



EPX *microwave inc.*

RF & MICROWAVE SWITCH Product Guide



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Mechanical Specification

Switch Type:	Electromechanical, Coaxial
RF Contacts:	Break before Make
Characteristic Impedance:	50Ω (75Ω available for SPDT upon request)
Temperature Range:	-25°C to +65°C Operating
Wider Temperature Range:	-54°C to +85°C Operating
Humidity:	Moisture Seal Available
Shock:	MIL-STD-202 Method 213, Condition D (500G Non Operating)
Vibration:	MIL-STD-202 Method 214, Condition D (10G RMS Non Operating)
Switch Actuation Life:	Failsafe : 2 Million Cycles Latching: 5 Million Cycles Normally Open: 2 Million Cycles



Example: SPDT-0A-18A-D-S9

M SPDT - 0 A - 18 A - D - S9 - LP

M VERSION

Standard : -54 ~ +85°C
With TTL : -40 ~ +85°C
With Indicator : -40 ~ +85°C

TYPE

SPDT
TRAN
SPMT
MSPDT
MTRAN
MSPMT

CONNECTOR

0: SMA
1: N
2: TNC
3: RF PIN
4: F (75 ohms)
5: SC (High Power)
6: SMB
7: 7/16 DIN
8: BNC
9: K (2.92mm)
10: MINI DIN

ACTUATOR TYPE

A: Failsafe without Indicator
B: Failsafe with Indicator
C: Latching without Indicator
D: Latching with Indicator
E: Normally open without Indicator
F: Normally open with Indicator

FREQUENCY RANGE

03: DC-3GHz
08: DC-8GHz
12: DC-12GHz
18: DC-18GHz
22: DC-22GHz
26: DC-26.5GHz
33: DC-33.5GHz
40: DC-40GHz

LOW PIM

Low PIM

CONTROL OPTIONS

SPDT/ TRAN

Not specified: Pin Terminal Control
S9: 9Pins D-Sub Control
S15: 15Pins D-Sub Control

SPMT

Not specified: D-Sub Control
PIN: Pin Terminal Control
D10: 10Pins DIP Socket
D16: 16Pins DIP Socket

OPTIONS

H: High Power
T: Internal Terminations
- SPDT/SPMT, SMA & K connectors only
D: TTL Drivers with diodes
P: Positive + Common
- Latching or Normally Open only
A: Auto Reset
- SPMT, Latching only
S: Self Cutoff
- Latching only
I: Transient Suppression Diodes
E: Decoder
Y: Moisture Seal
N: Narrow Body
- SPDT only
L: High Isolation (90dB)
C: Custom
- Customer specified requirements

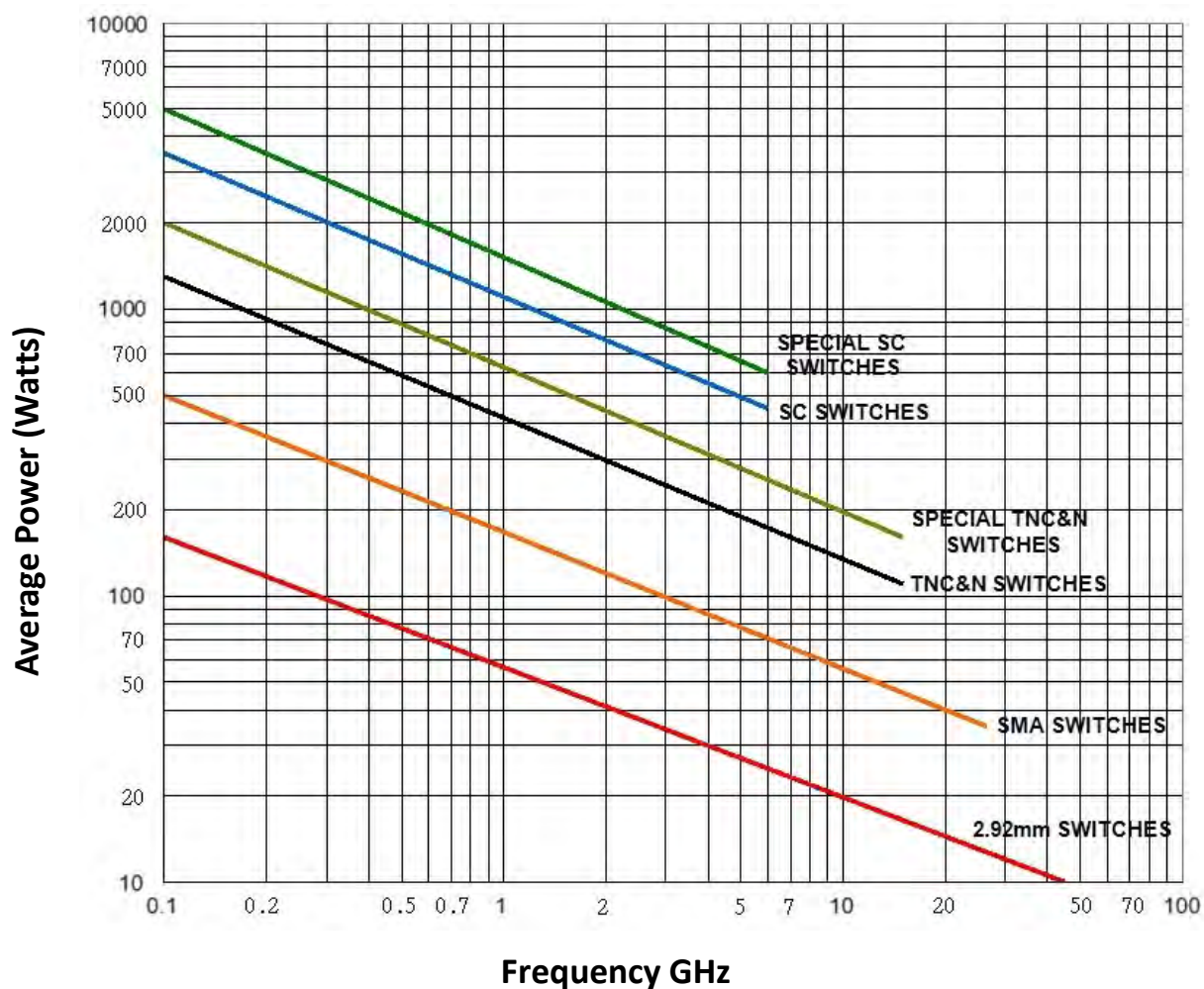
ACTUATOR VOLTAGE

A: 12VDC
B: 15VDC
C: 28VDC
D: 24VDC
E: 20VDC
F: 5VDC
G: 18VDC
H: 48VDC

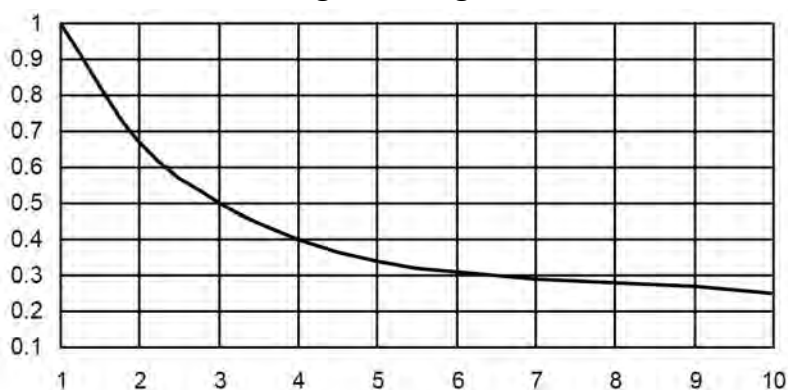


Power Handling

POWER HANDLING vs. FREQUENCY



Power Handling Derating vs. Load VSWR



Power handling chart base on the following reference conditions:

- Ambient temperature of 40°C or less
- Sea level operation
- Load VSWR of 1.20:1 Maximum
- No high-power (hot) switching

Please contact EPX Microwave for testing factors when applications do not meet the foregoing reference conditions.



Features:

- Broadband: DC - 18 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation

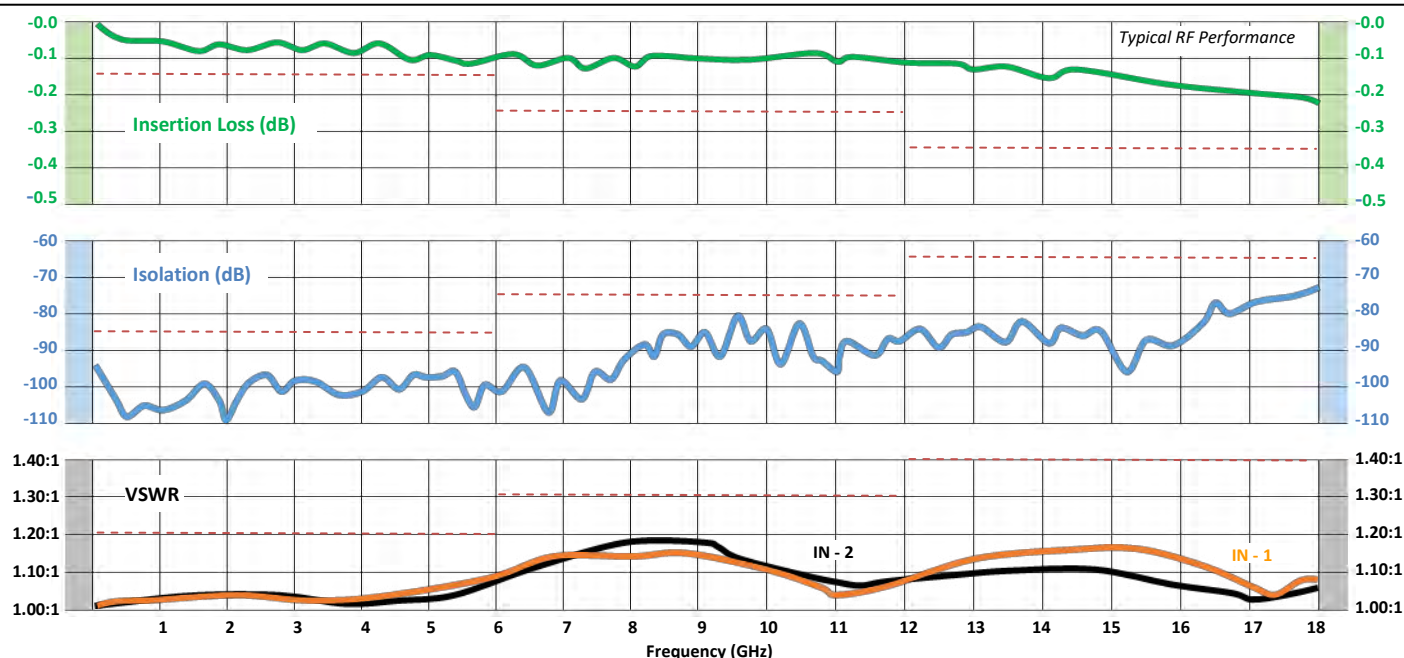


RF Specification:

Frequency (GHz)	DC - 6	6 - 12	12 - 18
Ins. Loss dB (max)	0.15	0.25	0.35
Isolation dB (max)	85	75	65
VSWR (max)	1.20:1	1.30:1	1.40:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Nominal Impedance	50 Ohms		

Description:

High reliability and low loss performance makes these switches ideal for testing and end product applications. A wide selection of connectors and features is available to meet most requirements. Good low to medium power handling. **Applications:** test stations, stand-by switch, Tx/Rx antenna switch, distribution switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	470	200	160	110	90

* at nominal voltage and +20°C

Popular Models

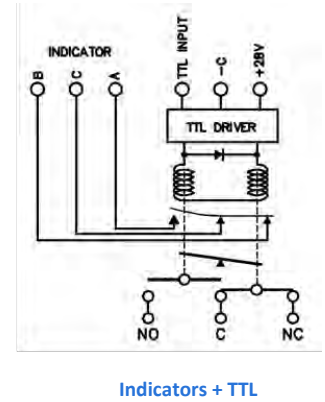
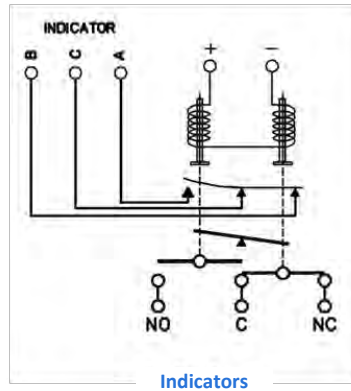
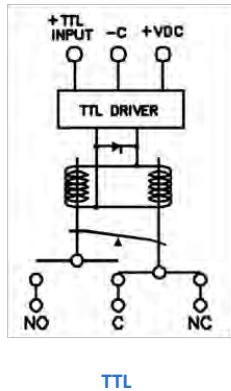
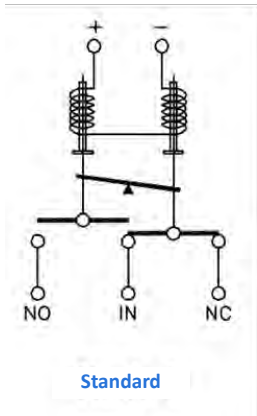
SPDT-0A-18A	SPDT, SMA, Failsafe, DC-18GHz, 12VDC
SPDT-0A-18A-D	SPDT, SMA, Failsafe, DC-18GHz, 12VDC, TTL
SPDT-0A-18A-N	SPDT, SMA, Failsafe, DC-18GHz, 12VDC, Narrow Body
SPDT-0B-18A	SPDT, SMA, Failsafe, DC-18GHz, 12VDC, Indicator
SPDT-0B-18A-D	SPDT, SMA, Failsafe, DC-18GHz, 12VDC, Indicator, TTL

- See backside for a full list of available features and options
- Contact us for high power and custom designs

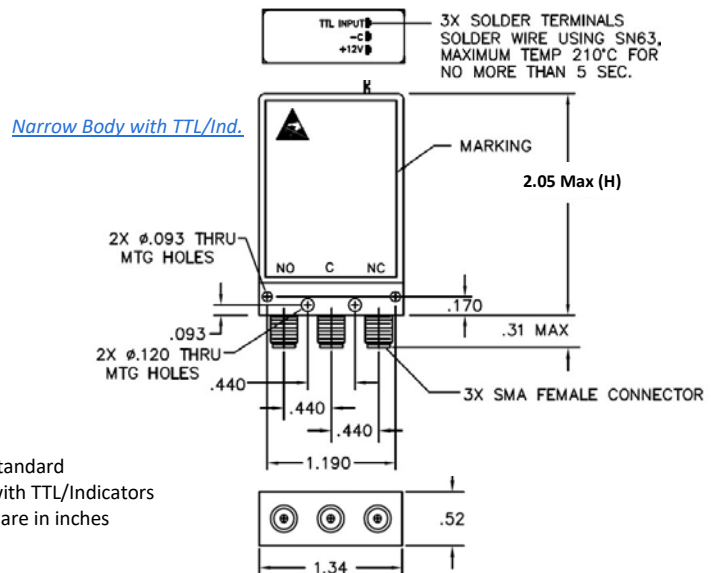
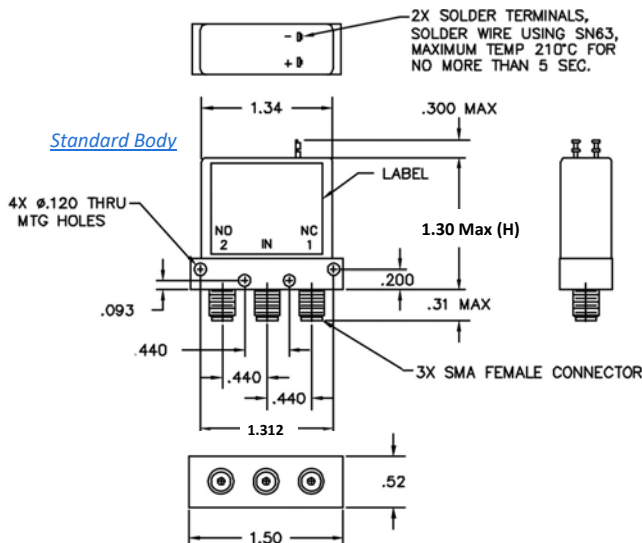




Schematics:



Outline:



H = 1.30 max standard
H = 2.05 max with TTL/Indicators
All dimensions are in inches

Model Numbering System

Example: SPDT-0A-18A-D-S9

(SPDT, SMA Connector, Failsafe without indicator, DC-18GHz, 12VDC, TTL Driver, D-Sub Control)

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
A : Failsafe without Indicator
B : Failsafe with Indicator

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
N : Narrow Body
C : Custom



* Solder pins are standard for SPDT, no designation on model number needed





Features:

- Broadband: DC - 26.5 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation

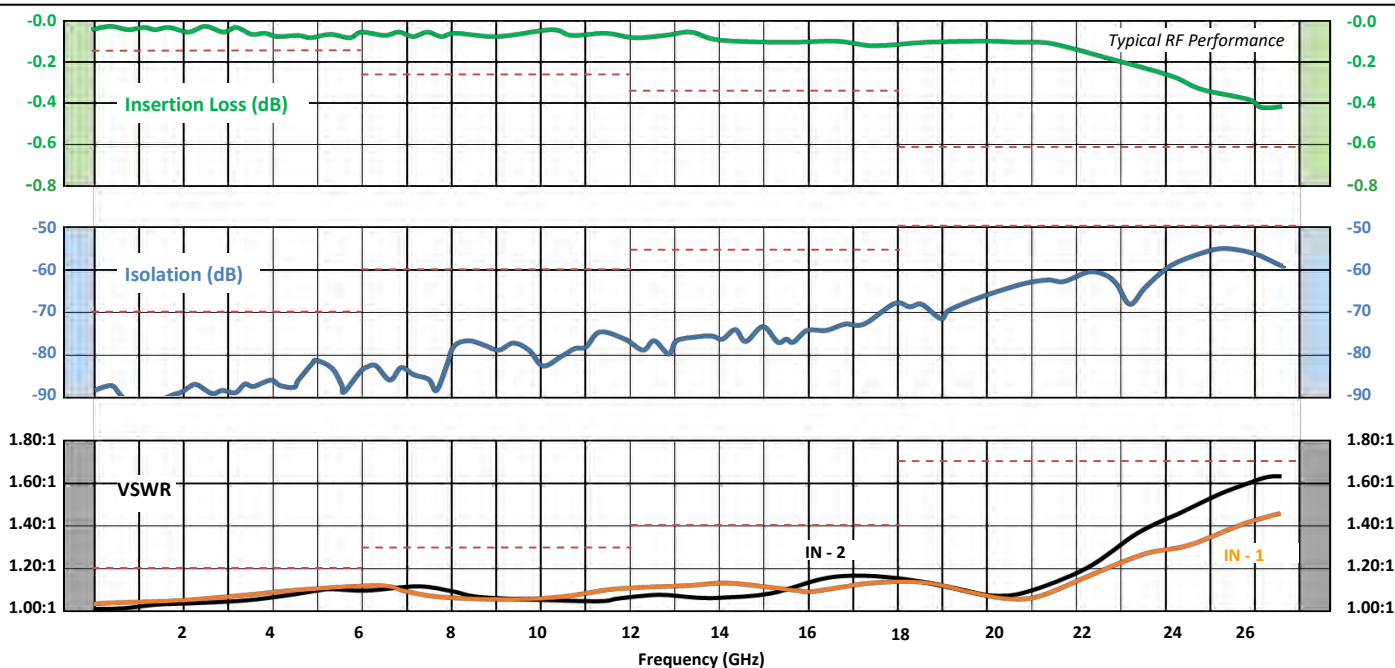


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-26.5
Ins. Loss dB (max)	0.15	0.25	0.35	0.60
Isolation dB (min)	80	70	60	50
VSWR (max)	1.20:1	1.30:1	1.40:1	1.70:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω			

Description:

Broadband frequency coverage with high reliability and low loss performance makes these switches ideal for testing and end product applications. A wide selection of connectors and features are available to meet most requirements. Good low to medium power handling. **Applications:** test stations, stand-by switch, Tx/Rx antenna switch, distribution switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current					
Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	470	200	160	110	90

* at nominal voltage and +20°C

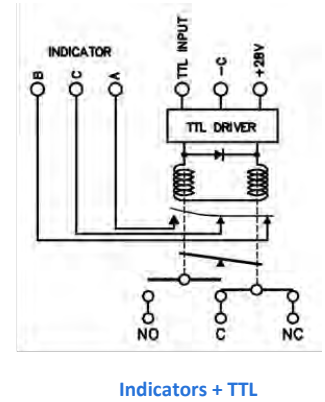
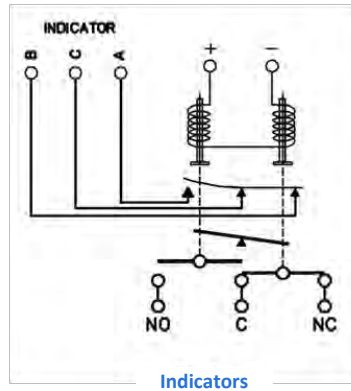
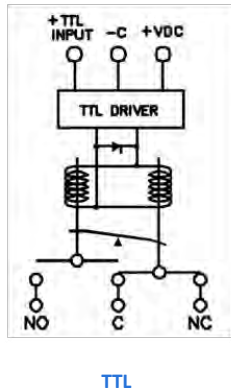
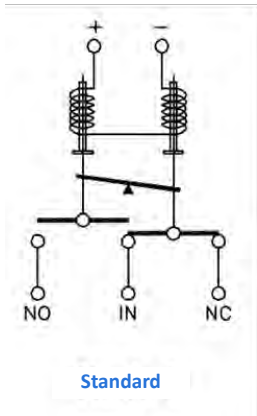
Popular Models	
SPDT-0A-26A	SPDT, SMA, Failsafe, DC-26.5GHz, 12VDC
SPDT-0A-26A-D	SPDT, SMA, Failsafe, DC-26.5GHz, 12VDC, TTL
SPDT-0B-26A	SPDT, SMA, Failsafe, DC-26.5GHz, 12VDC, Indicator
SPDT-0B-26A-D	SPDT, SMA, Failsafe, DC-26.5GHz, 12VDC, Indicator , TTL

- See backside for a full list of available features and options
- Contact us for high power and custom designs

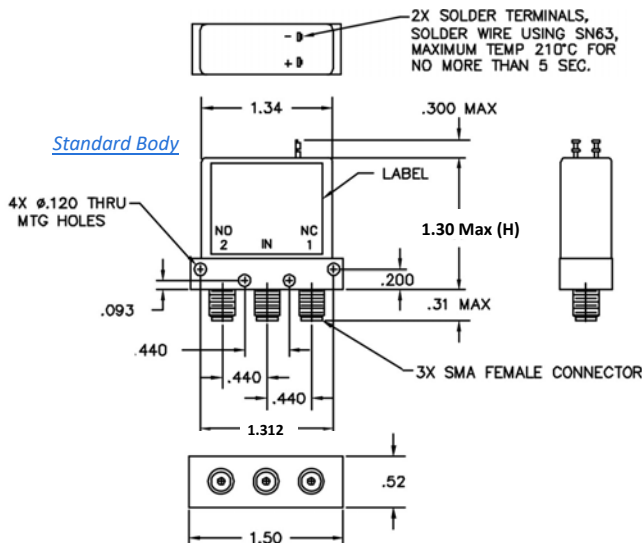




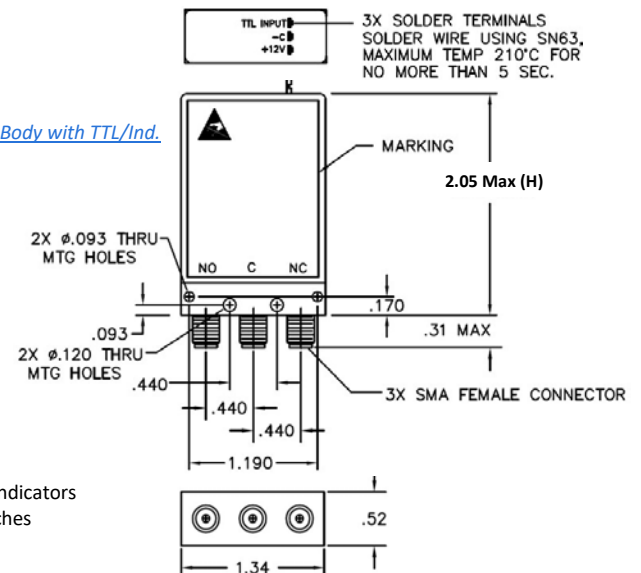
Schematics:



Outline:



Narrow Body with TTL/Ind.



H = 1.30 max standard
H = 2.05 max with TTL/Indicators
All dimensions are in inches

Model Numbering System

Example: SPDT-0A-26A-D

(SPDT, SMA Connector, Failsafe without indicator, DC-26.5GHz, 12VDC, TTL Driver, Pin Terminal Control)

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
A : Failsafe without Indicator
B : Failsafe with Indicator

Frequency Range	
03 : DC-3GHz	18 : DC-18GHz
08 : DC-8GHz	22 : DC-22GHz
12 : DC-12GHz	26 : DC-26.5GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
N : Narrow Body
C : Custom



RoHS



* Solder pins are standard for SPDT, no designation on model number needed



Features:

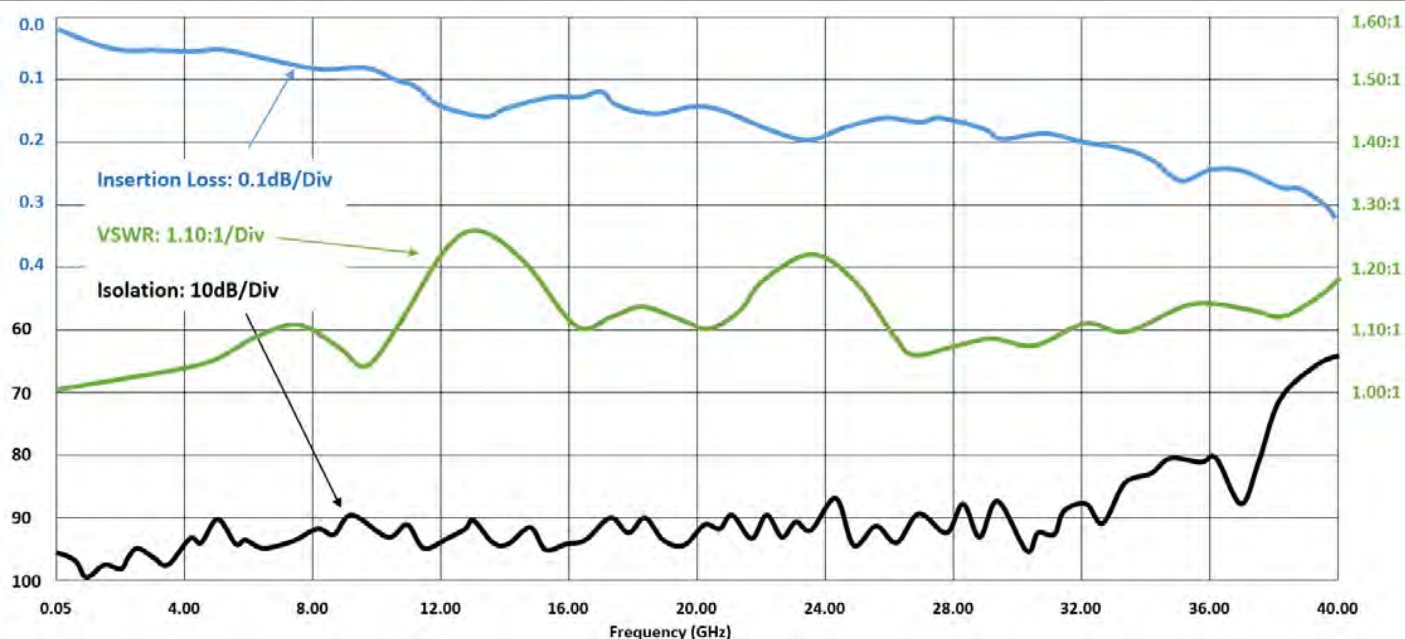
- Broadband: DC - 40 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation



RF Specification:

Frequency, (GHz)	DC - 6	6 - 12.4	12.4 - 18	18 - 26.5	26.5 - 40	Operation	Specification
Ins. Loss dB (max)	0.15	0.25	0.30	0.40	0.50	Switching Time	20 mS (max)
Isolation dB (min)	80	75	65	65	60	Switching Action	Break-Before-Make
VSWR (max)	1.15:1	1.35:1	1.40:1	1.40:1	1.50:1	Impedance	50 Ω

Description: Broadband frequency coverage with high reliability and low loss performance makes these switches ideal for testing and end product applications. Precision 2.92mm connectors are employed for excellent RF performance coupled with a variety of available features to meet most requirements. Good low to medium power handling. **Applications:** test stations, stand-by switch, Tx/Rx antenna switch, distribution switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +70° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltagess and Current

Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	470	200	160	110	90

* at nominal voltage and +20°C

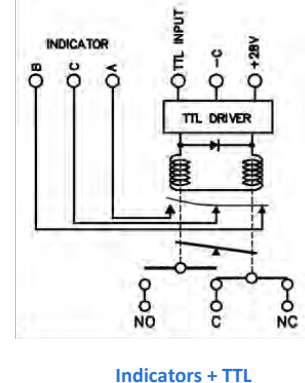
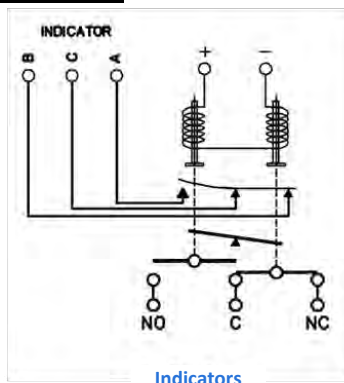
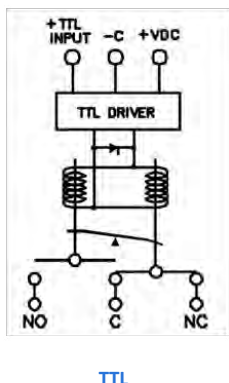
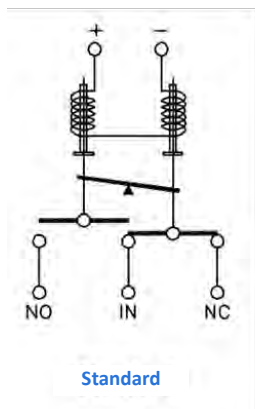
Popular Models

SPDT-9A-40A	SPDT, K connector, Failsafe, DC-40GHz, 12VDC
SPDT-9A-40A-D	SPDT, K connector, Failsafe, DC-40GHz, 12VDC, TTL
SPDT-9A-40B	SPDT, K connector, Failsafe, DC-40GHz, 15VDC
SPDT-9A-40C	SPDT, K connector, Failsafe, DC-40GHz, 28VDC

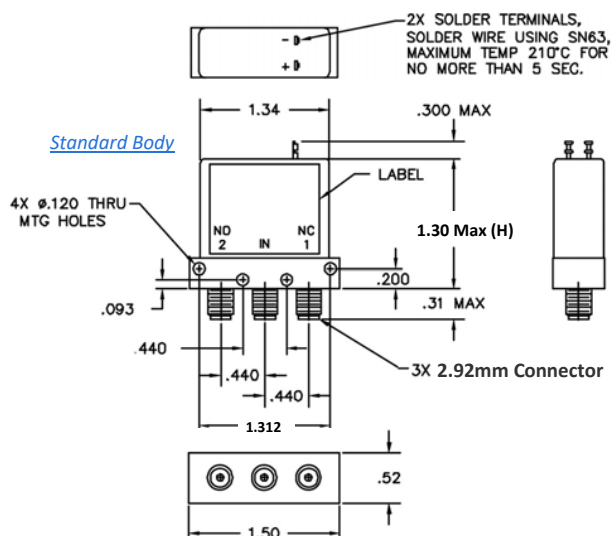
- See backside for a full list of available features and options
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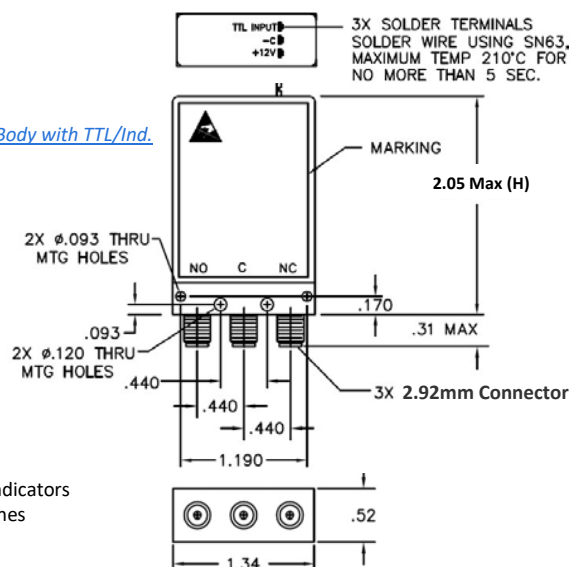
Schematics:



Outline:



Narrow Body with TTL/Ind.



H = 1.30 max standard
H = 2.05 max with TTL/Indicators
All dimensions are in inches

Model Numbering System

Example: SPDT-9A-40A-D

(SPDT, K Connector, Failsafe without indicator, DC-40GHz, 12VDC, TTL Driver, Pin Terminal Control)

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
A : Failsafe without Indicator
B : Failsafe with Indicator

SPDT - 9A - 40A - D -

Frequency Range	
03 : DC-3GHz	22 : DC-22GHz
08 : DC-8GHz	26 : DC-26.5GHz
12 : DC-12GHz	33 : DC-33.5GHz
18 : DC-18GHz	40 : DC-40GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
N : Narrow Body
C : Custom



RoHS



* Solder pins are standard for SPDT, no designation on model number needed



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Site Web : www.es-france.com

Features:

- Broadband: DC - 12 GHz
- Extended Life: 2 million cycles
- High Power Handling: >1kW
- Low Insertion Loss
- High Isolation

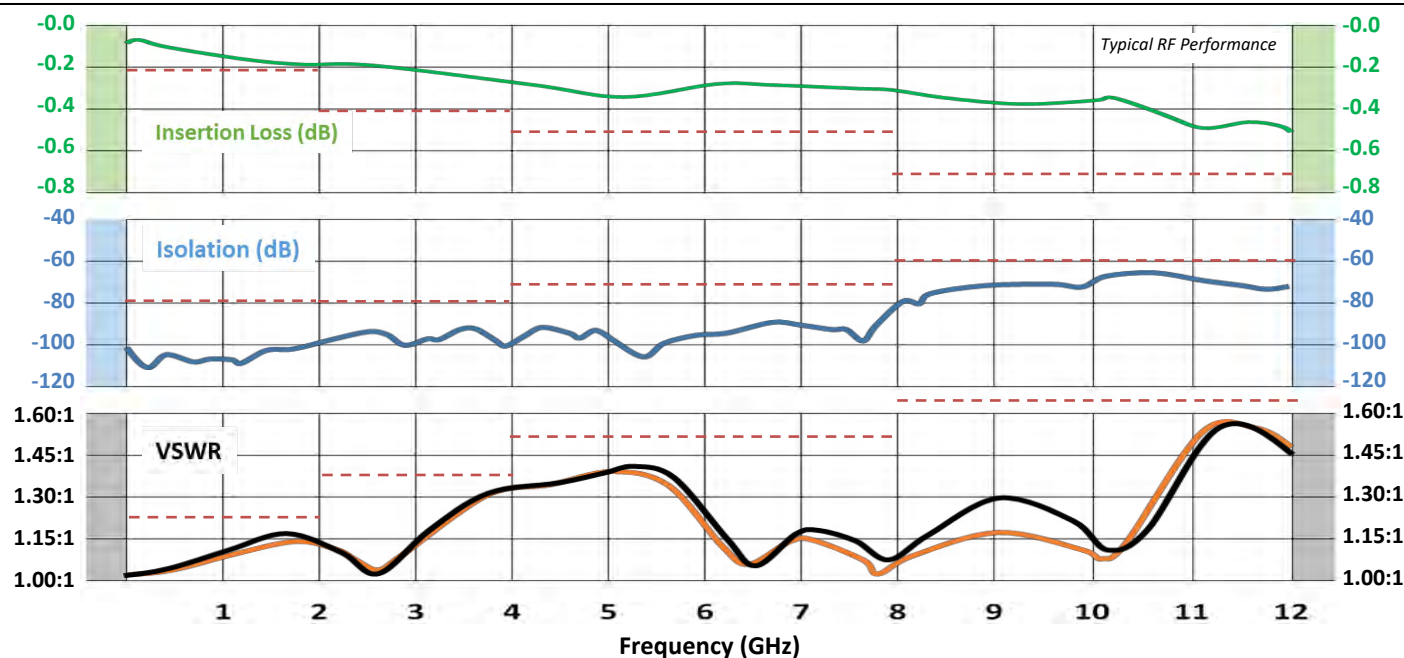


RF Specification:

Frequency, (GHz)	DC-2	2-4	4-8	8-12
Ins. Loss dB (max)	0.2	0.4	0.5	0.7
Isolation dB (min)	80	80	70	60
VSWR (max)	1.20:1	1.40:1	1.50:1	1.70:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω			
RF Power Handling	>1kW CW designs available			

Description:

Excellent high RF power handling with reliability and low loss performance makes these switches ideal for testing and end product applications. A wide selection of connectors and features are available to meet most requirements. Higher RF power designs available. **Applications:** test stations, stand-by switch, antenna diversity switch, bypass switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	24-30
Current (mA)*	800	500	300	270

* at nominal voltage and +20°C

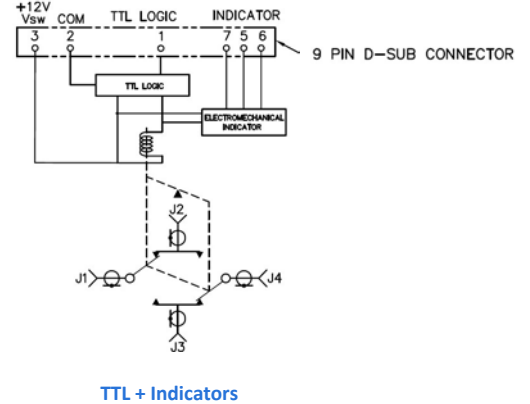
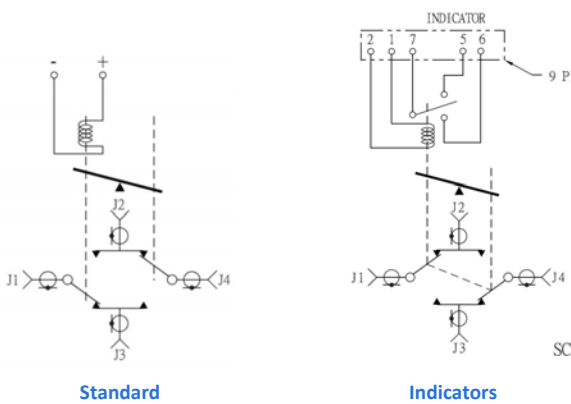
Popular Models

TRAN-1A-12A	TRAN, N, Failsafe, DC-12GHz, 12VDC
TRAN-1A-12A-D	TRAN, N, Failsafe, DC-12GHz, 12VDC, TTL
TRAN-1A-12A-S9	TRAN, N, Failsafe, DC-12GHz, 12VDC, D-Sub
TRAN-1B-12A	TRAN, N, Failsafe, DC-12GHz, 12VDC, Indicator
TRAN-1B-12A-D	TRAN, N, Failsafe, DC-12GHz, 12VDC, Indicator, TTL

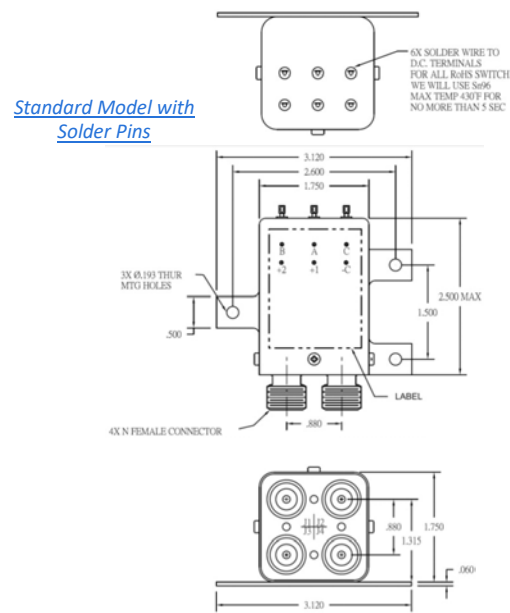
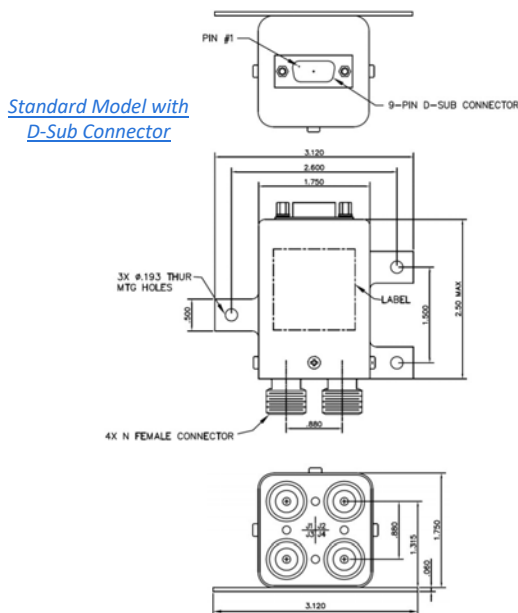
- See backside for a full list of available features and options
- Contact us for high power and custom designs



Schematics:



Outline:



Model Numbering System

Example: TRAN-1A-12A-D

(TRAN, N Connector, Failsafe without indicator, DC-12GHz, 12VDC, TTL Driver, Pin Terminal Control)

TRAN - 1 A - 12 A - D -

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
A : Failsafe without Indicator
B : Failsafe with Indicator

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* Solder pins are standard for TRAN, no designation on model number needed



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Features:

- Broadband: DC - 18 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation
- Internal 50 Ω Terminations



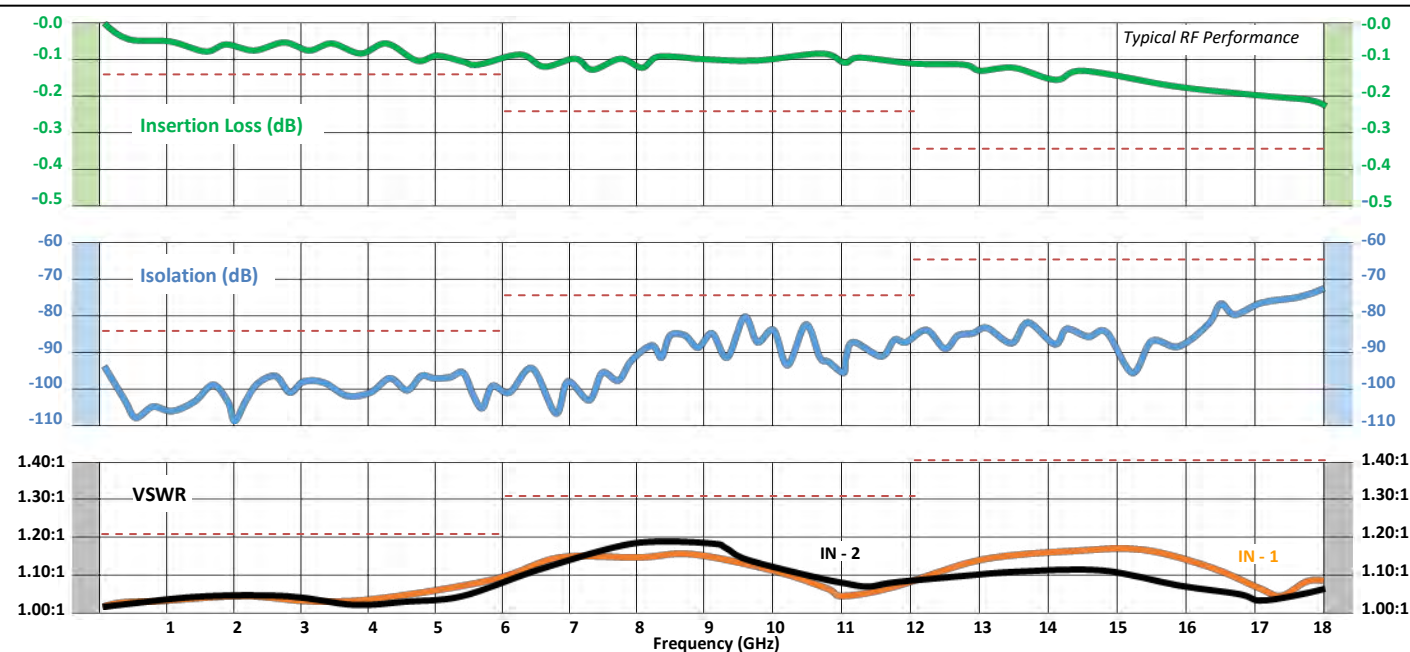
RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.15	0.25	0.35
Isolation dB (min)	85	70	65
VSWR (max)	1.20:1	1.30:1	1.40:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50 Ω (Switch and Terminations)		

Description:

The 50 Ω terminations of the switch in the "off" state ensures good isolation regardless of the match to which the switch is connected. Combined with repeatability and low insertion loss makes these switches ideal for all testing applications. Low to medium power RF handling with a wide selection of features are available to meet most requirements.

Applications: Bench testing, ATE stations, broadband transceivers, antenna systems. **Markets:** government, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current					
Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	470	200	160	110	90

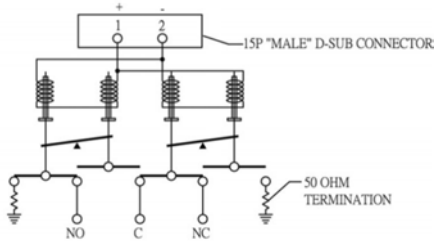
* at nominal voltage and +20°C

Popular Models	
SPDT-0A-18A-T	SPDT, SMA, Failsafe, DC-18GHz, 12VDC, Internal Termination
SPDT-0A-18A-TD	SPDT, SMA, Failsafe, DC-18GHz, 12VDC, Internal Termination, TTL
SPDT-0B-18A-T	SPDT, SMA, Failsafe, DC-18GHz, 12VDC, Indicator, Internal Termination
SPDT-0B-18A-TD	SPDT, SMA, Failsafe, DC-18GHz, 12VDC, Indicator, Internal Termination, TTL

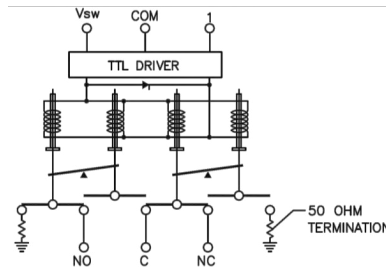
- See backside for a full list of available features and options
- Contact us for high power and custom designs



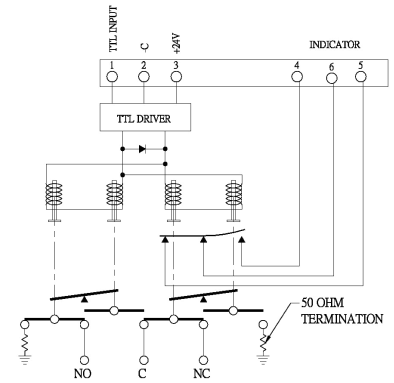
Schematics



15 Pin D-Sub

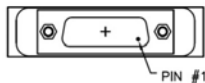


TTL Driver



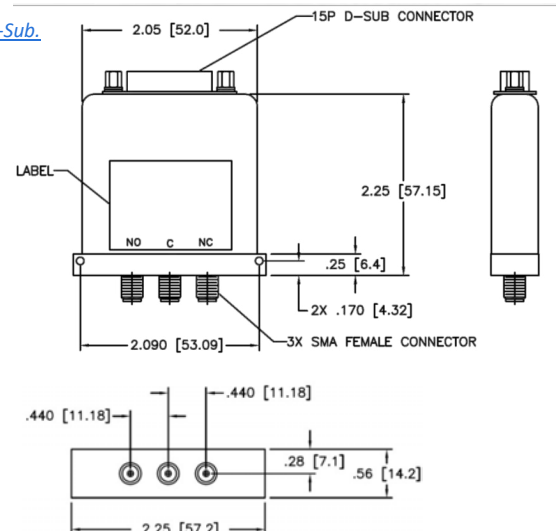
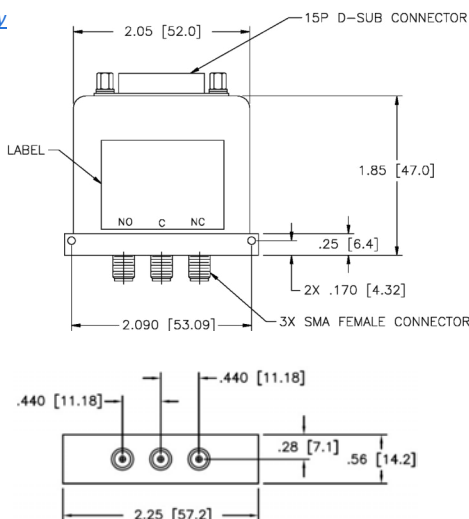
TTL Driver + Indicators

Outlines



Standard Body
15Pin D-Sub

TTL + Indicators + D-Sub.



Model Numbering System

Example: SPDT-0A-18A-T-S15

(SPDT, SMA Connector, Failsafe without indicator, DC-18GHz, 12VDC, Internal Termination, D-Sub Control)

SPDT - 0A - 18A - T - S15

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
A : Failsafe without Indicator
B : Failsafe with Indicator

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
T : Internal Terminations
D : TTL Drivers with Diodes
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* Solder pins are standard for SPDT, no designation on model number needed



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Site Web : www.es-france.com

Features:

- Broadband: DC - 26.5 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation
- Internal 50 Ω Terminations



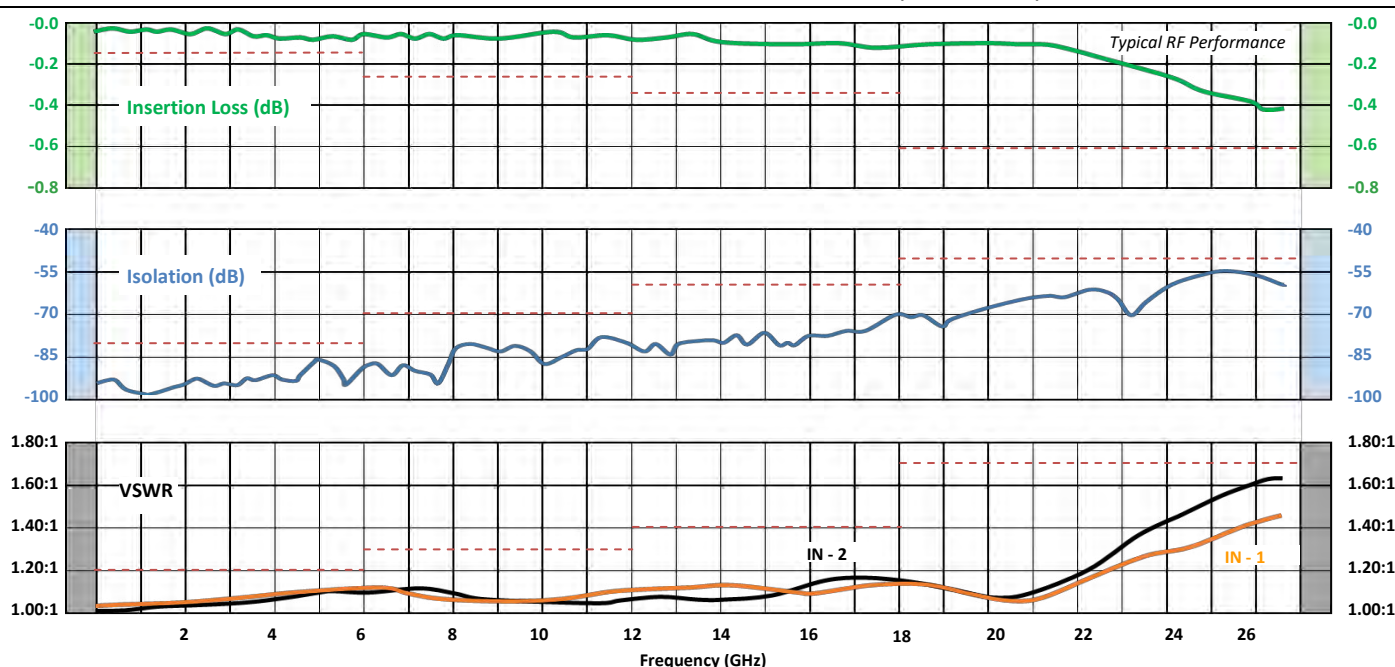
RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-26.5
Ins. Loss dB (max)	0.15	0.25	0.35	0.60
Isolation dB (min)	80	70	60	50
VSWR (max)	1.20:1	1.30:1	1.40:1	1.70:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω (Switch and Terminations)			

Description:

The 50 Ω terminations of the switch in the "off" state ensures good isolation regardless of the match to which the switch is connected. Combined with repeatability and low insertion makes these switches ideal for all testing applications. Low to medium power RF handling with a wide selection of features is available to meet most requirements.

Applications: Bench testing, ATE stations, broadband transceivers, antenna systems. **Markets:** government, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	470	200	160	110	90

* at nominal voltage and +20°C

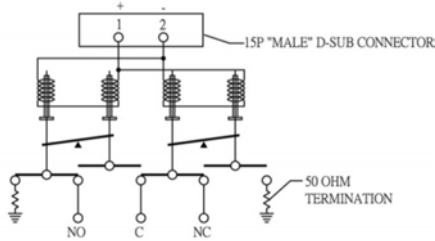
Popular Models

SPDT-0A-26A-T	SPDT, SMA, Failsafe, DC-26.5GHz, 12VDC, Internal Termination
SPDT-0A-26A-TD	SPDT, SMA, Failsafe, DC-26.5GHz, 12VDC, Internal Termination, TTL
SPDT-0B-26A-T	SPDT, SMA, Failsafe, DC-26.5GHz, 12VDC, Indicator, Internal Termination
SPDT-0B-26A-TD	SPDT, SMA, Failsafe, DC-26.5GHz, 12VDC, Indicator, Internal Termination, TTL

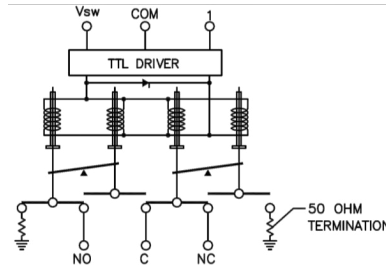
- See backside for a full list of available features and options
- Contact us for high power and custom designs



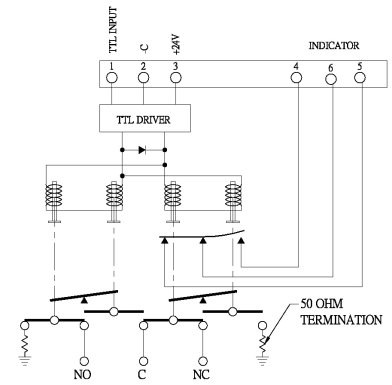
Schematics



15 Pin D-Sub

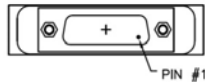


TTL Driver

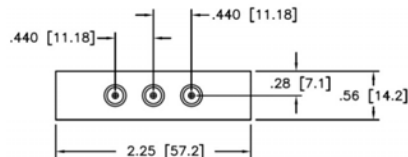
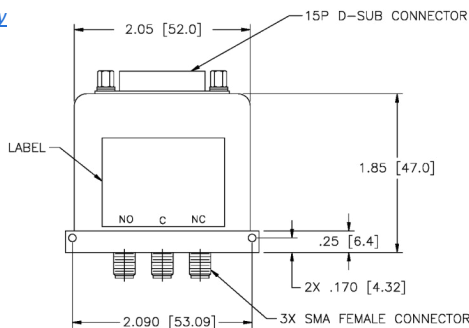


TTL Driver + Indicators

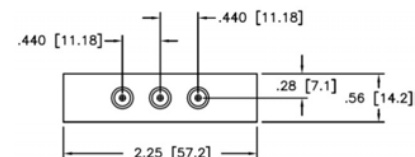
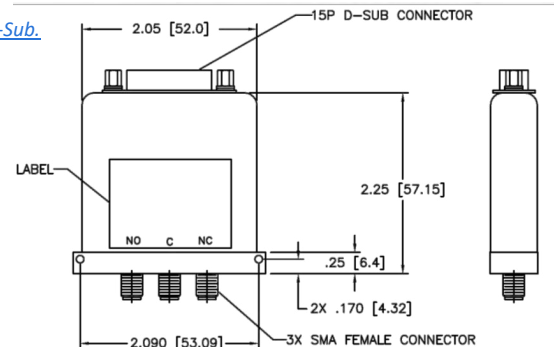
Outlines



Standard Body
15Pin D-Sub



TTL + Indicators + D-Sub.



Model Numbering System

Example: SPDT-0A-26A-T-S15

(SPDT, SMA Connector, Failsafe without indicator, DC-26.5GHz, 12VDC, Internal Termination, D-Sub Control)

SPDT - 0A - 26A - T - S15

Connector Type

0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type

A : Failsafe without Indicator
B : Failsafe with Indicator

Frequency Range

03 : DC-3GHz	18 : DC-18GHz
08 : DC-8GHz	22 : DC-22GHz
12 : DC-12GHz	26 : DC-26.5GHz

Actuator Voltage

A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options

Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options

H : High Power
T : Internal Terminations
D : TTL Drivers with Diodes
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* Solder pins are standard for SPDT, no designation on model number needed



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Site Web : www.es-france.com

Features:

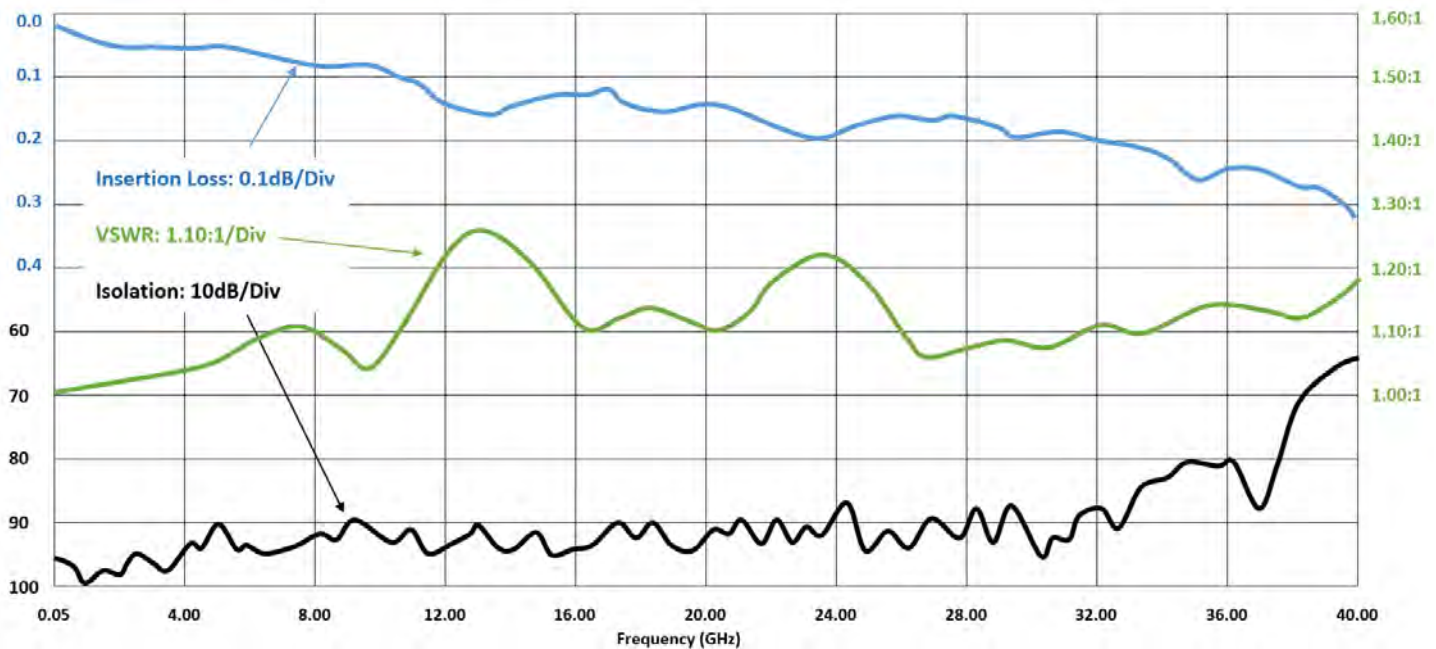
- Broadband: DC - 40 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation
- Internal 50 Ω Terminations

RF Specification:

Frequency, (GHz)	DC - 6	6 - 12.4	12.4 - 18	18 - 26.5	26.5 - 40	Operation	Specification
Ins. Loss dB (max)	0.15	0.25	0.30	0.40	0.50	Switching Time	20 mS (max)
Isolation dB (min)	80	75	65	65	60	Switching Action	Break-Before-Make
VSWR (max)	1.15:1	1.35:1	1.40:1	1.40:1	1.50:1	Impedance	50 Ω

Description: The 50 Ω terminations of the switch in the "off" state ensures good isolation regardless of the match to which the switch is connected. Combined with repeatability and low insertion makes these switches ideal for all testing applications. Low to medium power RF handling with a wide selection of features is available to meet most requirements.

Applications: Bench testing, ATE stations, broadband transceivers, antenna systems. **Markets:** government, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +70° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	470	200	160	110	90

* at nominal voltage and +20° C

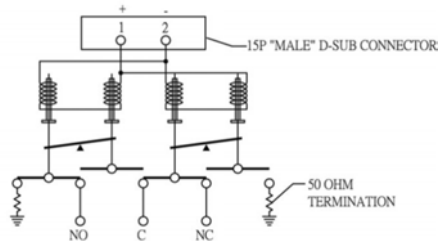
Popular Models

SPDT-9A-40A-T	SPDT, K, Failsafe, DC-40GHz, 12VDC, Internal Termination
SPDT-9A-40A-TD	SPDT, K, Failsafe, DC-40GHz, 12VDC, Internal Termination, TTL
SPDT-9B-40A-T	SPDT, K, Failsafe, DC-40GHz, 12VDC, Indicator, Internal Termination
SPDT-9B-40A-TD	SPDT, K, Failsafe, DC-40GHz, 12VDC, Indicator, Internal Termination, TTL

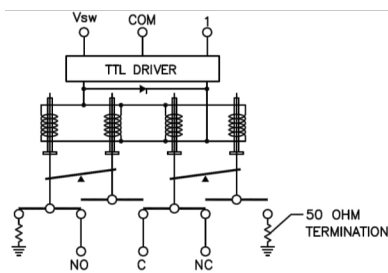
- See backside for a full list of available features and options
- Contact us for high power and custom designs



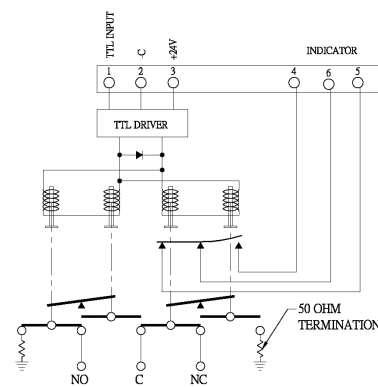
Schematics



15 Pin D-Sub



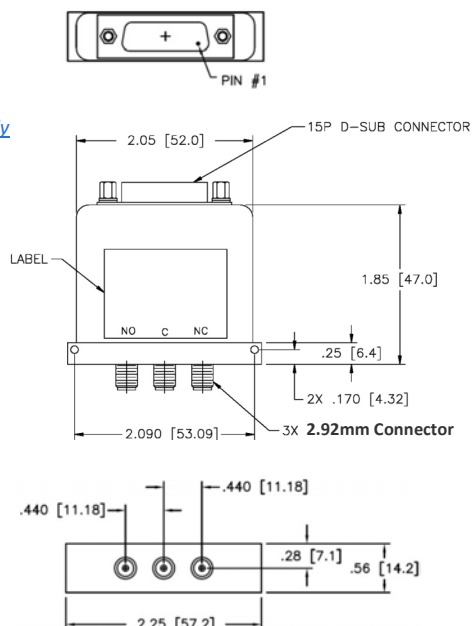
TTL Driver



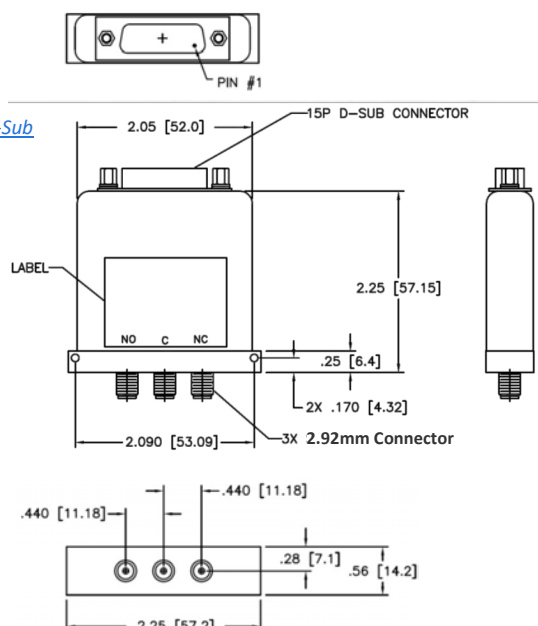
TTL Driver + Indicators

Outlines

Standard Body
15Pin D-Sub



TTL + Indicators + D-Sub



Model Numbering System

Example: SPDT-9A-40A-T-S15

(SPDT, K Connector, Failsafe without indicator, DC-40GHz, 12VDC, Internal Termination, D-Sub Control)

SPDT - 9A - 40A - T - S15

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
A : Failsafe without Indicator
B : Failsafe with Indicator

Frequency Range	
03 : DC-3GHz	22 : DC-22GHz
08 : DC-8GHz	26 : DC-26.5GHz
12 : DC-12GHz	33 : DC-33.5GHz
18 : DC-18GHz	40 : DC-40GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
T : Internal Terminations
D : TTL Drivers with Diodes
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom

* Solder pins are standard for SPDT, no designation on model number needed



Features:

- Broadband: DC - 18 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation

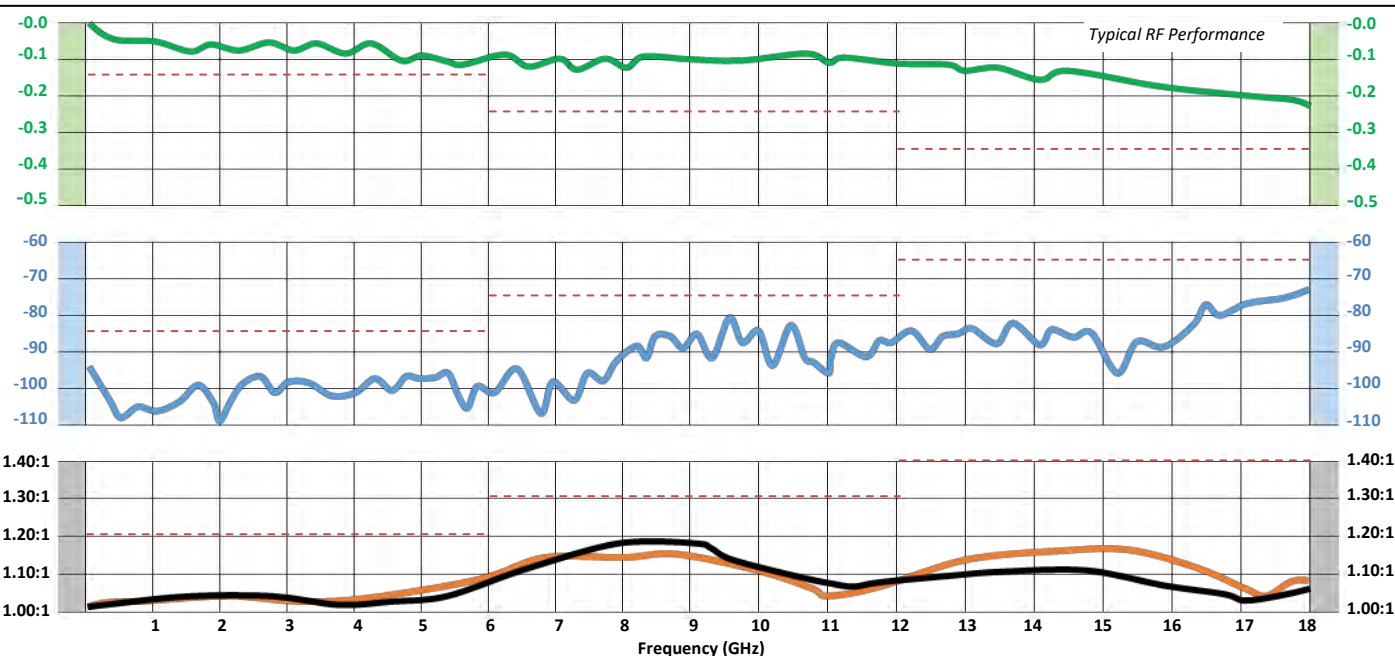


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.15	0.25	0.35
Isolation dB (min)	80	75	65
VSWR (max)	1.20:1	1.30:1	1.40:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50 Ω		

Description:

High reliability and low loss performance makes these switches ideal for testing and end product applications requiring energy conservation. A wide selection of connectors and other features is available to meet most requirements. Capable of handling low to medium RF power, higher power solutions available. **Applications:** test stations, stand-by switch, Tx/Rx antenna switch, distribution switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current					
Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	250	200	160	110	65

* at nominal voltage and +20°C

Popular Models	
SPDT-OC-18A	SPDT, SMA, Latching, DC-18GHz, 12VDC
SPDT-OC-18A-D	SPDT, SMA, Latching, DC-18GHz, 12VDC, TTL
SPDT-OC-18D	SPDT, SMA, Latching, DC-18GHz, 24VDC
SPDT-OD-18B	SPDT, SMA, Latching, DC-18GHz, 15VDC, Indicator

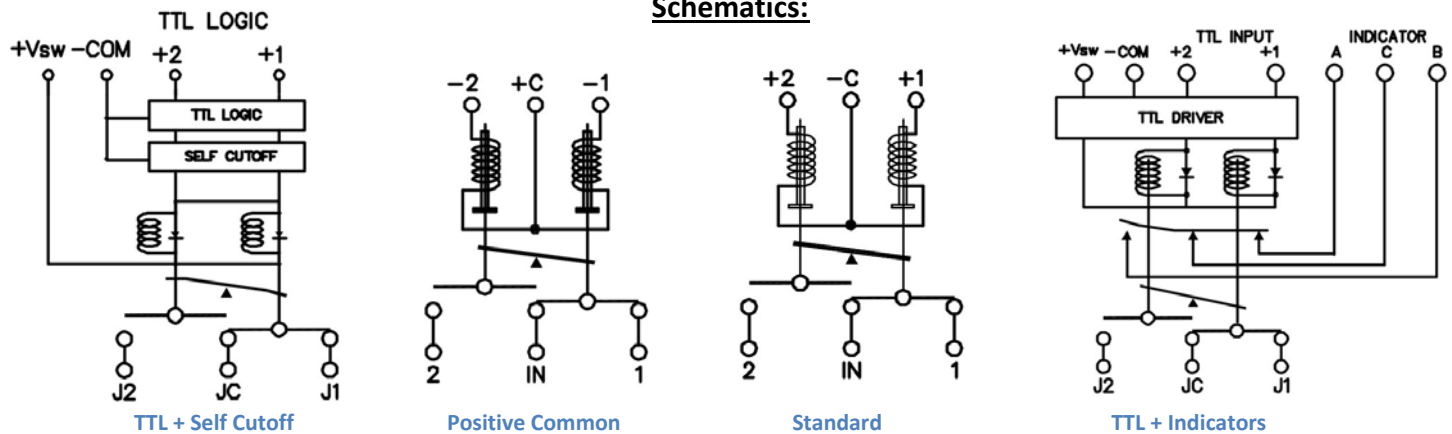
- See backside for a full list of available features and options
- Contact us for high power and custom designs



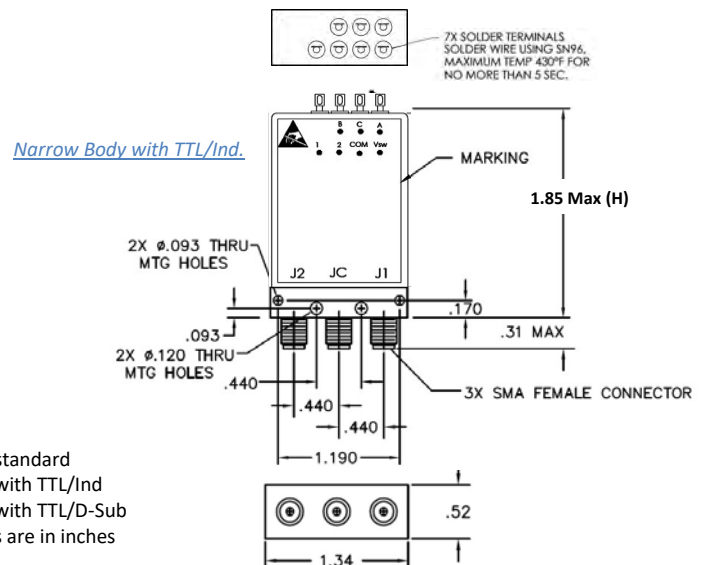
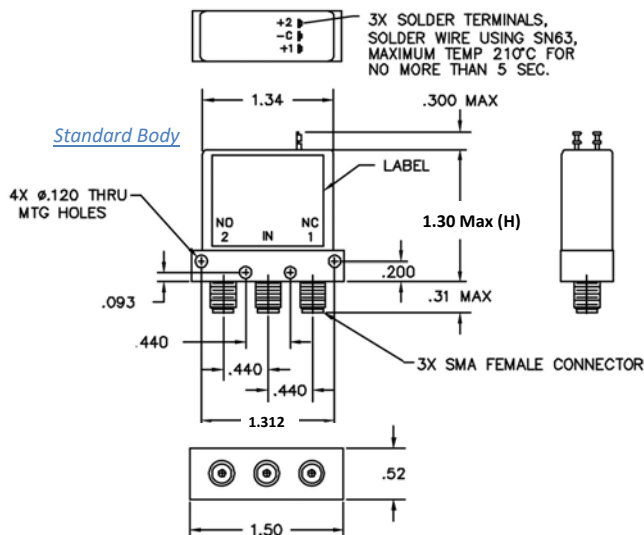
Single-Pole-Double-Throw (SPDT)

Latching - SMA - Standard/Narrow Body - DC to 18 GHz

Schematics:



Outline:



H = 1.30 max standard
H = 1.85 max with TTL/Ind
H = 2.05 max with TTL/D-Sub
All dimensions are in inches

Model Numbering System

Example: SPDT-0C-18A-D-S9

(SPDT, SMA Connector, Latching without indicator, DC-18GHz, 12VDC, TTL Driver, D-Sub Control)

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
C : Latching without Indicator
D : Latching with Indicator

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
\$9 : 9 Pins D-Sub
\$15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
P : Positive + Common
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
N : Narrow Body
C : Custom



* Solder pins are standard for SPDT, no designation on model number needed



Features:

- Broadband: DC - 26.5 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation

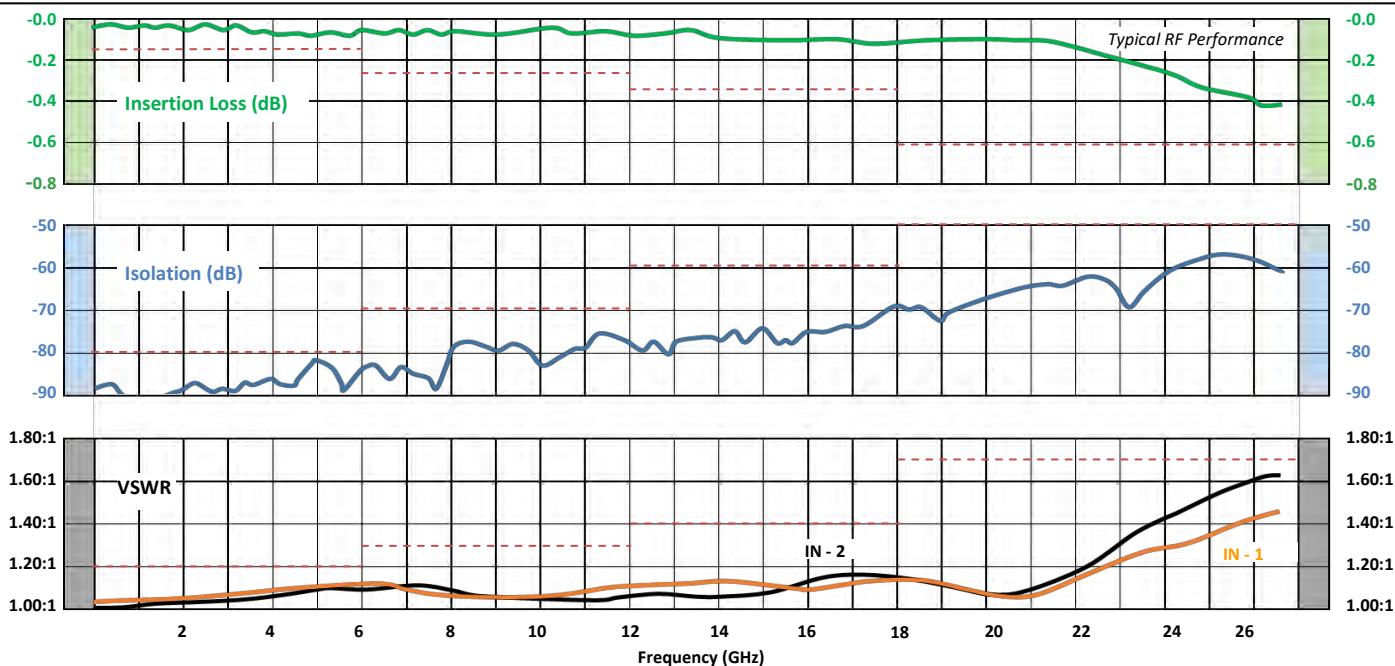
RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-26.5
Ins. Loss dB (max)	0.15	0.25	0.35	0.60
Isolation dB (min)	80	70	60	50
VSWR (max)	1.20:1	1.30:1	1.40:1	1.70:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω			



Description:

High reliability and low loss performance makes these switches ideal for testing and end product applications requiring energy conservation. A wide selection of connectors and features is available to meet most requirements. Capable of handling low to medium RF power, higher power solutions available. **Applications:** test stations, stand-by switch, Tx/Rx antenna switch, distribution switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	250	200	160	110	65

* at nominal voltage and +20°C

Popular Models

SPDT-0C-26A	SPDT, SMA, Latching, DC-26.5GHz, 12VDC
SPDT-0C-26A-D	SPDT, SMA, Latching, DC-26.5GHz, 12VDC, TTL
SPDT-0C-26D	SPDT, SMA, Failsafe, DC-26.5GHz, 24VDC
SPDT-0D-26B	SPDT, SMA, Failsafe, DC-26.5GHz, 15VDC, Indicator

- See backside for a full list of available features and options
- Contact us for high power and custom designs



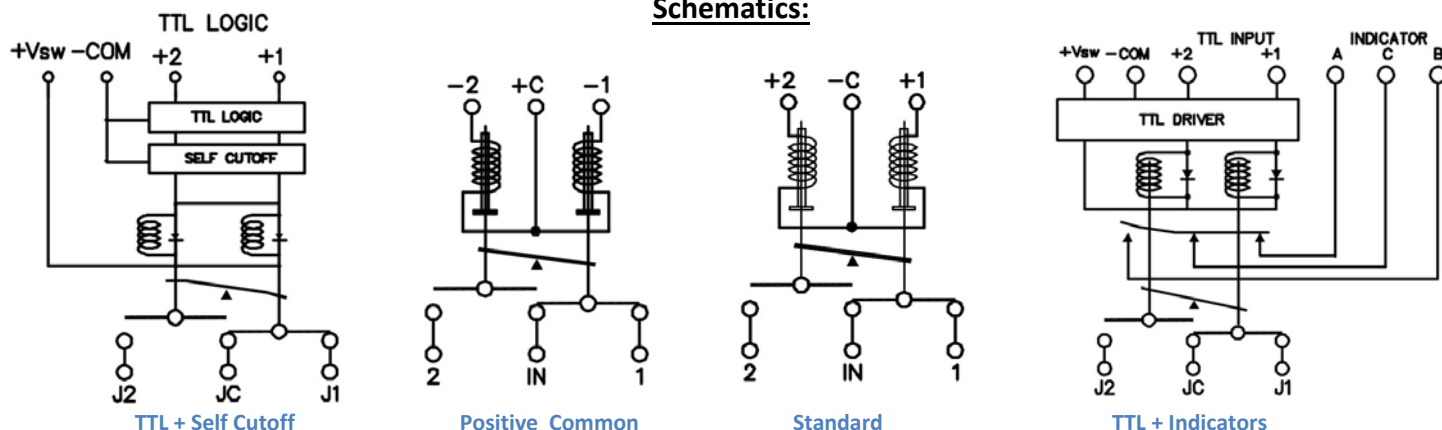


EPX microwave inc.

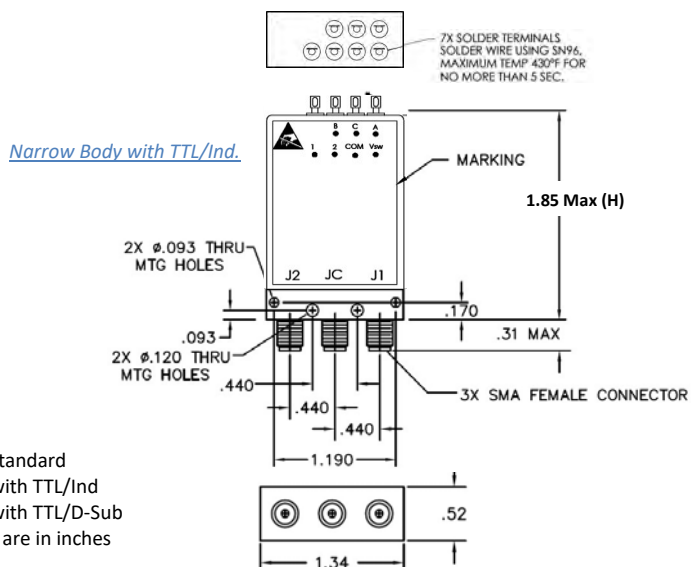
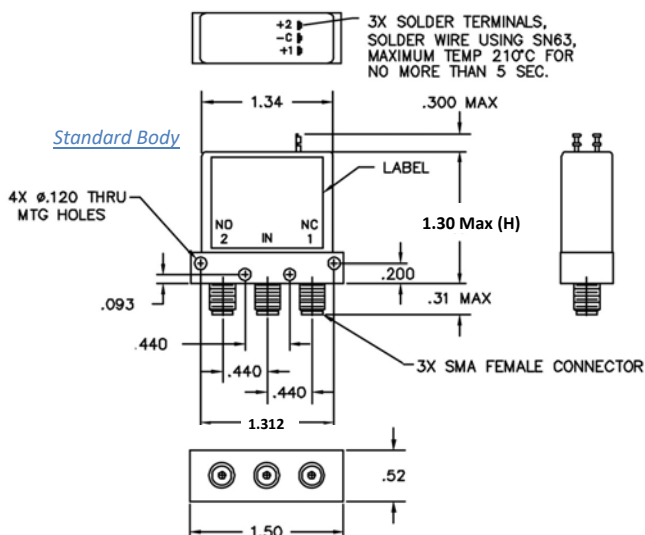
Single-Pole-Double-Throw (SPDT)

Latching - SMA - Standard/Narrow Body - DC to 26.5 GHz

Schematics:



Outline:



H = 1.30 max standard
H = 1.85 max with TTL/Ind
H = 2.05 max with TTL/D-Sub
All dimensions are in inches

Model Numbering System

Example: SPDT-0C-26A-D

(SPDT, SMA Connector, Latching without indicator, DC-26.5GHz, 12VDC, TTL Driver, Pin Terminal Control)

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
C : Latching without Indicator
D : Latching with Indicator

SPDT - 0C - 26A - D -

Frequency Range	
03 : DC-3GHz	18 : DC-18GHz
08 : DC-8GHz	22 : DC-22GHz
12 : DC-12GHz	26 : DC-26.5GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
P : Positive + Common
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
N : Narrow Body
C : Custom



* Solder pins are standard for SPDT, no designation on model number needed



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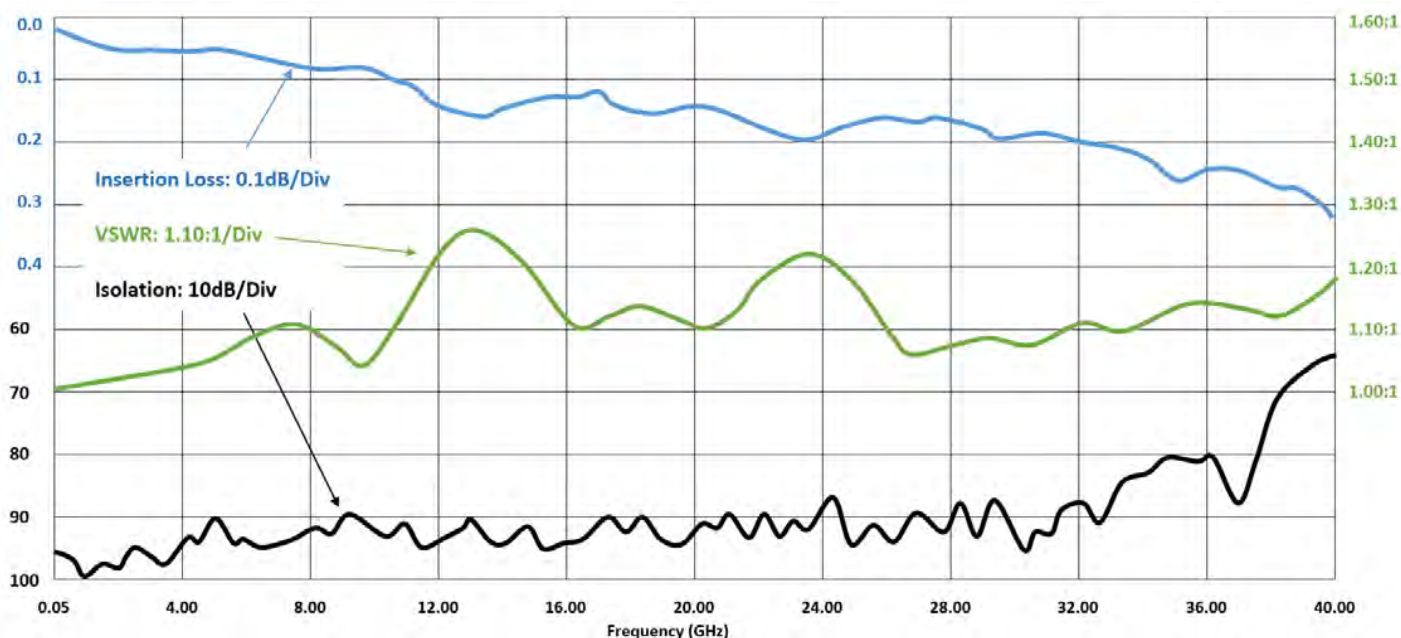
Features:

- Broadband: DC - 40 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation

RF Specification:

Frequency, (GHz)	DC - 6	6 - 12.4	12.4 - 18	18 - 26.5	26.5 - 40	Operation	Specification
Ins. Loss dB (max)	0.15	0.25	0.30	0.40	0.50	Switching Time	20 mS (max)
Isolation dB (min)	80	75	65	65	60	Switching Action	Break-Before-Make
VSWR (max)	1.15:1	1.35:1	1.40:1	1.40:1	1.50:1	Impedance	50 Ω

Description: Broadband frequency coverage with high reliability and low loss performance makes these switches ideal for testing and end product applications. Precision 2.92mm connectors are employed for excellent RF performance coupled with a variety of available features to meet most requirements. Good low to medium power handling. **Applications:** test stations, stand-by switch, Tx/Rx antenna switch, distribution switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +70° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	250	200	160	110	65

* at nominal voltage and +20°C

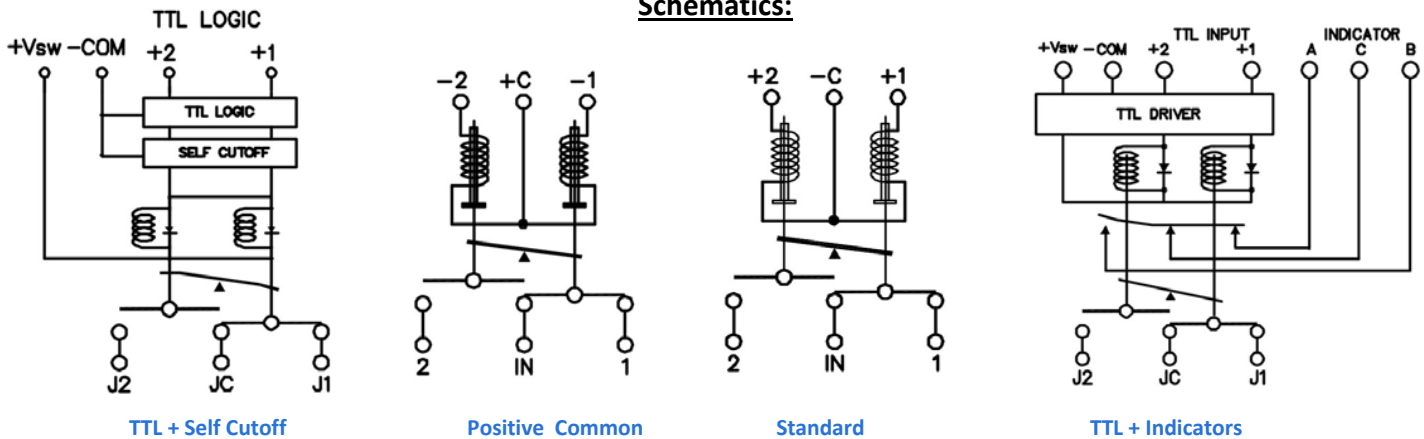
Popular Models

SPDT-9C-40A	SPDT, K connector, Latching, DC-40GHz, 12VDC
SPDT-9C-40A-D	SPDT, K connector, Latching, DC-40GHz, 12VDC, TTL
SPDT-9C-40B	SPDT, K connector, Latching, DC-40GHz, 15VDC
SPDT-9C-40C	SPDT, K connector, Latching, DC-40GHz, 28VDC

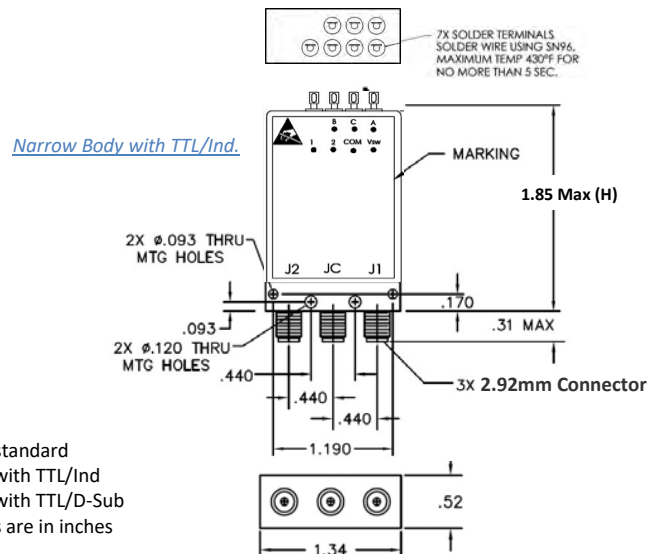
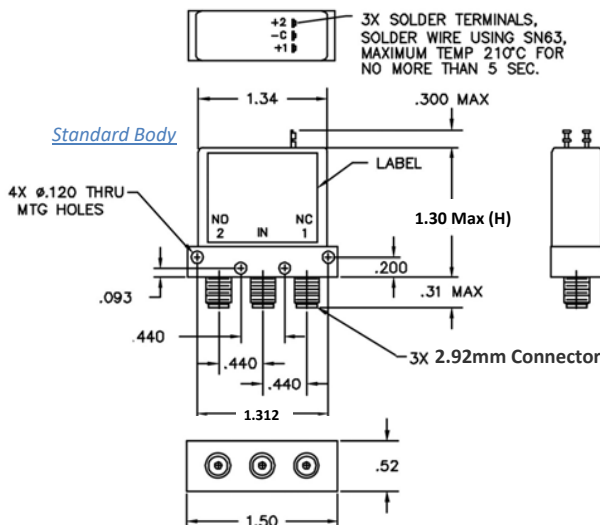
- See backside for a full list of available features and options
- Contact us for high power and custom designs



Schematics:



Outline:



Model Numbering System

Example: SPDT-9C-40A-D-S9

(SPDT, K Connector, Latching without indicator, DC-40GHz, 12VDC, TTL Driver, D-Sub Control)

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
C : Latching without Indicator
D : Latching with Indicator

SPDT - 9C - 40A - D - S9

Frequency Range	
03 : DC-3GHz	22 : DC-22GHz
08 : DC-8GHz	26 : DC-26.5GHz
12 : DC-12GHz	33 : DC-33.5GHz
18 : DC-18GHz	40 : DC-40GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
P : Positive + Common
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
N : Narrow Body
C : Custom

Features:

- Broadband: DC - 12 GHz
- Extended Life: 5 million cycles
- High Power Handling: >1kW
- Low Insertion Loss
- High Isolation



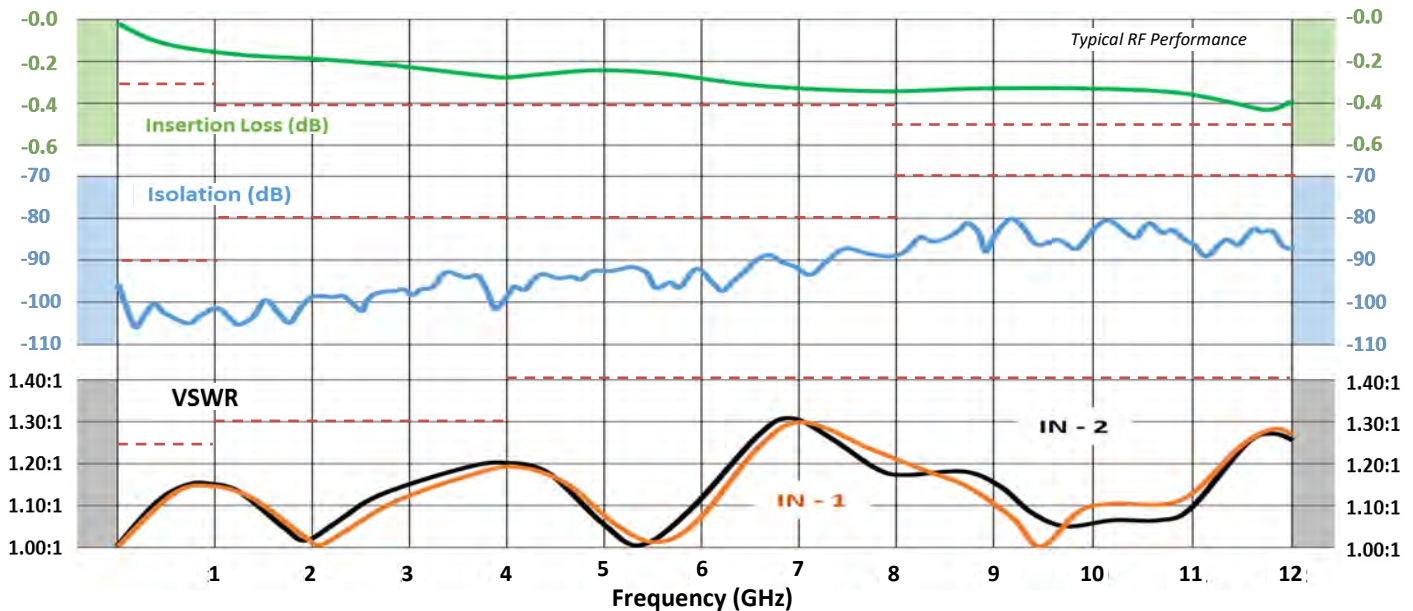
RF Specification:

Frequency, (GHz)	DC-1	1-4	4-8	8-12
Ins. Loss dB (max)	0.3	0.4	0.4	0.5
Isolation dB (min)	90	80	80	70
VSWR (max)	1.25:1	1.30:1	1.40:1	1.40:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω			
RF Power Handling	>1kW CW designs available			

Description:

Excellent high RF power handling with reliability and low loss performance makes these switches ideal for testing and end product applications. A wide selection of connectors and other features is available to meet most requirements. Higher RF power designs available.

Applications: test stations, stand-by switch, Tx/Rx antenna switch, distribution switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	24-30
Current (mA)*	200	160	150	160

* at nominal voltage and +20°C

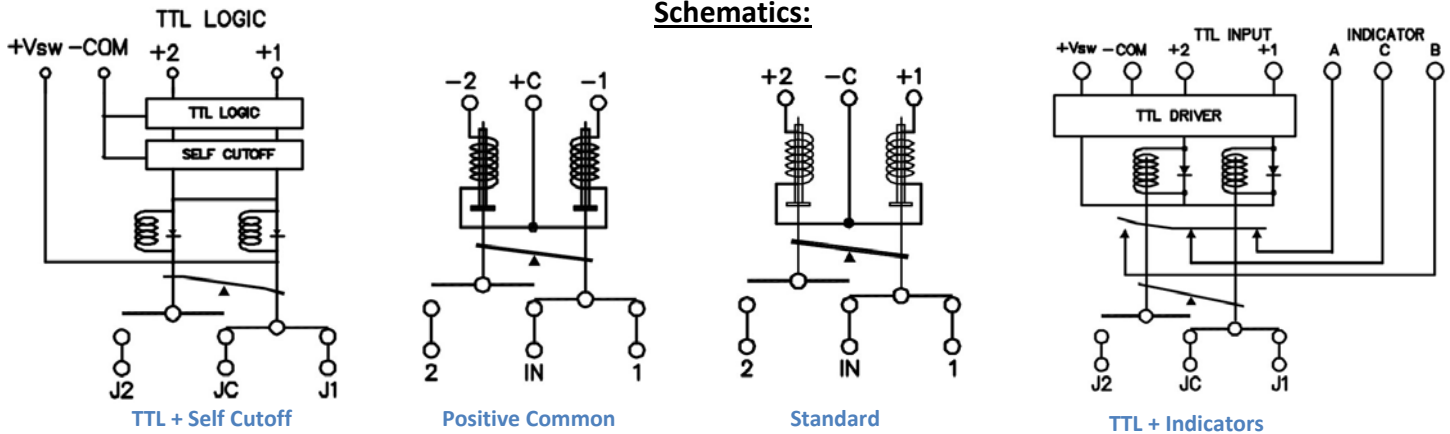
Popular Models

SPDT-1C-12A	SPDT, N, Latching, DC-12GHz, 12VDC
SPDT-1C-12A-D	SPDT, N, Latching, DC-12GHz, 12VDC, TTL
SPDT-1D-12A	SPDT, N, Latching, DC-12GHz, 12VDC, Indicator
SPDT-1D-12A-S9	SPDT, N, Latching, DC-12GHz, 12VDC, Indicator, D-Sub

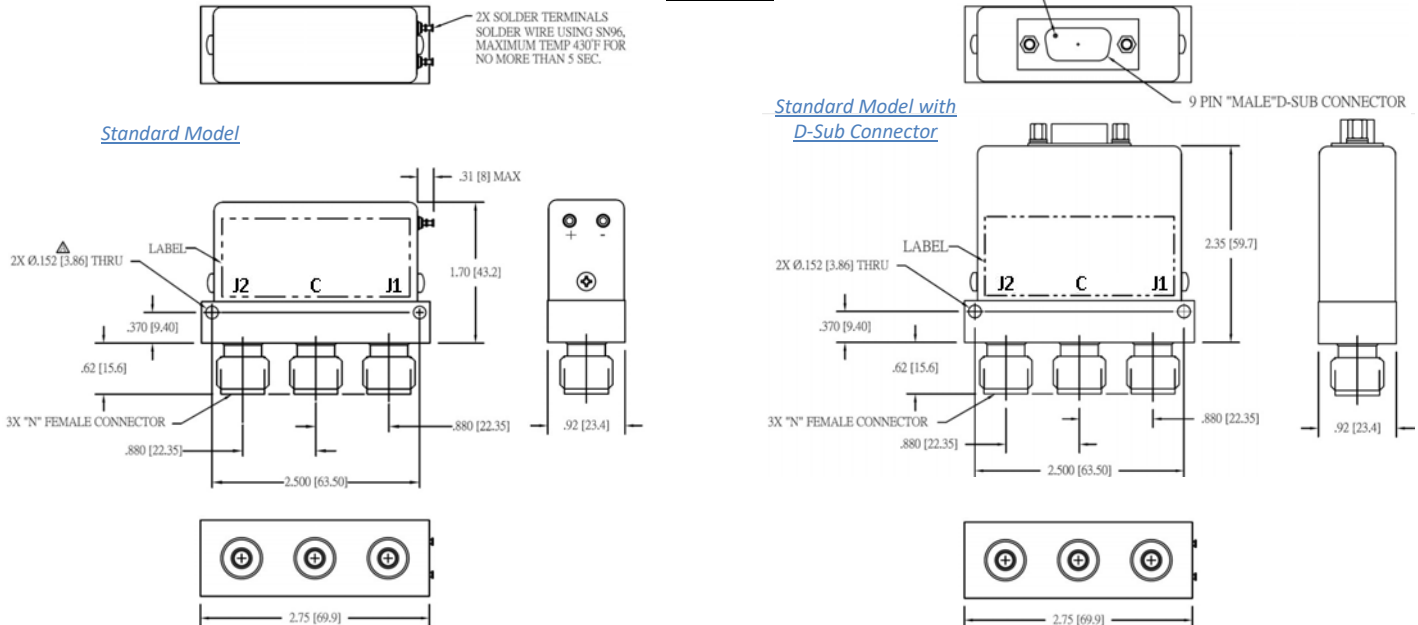
- See backside for a full list of available features and options
- Contact us for high power and custom designs



Schematics:



Outline:



Model Numbering System

Example: SPDT-1C-12A-D-S9

(SPDT, N Connector, Latching without indicator, DC-12GHz, 12VDC, TTL Driver, D-Sub Control)

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
C : Latching without Indicator
D : Latching with Indicator

SPDT - 1C - 12A - D - S9

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
P : Positive + Common
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* Solder pins are standard for SPDT, no designation on model number needed



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Features:

- Broadband: DC - 18 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation
- Internal 50Ω Terminations

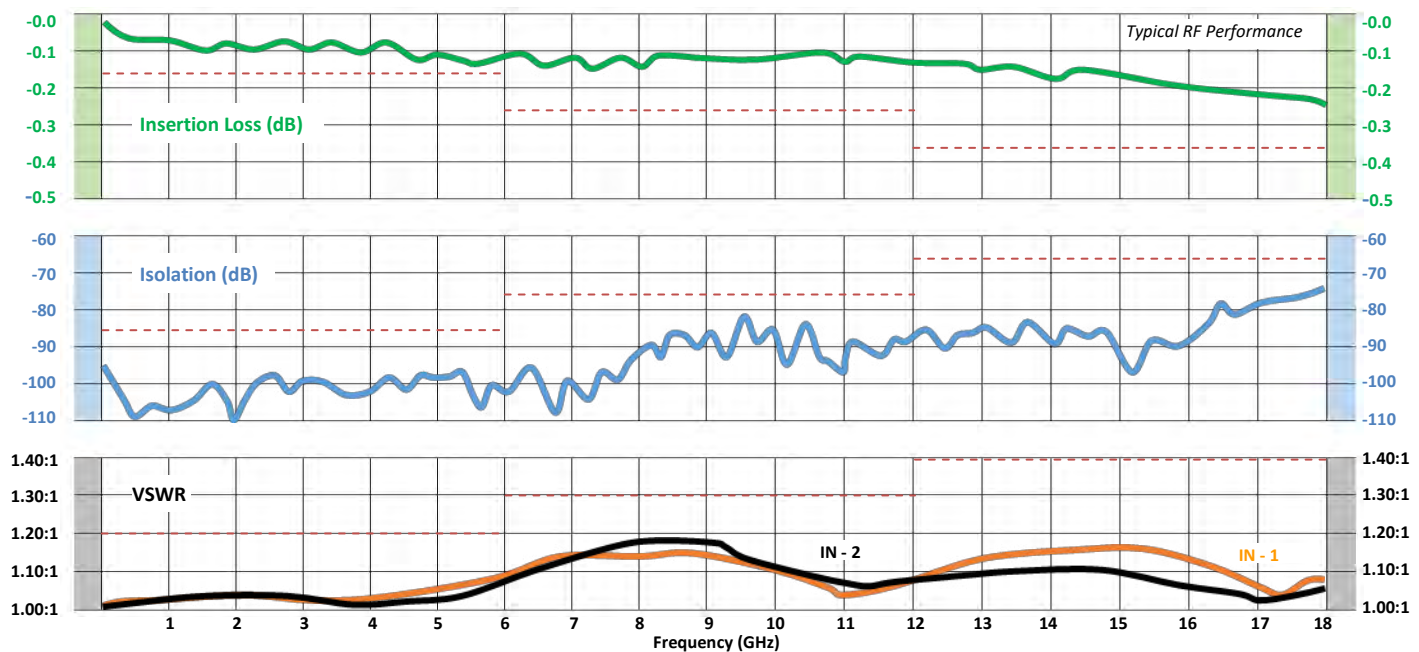


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.15	0.25	0.35
Isolation dB (min)	85	70	65
VSWR (max)	1.20:1	1.30:1	1.40:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50 Ω		

Description:

The 50 Ω terminations of the switch in the “off” state ensures good isolation regardless of the match to which the switch is connected. This model provides energy conservation with RF paths held in place after voltage is removed. Combined with repeatability and low insertion loss makes these switches ideal for all testing applications. A wide selection of features are available to meet most requirements. **Applications:** Bench testing, ATE stations, broadband transceivers, antenna systems. **Markets:** government, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current					
Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	250	200	160	110	65

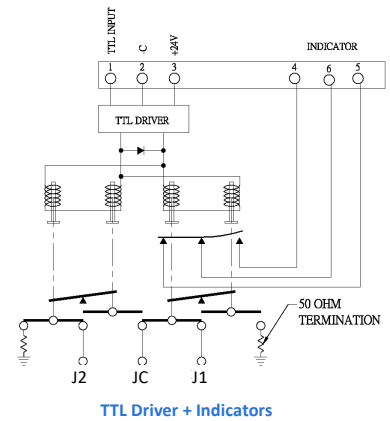
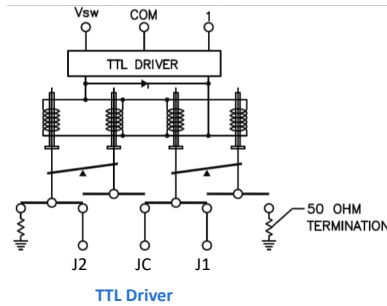
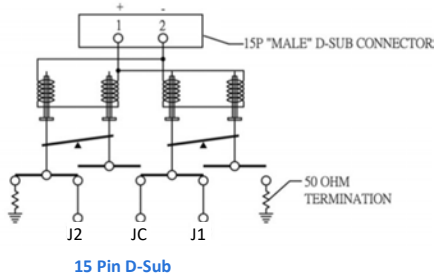
* at nominal voltage and +20°C

Popular Models	
SPDT-OC-18A-T	SPDT, SMA, Latching, DC-18GHz, 12VDC, Internal Termination
SPDT-OC-18A-TD	SPDT, SMA, Latching, DC-18GHz, 12VDC, Internal Termination, TTL
SPDT-OD-18A-T	SPDT, SMA, Latching, DC-18GHz, 12VDC, Indicator, Internal Termination
SPDT-OD-18A-TD	SPDT, SMA, Latching, DC-18GHz, 12VDC, Indicator, Internal Termination, TTL

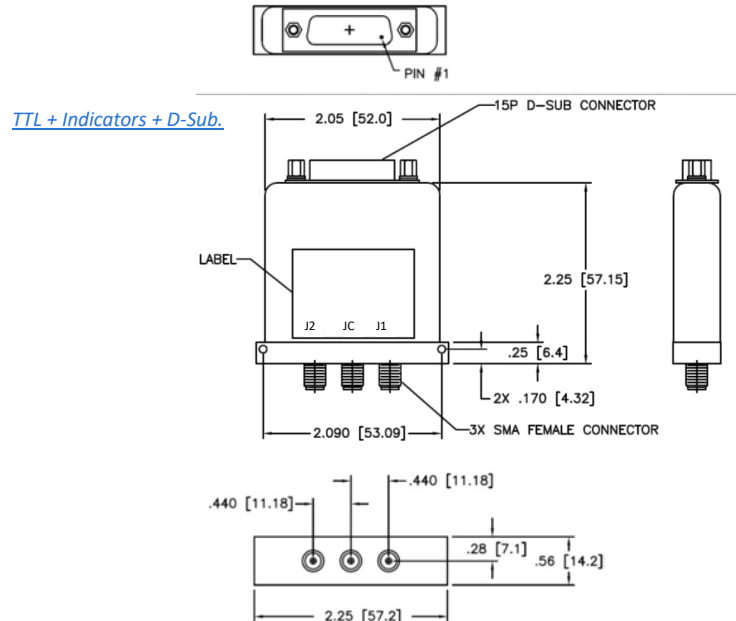
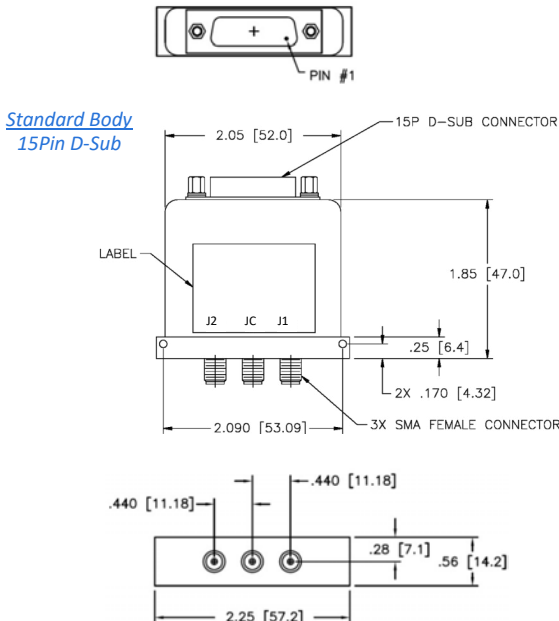
- See backside for a full list of available features and options
- Contact us for high power and custom designs



Schematics:



Outline:



Model Numbering System

Example: SPDT-0C-18A-T-S15

(SPDT, SMA Connector, Latching without indicator, DC-18GHz, 12VDC, Internal Termination, D-Sub Control)

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
C: Latching without Indicator
D: Latching with Indicator

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
T : Internal Terminations
D : TTL Drivers with Diodes
P : Positive + Common
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



* Solder pins are standard for SPDT, no designation on model number needed



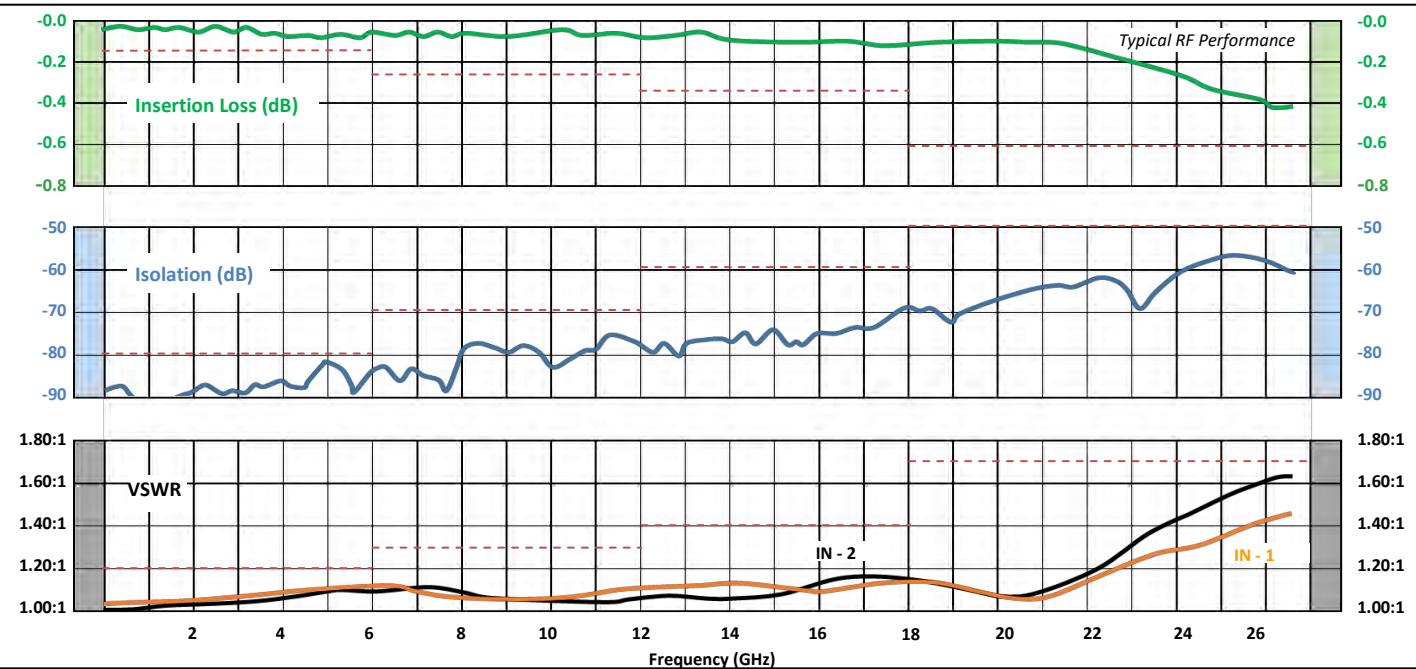
Features:

- Broadband: DC - 26.5 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation
- Internal 50Ω Terminations

RF Specification:

Frequency, (GHz)	DC - 6	6 - 12	12 - 18	18 - 26.5	Operation	
Ins. Loss dB (max)	0.15	0.25	0.35	0.60	Switching Time	20 mS (max)
Isolation dB (min)	80	70	60	50	Switching Action	Break-Before-Make
VSWR (max)	1.20:1	1.30:1	1.40:1	1.70:1	Impedance	50 Ω

Description: The 50 Ω terminations of the switch in the “off” state ensures good isolation regardless of the match to which the switch is connected. This model provides energy conservation with RF paths held in place after voltage is removed. Combined with repeatability and low insertion loss makes these switches ideal for all testing applications. A wide selection of features is available to meet most requirements. **Applications:** Bench testing, ATE stations, broadband transceivers, antenna systems. **Markets:** government, telecom, aerospace, enterprise, consumer and IoT.



Specifications		Popular Models	
Oper Temp	-25° C to +70° C	SPDT-0C-26.5A-T	SPDT, SMA, Latching, DC-26.5GHz, 12VDC, Internal Termination
Oper Temp	-54° C to +85° C (M version)	SPDT-0C-26.5A-TD	SPDT, SMA, Latching, DC-26.5GHz, 12VDC, Internal Termination, TTL
Storage Temp	-55° C to +100° C	SPDT-0D-26.5A-T	SPDT, SMA, Latching, DC-26.5GHz, 12VDC, Indicator, Internal Termination
Humidity	Moisture resistant or immersion sealing available	SPDT-0D-26.5A-TD	SPDT, SMA, Latching, DC-26.5GHz, 12VDC, Indicator, Internal Termination, TTL
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)		
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)		
Cycle Life	5M cycles (may vary based on selected options)		

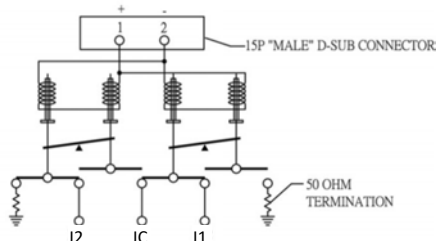
Voltages and Current					
Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	250	200	160	110	65

* at nominal voltage and +20°C

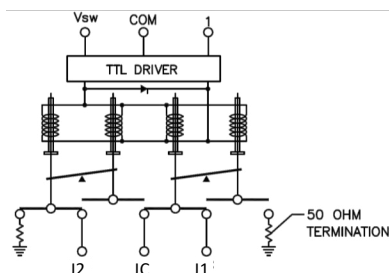
- See backside for a full list of available features and options
- Contact us for high power and custom designs



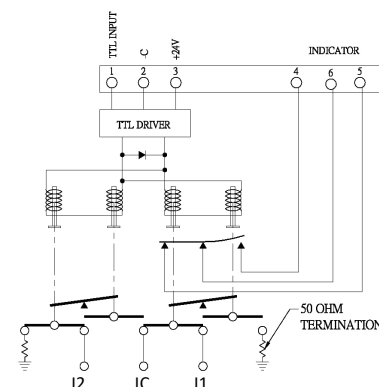
Schematics:



15 Pin D-Sub

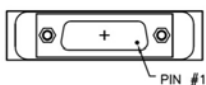


TTL Driver

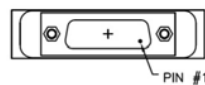
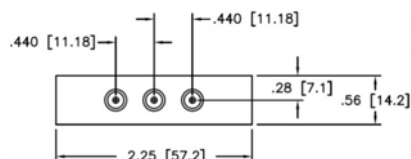
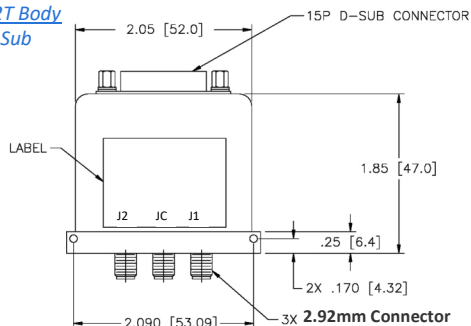


TTL Driver + Indicators

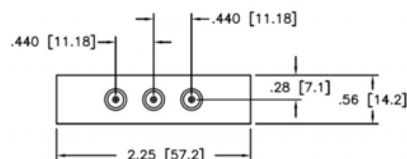
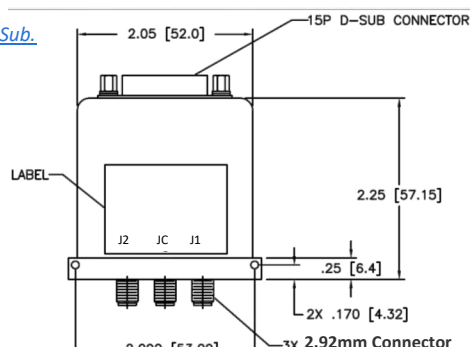
Outline:



Standard 12T Body
15Pin D-Sub



TTL + Indicators + D-Sub.
12T Body



Model Numbering System

Example: SPDT-0C-26A-T-S15

(SPDT, SMA Connector, Latching without indicator, DC-26.5GHz, 12VDC, Internal Termination, D-Sub Control)

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
C : Latching without Indicator
D : Latching with Indicator

SPDT - 0C - 26A - T - S15

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz
26 : DC-26.5GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
T : Internal Terminations
D : TTL Drivers with Diodes
P : Positive + Common
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



* Solder pins are standard for SPDT, no designation on model number needed



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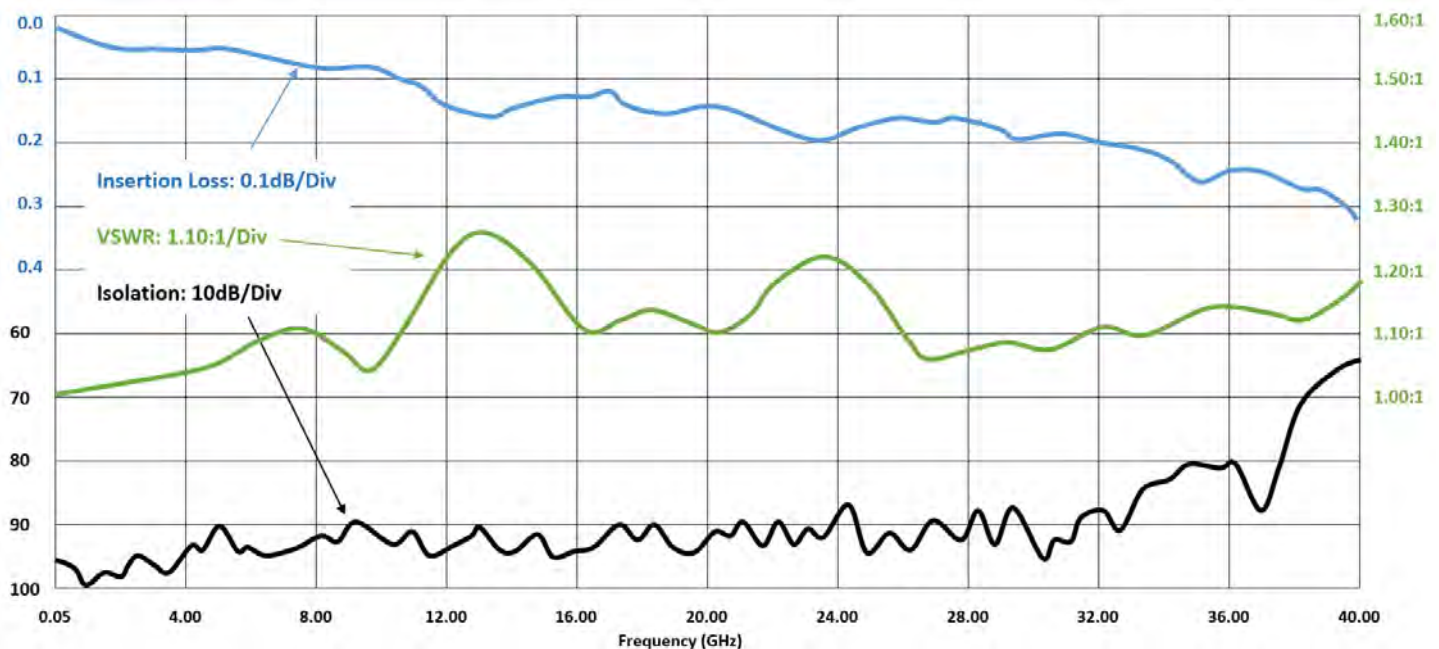
Features:

- Broadband: DC - 40.5 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation
- Internal 50Ω Terminations

RF Specification:

Frequency, (GHz)	DC - 6	6 - 12.4	12.4 - 18	18 - 26.5	26.5 - 40	Operation	Specification
Ins. Loss dB (max)	0.15	0.25	0.30	0.40	0.50	Switching Time	20 mS (max)
Isolation dB (min)	80	75	65	65	60	Switching Action	Break-Before-Make
VSWR (max)	1.15:1	1.35:1	1.40:1	1.40:1	1.50:1	Impedance	50 Ω

Description: The 50 Ω terminations of the switch in the “off” state ensures good isolation regardless of the match to which the switch is connected. This model provides energy conservation with RF paths held in place after voltage is removed. Combined with repeatability and low insertion loss makes these switches ideal for all testing applications. A wide selection of features is available to meet most requirements. **Applications:** Bench testing, ATE stations, broadband transceivers, antenna systems. **Markets:** government, telecom, aerospace, enterprise, consumer and IoT.



Specifications		Popular Models	
Oper Temp	-25° C to +70° C	SPDT-9C-40A-T	SPDT, K, Latching, DC-40GHz, 12VDC, Internal Termination
Oper Temp	-54° C to +85° C (M version)	SPDT-9C-40A-TD	SPDT, K, Latching, DC-40GHz, 12VDC, Internal Termination, TTL
Storage Temp	-55° C to +100° C	SPDT-9D-40A-T	SPDT, K, Latching, DC-40GHz, 12VDC, Indicator, Internal Termination
Humidity	Moisture resistant or immersion sealing available	SPDT-9D-40A-TD	SPDT, K, Latching, DC-40GHz, 12VDC, Indicator, Internal Termination, TTL
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)		
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)		
Cycle Life	5M cycles (may vary based on selected options)		

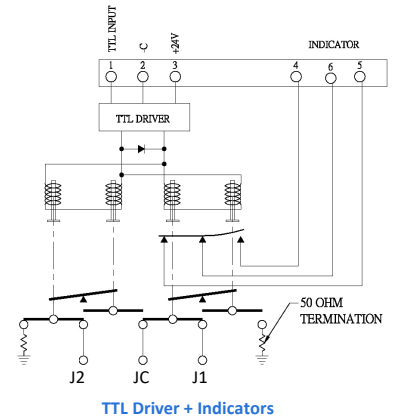
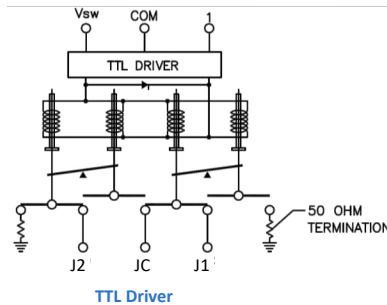
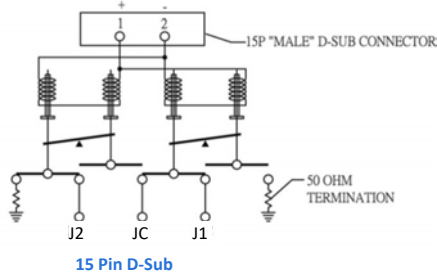
Voltages and Current					
Nominal Voltage, Vdc	5	12	15	24	28
Voltage Range, Vdc	4.5-6	11-13	14-16	22-26	26-30
Current (mA)*	250	200	160	110	65

* at nominal voltage and +20°C

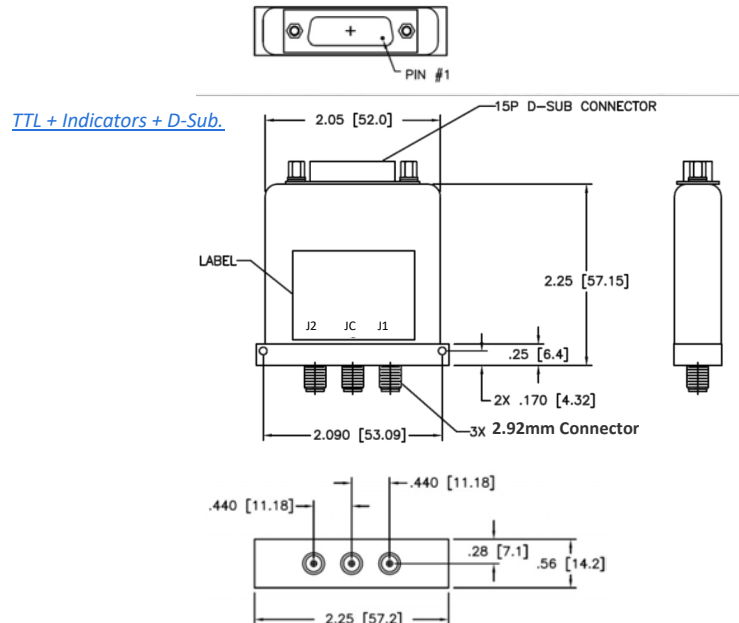
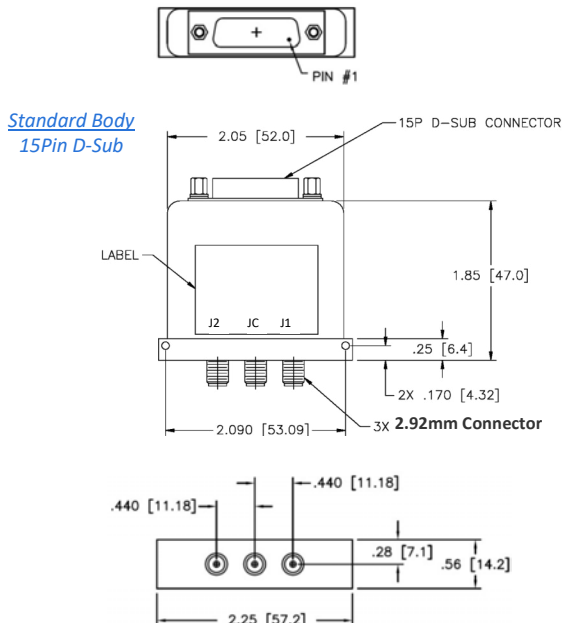
- See backside for a full list of available features and options
- Contact us for high power and custom designs



Schematics:



Outline:



Model Numbering System

Example: SPDT-9C-40A-T-S15

(SPDT, K Connector, Latching without indicator, DC-40GHz, 12VDC, Internal Termination, D-Sub Control)

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
C : Latching without Indicator
D : Latching with Indicator

SPDT - 9C - 40A - T - S15

Frequency Range	
03 : DC-3GHz	22 : DC-22GHz
08 : DC-8GHz	26 : DC-26.5GHz
12 : DC-12GHz	33 : DC-33.5GHz
18 : DC-18GHz	40 : DC-40GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
T : Internal Terminations
D : TTL Drivers with Diodes
P : Positive + Common
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



* Solder pins are standard for SPDT, no designation on model number needed



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Site Web : www.es-france.com

Features:

- Broadband: DC - 18 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation

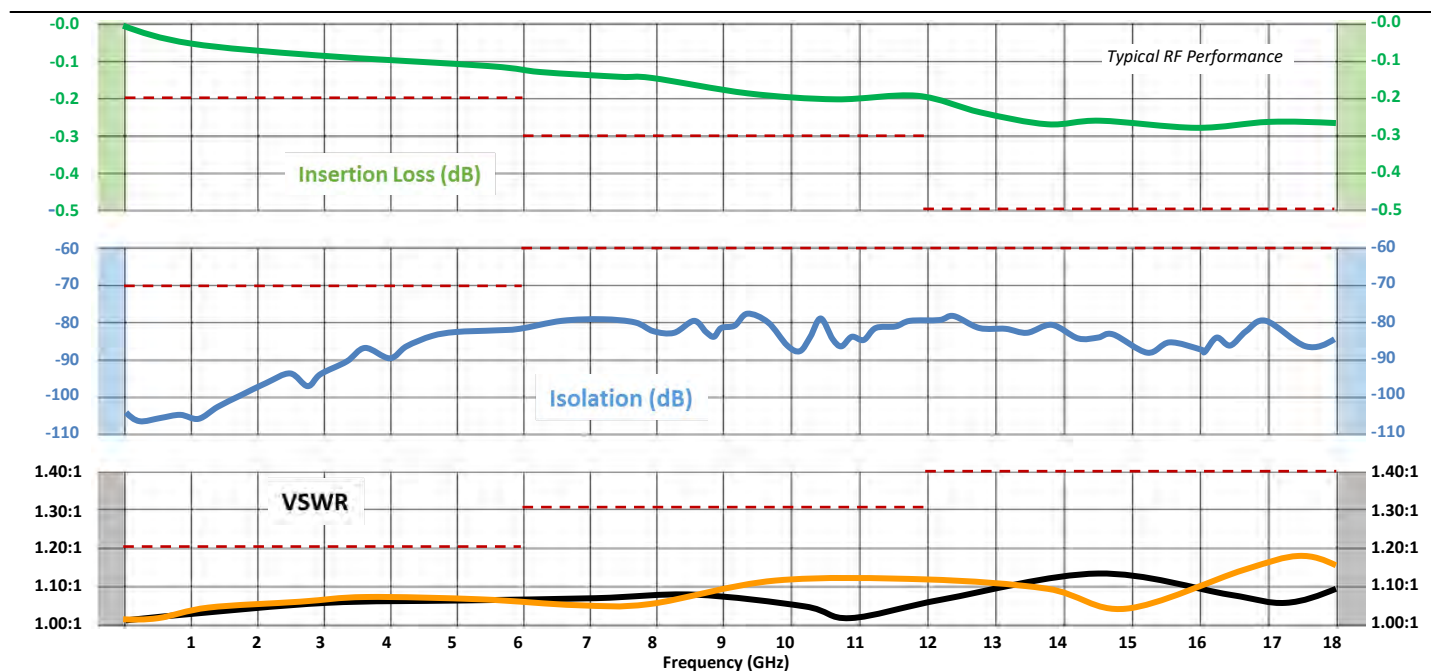


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.2	0.3	0.5
Isolation dB (min)	70	60	60
VSWR (max)	1.20:1	1.30:1	1.40:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50 Ω		

Description:

Repeatability and low insertion loss makes these switches ideal for testing and end product applications. A wide selection of connectors and features are available to meet most requirements. Higher RF power handling designs available. **Applications:** test stations, stand-by switch, antenna diversity switch, bypass switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	24-30
Current (mA)*	390	320	220	200

* at nominal voltage and +20°C

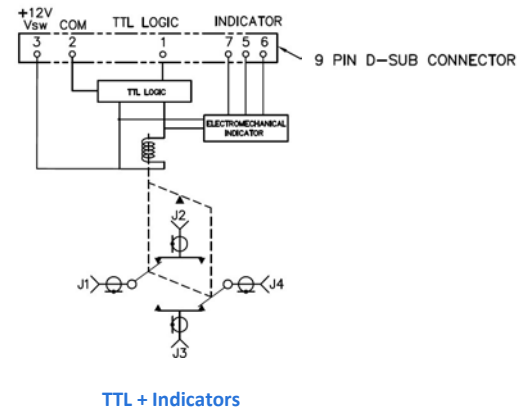
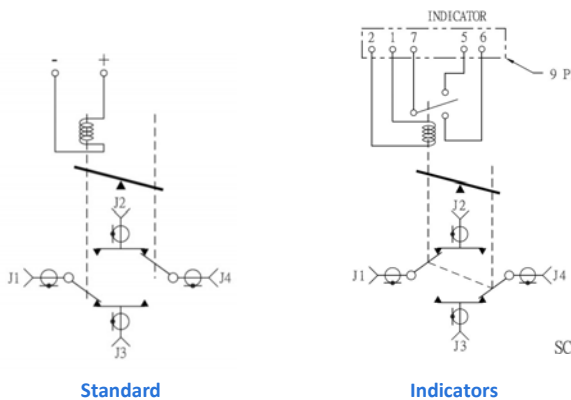
Popular Models

TRAN-0A-18A	TRAN, SMA, Failsafe, DC-18GHz, 12VDC
TRAN-0A-18A-D	TRAN, SMA, Failsafe, DC-18GHz, 12VDC, TTL
TRAN-0A-18A-S9	TRAN, SMA, Failsafe, DC-18GHz, 12VDC, D-Sub
TRAN-0B-18A	TRAN, SMA, Failsafe, DC-18GHz, 12VDC, Indicator
TRAN-0B-18A-D	TRAN, SMA, Failsafe, DC-18GHz, 12VDC, Indicator, TTL

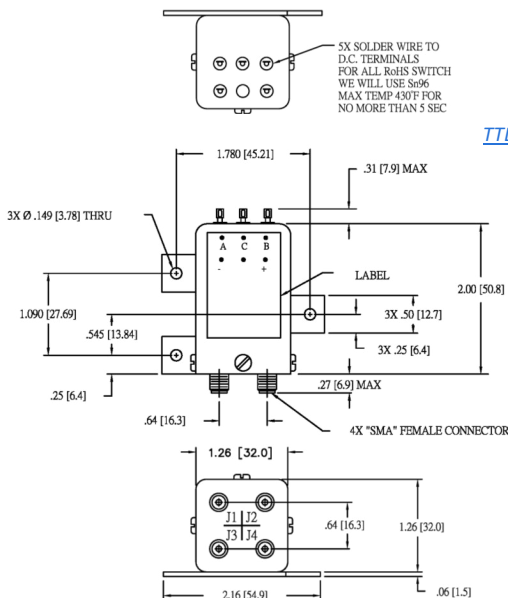
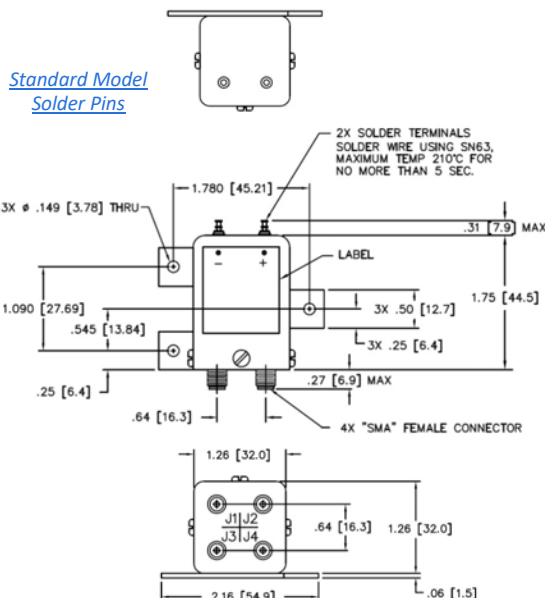
- See backside for a full list of available features and options
- Contact us for high power and custom designs



Schematics:



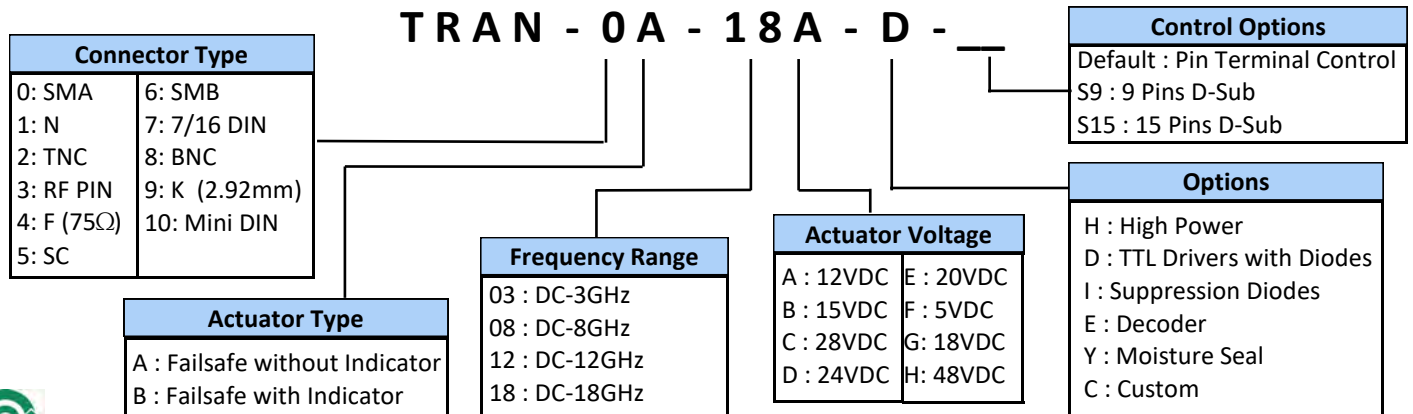
Outline:



Model Numbering System

Example: TRAN-0A-18A-D

(TRAN, SMA Connector, Failsafe without indicator, DC-18GHz, 12VDC, TTL Driver, Pin Terminal Control)



RoHS



* Solder pins are standard for TRAN, no designation on model number needed



Features:

- Broadband: DC - 40 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation



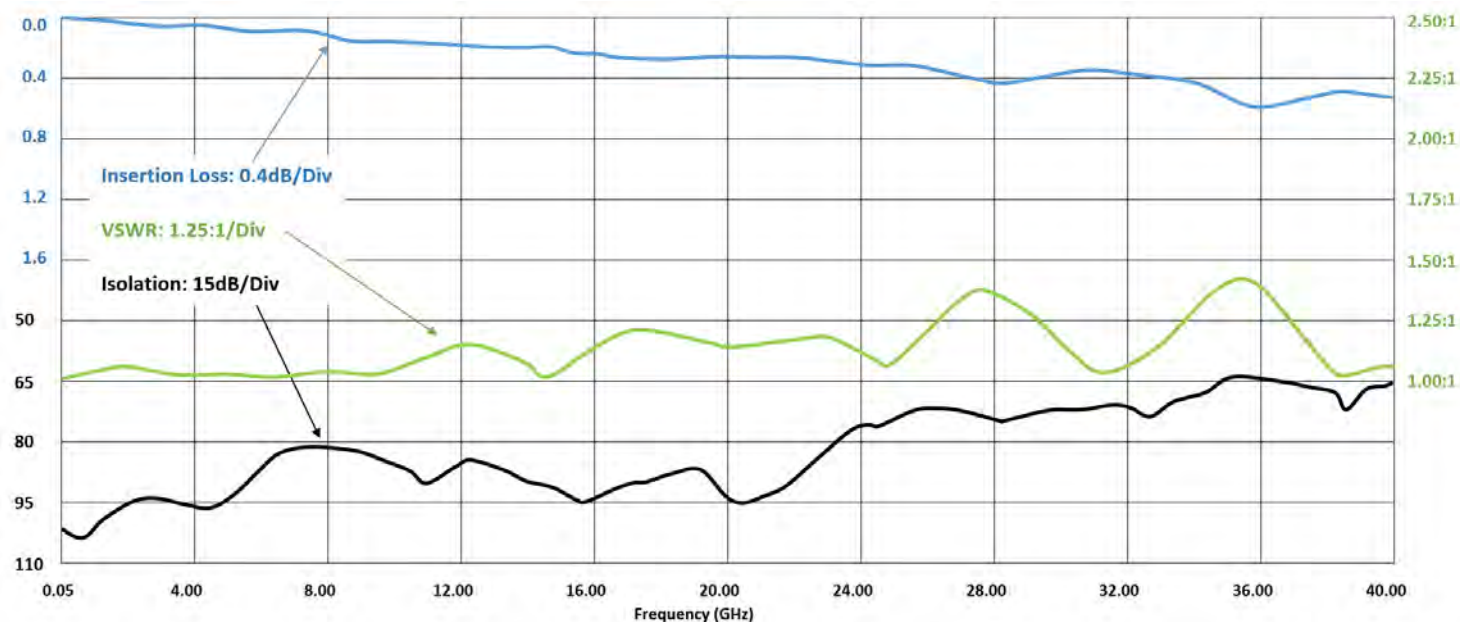
RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-30	30-33	33-40	Operation	Specification
Ins. Loss dB (max)	0.15	0.25	0.35	0.55	1.00	1.35	Switching Time	15 mS (max)
Isolation dB (min)	70	70	65	60	50	50	Switching Action	Break-Before-Make
VSWR (max)	1.15:1	1.20:1	1.25:1	1.50:1	2.00:1	.50:1	Impedance	50 Ω

Description:

Repeatability and low insertion loss makes these switches ideal for testing and end product applications. A wide selection of connectors and features are available to meet most requirements. Higher RF power handling designs available. **Applications:** test stations, stand-by switch, antenna diversity switch, bypass switch.

Markets: defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +70° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	24-30
Current (mA)*	800	650	700	400

* at nominal voltage and +20°C

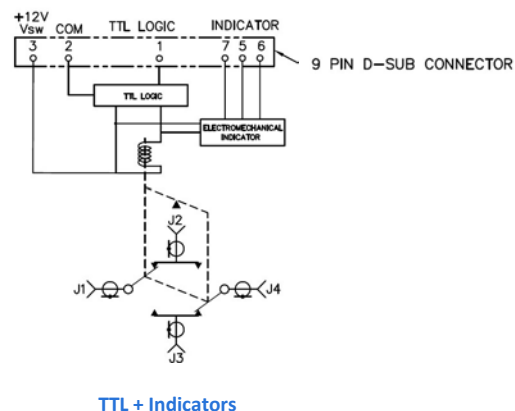
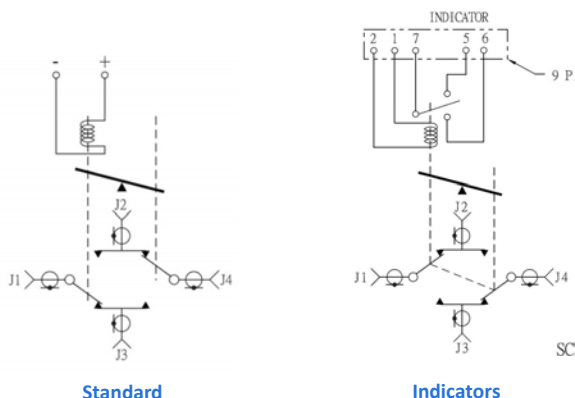
Popular Models

TRAN-9A-40A	TRAN, K, Failsafe, DC-40GHz, 12VDC
TRAN-9A-40A-D	TRAN, K Failsafe, DC-40GHz, 12VDC, TTL
TRAN-9A-40A-S9	TRAN, K, Failsafe, DC-40GHz, 12VDC, D-Sub
TRAN-9B-40A	TRAN, K, Failsafe, DC-40GHz, 12VDC, Indicator
TRAN-9B-40A-D	TRAN, K, Failsafe, DC-40GHz, 12VDC, Indicator, TTL

- See backside for a full list of available features and options
- Contact us for high power and custom designs

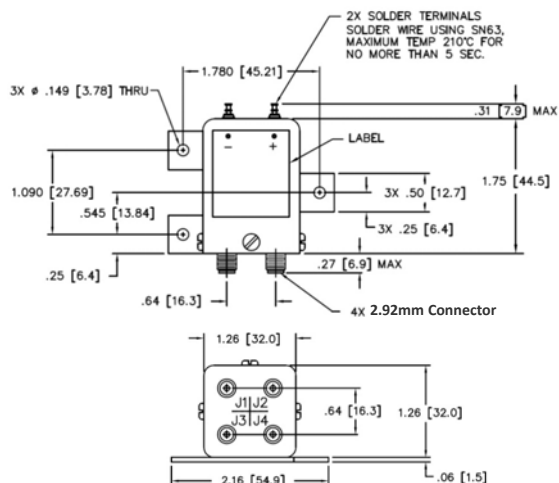


Schematics:

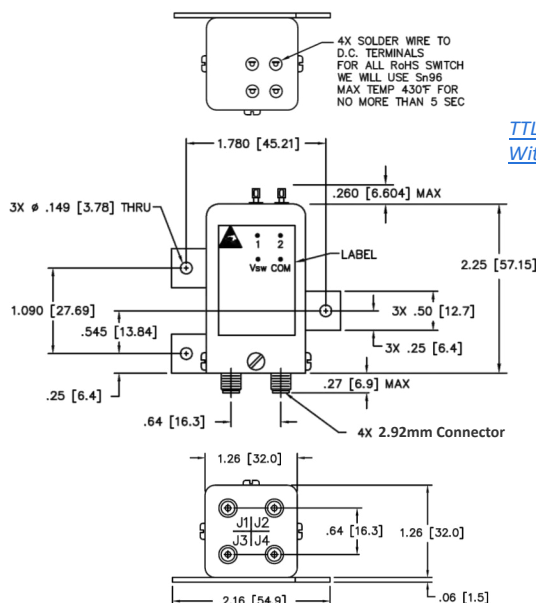


Outline:

Standard Model Solder Pins



TTL + Self Cutoff With Solder Pins



Model Numbering System

Example: TRAN-9A-40A-D

(TRAN, K Connector, Failsafe without indicator, DC-40GHz, 12VDC, TTL Driver, Pin Terminal Control)

TRAN - 9 A - 30 A - D -

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75 Ω)	10: Mini DIN
5: SC	

Actuator Type
A : Failsafe without Indicator
B : Failsafe with Indicator

Frequency Range	
03 : DC-3GHz	22 : DC-22GHz
08 : DC-8GHz	26 : DC-26.5GHz
12 : DC-12GHz	30 : DC-30GHz
18 : DC-18GHz	40 : DC-40GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* Solder pins are standard for TRAN, no designation on model number needed



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Features:

- Broadband: DC - 12 GHz
- Extended Life: 2 million cycles
- High Power Handling: >1kW
- Low Insertion Loss
- High Isolation

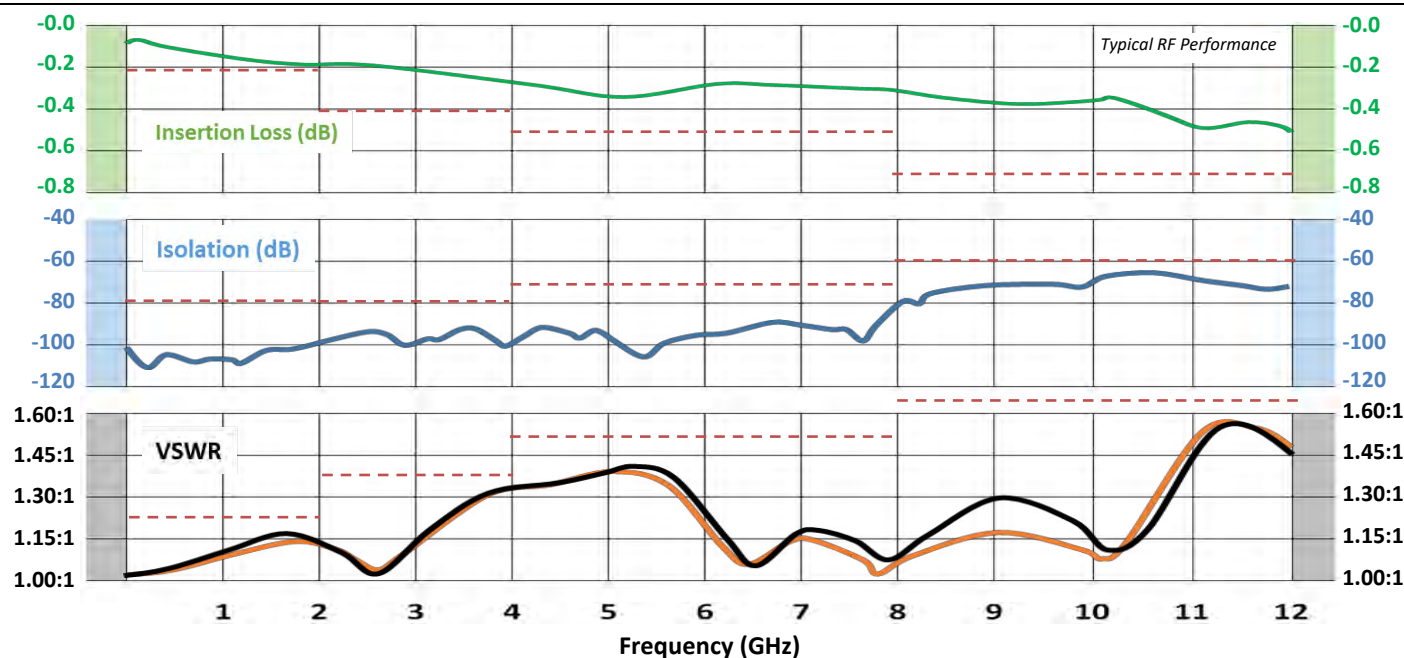


RF Specification:

Frequency, (GHz)	DC-2	2-4	4-8	8-12
Ins. Loss dB (max)	0.2	0.4	0.5	0.7
Isolation dB (min)	80	80	70	60
VSWR (max)	1.20:1	1.40:1	1.50:1	1.70:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω			
RF Power Handling	>1kW CW designs available			

Description:

Excellent high RF power handling with reliability and low loss performance makes these switches ideal for testing and end product applications. A wide selection of connectors and features are available to meet most requirements. Higher RF power designs available. **Applications:** test stations, stand-by switch, antenna diversity switch, bypass switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current				
Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	24-30
Current (mA)*	800	500	300	270

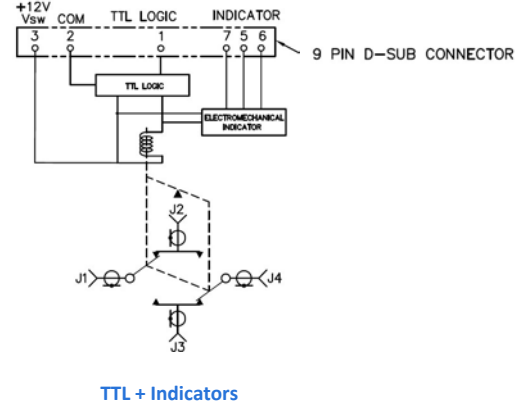
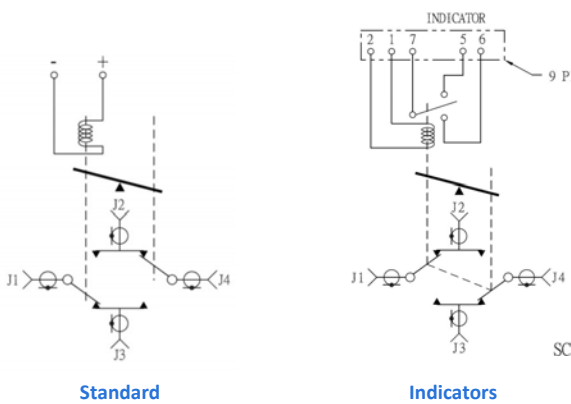
* at nominal voltage and +20°C

Popular Models	
TRAN-1A-12A	TRAN, N, Failsafe, DC-12GHz, 12VDC
TRAN-1A-12A-D	TRAN, N, Failsafe, DC-12GHz, 12VDC, TTL
TRAN-1A-12A-S9	TRAN, N, Failsafe, DC-12GHz, 12VDC, D-Sub
TRAN-1B-12A	TRAN, N, Failsafe, DC-12GHz, 12VDC, Indicator
TRAN-1B-12A-D	TRAN, N, Failsafe, DC-12GHz, 12VDC, Indicator, TTL

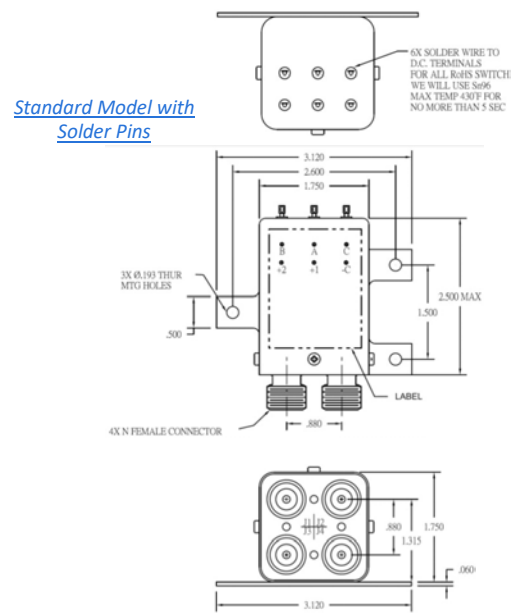
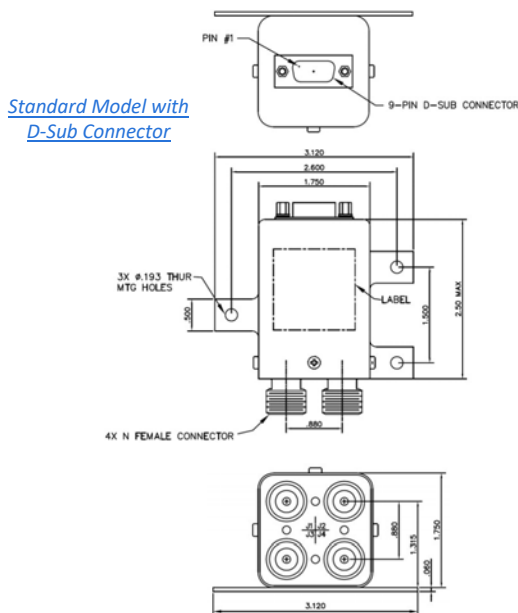
- See backside for a full list of available features and options
- Contact us for high power and custom designs



Schematics:



Outline:



Model Numbering System

Example: TRAN-1A-12A-D

(TRAN, N Connector, Failsafe without indicator, DC-12GHz, 12VDC, TTL Driver, Pin Terminal Control)

TRAN - 1 A - 12 A - D -

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
A : Failsafe without Indicator
B : Failsafe with Indicator

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* Solder pins are standard for TRAN, no designation on model number needed



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Features:

- Broadband: DC - 18 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation

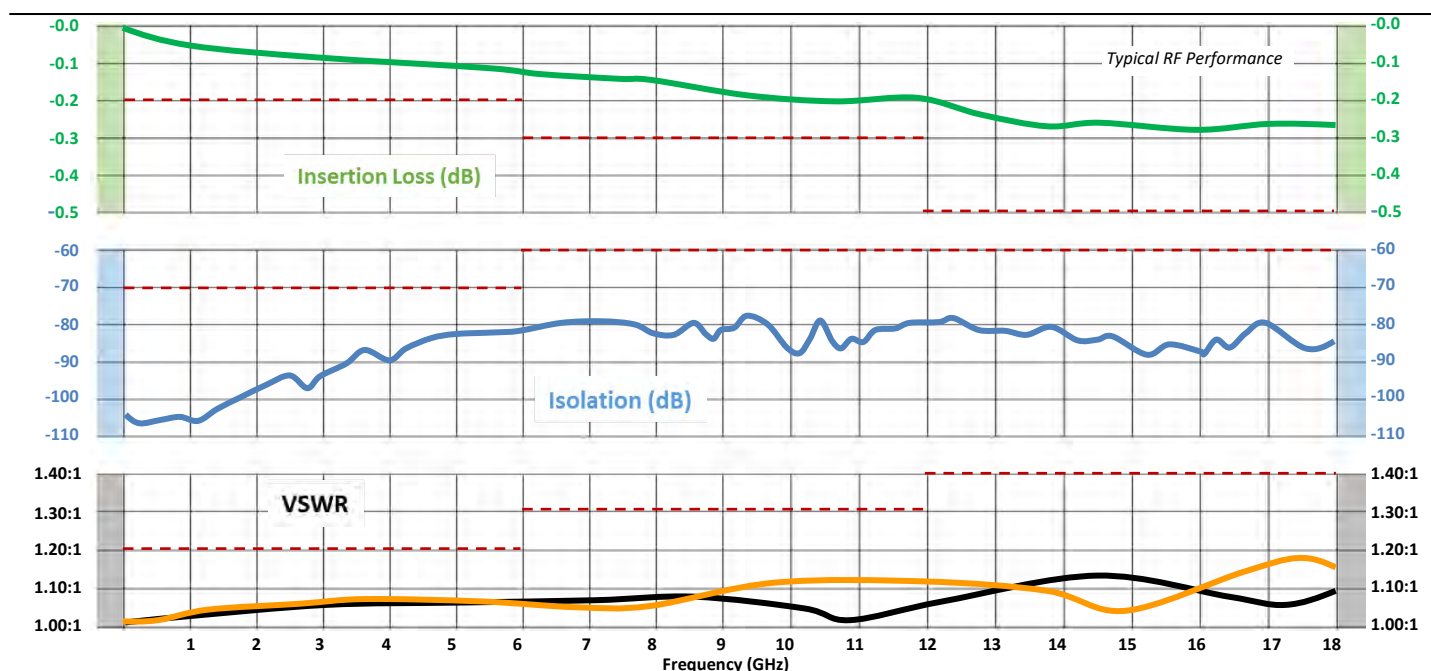


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.2	0.3	0.5
Isolation dB (min)	70	60	60
VSWR (max)	1.20:1	1.30:1	1.40:1
Switching Time	15 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50 Ω		

Description:

Repeatability, low power consumption and low insertion loss makes these switches ideal for testing and end product applications. A wide selection of connectors and features are available to meet most requirements. Higher RF power designs available. **Applications:** test stations, stand-by switch, antenna diversity switch, bypass switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	24-30
Current (mA)*	150	130	85	60

* at nominal voltage and +20°C

Popular Models

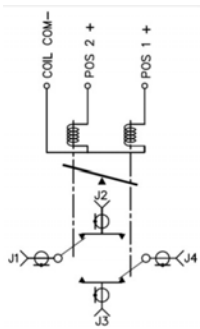
TRAN-OC-18A	TRAN, SMA, Latching, DC-18GHz, 12VDC
TRAN-OC-18A-D	TRAN, SMA, Latching, DC-18GHz, 12VDC, TTL
TRAN-OC-18A-S9	TRAN, SMA, Latching, DC-18GHz, 12VDC, D-Sub
TRAN-OD-18A	TRAN, SMA, Latching, DC-18GHz, 12VDC, Indicator
TRAN-OD-18A-D	TRAN, SMA, Latching, DC-18GHz, 12VDC, Indicator, TTL

- See backside for a full list of available features and options
- Contact us for high power and custom designs

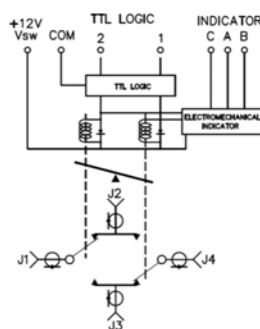




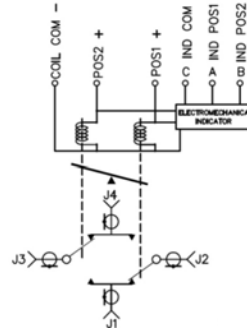
Schematics:



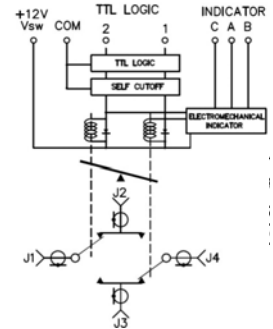
Standard



TTL + Indicators



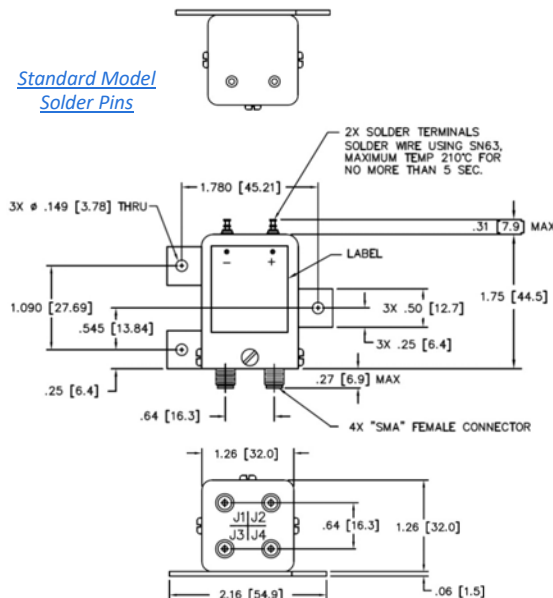
Indicators



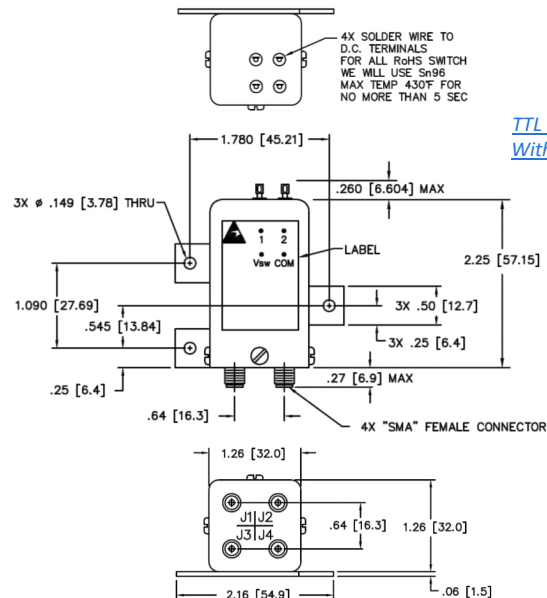
Self Cutoff / TTL + Indicators

Outline:

Standard Model
Solder Pins



TTL + Self Cutoff
With Solder Pins



Model Numbering System

Example: TRAN-0C-18A-D

(TRAN, SMA Connector, Latching without indicator, DC-18GHz, 12VDC, TTL Driver, Pin Terminal Control)

TRAN - 0C - 18A - D -

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
C : Latching without Indicator
D : Latching with Indicator

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G: 18VDC
D : 24VDC	H: 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
P : Positive + Common
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* Solder pins are standard for TRAN, no designation on model number needed



Features:

- Broadband: DC - 40 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation



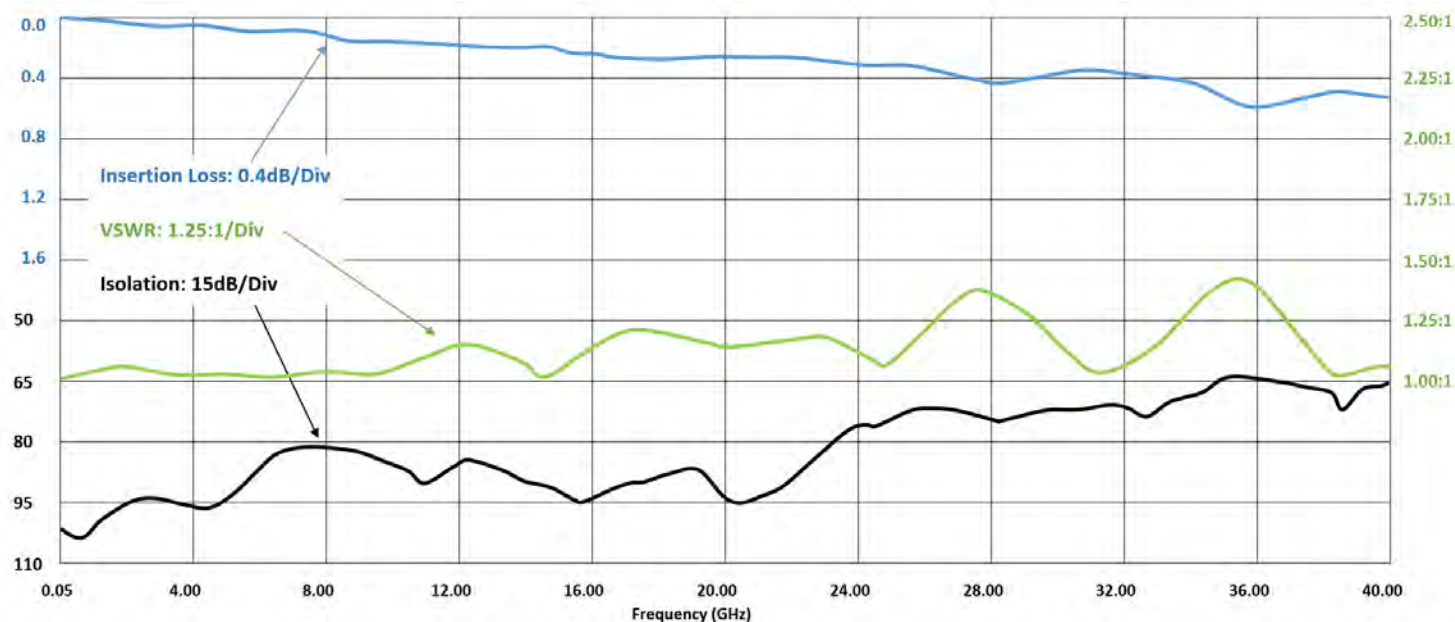
RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-30	30-33	33-40	Operation	Specification
Ins. Loss dB (max)	0.15	0.25	0.35	0.55	1.00	1.35	Switching Time	15 mS (max)
Isolation dB (min)	70	70	65	60	50	50	Switching Action	Break-Before-Make
VSWR (max)	1.15:1	1.20:1	1.25:1	1.50:1	2.00:1	.50:1	Impedance	50 Ω

Description:

Repeatability, low power consumption and low insertion loss makes these switches ideal for testing and end product applications. A wide selection of connectors and features are available to meet most requirements. Higher RF power designs available. **Applications:** test stations, stand-by switch, antenna diversity switch, bypass switch.

Markets: defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +70° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	24-30
Current (mA)*	300	380	300	250

* at nominal voltage and +20°C

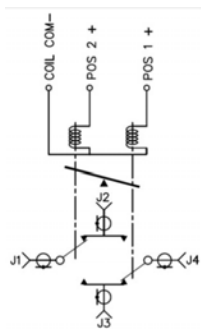
Popular Models

TRAN-9C-40A	TRAN, K, latching, DC-40GHz, 12VDC
TRAN-9C-40A-D	TRAN, K, Latching, DC-40GHz, 12VDC, TTL
TRAN-9C-40A-S9	TRAN, K, Latching, DC-40GHz, 12VDC, D-Sub
TRAN-9D-40A	TRAN, K, Latching, DC-40GHz, 12VDC, Indicator
TRAN-9D-40A-D	TRAN, K, Latching, DC-40GHz, 12VDC, Indicator, TTL

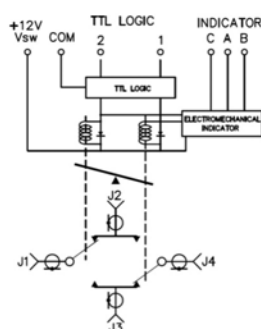
- See backside for a full list of available features and options
- Contact us for high power and custom designs



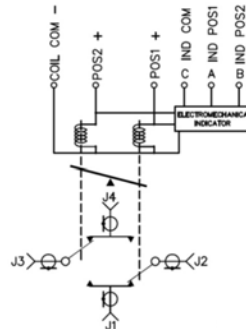
Schematics:



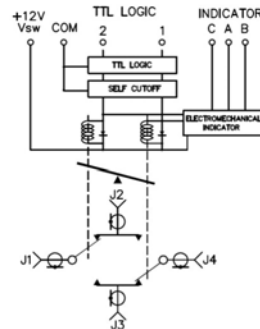
Standard



TTL + Indicators



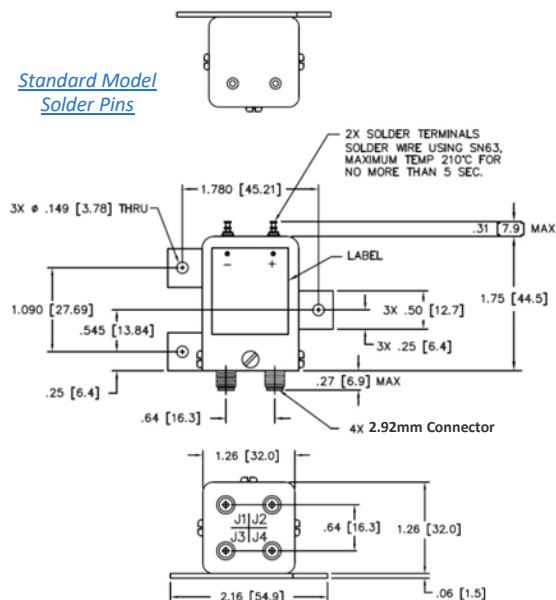
Indicators



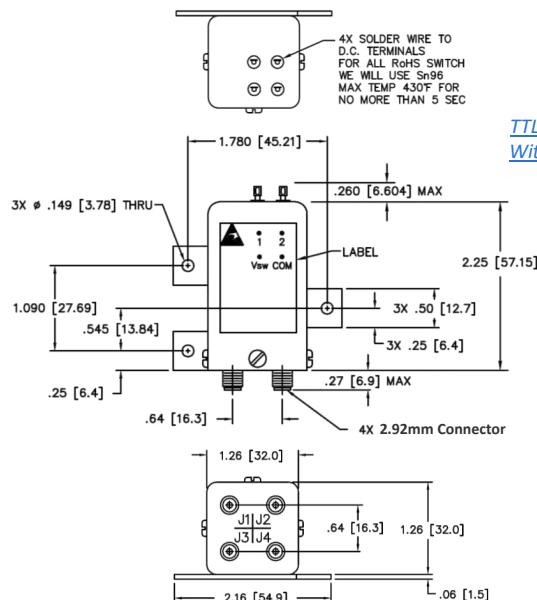
Self Cutoff / TTL + Indicators

Outline:

Standard Model
Solder Pins



TTL + Self Cutoff
With Solder Pins



Model Numbering System

Example: TRAN-9C-40A-D

(TRAN, K Connector, Latching without indicator, DC-40GHz, 12VDC, TTL Driver, Pin Terminal Control)

TRAN - 9 C - 40 A - D -

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
C : Latching without Indicator
D : Latching with Indicator

Frequency Range	
03 : DC-3GHz	22 : DC-22GHz
08 : DC-8GHz	26 : DC-26.5GHz
12 : DC-12GHz	30 : DC-30GHz
18 : DC-18GHz	40 : DC-40GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
P : Positive + Common
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* Solder pins are standard for TRAN, no designation on model number needed



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Site Web : www.es-france.com

Features:

- Broadband: DC - 12 GHz
- Extended Life: 5 million cycles
- High Power Handling: >1kW
- Low Insertion Loss
- High Isolation

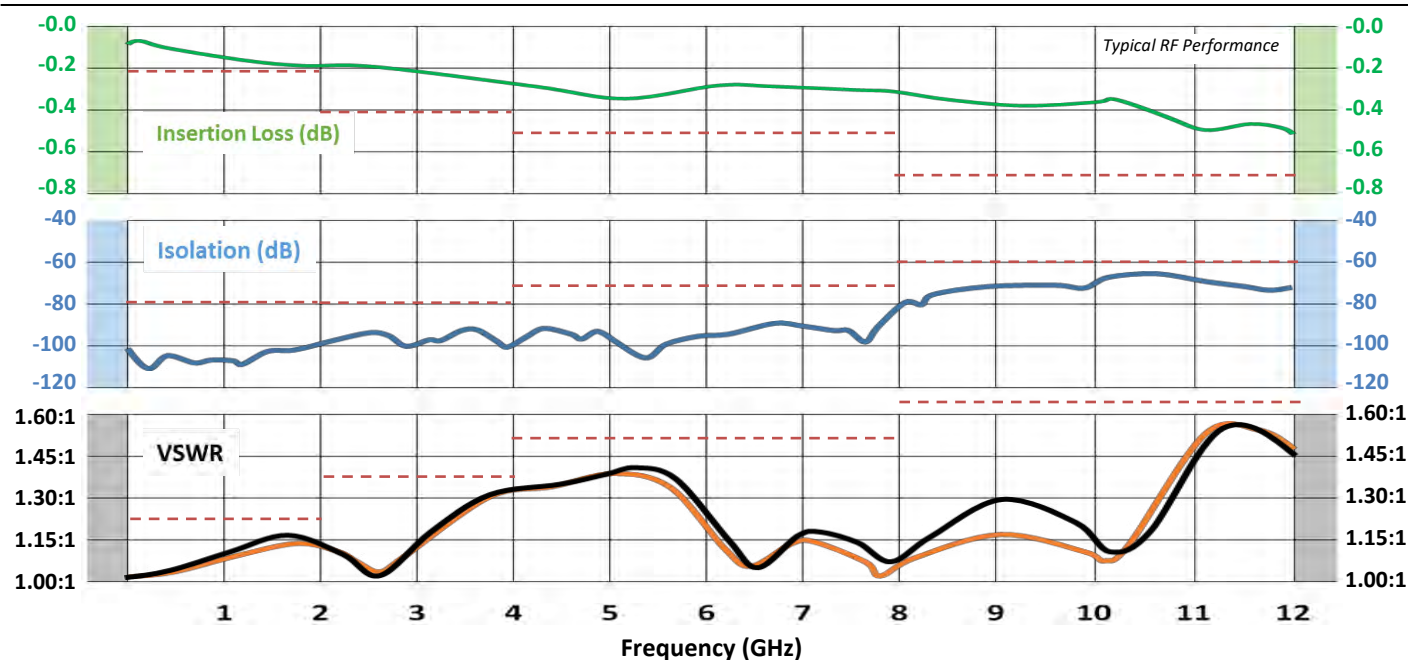


RF Specification:

Frequency, (GHz)	DC-2	2-4	4-8	8-12
Ins. Loss dB (max)	0.2	0.4	0.5	0.7
Isolation dB (min)	80	80	70	60
VSWR (max)	1.20:1	1.40:1	1.50:1	1.70:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω			
RF Power Handling	>1kW CW designs available			

Description:

Excellent high RF power handling with reliability and low loss performance makes these switches ideal for testing and end product applications. A wide selection of connectors and features is available to meet most requirements. Higher RF power designs available. **Applications:** test stations, stand-by switch, antenna diversity switch, bypass switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	24-30
Current (mA)*	170	120	200	110

* at nominal voltage and +20°C

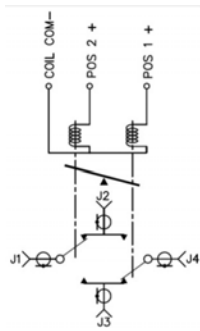
Popular Models

TRAN-1C-12A	TRAN, N, Latching, DC-12GHz, 12VDC
TRAN-1C-12A-D	TRAN, N, Latching, DC-12GHz, 12VDC, TTL
TRAN-1C-12A-S9	TRAN, N, Latching, DC-12GHz, 12VDC, D-Sub
TRAN-1D-12A	TRAN, N, Latching, DC-12GHz, 12VDC, Indicator
TRAN-1D-12A-D	TRAN, N, Latching, DC-12GHz, 12VDC, Indicator, TTL

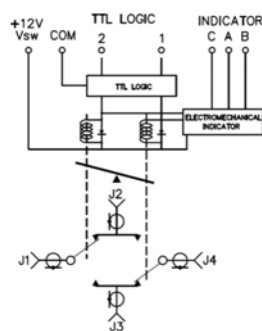
- See backside for a full list of available features and options
- Contact us for high power and custom designs



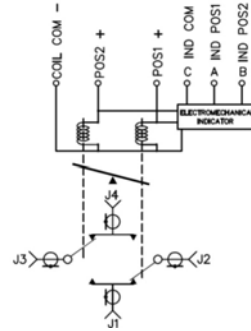
Schematics:



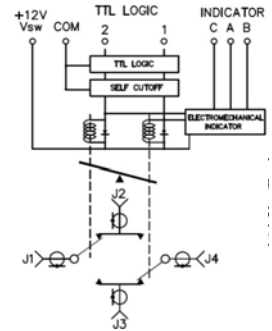
Standard



TTL + Indicators



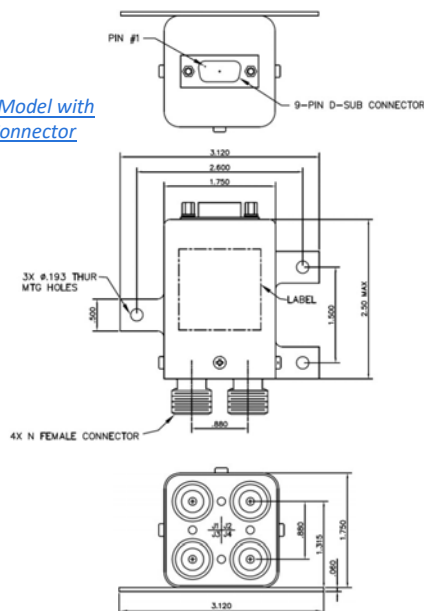
Indicators



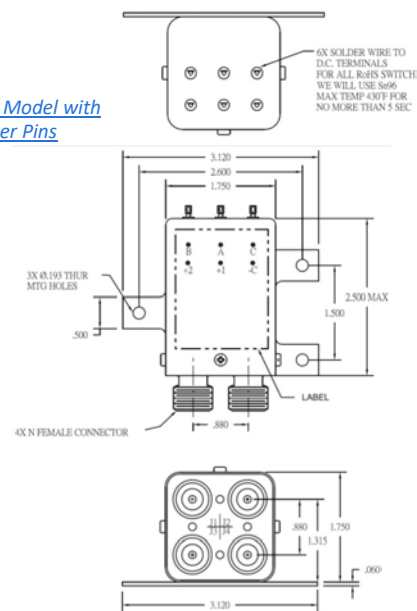
Self Cutoff / TTL + Indicators

Outline:

Standard Model with
D-Sub Connector



Standard Model with
Solder Pins



Model Numbering System

Example: TRAN-1C-12A-D

(TRAN, N Connector, Latching without indicator, DC-12GHz, 12VDC, TTL Driver, Pin Terminal Control)

TRAN - 1 C - 12 A - D -

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
C : Latching without Indicator
D : Latching with Indicator

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	H : 48VDC

Control Options
Default : Pin Terminal Control
S9 : 9 Pins D-Sub
S15 : 15 Pins D-Sub

Options
H : High Power
D : TTL Drivers with Diodes
P : Positive + Common
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* Solder pins are standard for TRAN, no designation on model number needed



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Site Web : www.es-france.com

Features:

- Broadband: DC - 18 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 3, 4, 5 or 6 Positions

Note: See series SP3T-SP6T Option T for 50Ω terminations

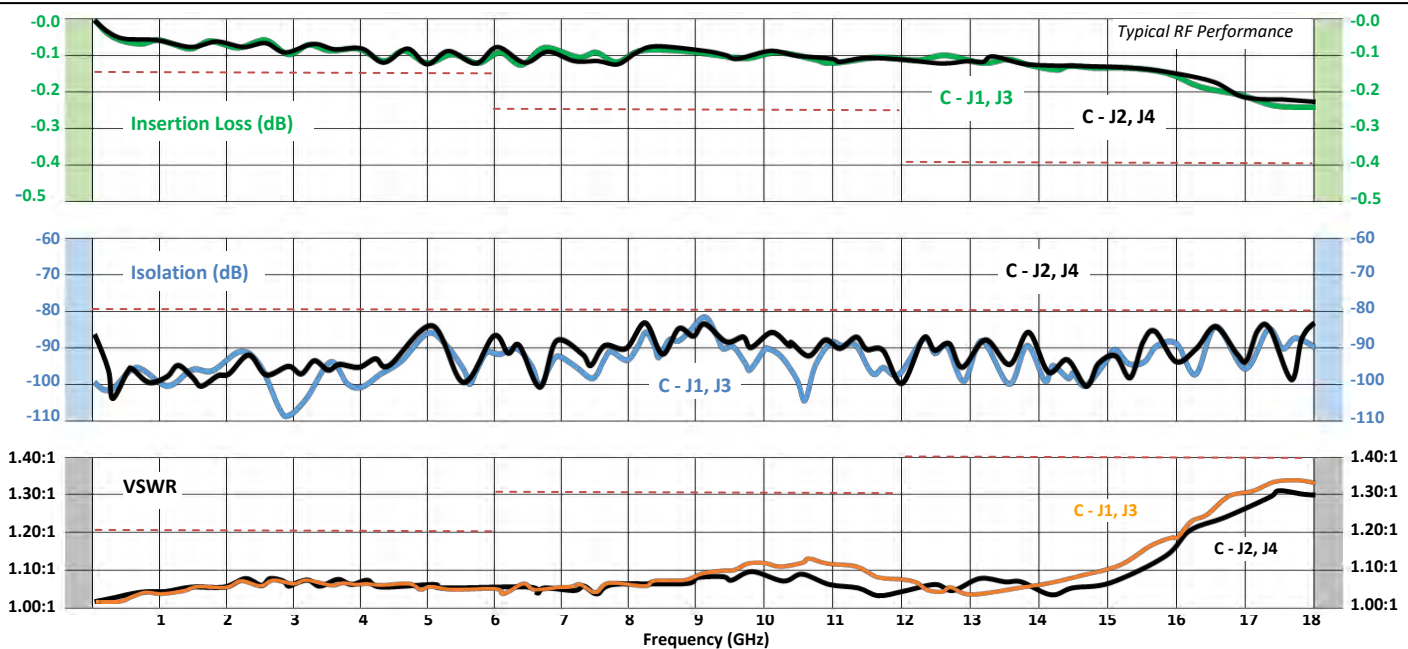


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.15	0.25	0.40
Isolation dB (min)	80	80	80
VSWR (max)	1.20:1	1.30:1	1.40:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50 Ω (Switch and Terminations)		

Description:

High reliability and low loss performance makes these switches ideal for all testing applications. Available in 3, 4, 5 or 6 position versions with a wide selection of features are available to meet most requirements. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltagess and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	250	200	150	140

* at nominal voltage and +20°C

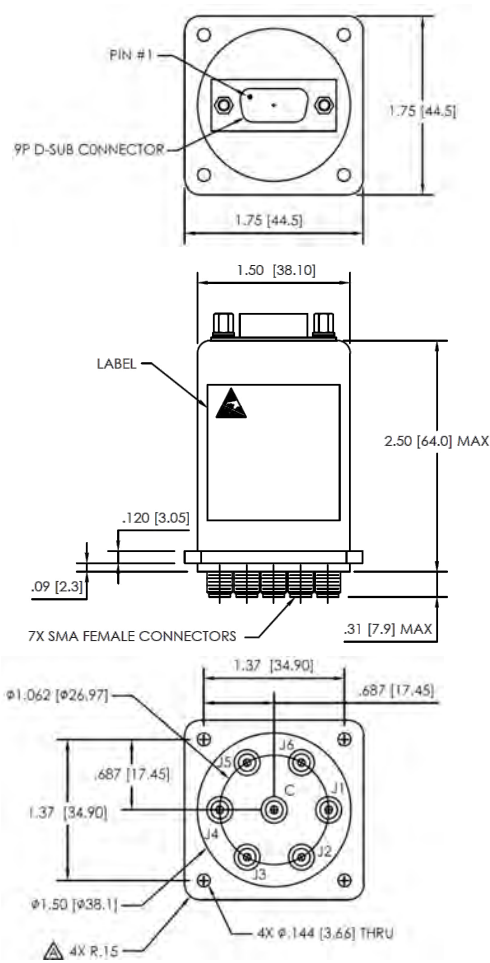
Popular Models

SP3T-OE-18A	SP3T, SMA, Normally Open, DC-18GHz, 12VDC
SP3T-OE-18A-D	SP3T, SMA, Normally Open, DC-18GHz, 12VDC, TTL
SP4T-OE-18A	SP4T, SMA, Normally Open, DC-18GHz, 12VDC
SP4T-OE-18A-D	SP4T, SMA, Normally Open, DC-18GHz, 12VDC, TTL
SP6T-OE-18A	SP6T, SMA, Normally Open, DC-18GHz, 12VDC
SP6T-OE-18A-D	SP6T, SMA, Normally Open, DC-18GHz, 12VDC, TTL

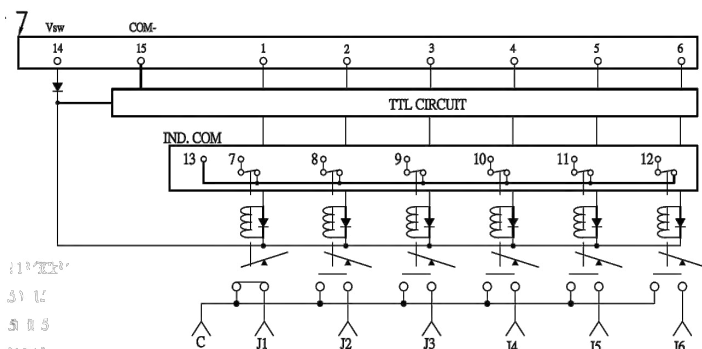
- See backside for a full list of available features and options
- Contact us for high power and custom designs



Outline



(SP4T w/ TTL & Indicators) Position #1 Energized



(SP6T w/TTL & Indicators) Position #1 Energized

Example: SP3T-0E-18A-D

(SP3T, SMA Connector, Normally Open without indicator, DC-18GHz, 12VDC, TTL Driver, D-Sub Control)

No. of Outputs 3 : SP3T 4 : SP4T 5 : SP5T 6 : SP6T		SP3T - 0E - 18A - D -				Control Options Default : D-Sub Control PIN : Pin Terminal Control		
Connector Type 0: SMA 1: N 2: TNC 3: RF PIN 4: F (75Ω) 5: SC 6: SMB 7: 7/16 DIN 8: BNC 9: K (2.92mm) 10: Mini DIN		Actuator Type E : Normally Open without Indicator F : Normally Open with Indicator		Frequency Range 03 : DC-3GHz 08 : DC-8GHz 12 : DC-12GHz 18 : DC-18GHz		Actuator Voltage A : 12VDC B : 15VDC C : 28VDC D : 24VDC E : 20VDC F : 5VDC G : 18VDC		Options H : High Power D : TTL Drivers with Diodes P : Positive + Common I : Suppression Diodes E : Decoder Y : Moisture Seal C : Custom

Features:

- Broadband: DC - 26.5 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 3, 4, 5 or 6 Positions

Note: See series SP3T-SP6T Option T for 50Ω terminations.

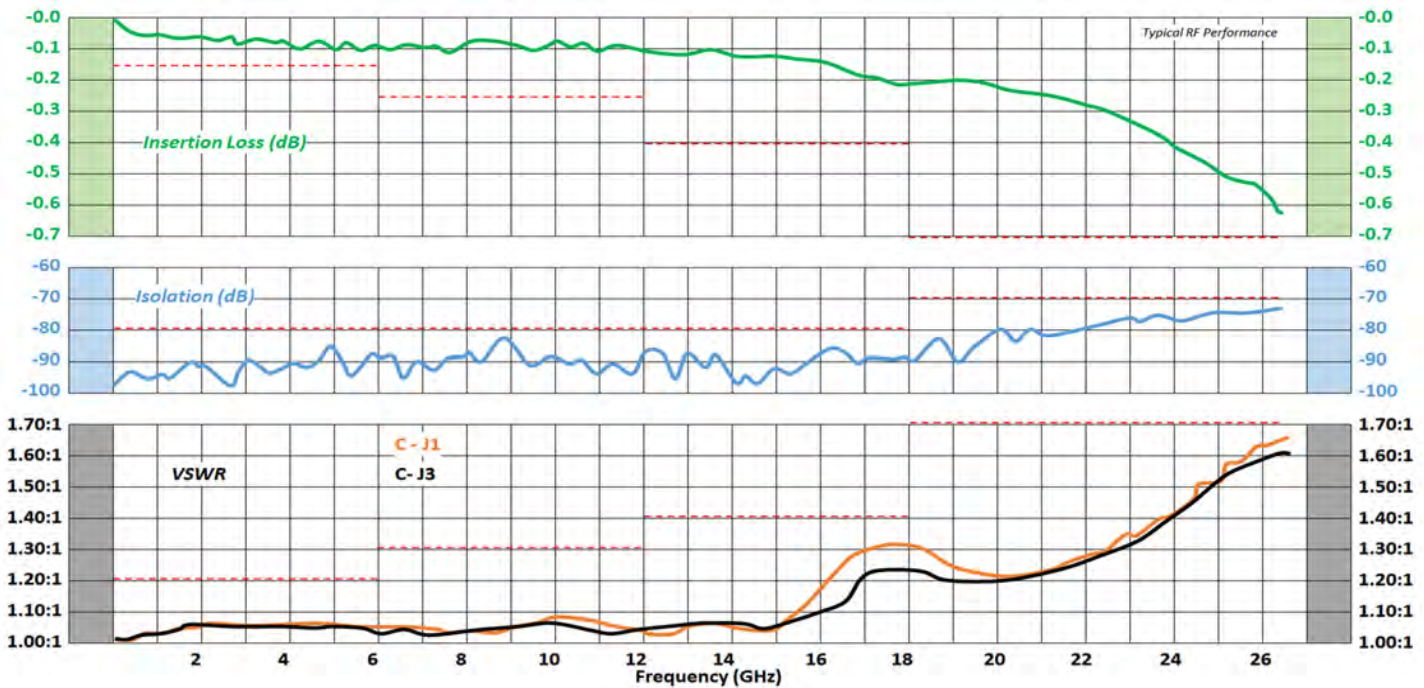


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-26.5
Ins. Loss dB (max)	0.15	0.25	0.40	0.70
Isolation dB (min)	80	80	80	70
VSWR (max)	1.20:1	1.30:1	1.40:1	1.70:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω (Switch and Terminations)			

Description:

High reliability and low loss performance makes these switches ideal for all testing applications. Selected position remains active with constant voltage, all positions are open when voltage is removed. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	250	200	150	140

* at nominal voltage and +20°C

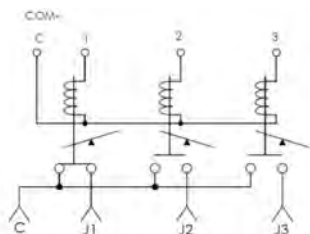
Popular Models

SP3T-0E-26A	SP3T, SMA, Normally Open, DC-26.5GHz, 12VDC
SP3T-0E-26A-D	SP3T, SMA, Normally Open, DC-26.5GHz, 12VDC, TTL
SP4T-0E-26A	SP4T, SMA, Normally Open, DC-26.5GHz, 12VDC
SP4T-0E-26A-D	SP4T, SMA, Normally Open, DC-26.5GHz, 12VDC, TTL
SP6T-0E-26A	SP6T, SMA, Normally Open, DC-26.5GHz, 12VDC
SP6T-0E-26A-D	SP6T, SMA, Normally Open, DC-26.5GHz, 12VDC, TTL

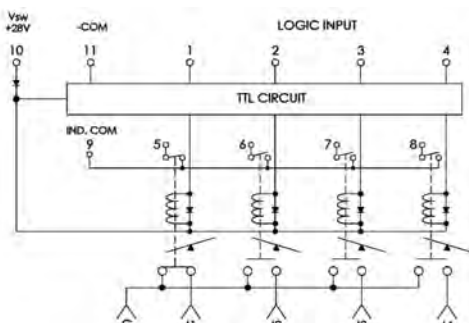
- See backside for a full list of available features and options
- Contact us for high power and custom designs



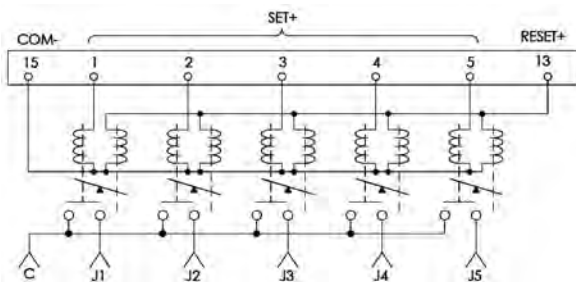
Schematics



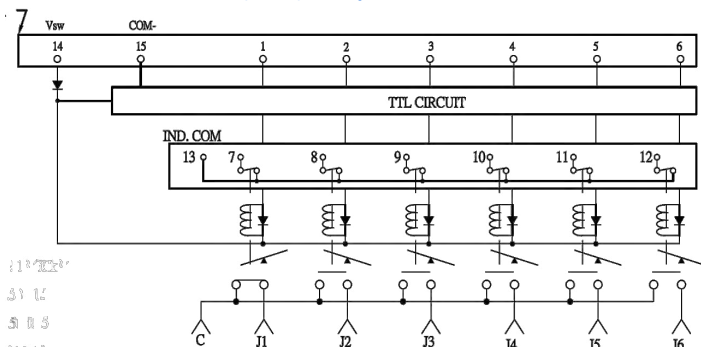
(SP3T) Position #1 Energized



(SP4T w/ TTL & Indicators) Position #1 Energized

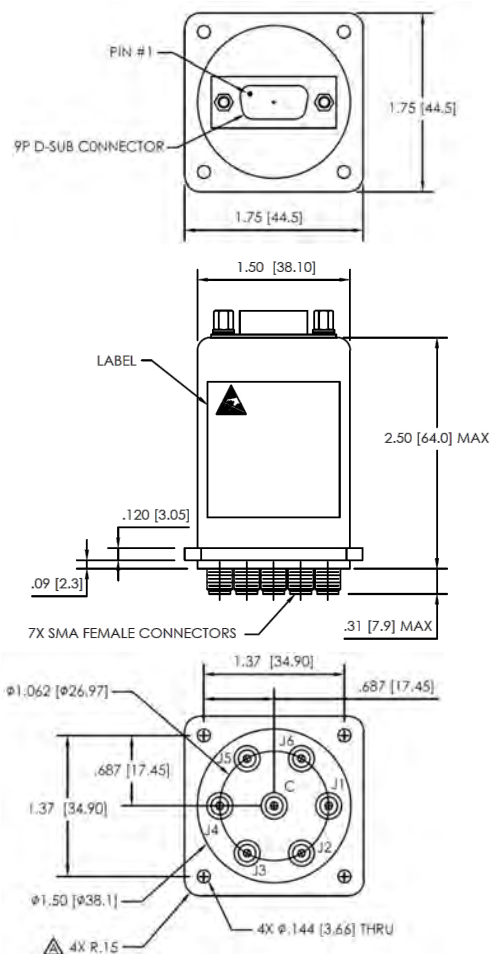


(SP5T) All Open Position



(SP6T w/TTL & Indicators) Position #1 Energized

Outline



Model Numbering System

Example: SP3T-0E-26A-D

(SP3T, SMA Connector, Normally Open without indicator, DC-26.5GHz, 12VDC, TTL Driver, D-Sub Control)

No. of Outputs		SP3T - 0E - 26A - D -				Control Options	
3 : SP3T						Default : D-Sub Control	
4 : SP4T						PIN : Pin Terminal Control	
5 : SP5T							
6 : SP6T							
Connector Type		Actuator Type		Frequency Range		Actuator Voltage	
0: SMA	6: SMB	E : Normally Open without Indicator		03 : DC-3GHz		A : 12VDC	E : 20VDC
1: N	7: 7/16 DIN	F : Normally Open with Indicator		08 : DC-8GHz		B : 15VDC	F : 5VDC
2: TNC	8: BNC			12 : DC-12GHz		C : 28VDC	G : 18VDC
3: RF PIN	9: K (2.92mm)			18 : DC-18GHz		D : 24VDC	
4: F (75Ω)	10: Mini DIN			22 : DC-22GHz			
5: SC				26 : DC-26.5GHz			
						Options	
						D : TTL Driver	
						E : Decoder	
						H : High Power	
						I : Suppression Diodes	
						P : Positive + Common	
						Y : Moisture Seal	
						C : Custom	



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



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Features:

- Broadband: DC - 40 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 3, 4, 5 or 6 Positions

Note: See series SP3T-SP6T Option T for 50Ω terminations

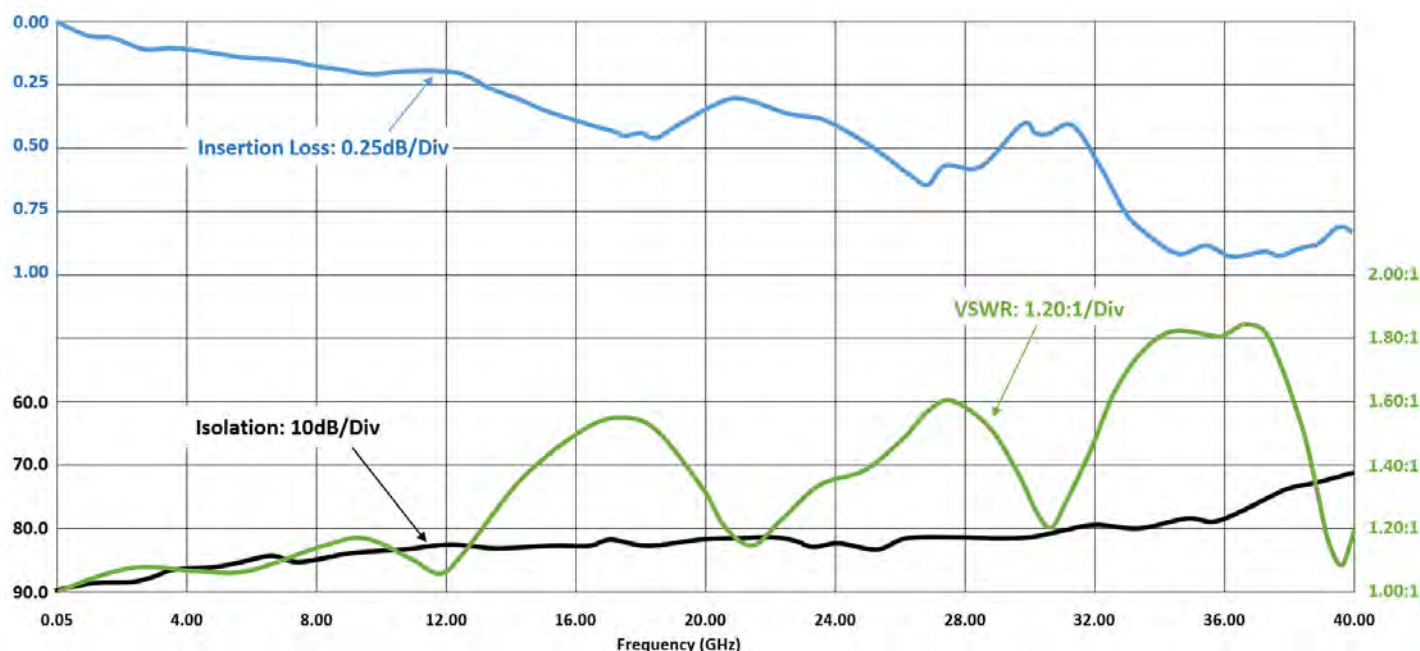


RF Specification:

Frequency, (GHz)	DC-12	12-26	26-32	32-40
Ins. Loss dB (max)	0.30	0.60	0.80	1.00
Isolation dB (min)	80	80	80	70
VSWR (max)	1.25:1	1.60:1	1.70:1	1.90:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω			

Description:

Broadband frequency coverage and high reliability makes these switches ideal for all testing applications. Selected position remains active with constant voltage, all positions are open when voltage is removed. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise and 5G.



Specifications

Oper Temp	-25° C to +70° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	250	200	150	140

* at nominal voltage and +20°C

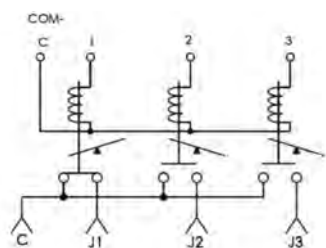
Popular Models

SP3T-9E-40A	SP3T, K connector, Normally Open, DC-40GHz, 12VDC
SP3T-9E-40A-D	SP3T, K connector, Normally Open, DC-40GHz, 12VDC, TTL
SP4T-9E-40A	SP4T, K connector, Normally Open, DC-40GHz, 12VDC
SP4T-9E-40A-D	SP4T, K connector, Normally Open, DC-40GHz, 12VDC, TTL
SP6T-9E-40A	SP6T, K connector, Normally Open, DC-40GHz, 12VDC
SP6T-9E-40A-D	SP6T, K connector, Normally Open, DC-40GHz, 12VDC, TTL

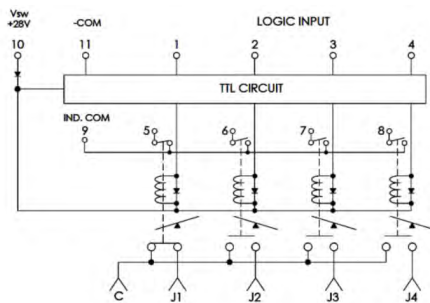
- See backside for a full list of available features and options
- Contact us for high power and custom designs



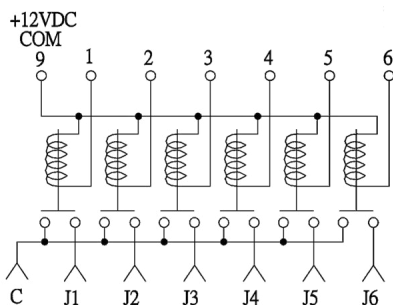
Schematics



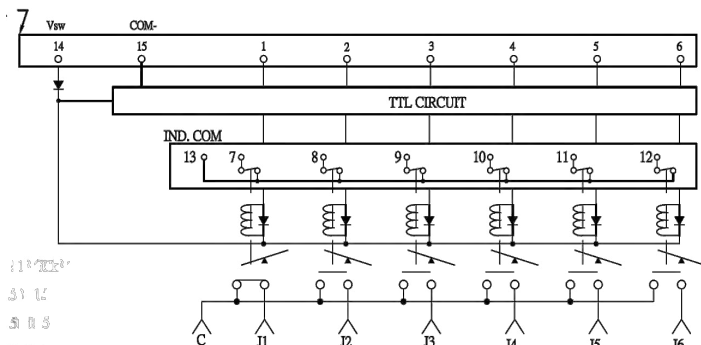
(SP3T) Position #1 Energized



(SP4T w/ TTL & Indicators) Position #1 Energized

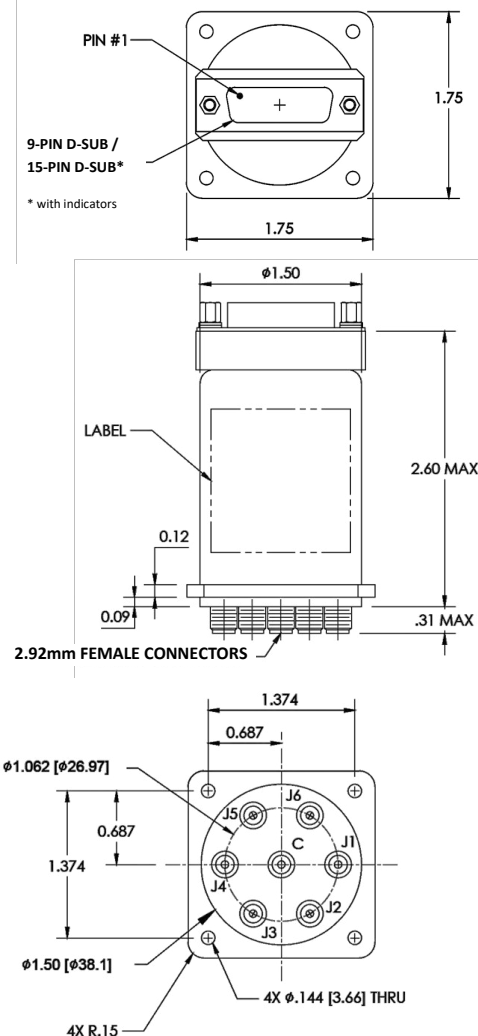


(SP6T) +Common, All Positions Open



(SP6T w/TTL & Indicators) Position #1 Energized

Outline



Model Numbering System

Example: SP3T-9E-40A-D

(SP3T, K Connector, Normally Open without indicator, DC-40GHz, 12VDC, TTL Driver, D-Sub Control)

No. of Outputs		SP3T - 9E - 40A - D -				Control Options	
3 : SP3T						Default : D-Sub Control	
4 : SP4T						PIN : Pin Terminal Control	
5 : SP5T							
6 : SP6T							
Connector Type		Actuator Type		Frequency Range		Options	
0: SMA	6: SMB	E : Normally Open without Indicator F : Normally Open with Indicator		03 : DC-3GHz		H : High Power	
1: N	7: 7/16 DIN			08 : DC-8GHz		D : TTL Drivers with Diodes	
2: TNC	8: BNC			12 : DC-12GHz		P : Positive + Common	
3: RF PIN	9: K (2.92mm)			18 : DC-18GHz		I : Suppression Diodes	
4: F (75Ω)	10: Mini DIN			22 : DC-22GHz		E : Decoder	
5: SC				26 : DC-26.5GHz		Y : Moisture Seal	
				33 : DC-33.5GHz		C : Custom	
				40 : DC-40GHz			
Actuator Voltage							
A : 12VDC	E : 20VDC						
B : 15VDC	F : 5VDC						
C : 28VDC	G : 18VDC						
D : 24VDC							



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



Features:

- Broadband: DC - 18 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 3, 4, 5 or 6 Positions
- 50 Ω Internal Terminations



RF Specification:

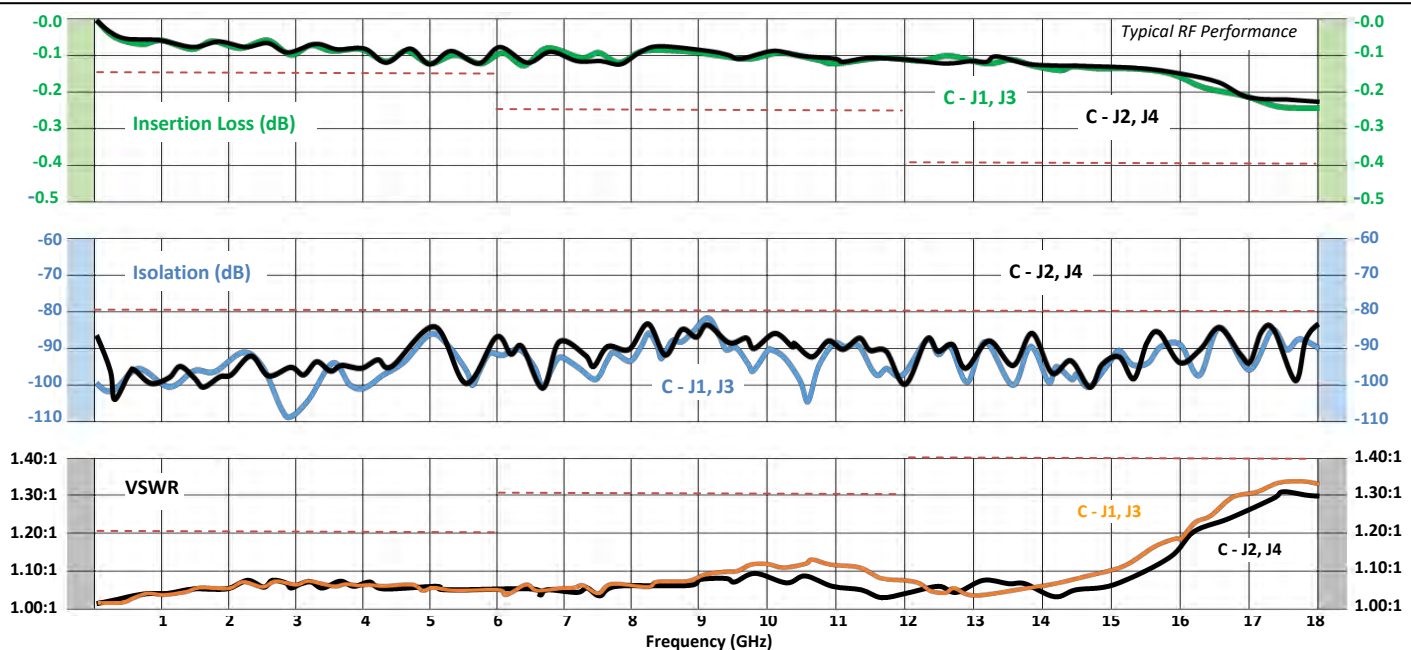
Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.15	0.25	0.40
Isolation dB (min)	80	80	80
VSWR (max)	1.20:1	1.30:1	1.40:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50 Ω (Switch and Terminations)		

Description:

The 50 Ω terminations of the switch in the "off" state ensures good isolation regardless of the match to which the switch is connected. High reliability and low loss performance makes these switches ideal for all testing applications. Available in 3, 4, 5 or 6 position versions with a wide selection of features to meet most requirements.

Applications: lab testing to production ATE requirements.

Markets: defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current				
Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	420	205	250	180

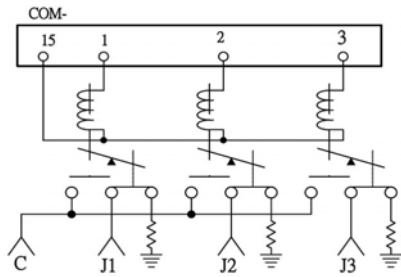
* at nominal voltage and +20°C

Popular Models	
SP3T-0E-18A-T	SP3T, SMA, Normally Open, DC-18GHz, 12VDC, Internal Termination
SP4T-0E-18A-T	SP4T, SMA, Normally Open, DC-18GHz, 12VDC, , Internal Termination
SP6T-0E-18A-T	SP6T, SMA, Normally Open, DC-18GHz, 12VDC, Internal Termination
SP6T-0E-18A-TD	SP6T, SMA, Normally Open, DC-18GHz, 12VDC, Internal Termination , TTL

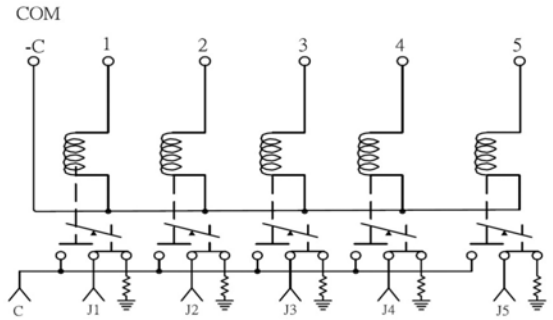
- See backside for a full list of available features and options
- Contact us for high power and custom designs



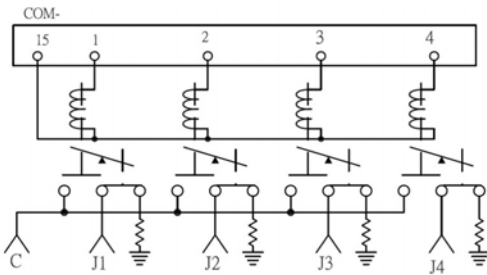
Schematics



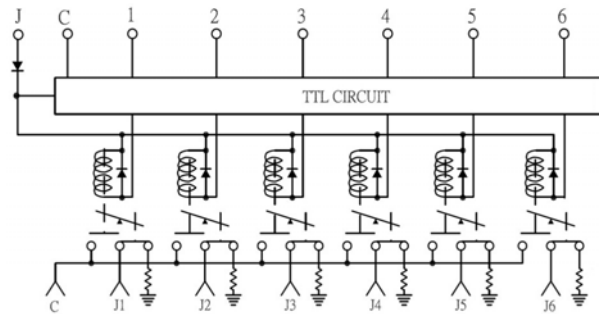
SP3T, 50Ω Terminations, 15 PIN D-Sub Connector



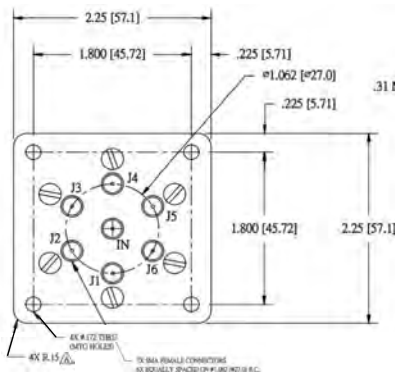
SP5T with Solder Pins/Lugs



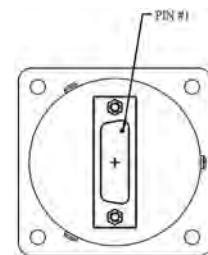
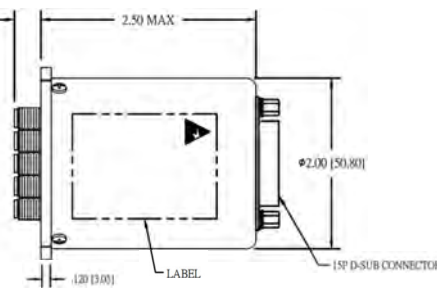
SP4T with 15 Pin D-Sub Connector



SP6T with TTL and Solder Pins



Outline



Model Numbering System

Example: SP3T-0E-18A-T

(SP3T, SMA Connector, Normally Open without indicator, DC-18GHz, 12VDC, Internal Termination, D-Sub Control)

No. of Outputs		SP3T - 0E - 18A - T -				Control Options	
3 : SP3T						Default : D-Sub Control	
4 : SP4T						PIN : Pin Terminal Control	
5 : SP5T							
6 : SP6T							
Connector Type		Actuator Type		Frequency Range		Actuator Voltage	
0: SMA	6: SMB	E : Normally Open without Indicator		03 : DC-3GHz		A : 12VDC	E : 20VDC
1: N	7: 7/16 DIN	F : Normally Open with Indicator		08 : DC-8GHz		B : 15VDC	F : 5VDC
2: TNC	8: BNC			12 : DC-12GHz		C : 28VDC	G : 18VDC
3: RF PIN	9: K (2.92mm)			18 : DC-18GHz		D : 24VDC	
4: F (75Ω)	10: Mini DIN						
5: SC							
		Options					
		H : High Power					
		T : Internal Terminations					
		D : TTL Drivers with Diodes					
		P : Positive + Common					
		I : Suppression Diodes					
		E : Decoder					
		Y : Moisture Seal					
		C : Custom					



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



ES France - Département RF & Hyperfréquences
127 rue de Buzenval BP 26 - 92380 Garches



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e-mail : hyper@es-france.com
Site Web : www.es-france.com

Features:

- Broadband: DC - 26.5 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 3, 4, 5 or 6 Positions
- 50 Ω Internal Terminations

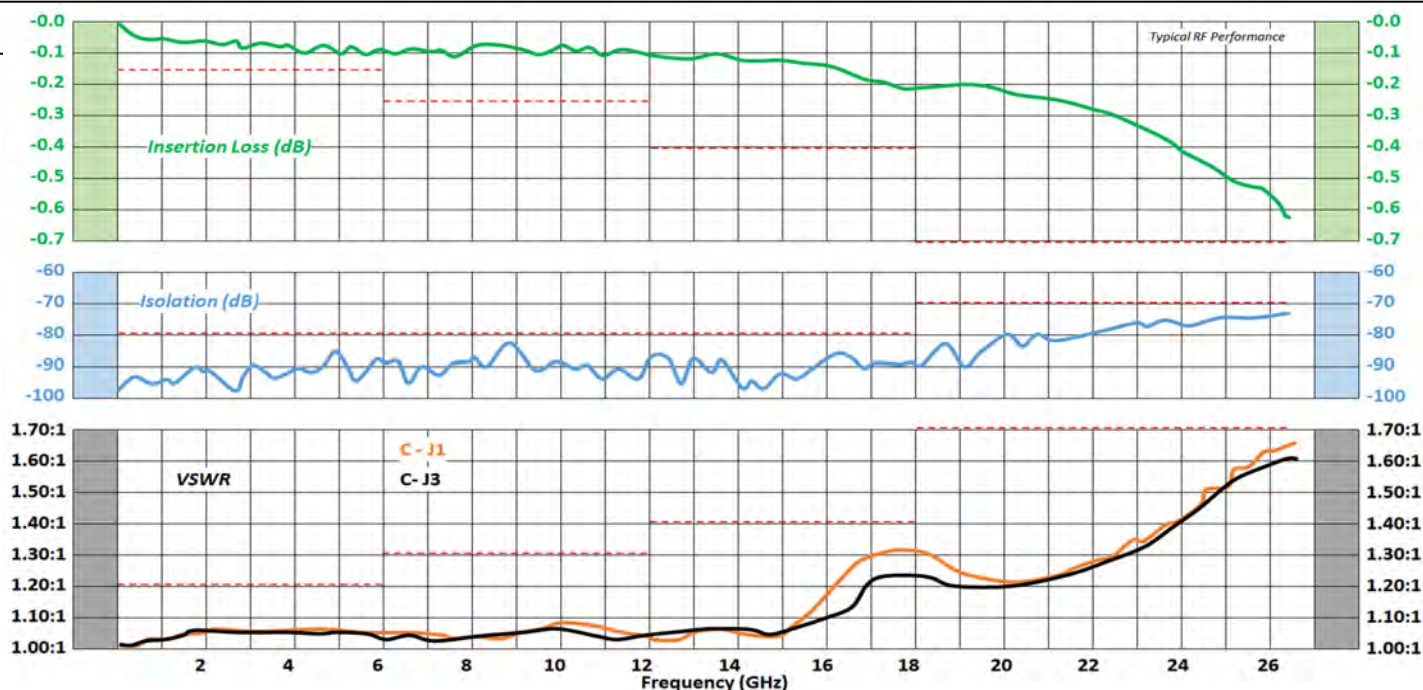


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-26.5
Ins. Loss dB (max)	0.15	0.25	0.40	0.70
Isolation dB (min)	80	80	80	70
VSWR (max)	1.20:1	1.30:1	1.40:1	1.70:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω (Switch and Terminations)			

Description:

The 50 Ω terminations of the switch in the "off" state ensures good isolation regardless of the match to which the switch is connected. High reliability and low loss performance makes these switches ideal for all testing applications. Available in 3, 4, 5 or 6 position versions with a wide selection of features to meet most requirements. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	420	205	250	180

* at nominal voltage and +20°C

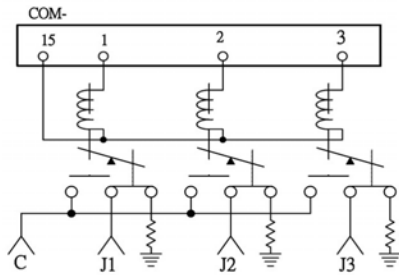
Popular Models

SP3T-0E-26A-T	SP3T, SMA, Normally Open, DC-26.5GHz, 12VDC, Internal Termination
SP4T-0E-26A-T	SP4T, SMA, Normally Open, DC-26.5GHz, 12VDC, , Internal Termination
SP6T-0E-26A-T	SP6T, SMA, Normally Open, DC-26.5GHz, 12VDC, Internal Termination
SP6T-0E-26A-TD	SP6T, SMA, Normally Open, DC-26.5GHz, 12VDC, Internal Termination , TTL

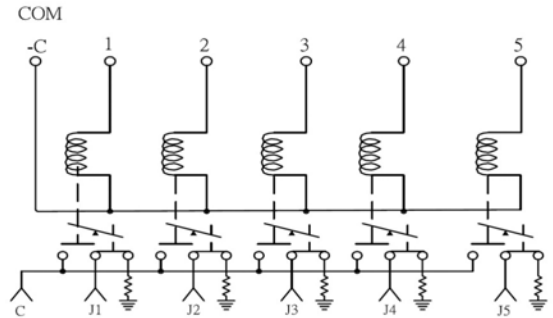
- See backside for a full list of available features and options
- Contact us for high power and custom designs



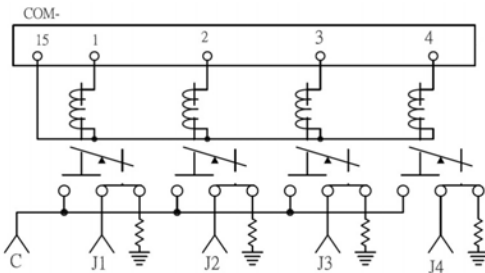
Schematics



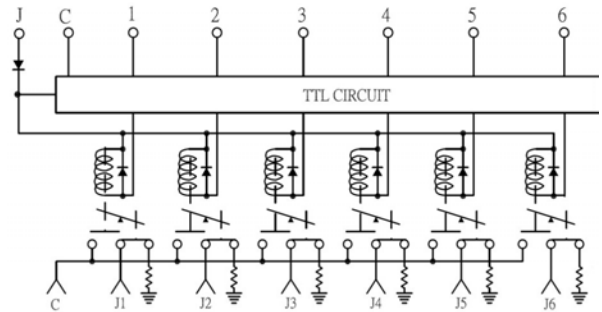
SP3T, 50Ω Terminations, 15 PIN D-Sub Connector



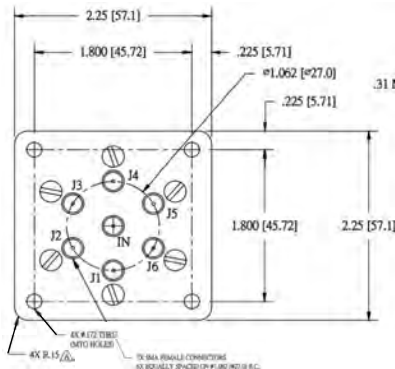
SP5T with Solder Pins/Lugs



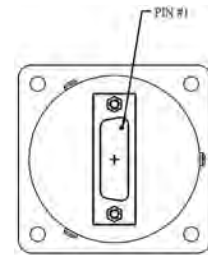
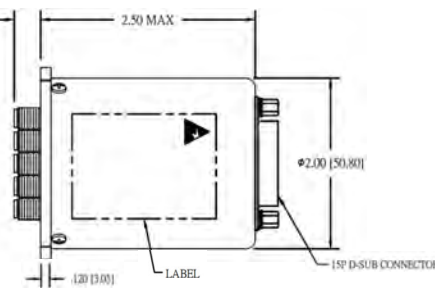
SP4T with 15 Pin D-Sub Connector



SP6T with TTL and Solder Pins



Outline



Model Numbering System

Example: SP3T-0E-26A-T

(SP3T, SMA Connector, Normally Open without indicator, DC-26.5GHz, 12VDC, Internal Termination, D-Sub Control)

No. of Outputs		SP3T - 0E - 26A - T -				Control Options		
3 : SP3T 4 : SP4T 5 : SP5T 6 : SP6T						Default : D-Sub Control PIN : Pin Terminal Control		
Connector Type		Actuator Type	Frequency Range	Actuator Voltage		Options		
0: SMA 1: N 2: TNC 3: RF PIN 4: F (75Ω) 5: SC		E : Normally Open without Indicator F : Normally Open with Indicator	03 : DC-3GHz 08 : DC-8GHz 12 : DC-12GHz 18 : DC-18GHz 22 : DC-22GHz 26 : DC-26.5GHz	A : 12VDC B : 15VDC C : 28VDC D : 24VDC		E : 20VDC F : 5VDC G : 18VDC		H : High Power T : Internal Terminations D : TTL Drivers with Diodes P : Positive + Common I : Suppression Diodes E : Decoder Y : Moisture Seal C : Custom
6: SMB 7: 7/16 DIN 8: BNC 9: K (2.92mm) 10: Mini DIN								

Features:

- Broadband: DC - 40 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 3, 4, 5 or 6 Positions
- 50 Ω Internal Terminations

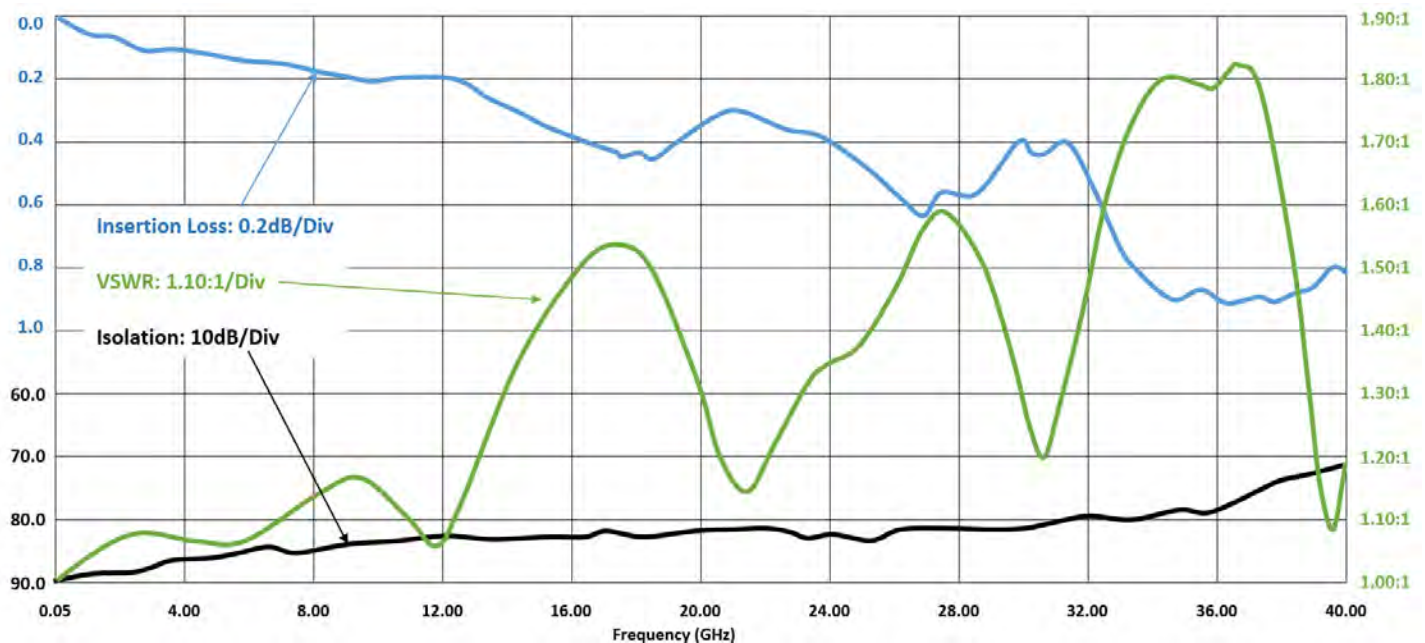


RF Specification:

Frequency, (GHz)	DC - 6	6 - 12	12 - 18	18 - 26.5	26.5 - 32	32 - 40	Operation	Specification
Ins. Loss dB (max)	0.30	0.30	0.60	0.80	0.80	1.10	Switching Time	20 mS (max)
Isolation dB (min)	80	75	70	70	60	60	Switching Action	Break-Before-Make
VSWR (max)	1.25:1	1.30:1	1.60:1	1.70:1	1.80:1	1.95:1	Impedance	50 Ω

Description:

The 50 Ω terminations of the switch in the "off" state ensures good isolation regardless of the match to which the switch is connected. High reliability and low loss performance makes these switches ideal for all testing applications. Available in 3, 4, 5 or 6 position versions with a wide selection of features to meet most requirements. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-25° C to +70° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current				
Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	420	205	250	180

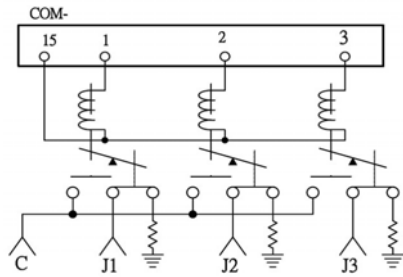
* at nominal voltage and +20°C

Popular Models	
SP3T-9E-40A-T	SP3T, K, Normally Open, DC-40GHz, 12VDC, Internal Termination
SP4T-9E-40A-T	SP4T, K, Normally Open, DC-40GHz, 12VDC, , Internal Termination
SP6T-9E-40A-T	SP6T, K, Normally Open, DC-40GHz, 12VDC, Internal Termination
SP6T-9E-40A-TD	SP6T, K, Normally Open, DC-40GHz, 12VDC, Internal Termination , TTL

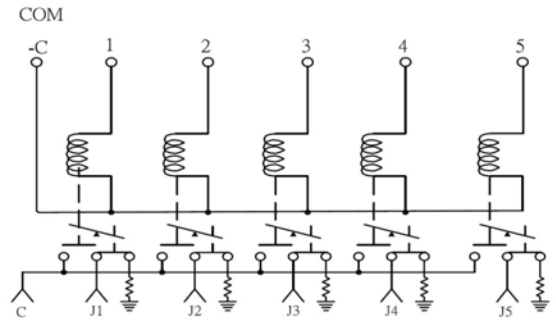
- See backside for a full list of available features and options
- Contact us for high power and custom designs



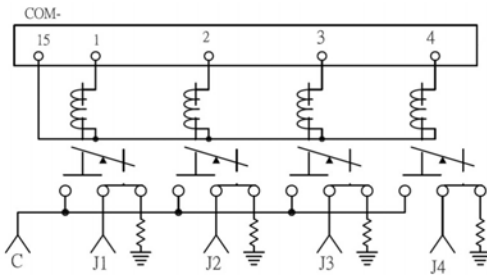
Schematics



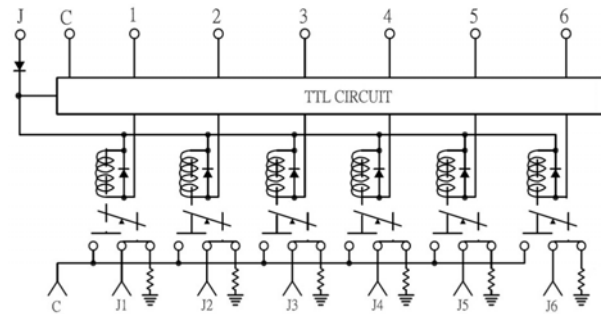
SP3T, 50Ω Terminations, 15 PIN D-Sub Connector



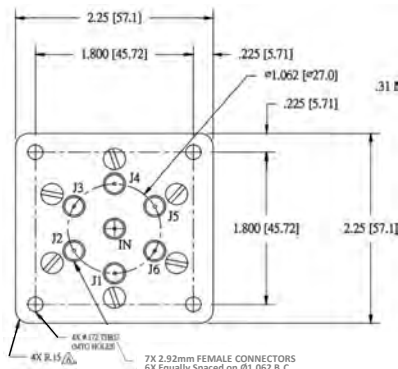
SP5T with Solder Pins/Lugs



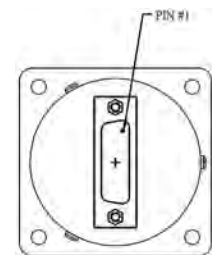
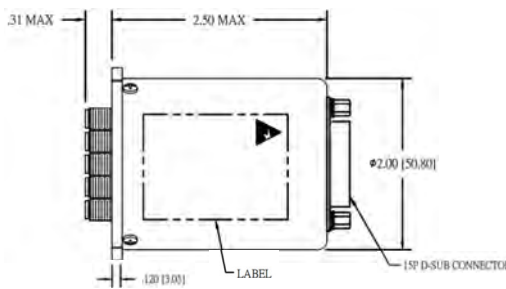
SP4T with 15 Pin D-Sub Connector



SP6T with TTL and Solder Pins



Outline



Model Numbering System

Example: SP3T-9E-40A-T

(SP3T, K Connector, Normally Open without indicator, DC-40GHz, 12VDC, Internal Termination, D-Sub Control)

No. of Outputs		SP3T - 9E - 40A - T -		Control Options	
3 : SP3T 4 : SP4T 5 : SP5T 6 : SP6T				Default : D-Sub Control PIN : Pin Terminal Control	
Connector Type		Frequency Range		Options	
0: SMA 1: N 2: TNC 3: RF PIN 4: F (75Ω) 5: SC		03 : DC-3GHz 08 : DC-8GHz 12 : DC-12GHz 18 : DC-18GHz 22 : DC-22GHz 26 : DC-26.5GHz 33 : DC-33.5GHz 40 : DC-40GHz		H : High Power T : Internal Terminations D : TTL Drivers with Diodes P : Positive + Common I : Suppression Diodes E : Decoder Y : Moisture Seal C : Custom	
Actuator Type		Actuator Voltage			
E : Normally Open without Indicator F : Normally Open with Indicator		A : 12VDC B : 15VDC C : 28VDC D : 24VDC E : 20VDC F : 5VDC G : 18VDC			
6: SMB 7: 7/16 DIN 8: BNC 9: K (2.92mm) 10: Mini DIN					

* D-Sub connectors are standard for SPMT, no designation on model number needed



RoHS



Features:

- Broadband: DC - 18 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 3, 4, 5 or 6 Positions

Note: See series SP3T-SP6T Option T for 50Ω terminations

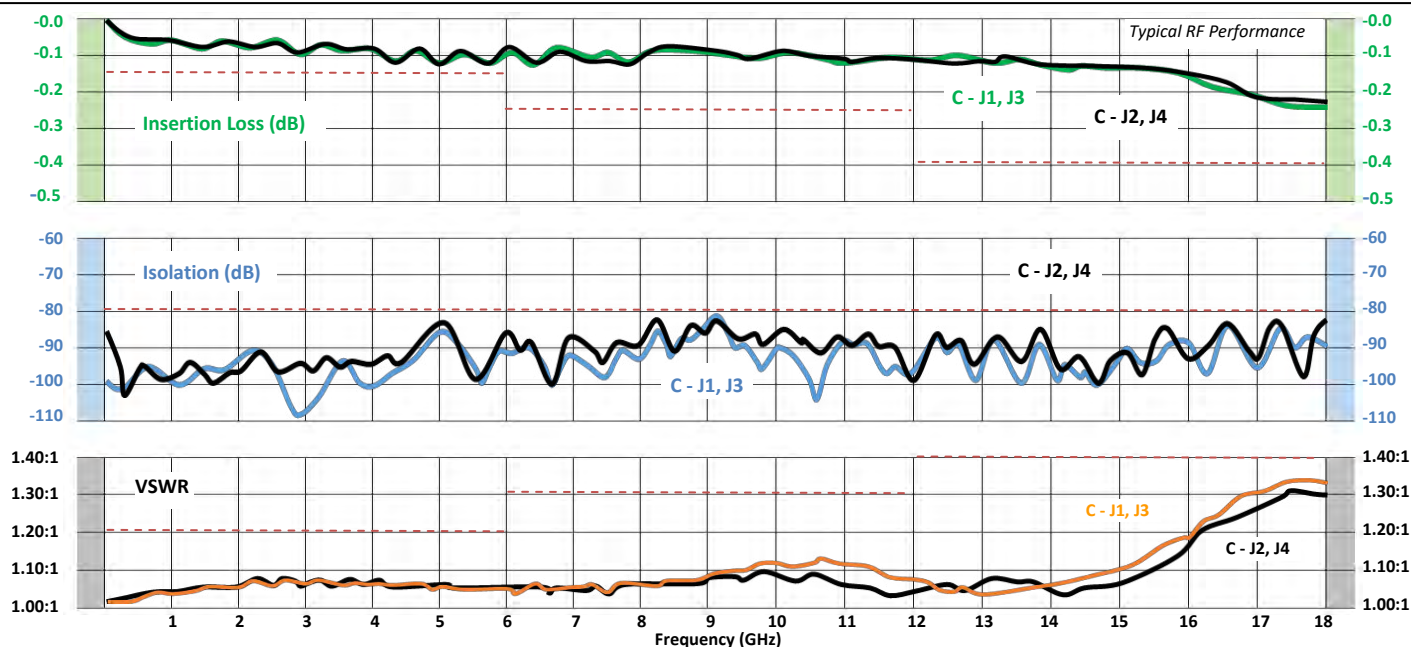


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.15	0.25	0.40
Isolation dB (min)	80	80	80
VSWR (max)	1.20:1	1.30:1	1.40:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50 Ω (Switch and Terminations)		

Description:

High reliability and low loss performance makes these switches ideal for all testing applications. Magnetically latched in place after control voltage is removed. Available in 3, 4, 5 or 6 position versions with a wide selection of features are available to meet most requirements. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	250	200	150	140

Note: Reset current = Current rating x (# of positions)

* at nominal voltage and +20°C

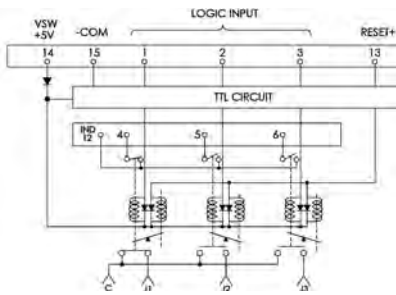
Popular Models

SP3T-OC-18A	SP3T, SMA, Latching, DC-18GHz, 12VDC
SP3T-OC-18A-D	SP3T, SMA, Latching, DC-18GHz, 12VDC, TTL
SP4T-OC-18A	SP4T, SMA, Latching, DC-18GHz, 12VDC
SP4T-OC-18A-D	SP4T, SMA, Latching, DC-18GHz, 12VDC, TTL
SP6T-OC-18A	SP6T, SMA, Latching, DC-18GHz, 12VDC
SP6T-OC-18A-D	SP6T, SMA, Latching, DC-18GHz, 12VDC, TTL

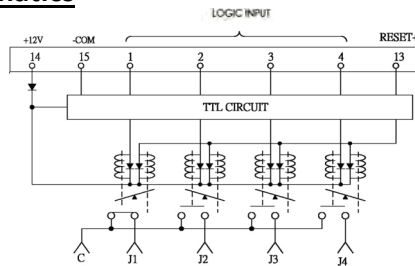
- See backside for a full list of available features and options
- Contact us for high power and custom designs



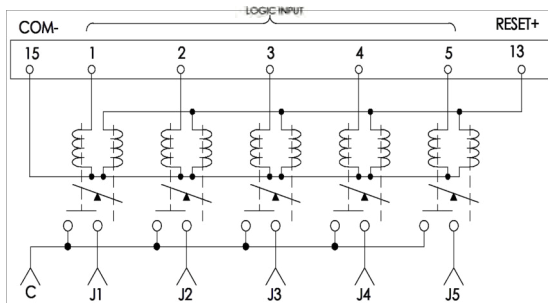
Schematics



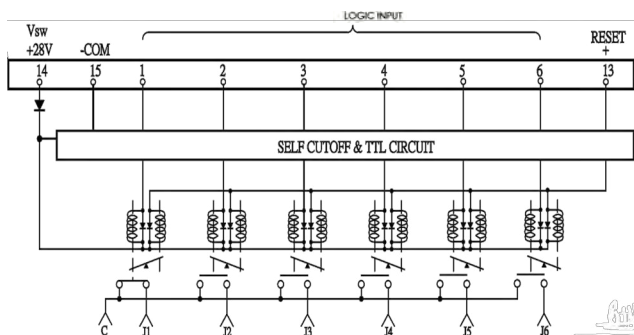
SP3T w/ TTL & Indicators in position J1



SP4T w/ TTL in position J1



SP5T in reset position



SP6T w/TTL & Self Cutoff in position J1

TTL Control

Logic "1": 2.4 to 5.0 VDC
Logic "0": 0 to 0.8 VDC

Actuation Control

Requires two sequential pulses

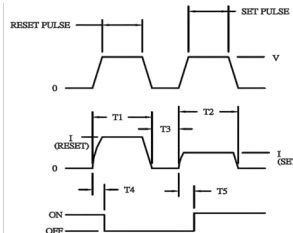
"Reset and Set" (see below)

T1 & T2 = 30ms min.

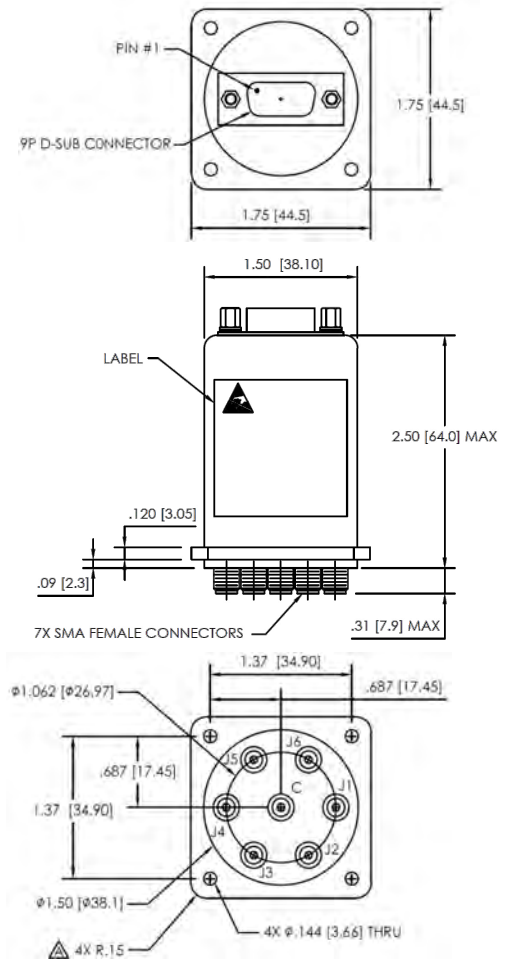
T3 = 10ms min.

T4 & T5 = 20ms max

Contact factory for full operating sequence, pin assignments and truth tables



Outline



Model Numbering System

Example: SP3T-0C-18A-D

(SP3T, SMA Connector, Latching without indicator, DC-18GHz, 12VDC, TTL Driver, D-Sub Control)

No. of Outputs		SP3T - 0C - 18A - D -				Control Options	
3 : SP3T						Default : D-Sub Control	
4 : SP4T						PIN : Pin Terminal Control	
5 : SP5T							
6 : SP6T							
Connector Type		Actuator Type		Frequency Range		Actuator Voltage	
0: SMA	6: SMB	C : Latching without Indicator	D : Latching with Indicator	03 : DC-3GHz	12 : DC-12GHz	A : 12VDC	E : 20VDC
1: N	7: 7/16 DIN			08 : DC-8GHz		B : 15VDC	F : 5VDC
2: TNC	8: BNC			12 : DC-12GHz	18 : DC-18GHz	C : 28VDC	G : 18VDC
3: RF PIN	9: K (2.92mm)					D : 24VDC	
4: F (75Ω)	10: Mini DIN						
5: SC							
						Options	
						H : High Power	
						D : TTL Drivers with Diodes	
						P : Positive + Common	
						A : Auto Reset	
						S : Self Cutoff	
						I : Suppression Diodes	
						E : Decoder	
						Y : Moisture Seal	
						C : Custom	

* D-Sub connectors are standard for SPMT, no designation on model number needed



Features:

- Broadband: DC - 26.5 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 3, 4, 5 or 6 Positions

Note: See series SP3T-SP6T Option T for 50Ω terminations

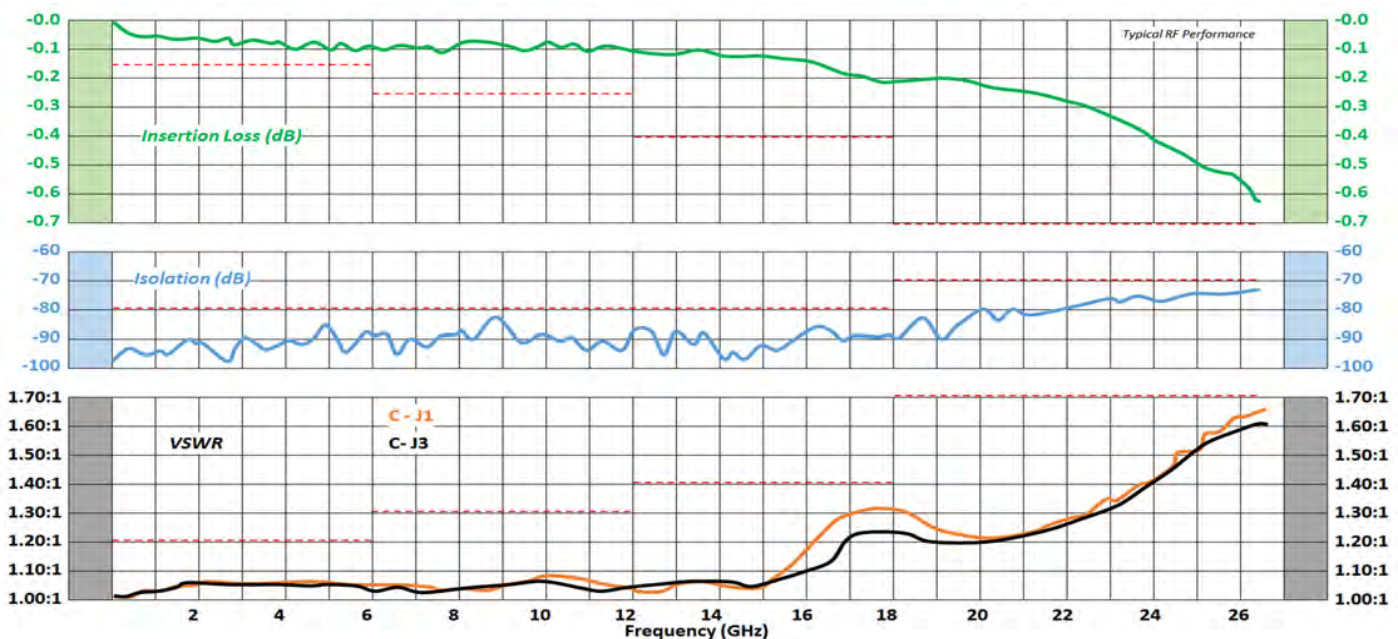


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-26.5
Ins. Loss dB (max)	0.15	0.25	0.40	0.70
Isolation dB (min)	80	80	80	70
VSWR (max)	1.20:1	1.30:1	1.40:1	1.70:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω			

Description:

High reliability and low loss performance makes these switches ideal for all testing applications. Magnetically latched in place after control voltage is removed. Available in 3, 4, 5 or 6 position versions with a wide selection of features are available to meet most requirements. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	250	200	150	140

Note: Reset current = Current rating x (# of positions)

* at nominal voltage and +20°C

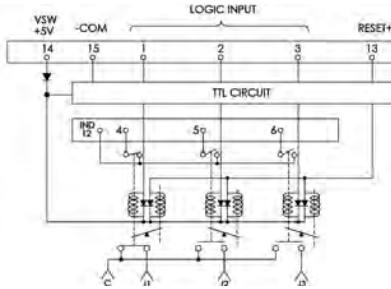
Popular Models

SP3T-OC-26A	SP3T, SMA, Latching, DC-26.5GHz, 12VDC
SP3T-OC-26A-D	SP3T, SMA, Latching, DC-26.5GHz, 12VDC, TTL
SP4T-OC-26A	SP4T, SMA, Latching, DC-26.5GHz, 12VDC
SP4T-OC-26A-D	SP4T, SMA, Latching, DC-26.5GHz, 12VDC, TTL
SP6T-OC-26A	SP6T, SMA, Latching, DC-26.5GHz, 12VDC
SP6T-OC-26A-D	SP6T, SMA, Latching, DC-26.5GHz, 12VDC, TTL

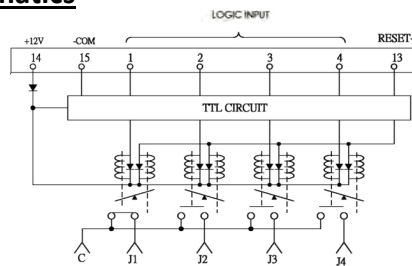
- See backside for a full list of available features and options
- Contact us for high power and custom designs



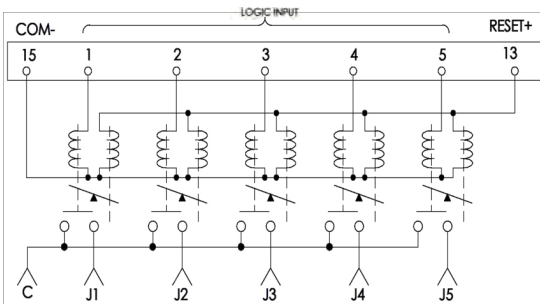
Schematics



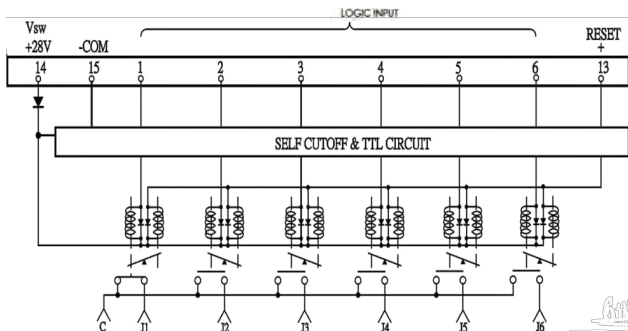
SP3T w/ TTL & Indicators in position J1



SP4T w/ TTL in position J1



SP5T in reset position



SP6T w/TTL & Self Cutoff in position J1

TTL Control

Logic "1": 2.4 to 5.0 VDC
Logic "0": 0 to 0.8 VDC

Actuation Control

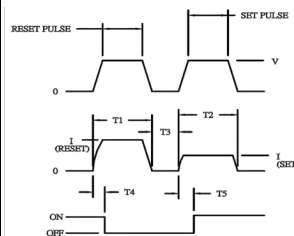
Requires two sequential pulses
"Reset and Set" (see below)

T1 & T2 = 30ms min.

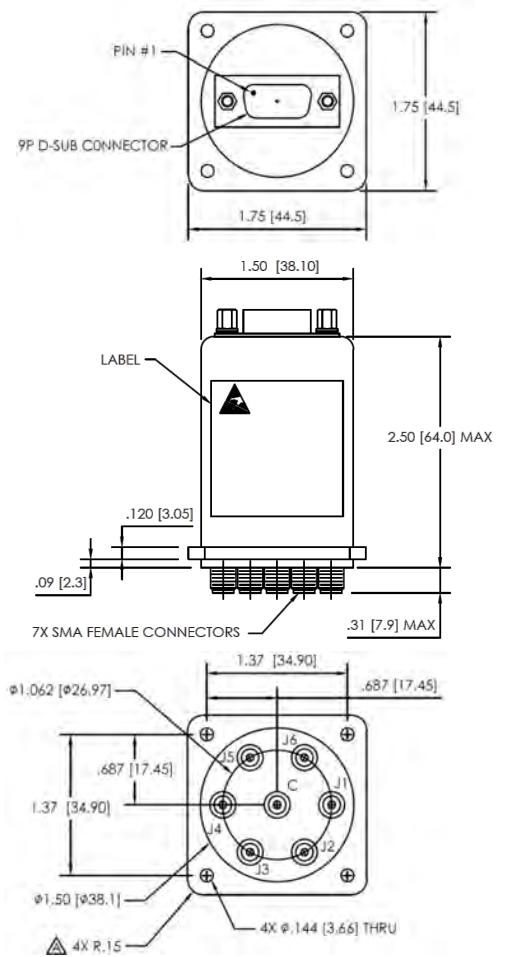
T3 = 10ms min.

T4 & T5 = 20ms max

Contact factory for full operating sequence, pin assignments and truth tables



Outline



Model Numbering System

Example: SP3T-0C-26A-D -

(SP3T, SMA Connector, Latching without indicator, DC-26.5GHz, 12VDC, TTL Driver, D-Sub Control)

No. of Outputs	SP3T - 0C - 26A - D -				Control Options
3 : SP3T 4 : SP4T 5 : SP5T 6 : SP6T					Default : D-Sub Control PIN : Pin Terminal Control
Connector Type	Actuator Type	Frequency Range	Actuator Voltage	Options	
0: SMA 1: N 2: TNC 3: RF PIN 4: F (75Ω) 5: SC	C : Latching without Indicator D : Latching with Indicator	03 : DC-3GHz 08 : DC-8GHz 12 : DC-12GHz 18 : DC-18GHz 22 : DC-22GHz 26 : DC-26.5GHz	A : 12VDC B : 15VDC C : 28VDC D : 24VDC E : 20VDC F : 5VDC G : 18VDC	H : High Power D : TTL Drivers with Diodes P : Positive + Common A : Auto Reset S : Self Cutoff I : Suppression Diodes E : Decoder Y : Moisture Seal C : Custom	
6: SMB 7: 7/16 DIN 8: BNC 9: K (2.92mm) 10: Mini DIN					

* D-Sub connectors are standard for SPMT, no designation on model number needed



Features:

- Broadband: DC - 40 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 3, 4, 5 or 6 Positions

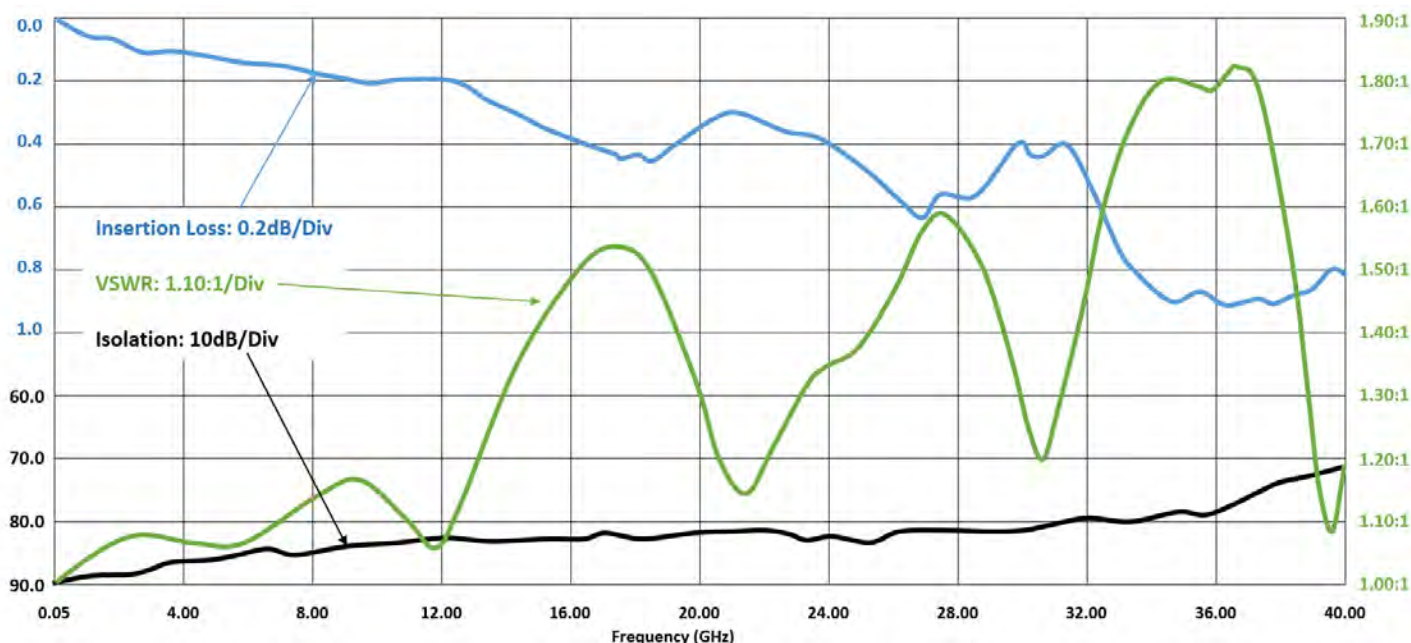
Note: See series SP3T-SP6T Option T for 50Ω terminations



RF Specification:

Frequency, (GHz)	DC - 6	6 - 12	12 - 18	18 - 26.5	26.5 - 32	32 - 40	Operation	Specification
Ins. Loss dB (max)	0.30	0.30	0.60	0.80	0.80	1.10	Switching Time	20 mS (max)
Isolation dB (min)	80	75	70	70	60	60	Switching Action	Break-Before-Make
VSWR (max)	1.25:1	1.30:1	1.60:1	1.70:1	1.80:1	1.95:1	Impedance	50 Ω

Description: High reliability and low loss performance makes these switches ideal for all testing applications. Magnetically latched in place after control voltage is removed. Available in 3, 4, 5 or 6 position versions with a wide selection of features are available to meet most requirements. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +70° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	250	200	150	140

Note: Reset current = Current rating x (# of positions)

* at nominal voltage and +20°C

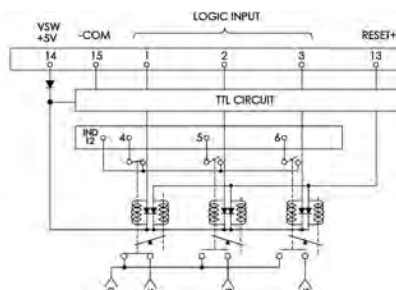
Popular Models

SP3T-9C-40A	SP3T, K connector, Latching, DC-40GHz, 12VDC
SP3T-9C-40A-D	SP3T, K connector, Latching, DC-40GHz, 12VDC, TTL
SP4T-9C-40A	SP4T, K connector, Latching, DC-40GHz, 12VDC
SP4T-9C-40A-D	SP4T, K connector, Latching, DC-40GHz, 12VDC, TTL
SP6T-9C-40A	SP6T, K connector, Latching, DC-40GHz, 12VDC
SP6T-9C-40A-D	SP6T, K connector, Latching, DC-40GHz, 12VDC, TTL

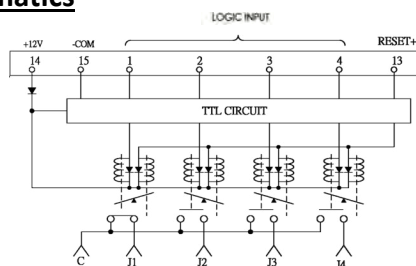
- See backside for a full list of available features and options
- Contact us for high power and custom designs



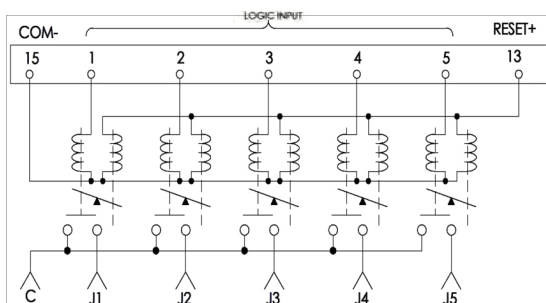
Schematics



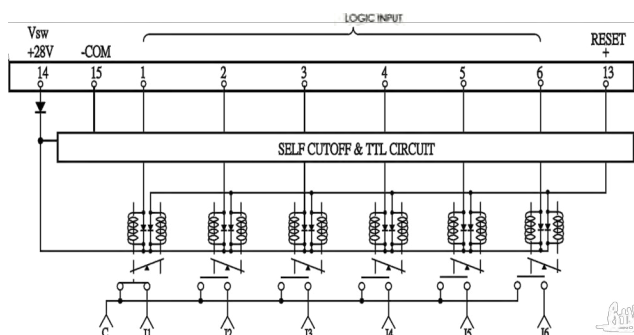
SP3T w/ TTL & Indicators in position J1



SP4T w/ TTL in position J1



SP5T in reset position



SP6T w/TTL & Self Cutoff in position J1

TTL Control

Logic "1": 2.4 to 5.0 VDC
Logic "0": 0 to 0.8 VDC

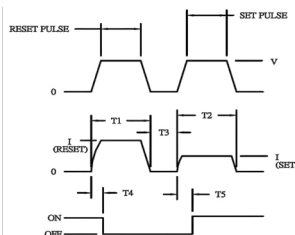
Actuation Control

Requires two sequential pulses
"Reset and Set" (see below)

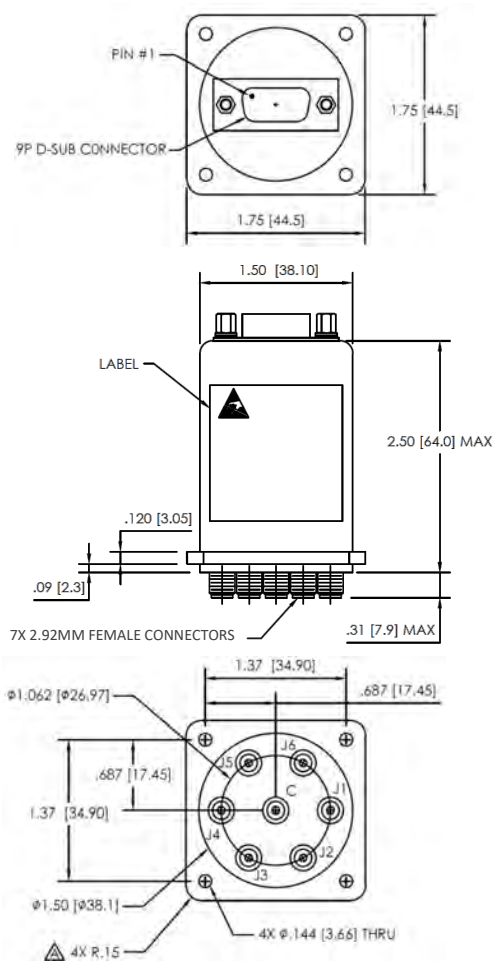
T1 & T2 = 30mS min.
T3 = 10mS min.

T4 & T5 = 20mS max

Contact factory for full operating sequence,
pin assignments and truth tables



Outline



Model Numbering System

Example: SP3T-9C-40A-D

(SP3T, K Connector, Latching without indicator, DC-40GHz, 12VDC, TTL Driver, D-Sub Control)

No. of Outputs

3 : SP3T

4 : SP4T

5 : SP5T

6 : SP6T

SP3T - 9C - 40A - D -

Control Options

Default : D-Sub Control

PIN : Pin Terminal Control

Connector Type

0: SMA

1: N

2: TNC

3: RF PIN

4: F (75Ω)

5: SC

6: SMB

7: 7/16 DIN

8: BNC

9: K (2.92mm)

10: Mini DIN

Actuator Type

C : Latching without Indicator

D : Latching with Indicator

Frequency Range

03 : DC-3GHz

08 : DC-8GHz

12 : DC-12GHz

18 : DC-18GHz

22 : DC-22GHz

26 : DC-26.5GHz

33 : DC-33.5GHz

40 : DC-40GHz

Actuator Voltage

A : 12VDC

B : 15VDC

C : 28VDC

D : 24VDC

E : 20VDC

F : 5VDC

G : 18VDC

Options

H : High Power

D : TTL Drivers with Diodes

P : Positive + Common

A : Auto Reset

S : Self Cutoff

I : Suppression Diodes

E : Decoder

Y : Moisture Seal

C : Custom

* D-Sub connectors are standard for SPMT, no designation on model number needed

Features:

- Broadband: DC - 18 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- 50Ω Internal Terminations
- Available in 3, 4, 5 or 6 Positions

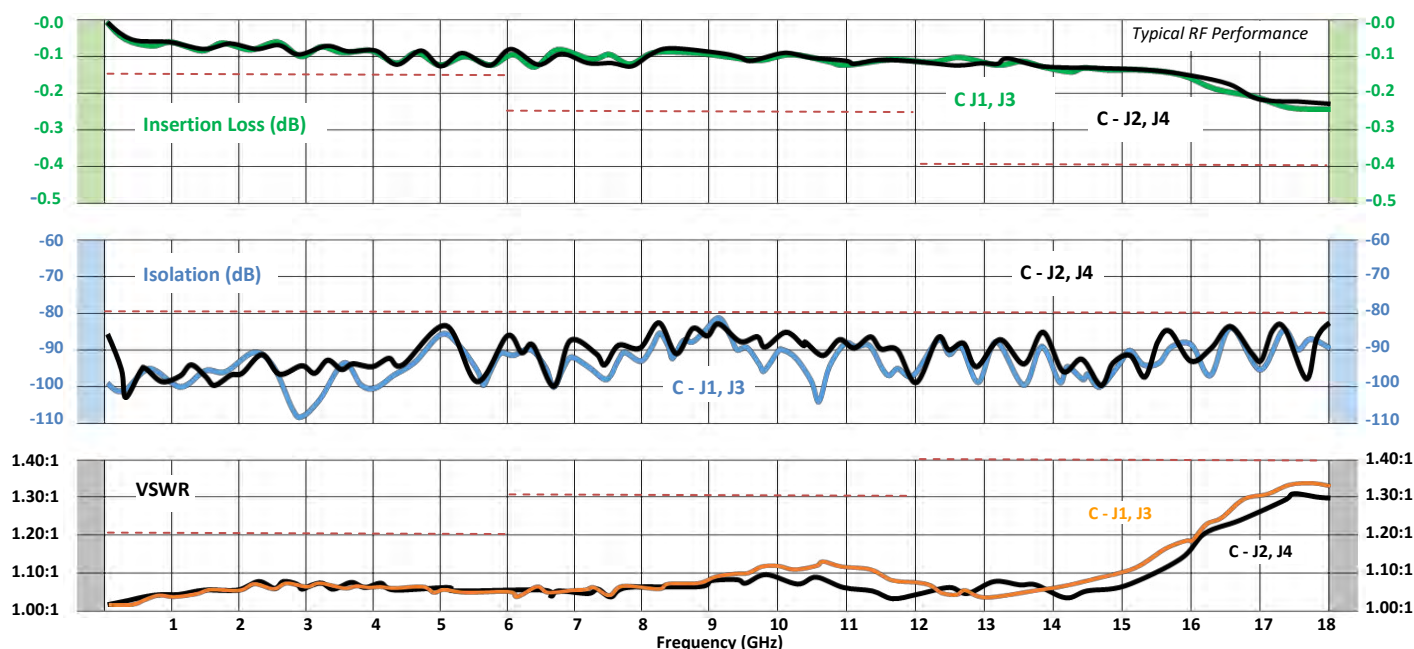


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.15	0.25	0.40
Isolation dB (min)	80	80	80
VSWR (max)	1.20:1	1.30:1	1.40:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50 Ω (Switch and Terminations)		

Description:

High reliability and low loss performance makes these switches ideal for all testing applications. Magnetically latched in place after control voltage is removed. Available in 3, 4, 5 or 6 position versions with a wide selection of features available to meet most requirements. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	250	200	150	140

Note: Reset current = Current rating x (# of positions)

* at nominal voltage and +20°C

Popular Models

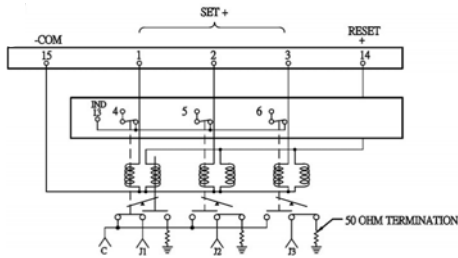
SP3T-OC-18A-T	SP3T, SMA, Latching, DC-18GHz, 12VDC, Internal Termination
SP4T-OC-18A-T	SP4T, SMA, Latching, DC-18GHz, 12VDC, , Internal Termination
SP6T-OC-18A-T	SP6T, SMA, Latching, DC-18GHz, 12VDC, Internal Termination
SP6T-OC-18A-TD	SP6T, SMA, Latching, DC-18GHz, 12VDC, Internal Termination , TTL

- See backside for a full list of available features and options
- Contact us for high power and custom designs

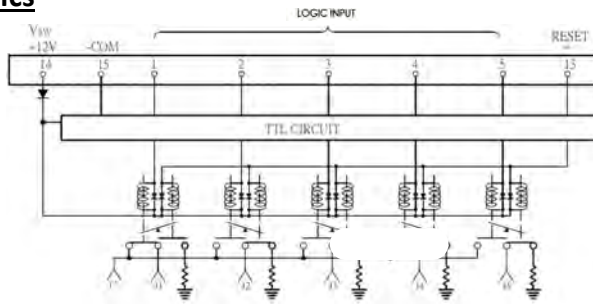




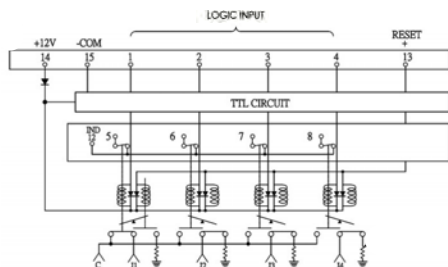
Schematics



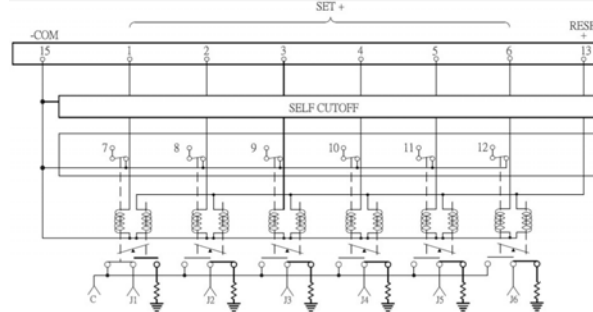
SP3T w/ Indicators in position J1



SP5T w/ TTL in position J1



SP4T w/ TTL & Indicators in position J1



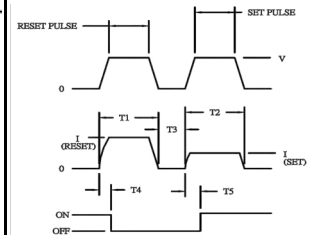
SP6T w/ Indicators & Self Cutoff in position J1

TTL Control

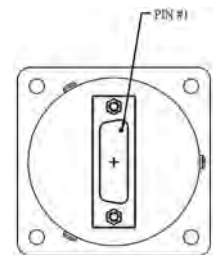
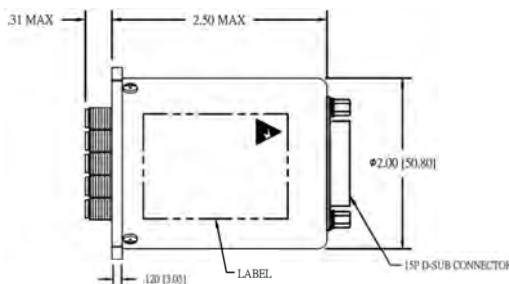
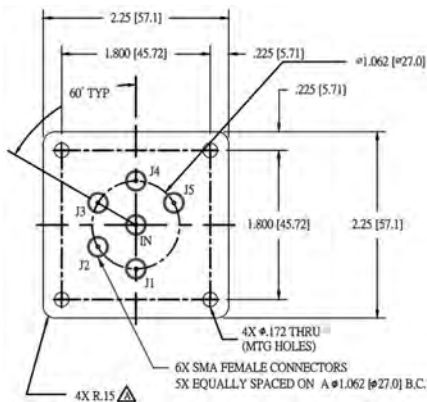
Logic "1": 2.4 to 5.0 VDC
Logic "0": 0 to 0.8 VDC

Actuation Control

Requires two sequential pulses
"Reset and Set" (see below)
T1 & T2 = 30mS min.
T3 = 10mS min.
T4 & T5 = 20mS max
Contact factory for full operating sequence,
pin assignments and truth tables



Outline



Model Numbering System

Example: SP3T-0C-18A-T-

(SP3T, SMA Connector, Latching without indicator, DC-18GHz, 12VDC, Internal Termination, D-Sub Control)

No. of Outputs	SP3T - 0C - 18A - T -				Control Options
3 : SP3T 4 : SP4T 5 : SP5T 6 : SP6T					Default : D-Sub Control PIN : Pin Terminal Control
Connector Type	Actuator Type	Frequency Range	Actuator Voltage		Options
0: SMA 1: N 2: TNC 3: RF PIN 4: F (75Ω) 5: SC	C : Latching without Indicator D : Latching with Indicator	03 : DC-3GHz 08 : DC-8GHz 12 : DC-12GHz 18 : DC-18GHz	A : 12VDC B : 15VDC C : 28VDC D : 24VDC	E : 20VDC F : 5VDC G : 18VDC	H : High Power T : Internal Terminations D : TTL Drivers with Diodes P : Positive + Common A : Auto Reset S : Self Cutoff I : Suppression Diodes E : Decoder Y : Moisture Seal C : Custom
6: SMB 7: 7/16 DIN 8: BNC 9: K (2.92mm) 10: Mini DIN					

* D-Sub connectors are standard for SPMT, no designation on model number needed



Features:

- Broadband: DC - 26.5 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- 50Ω Internal Terminations
- Available in 3, 4, 5 or 6 Positions

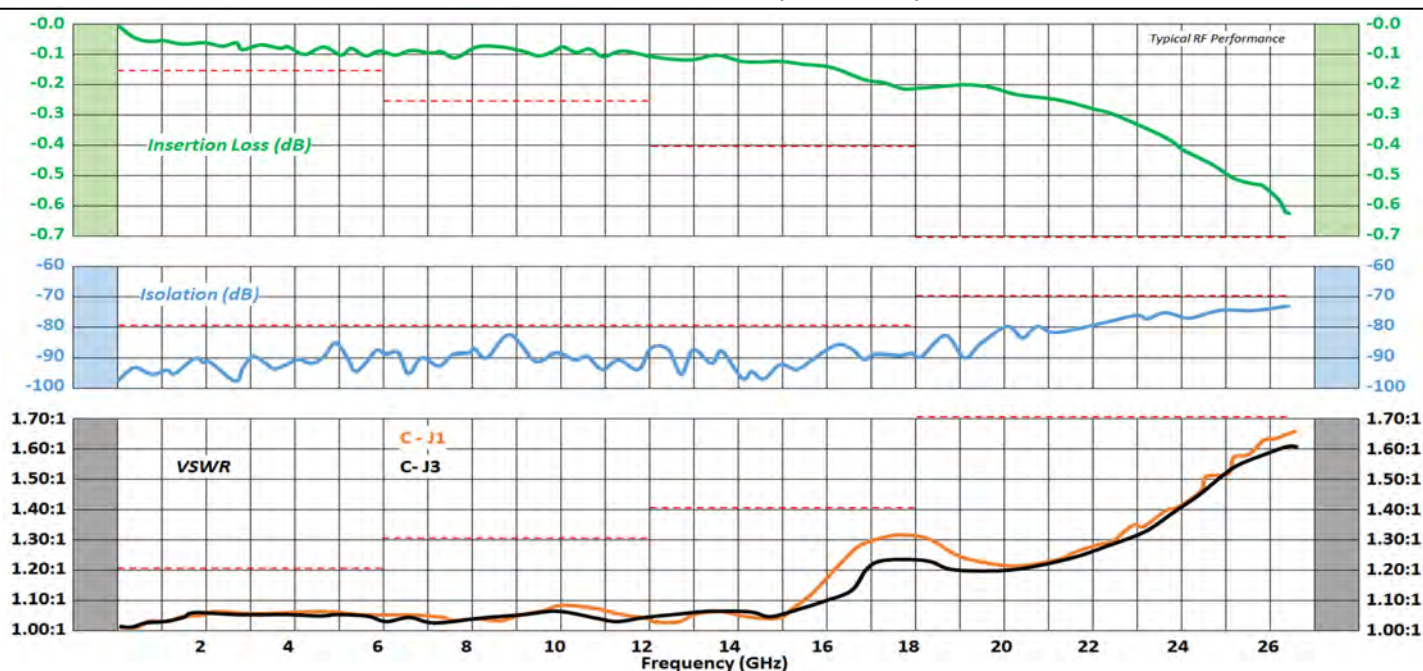


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-26.5
Ins. Loss dB (max)	0.15	0.25	0.40	0.70
Isolation dB (min)	80	80	80	70
VSWR (max)	1.20:1	1.30:1	1.40:1	1.70:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50 Ω (Switch and Terminations)			

Description:

High reliability and low loss performance makes these switches ideal for all testing applications. Magnetically latched in place after control voltage is removed. Available in 3, 4, 5 or 6 position versions with a wide selection of features available to meet most requirements. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	250	200	150	140

Note: Reset current = Current rating x (# of positions)

* at nominal voltage and +20°C

Popular Models

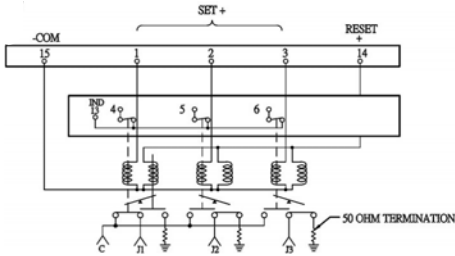
SP3T-OC-26A-T	SP3T, SMA, Latching, DC-26.5GHz, 12VDC, Internal Termination
SP4T-OC-26A-T	SP4T, SMA, Latching, DC-26.5GHz, 12VDC, , Internal Termination
SP6T-OC-26A-T	SP6T, SMA, Latching, DC-26.5GHz, 12VDC, Internal Termination
SP6T-OC-26A-TD	SP6T, SMA, Latching, DC-26.5GHz, 12VDC, Internal Termination , TTL

- See backside for a full list of available features and options
- Contact us for high power and custom designs

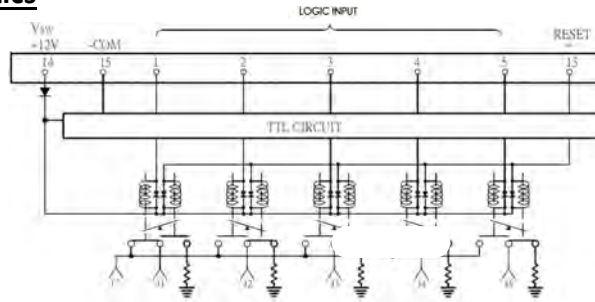




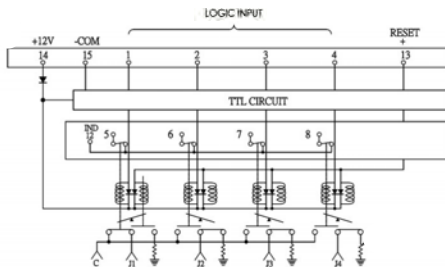
Schematics



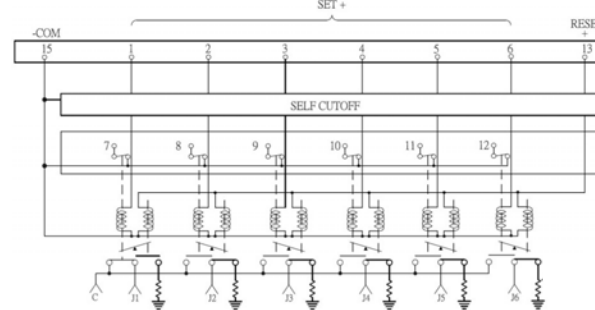
SP3T w/ Indicators in position J1



SP5T w/ TTL in position J1



SP4T w/ TTL & Indicators in position J1



SP6T w/ Indicators & Self Cutoff in position J1

TTL Control

Logic "1": 2.4 to 5.0 VDC
Logic "0": 0 to 0.8 VDC

Actuation Control

Requires two sequential pulses

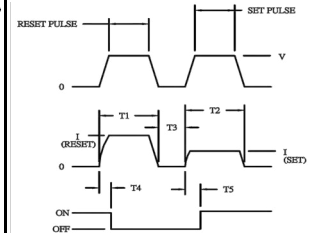
"Reset and Set" (see below)

T1 & T2 = 30mS min.

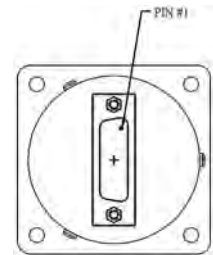
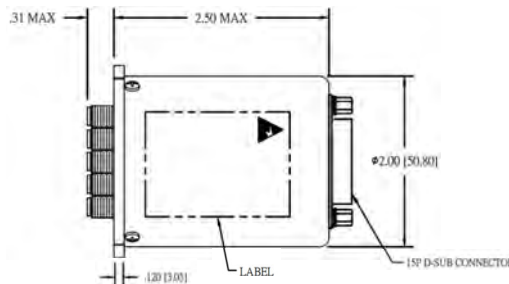
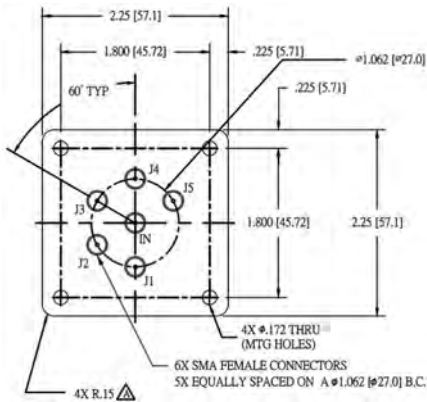
T3 = 10mS min.

T4 & T5 = 20mS max

Contact factory for full operating sequence, pin assignments and truth tables



Outline



Model Numbering System

Example: SP3T-0C-26A-T-

(SP3T, SMA Connector, Latching without indicator, DC-26.5GHz, 12VDC, Internal Termination, D-Sub Control)

No. of Outputs		S P 3 T - 0 C - 2 6 A - T -				Control Options	
3 : SP3T						Default : D-Sub Control	
4 : SP4T						PIN : Pin Terminal Control	
5 : SP5T							
6 : SP6T							
Connector Type		Actuator Type		Frequency Range		Actuator Voltage	
0: SMA	6: SMB	C : Latching		03 : DC-3GHz		A : 12VDC	E : 20VDC
1: N	7: 7/16 DIN	without Indicator		08 : DC-8GHz		B : 15VDC	F : 5VDC
2: TNC	8: BNC	D : Latching		12 : DC-12GHz		C : 28VDC	G : 18VDC
3: RF PIN	9: K (2.92mm)	with Indicator		18 : DC-18GHz		D : 24VDC	
4: F (75Ω)	10: Mini DIN			22 : DC-22GHz			
5: SC				26 : DC-26.5GHz			
						Options	
						H : High Power	
						T : Internal Terminations	
						D : TTL Drivers with Diodes	
						P : Positive + Common	
						A : Auto Reset	
						S : Self Cutoff	
						I : Suppression Diodes	
						E : Decoder	
						Y : Moisture Seal	
						C : Custom	

* D-Sub connectors are standard for SPMT, no designation on model number needed



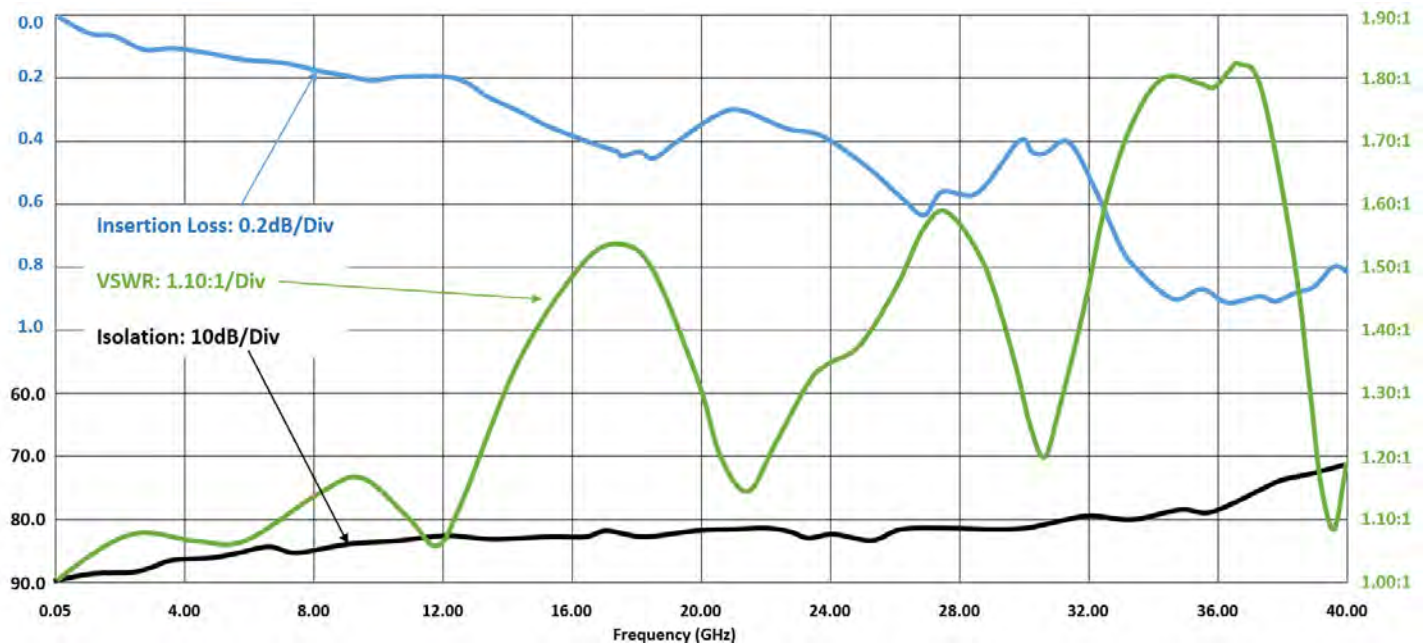
Features:

- Broadband: DC to 40 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 3, 4, 5 or 6 Positions
- 50Ω internal terminations

RF Specification:

Frequency, (GHz)	DC - 6	6 - 12	12 - 18	18 - 26.5	26.5 - 32	32 - 40	Operation	Specification
Ins. Loss dB (max)	0.30	0.30	0.60	0.80	0.80	1.10	Switching Time	20 mS (max)
Isolation dB (min)	80	75	70	70	60	60	Switching Action	Break-Before-Make
VSWR (max)	1.25:1	1.30:1	1.60:1	1.70:1	1.80:1	1.95:1	Impedance	50 Ω

Description: High reliability and low loss performance makes these switches ideal for all testing applications. Magnetically latched in place after control voltage is removed. Available in 3, 4, 5 or 6 position versions with a wide selection of features are available to meet most requirements. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-25° C to +70° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current				
Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Current (mA)*	250	200	150	140

Note: Reset current = Current rating x (# of positions)

* at nominal voltage and +20°C

Popular Models	
SP3T-9C-40A-T	SP3T, K, Latching, DC-40GHz, 12VDC, Internal Termination
SP4T-9C-40A-T	SP4T, K, Latching, DC-40GHz, 12VDC, , Internal Termination
SP6T-9C-40A-T	SP6T, K, Latching, DC-40GHz, 12VDC, Internal Termination
SP6T-9C-40A-TD	SP6T, K, Latching, DC-40GHz, 12VDC, Internal Termination, TTL

- See backside for a full list of available features and options
- Contact us for high power and custom designs

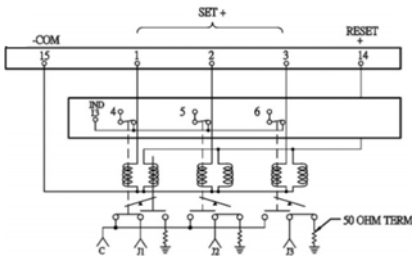




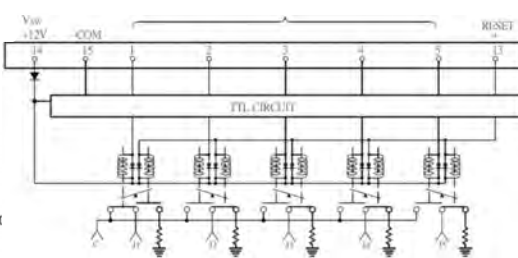
EPX microwave inc.

Single-Pole-Multi-Throw (SP3T-SP6T)

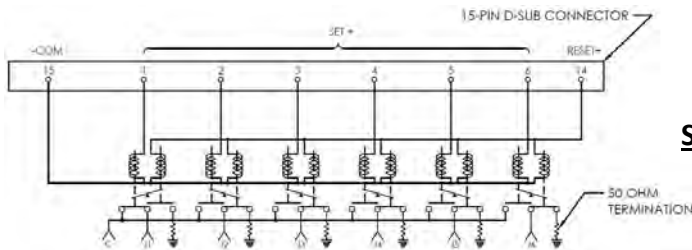
Latching - Terminations - 2.92mm - DC to 40GHz



SP3T w/ Indicators in position J1



SP5T w/ TTL in position J1



SP6T in position J1

Schematics

TTL Control

Logic "1": 2.4 to 5.0 VDC
Logic "0": 0 to 0.8 VDC

Actuation Control

Requires two sequential pulses

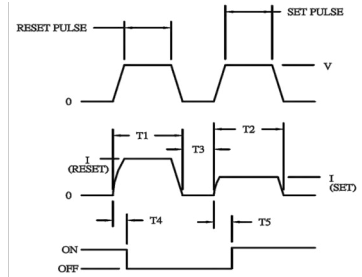
"Reset and Set" (see below)

T1 & T2 = 30ms min.

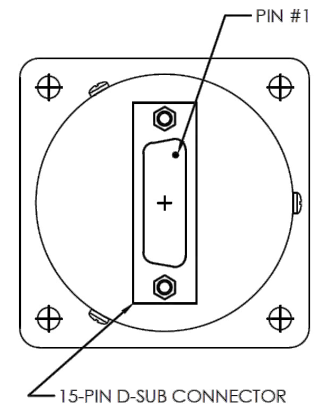
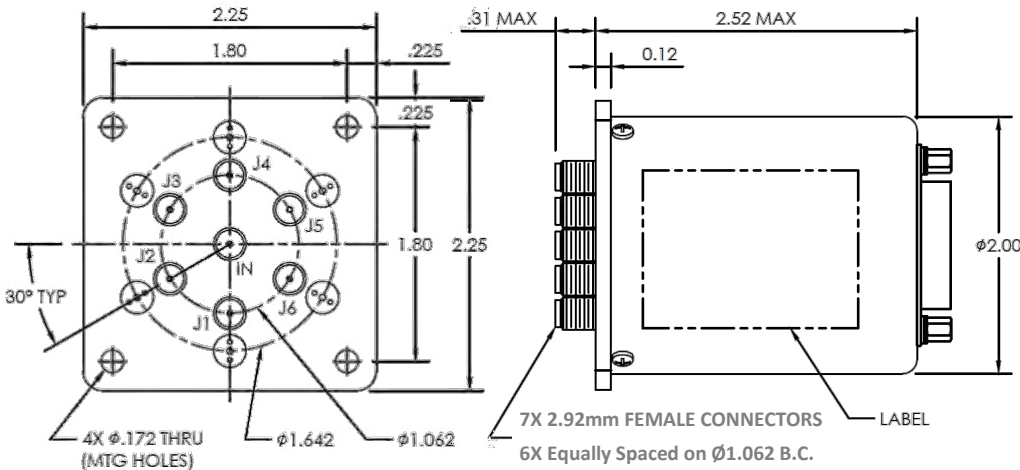
T3 = 10ms min.

T4 & T5 = 20ms max

Contact factory for full operating sequence, and truth tables



Outline



Model Numbering System

Example: SP3T-9C-40A-T

(SP3T, K Connector, Latching without indicator, DC-40GHz, 12VDC, Internal Termination, D-Sub Control)

No. of Outputs
3 : SP3T
4 : SP4T
5 : SP5T
6 : SP6T

Connector Type
0: SMA
1: N
2: TNC
3: RF PIN
4: F (75Ω)
5: SC
6: SMB
7: 7/16 DIN
8: BNC
9: K (2.92mm)
10: Mini DIN

Actuator Type
C : Latching without Indicator
D : Latching with Indicator

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz
22 : DC-22GHz
26 : DC-26.5GHz
33 : DC-33.5GHz
40 : DC-40GHz

Actuator Voltage
A : 12VDC
B : 15VDC
C : 28VDC
D : 24VDC
E : 20VDC
F : 5VDC
G : 18VDC

Control Options
Default : D-Sub Control
PIN : Pin Terminal Control

Options
H : High Power
T : Internal Terminations
D : TTL Drivers with Diodes
P : Positive + Common
A : Auto Reset
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



ES France - Département RF & Hyperfréquences
127 rue de Buzenval BP 26 - 92380 Garches



Tél. 01 47 95 99 60
Fax. 01 47 01 16 22



e-mail : hyper@es-france.com
Site Web : www.es-france.com

Features:

- Broadband: DC - 18 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 7 or 8 Positions

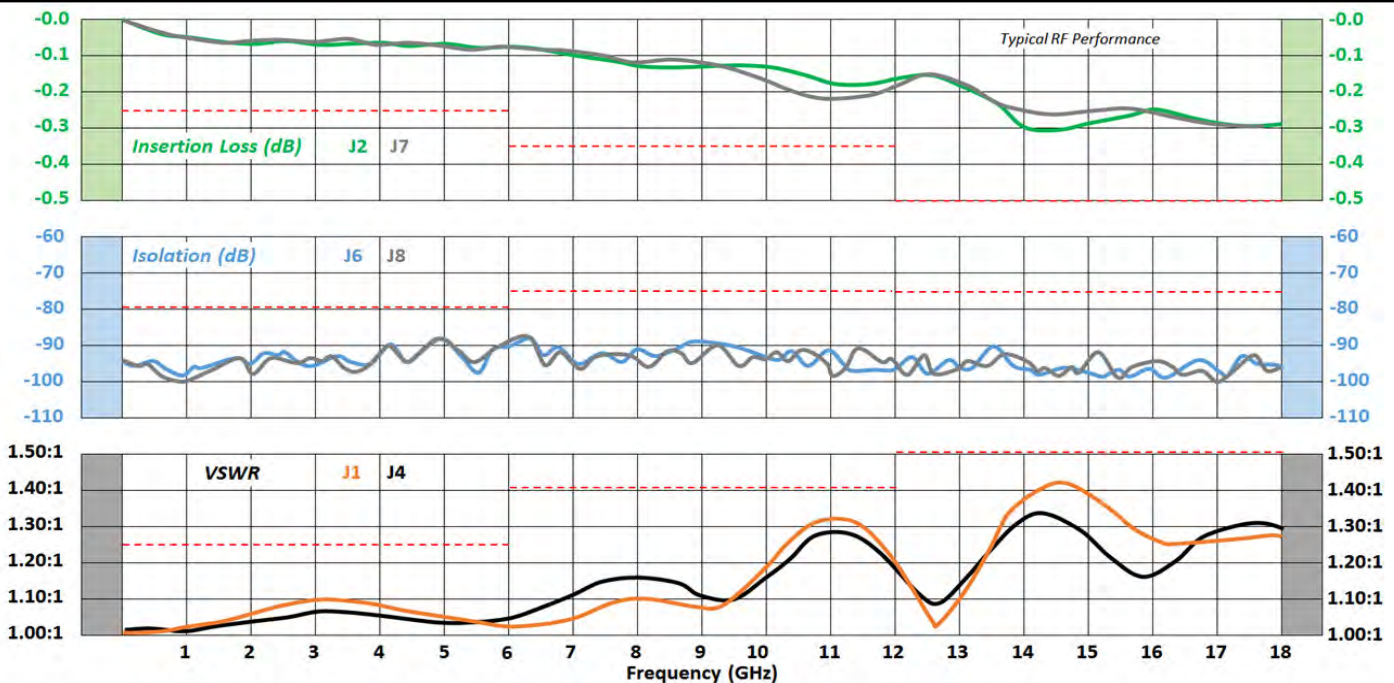


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.25	0.35	0.50
Isolation dB (min)	80	75	75
VSWR (max)	1.25:1	1.35:1	1.60:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50Ω (Switch and Terminations)		

Description:

High reliability and low loss performance makes these switches ideal for all testing applications. Selected position remains active with constant voltage, all positions are open when voltage is removed. A wide selection of features available to meet most requirements. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltagess and Current

Nominal Voltage, Vdc	12	24	28
Voltage Range, Vdc	11-13	22-26	26-30
Set Current (mA)*	420	175	140

Popular Models

SP7T-0E-18A	SP7T, SMA, Normally Open, DC-18GHz, 12VDC
SP7T-0E-18A-D	SP7T, SMA, Normally Open, DC-18GHz, 12VDC, TTL
SP8T-0E-18A	SP8T, SMA, Normally Open, DC-18GHz, 12VDC
SP8T-0E-18A-D	SP8T, SMA, Normally Open, DC-18GHz, 12VDC, TTL
SP8T-0F-18C	SP8T, SMA, Normally Open, DC-18GHz, 28VDC, Indicator

- See backside for a full list of available features and options

- Contact us for high power and custom designs

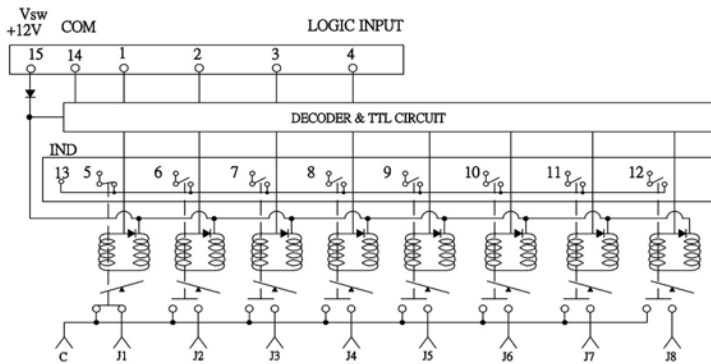
Note: Reset current = Current rating x (# of positions)

* at nominal voltage and +20°C

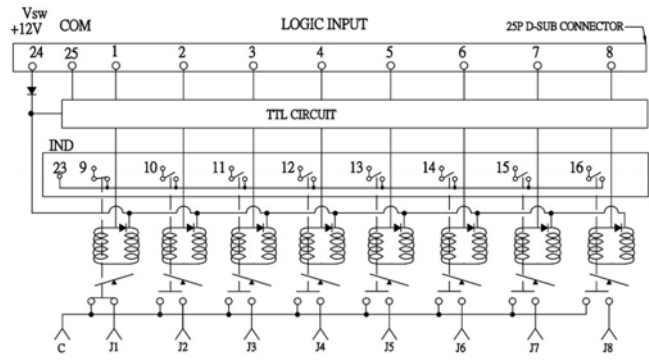


Single-Pole-Multi-Throw (SP7T-SP8T)

Normally Open - SMA - DC to 18 GHz

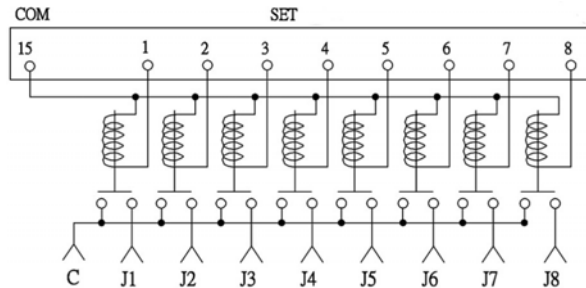


SP8T: Normally Open, Decoder, TTL, Indicators, 15 Pin D-Sub, (Position J1)



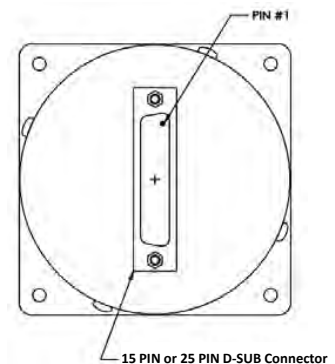
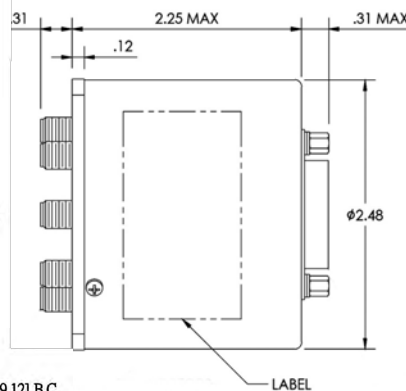
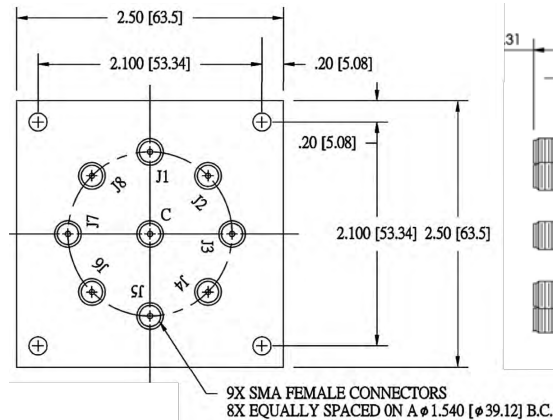
SP8T: Normally Open, TTL, Indicators, 25 pin D-Sub, (Position J1)

Schematics



SP8T: Normally Open,
15 pin D-Sub,
(All Open Positions)

Outline



Model Numbering System

Example: SP8T-0E-18A-D

(SP8T, SMA Connector, Normally Open without indicator, DC-18GHz, 12VDC, TTL Driver, D-Sub Control)

SP8T - 0E - 18A - D

No. of Outputs

7 : SP7T
8 : SP8T

Connector Type

0: SMA
1: N
2: TNC
3: RF PIN
4: F (75 Ω)
5: SC
6: SMB
7: 7/16 DIN
8: BNC
9: K (2.92mm)
10: Mini DIN

Actuator Type

E : Normally Open
without Indicator
F : Normally Open
with Indicator

Frequency Range

03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz

Actuator Voltage

A : 12VDC
B : 15VDC
C : 28VDC
D : 24VDC
E : 20VDC
F : 5VDC
G : 18VDC

Control Options

Default : D-Sub Control
PIN : Pin Terminal Control

Options

H : High Power
D : TTL Drivers with
Diodes
P : Positive + Common
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



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e-mail : hyper@es-france.com
Site Web : www.es-france.com

Features:

- Broadband: DC - 18 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- 50Ω Internal Terminations
- Available in 7 or 8 Positions

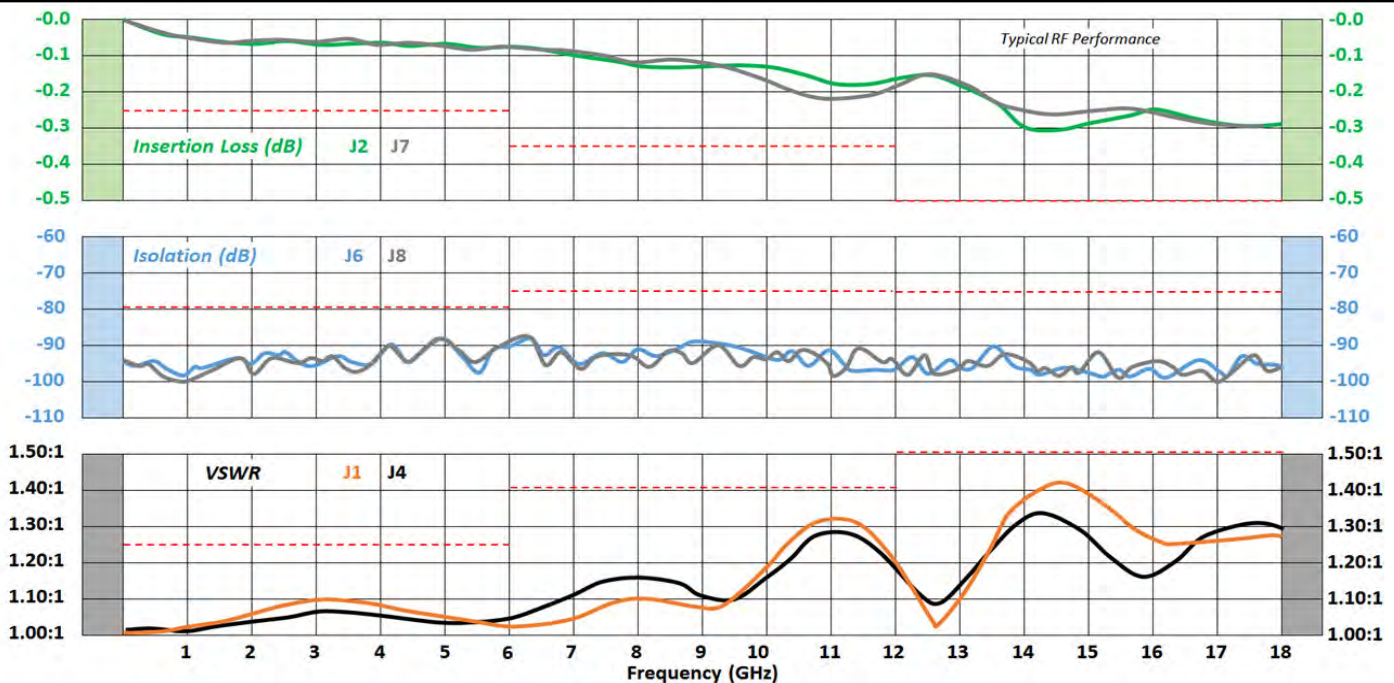


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.25	0.35	0.50
Isolation dB (min)	80	75	75
VSWR (max)	1.25:1	1.35:1	1.60:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50Ω (Switch and Terminations)		

Description:

Internal 50 ohm terminations ensure good isolation in the "off" state regardless of the match to which the switch is connected. High reliability and low loss performance makes these switches ideal for all testing applications. Selected position remains active with constant voltage, all positions are open when voltage is removed. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current			
Nominal Voltage, Vdc	12	24	28
Voltage Range, Vdc	11-13	22-26	26-30
Set Current (mA)*	420	175	140

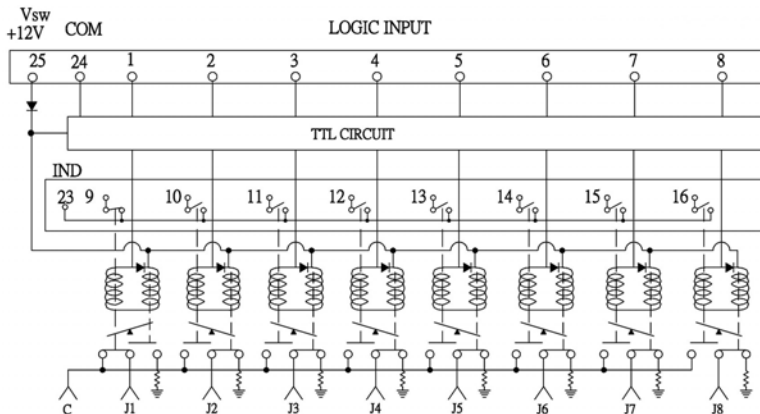
Note: Reset current = Current rating x (# of positions)

Popular Models	
SP7T-0E-18A-T	SP7T, SMA, Normally Open, DC-18GHz, 12VDC, Internal Termination
SP8T-0E-18A-T	SP8T, SMA, Normally Open, DC-18GHz, 12VDC, , Internal Termination
SP7T-0E-18A-TD	SP7T, SMA, Normally Open, DC-18GHz, 12VDC, Internal Termination, TTL
SP8T-0E-18A-TD	SP8T, SMA, Normally Open, DC-18GHz, 12VDC, Internal Termination , TTL

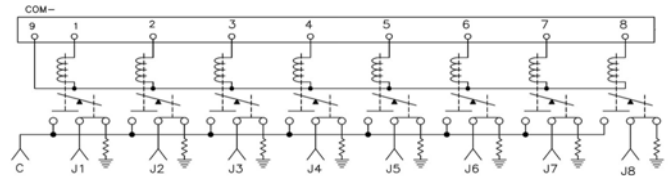
- See backside for a full list of available features and options
 - Contact us for high power and custom designs
 * at nominal voltage and +20°C



Schematics

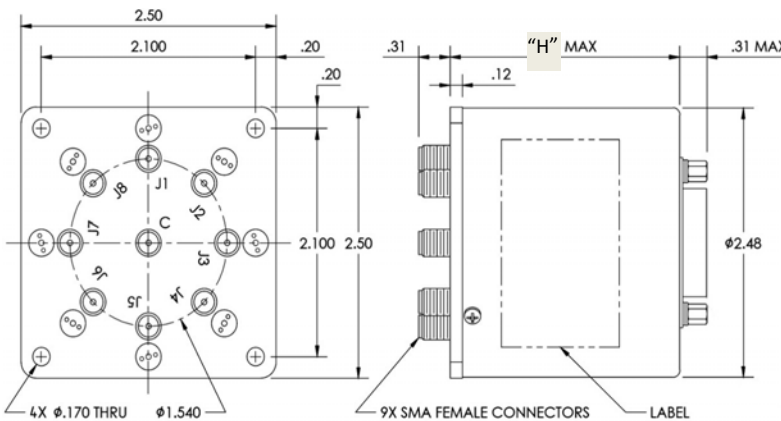


SP8T: Normally Open, 50Ω terminations, TTL control, Indicators, 25 Pin D-Sub
(Position J1)

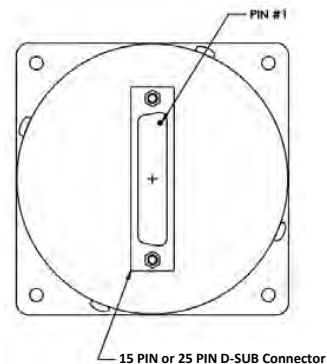


SP8T: 50Ω terminations, 15 pin D-Sub
(All Positions Open)

Outline



"H" DIM:
Standard = 2.25
With TTL = 3.30



Model Numbering System

Example: SP8T-0E-18A-T-

(SP8T, SMA Connector, Normally Open without indicator, DC-18GHz, 12VDC, Internal Termination, D-Sub Control)

SP8T - 0E - 18A - T -						Control Options
No. of Outputs						Default : D-Sub Control PIN : Pin Terminal Control
7 : SP7T 8 : SP8T						
Connector Type		Actuator Type	Frequency Range	Actuator Voltage		Options
0: SMA 1: N 2: TNC 3: RF PIN 4: F (75Ω) 5: SC	6: SMB 7: 7/16 DIN 8: BNC 9: K (2.92mm) 10: Mini DIN	E : Normally Open without Indicator F : Normally Open with Indicator	03 : DC-3GHz 08 : DC-8GHz 12 : DC-12GHz 18 : DC-18GHz	A : 12VDC B : 15VDC C : 28VDC D : 24VDC	E : 20VDC F : 5VDC G : 18VDC	H : High Power T : Internal Terminations D : TTL Drivers with Diodes P : Positive + Common I : Suppression Diodes E : Decoder Y : Moisture Seal C : Custom



* D-Sub connectors are standard for SPMT, no designation on model number needed



Features:

- Broadband: DC - 18 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 7 or 8 Positions

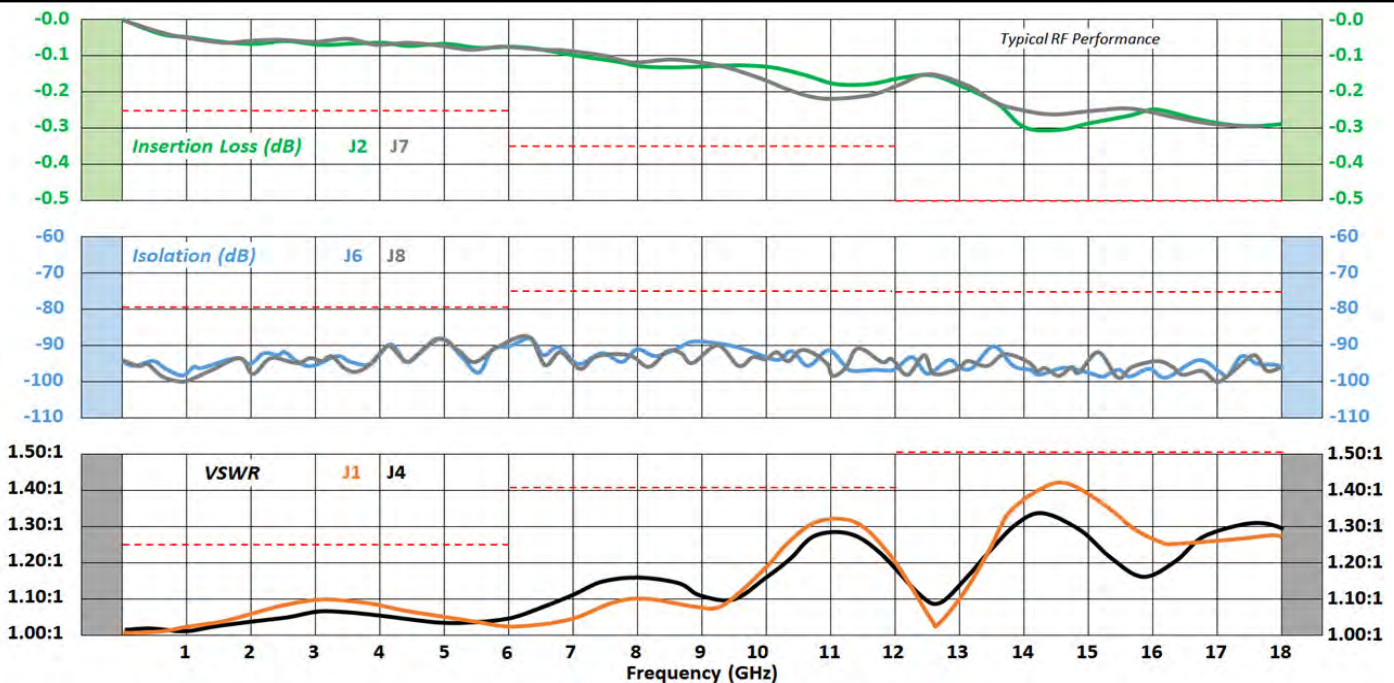


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.25	0.35	0.50
Isolation dB (min)	80	75	75
VSWR (max)	1.25:1	1.35:1	1.60:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50Ω (Switch and Terminations)		

Description:

High reliability and low loss performance makes these switches ideal for all testing applications. Magnetically latched in place after control voltage is removed. Available in 7 or 8 position versions with a wide selection of features available to meet most requirements. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	24	28
Voltage Range, Vdc	11-13	22-26	26-30
Set Current (mA)*	110	125	105
Reset Current (mA) * (SP8T)	880	1000	840

Popular Models

SP7T-OC-18A	SP7T, SMA, Latching, DC-18GHz, 12VDC
SP7T-OC-18A-D	SP7T, SMA, Latching, DC-18GHz, 12VDC, TTL
SP8T-OC-18A	SP8T, SMA, Latching, DC-18GHz, 12VDC
SP8T-OC-18A-D	SP8T, SMA, Latching, DC-18GHz, 12VDC, TTL
SP8T-OD-18C	SP8T, SMA, Latching, DC-18GHz, 28VDC, Indicator

- See backside for a full list of available features and options

- Contact us for high power and custom designs

Note: Reset current = Current rating x (# of positions)

* at nominal voltage and +20°C



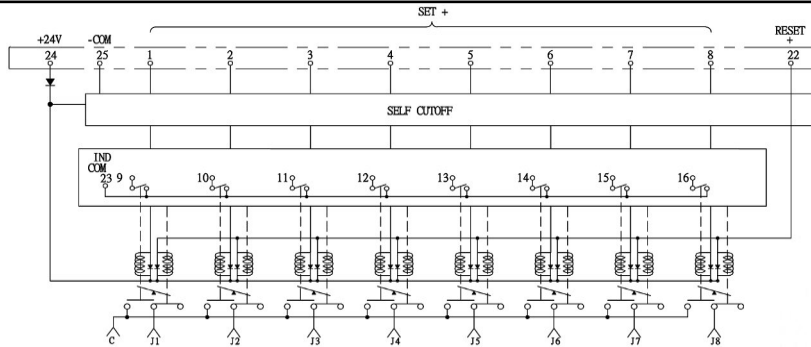


EPX microwave inc.

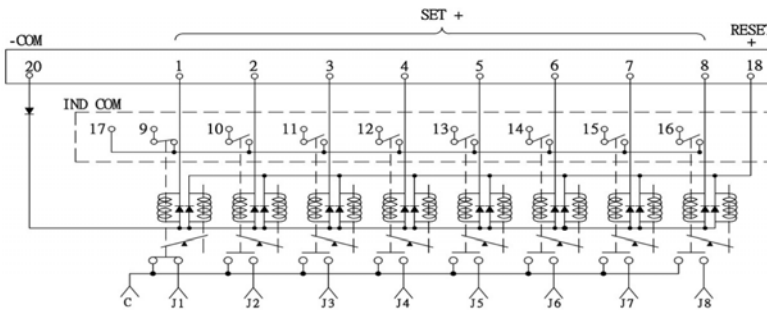
Single-Pole-Multi-Throw (SP7T-SP8T)

Latching - SMA - DC to 18 GHz

Schematics



SP8T: Latching, Self Cutoff, Indicators, 25 Pin D-Sub (Reset Position)



SP8T: 50Ω terminations, 15 pin D-Sub, (Position J1)

TTL Control

Logic "1": 2.4 to 5.0 VDC
Logic "0": 0 to 0.8 VDC

Actuation Control

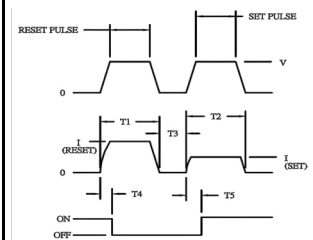
Requires two sequential pulses
"Reset and Set" (see below)

T1 & T2 = 30mS min.

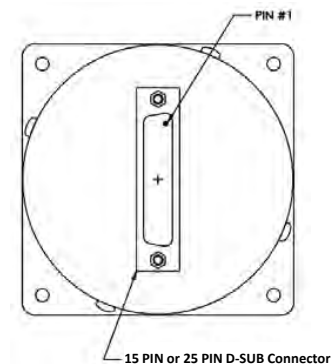
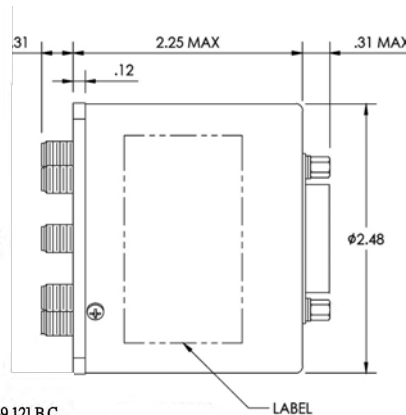
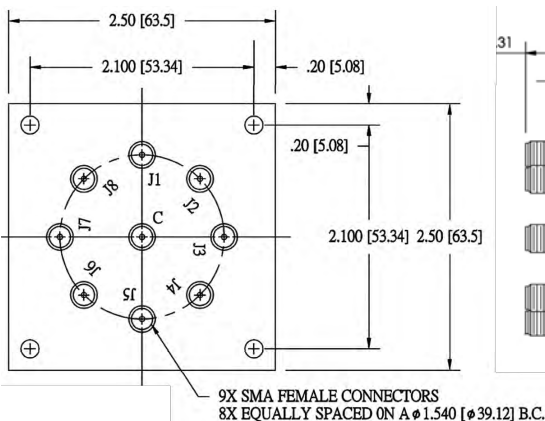
T3 = 10mS min.

T4 & T5 = 20mS max

Contact factory for full operating sequence, pin assignments and truth tables



Outline



Model Numbering System

Example: SP8T-0C-18A-D

(SP8T, SMA Connector, Latching without indicator, DC-18GHz, 12VDC, TTL Driver, D-Sub Control)

SP8T - 0C - 18A - D -

No. of Outputs

7 : SP7T
8 : SP8T

Connector Type

0: SMA
1: N
2: TNC
3: RF PIN
4: F (75Ω)
5: SC
6: SMB
7: 7/16 DIN
8: BNC
9: K (2.92mm)
10: Mini DIN

Actuator Type

C : Latching
without Indicator
D : Latching
with Indicator

Frequency Range

03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz

Actuator Voltage

A : 12VDC
B : 15VDC
C : 28VDC
D : 24VDC
E : 20VDC
F : 5VDC
G : 18VDC

Control Options

Default : D-Sub Control
PIN : Pin Terminal Control

Options

H : High Power
D : TTL Drivers with Diodes
P : Positive + Common
A : Auto Reset
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



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e-mail : hyper@es-france.com
Site Web : www.es-france.com

Features:

- Broadband: DC - 18 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- 50Ω Internal Terminations
- Available in 7 or 8 Positions



RF Specification:

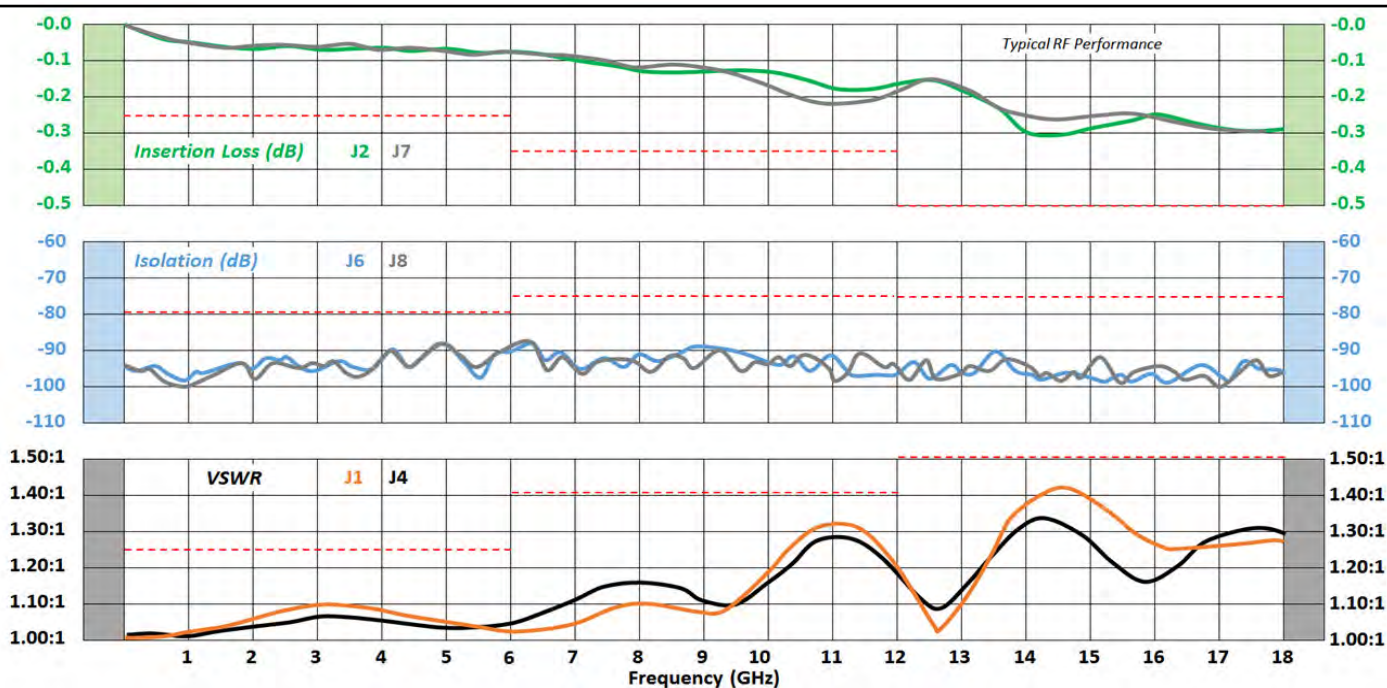
Frequency, (GHz)	DC-6	6-12	12-18
Ins. Loss dB (max)	0.25	0.35	0.50
Isolation dB (min)	80	75	75
VSWR (max)	1.25:1	1.35:1	1.60:1
Switching Time	20 mS (max)		
Switching Action	Break-Before-Make		
Impedance	50Ω (Switch and Terminations)		

Description:

Internal 50 ohm terminations ensure good isolation in the "off" state regardless of the match to which the switch is connected. High reliability and low loss performance makes these switches ideal for all testing applications. Magnetically latched in place after control voltage is removed.

Applications: lab testing and production ATE requirements.

Markets: defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current			
Nominal Voltage, Vdc	12	24	28
Voltage Range, Vdc	11-13	22-26	26-30
Set Current (mA)*	110	125	105
Reset Current (mA) * (SP8T)	880	1000	840

Popular Models	
SP7T-OC-18A-T	SP7T, SMA, Latching, DC-18GHz, 12VDC, Internal Termination
SP8T-OC-18A-T	SP8T, SMA, Latching, DC-18GHz, 12VDC, , Internal Termination
SP8T-OC-18A-TD	SP8T, SMA, Latching, DC-18GHz, 12VDC, Internal Termination, TTL
SP8T-OD-18A-T	SP8T, SMA, Latching, DC-18GHz, 12VDC, Internal Termination , Indicator

- See backside for a full list of available features and options
 - Contact us for high power and custom designs
 Note: Reset current = Current rating x (# of positions)
 * at nominal voltage and +20°C

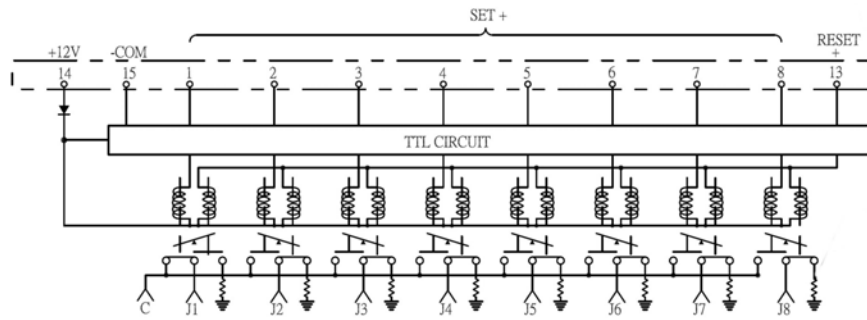




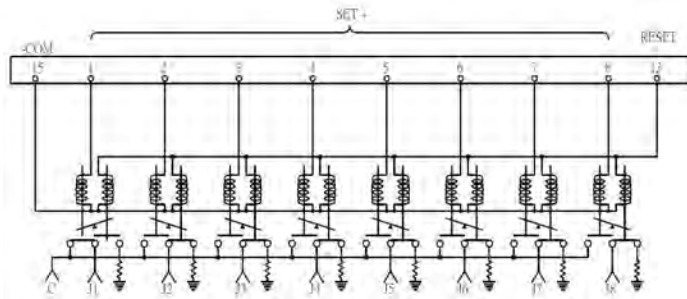
EPX microwave inc.

Single-Pole-Multi-Throw (SP7T-SP8T) Latching - Terminations - SMA - DC to 18 GHz

Schematics



SP8T: Latching, 50Ω terminations, TTL, 15 Pin D-Sub, (Position J1)



SP8T: 50Ω terminations, 15 pin D-Sub, (Position J1)

TTL Control

Logic "1": 2.4 to 5.0 VDC
Logic "0": 0 to 0.8 VDC

Actuation Control

Requires two sequential pulses

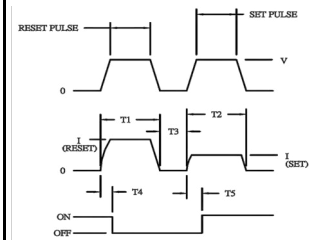
"Reset and Set" (see below)

T1 & T2 = 30mS min.

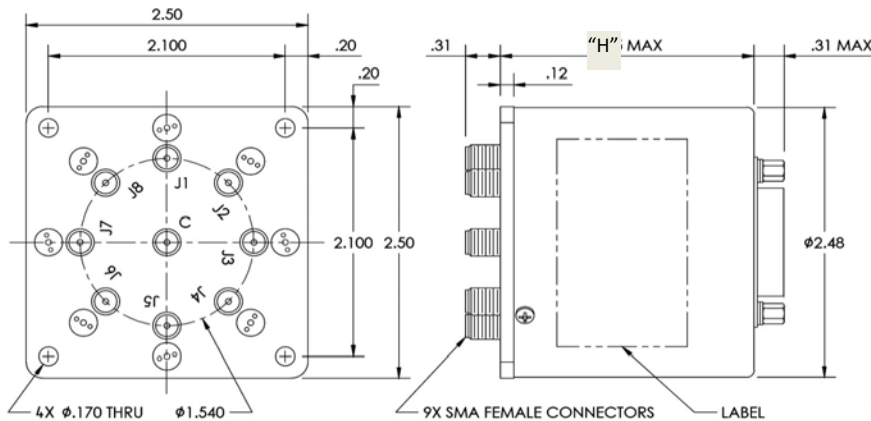
T3 = 10mS min.

T4 & T5 = 20mS max

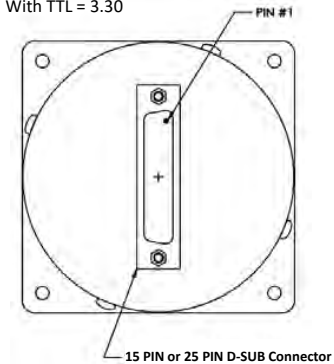
Contact factory for full operating sequence, pin assignments and truth tables



Outline



"H" DIM:
Standard = 2.25
With TTL = 3.30



Model Numbering System

Example: SP8T-0C-18A-T

(SP8T, SMA Connector, Latching without indicator, DC-18GHz, 12VDC, Internal Termination, D-Sub Control)

SP8T - 0 C - 18 A - T -

No. of Outputs

7 : SP7T
8 : SP8T

Connector Type

0: SMA
1: N
2: TNC
3: RF PIN
4: F (75Ω)
5: SC
6: SMB
7: 7/16 DIN
8: BNC
9: K (2.92mm)
10: Mini DIN

Actuator Type

C : Latching
without Indicator
D : Latching
with Indicator

Frequency Range

03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz

Actuator Voltage

A : 12VDC
B : 15VDC
C : 28VDC
D : 24VDC
E : 20VDC
F : 5VDC
G : 18VDC

Control Options

Default : D-Sub Control
PIN : Pin Terminal Control

Options

H : High Power
T : Internal Terminations
D : TTL Drivers with Diodes
P : Positive + Common
A : Auto Reset
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



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Tél. 01 47 95 99 60
Fax. 01 47 01 16 22



e-mail : hyper@es-france.com
Site Web : www.es-france.com

Features:

- Broadband: DC - 20 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 9 or 10 Positions

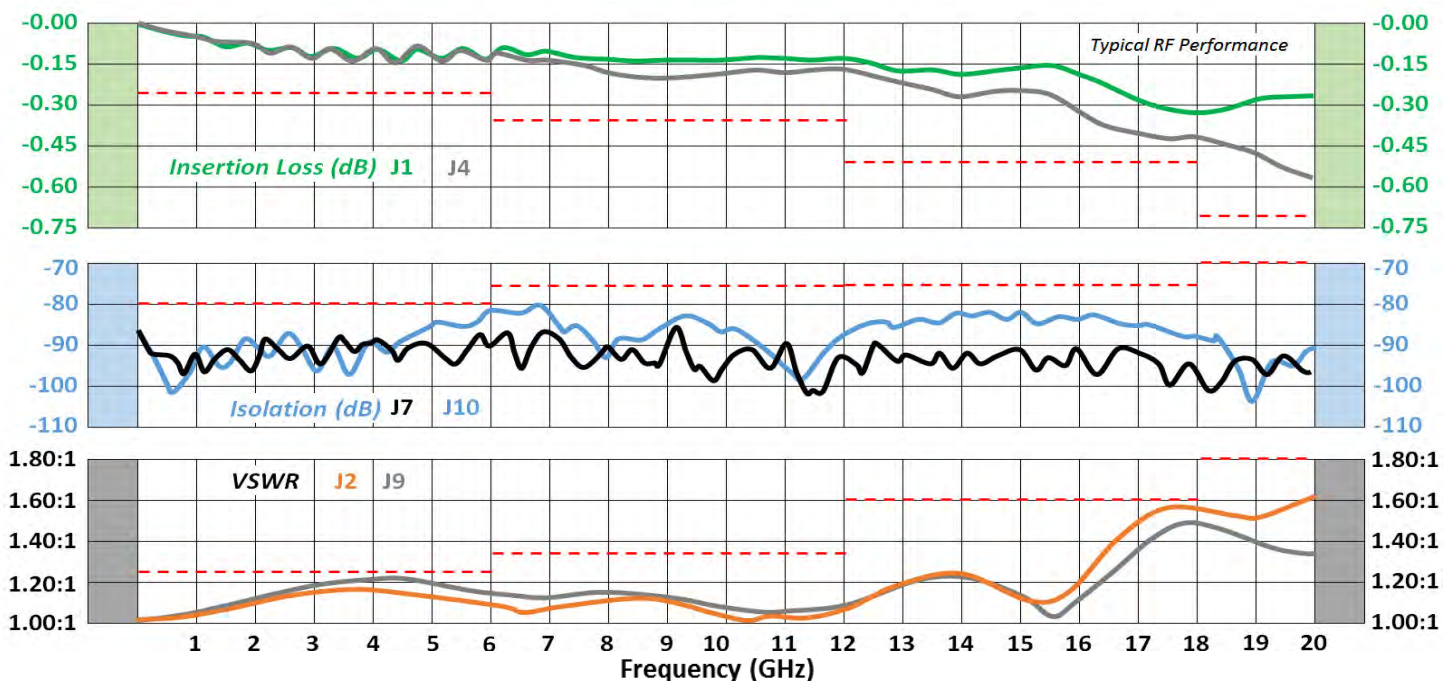


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-20
Ins. Loss dB (max)	0.25	0.35	0.50	0.70
Isolation dB (min)	80	75	75	70
VSWR (max)	1.25:1	1.35:1	1.60:1	1.80:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50Ω (Switch and)			

Description:

High reliability and low loss performance makes these switches ideal for all testing applications. Selected position remains active with constant voltage, all positions are open when voltage is removed. A wide selection of features available to meet most requirements. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	24	28
Voltage Range, Vdc	11-13	22-26	26-30
Set Current (mA)*	250	140	150

Popular Models

SP9T-0E-20A	SP9T, SMA, Normally Open, DC-20GHz, 12VDC
SP9T-0E-20A-D	SP9T, SMA, Normally Open, DC-20GHz, 12VDC, TTL
SP10T-0E-18A	SP10T, SMA, Normally Open, DC-18GHz, 12VDC
SP10T-0E-18A-D	SP10T, SMA, Normally Open, DC-18GHz, 12VDC, TTL
SP10T-0F-18C	SP10T, SMA, Normally Open, DC-18GHz, 28VDC, Indicator

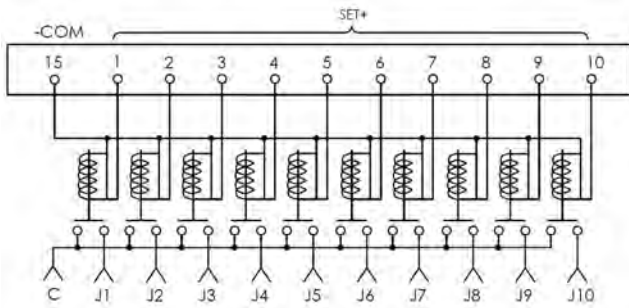
- See backside for a full list of available features and options

- Contact us for high power and custom designs

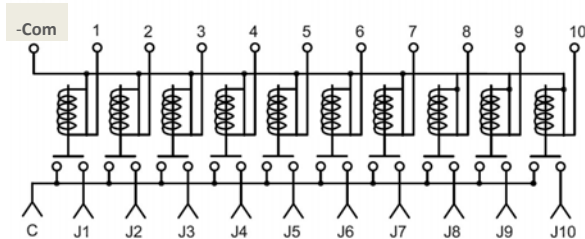
Note: Reset current = Current rating x (# of positions)

* at nominal voltage and +20°C



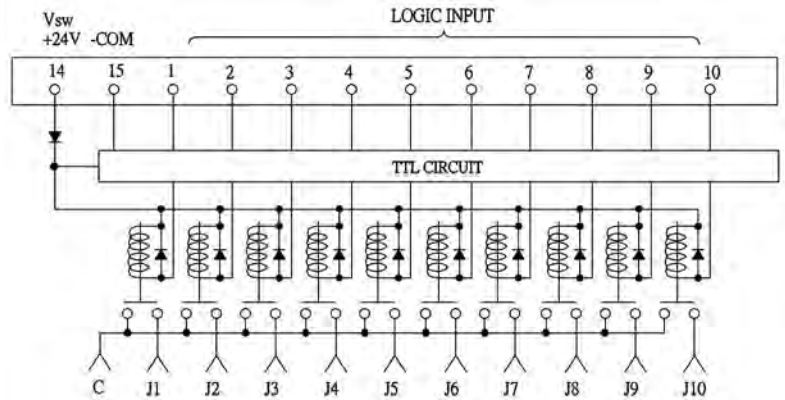


SP10T: Normally Open, 15 pin D-Sub Connector



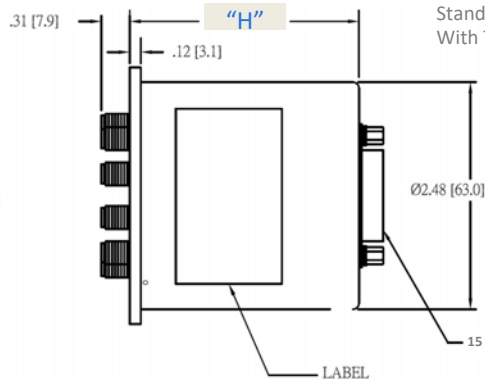
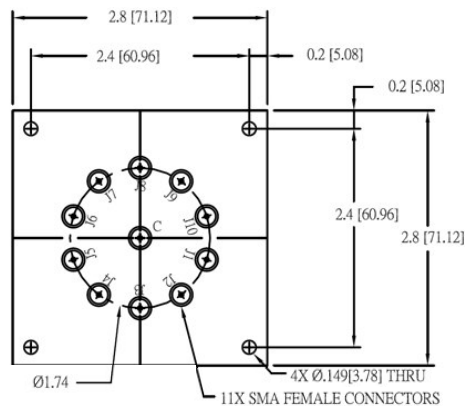
SP10T: Normally Open, Solder Pins/Lugs

Schematics



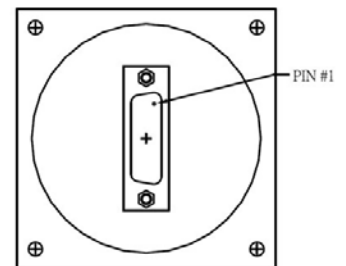
SP10T: Normally Open, TTL control, 15 pin D-Sub Connector

Outline



"H" DIM:

Standard = 2.25
With TTL = 3.12



Model Numbering System

Example: SP10T-0E-20A-D

(SP10T, SMA Connector, Normally Open without indicator, DC-20GHz, 12VDC, TTL Driver, D-Sub Control)

SP10T - 0E - 20A - D -

No. of Outputs

9 : SP9T
10 : SP10T

Connector Type

0: SMA
1: N
2: TNC
3: RF PIN
4: F (75Ω)
5: SC
6: SMB
7: 7/16 DIN
8: BNC
9: K (2.92mm)
10: Mini DIN

Actuator Type

E : Normally Open without Indicator
F : Normally Open with Indicator

Frequency Range

03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz
20 : DC-20GHz

Actuator Voltage

A : 12VDC
B : 15VDC
C : 28VDC
D : 24VDC
E : 20VDC
F : 5VDC
G : 18VDC

Control Options

Default : D-Sub Control
PIN : Pin Terminal Control

Options

H : High Power
D : TTL Drivers with Diodes
P : Positive + Common
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



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Features:

- Broadband: DC - 20 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- 50Ω Internal Terminations
- Available in 9 or 10 Positions

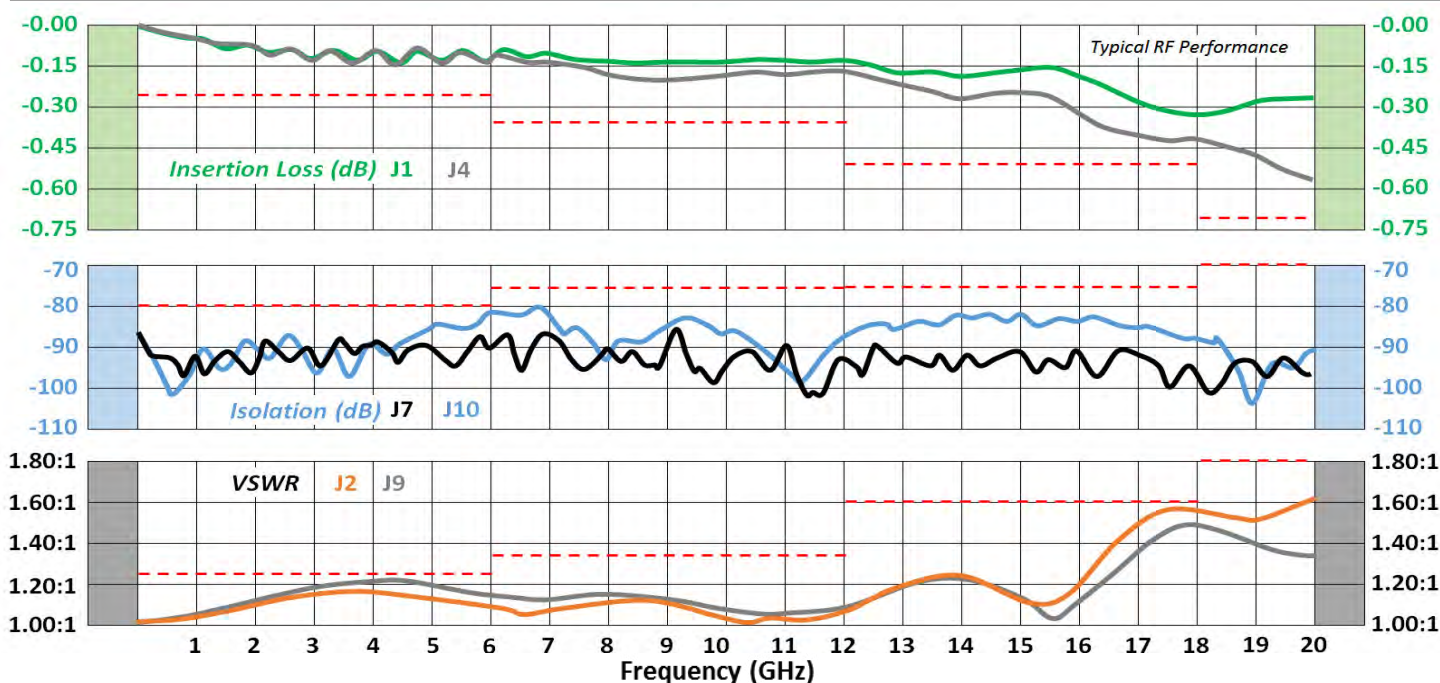


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-20
Ins. Loss dB (max)	0.25	0.35	0.50	0.70
Isolation dB (min)	80	75	75	70
VSWR (max)	1.25:1	1.35:1	1.60:1	1.80:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50Ω (Switch and Terminations)			

Description:

Internal 50 ohm terminations ensure good isolation in the "off" state regardless of the match to which the switch is connected. High reliability and low loss performance makes these switches ideal for all testing applications. Selected position remains active with constant voltage, all positions are open when voltage is removed. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	24	28
Voltage Range, Vdc	11-13	22-26	26-30
Set Current (mA)*	210	140	150

Popular Models

SP9T-0E-18A-T	SP9T, SMA, Normally Open, DC-18GHz, 12VDC, Internal Termination
SP10T-0E-18A-T	SP10T, SMA, Normally Open, DC-18GHz, 12VDC, , Internal Termination
SP9T-0E-18A-TD	SP9T, SMA, Normally Open, DC-18GHz, 12VDC, Internal Termination, TTL
SP10T-0E-18A-TD	SP10T, SMA, Normally Open, DC-18GHz, 12VDC, Internal Termination , TTL

- See backside for a full list of available features and options

- Contact us for high power and custom designs

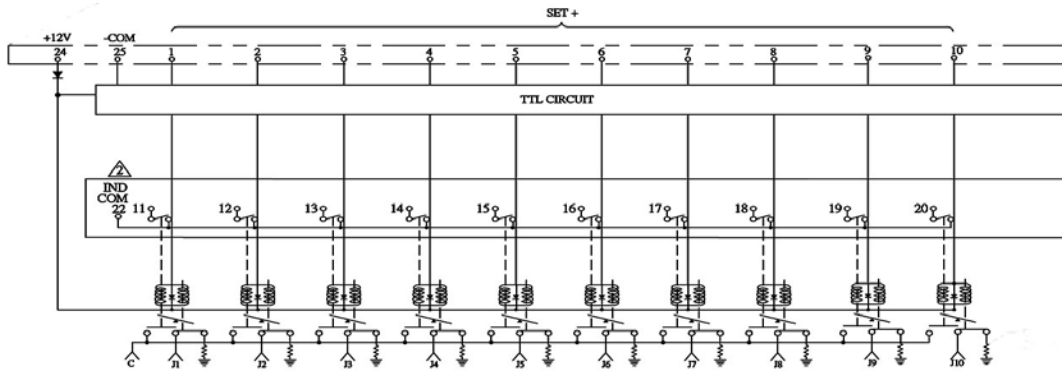
Note: Reset current = Current rating x (# of positions)

* at nominal voltage and +20°C

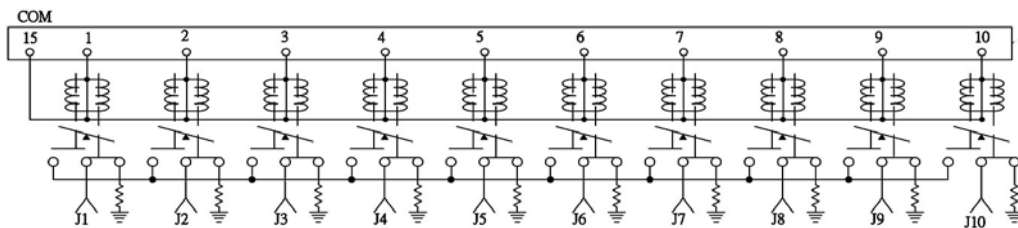




Schematics

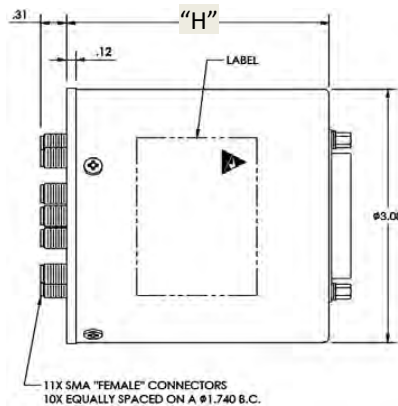
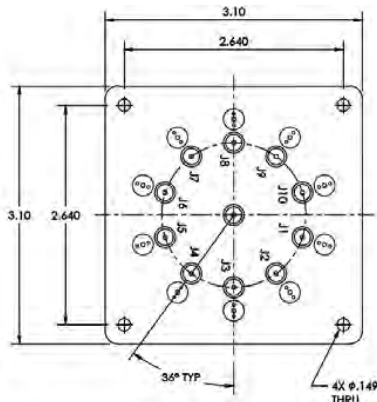


SP10T: Normally Open, 50Ω terminations, indicators, TTL control, 25 Pin D-Sub

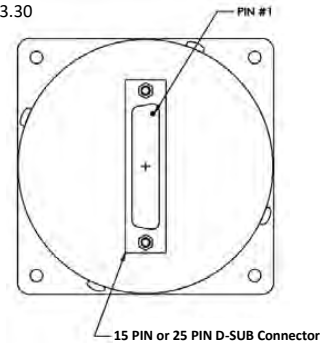


SP10T: 50Ω terminations, 15 pin D-Sub

Outline



"H" DIM:
Standard = 2.15
With TTL = 3.30



Model Numbering System

Example: SP10T-0E-18A-T

(SP10T, SMA Connector, Normally Open without indicator, DC-18GHz, 12VDC, Internal Termination, D-Sub Control)

SP10T - 0E - 18A - T -

No. of Outputs

9 : SP9T
10 : SP10T

Connector Type

0: SMA
1: N
2: TNC
3: RF PIN
4: F (75Ω)
5: SC
6: SMB
7: 7/16 DIN
8: BNC
9: K (2.92mm)
10: Mini DIN

Actuator Type

E : Normally Open without Indicator
F : Normally Open with Indicator

Frequency Range

03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz
20 : DC-20GHz

Actuator Voltage

A : 12VDC
B : 15VDC
C : 28VDC
D : 24VDC
E : 20VDC
F : 5VDC
G : 18VDC

Control Options

Default : D-Sub Control
PIN : Pin Terminal Control

Options

H : High Power
T : Internal Terminations
D : TTL Drivers with Diodes
P : Positive + Common
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



Features:

- Broadband: DC - 20 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- Available in 9 or 10 Positions

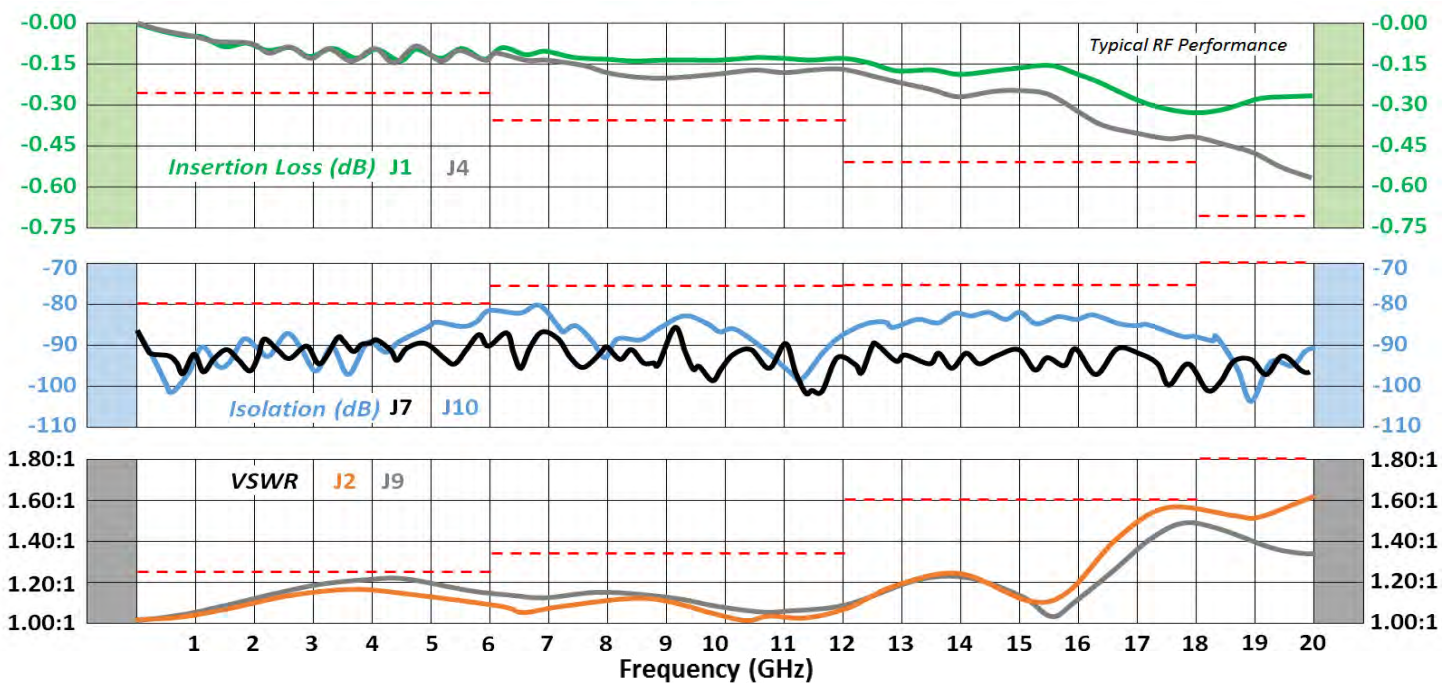


RF Specification:

Frequency, (GHz)	DC-6	6-12	12-18	18-20
Ins. Loss dB (max)	0.25	0.35	0.50	0.70
Isolation dB (min)	80	75	75	70
VSWR (max)	1.25:1	1.35:1	1.60:1	1.80:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50Ω (Switch and)			

Description:

High reliability and low loss performance makes these switches ideal for all testing applications. Magnetically latched in place after control voltage is removed. Available in 9 or 10 position versions with a wide selection of features available to meet most requirements. Good low to medium power handling. **Applications:** lab testing to production ATE requirements. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Set Current (mA)*	250	105	190	110
Reset Current (mA)* SP9T	2250	945	1710	990

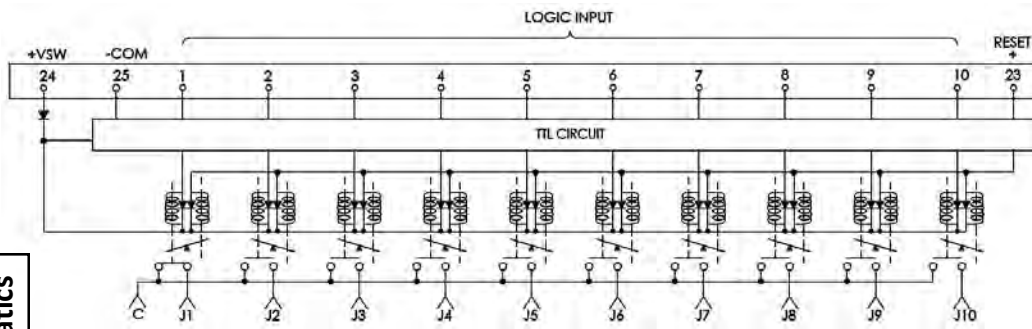
Popular Models

SP9T-OC-20A	SP9T, SMA, Latching, DC-20GHz, 12VDC
SP9T-OC-20A-D	SP9T, SMA, Latching, DC-20GHz, 12VDC, TTL
SP10T-OC-18A	SP10T, SMA, Latching, DC-18GHz, 12VDC
SP10T-OC-18A-D	SP10T, SMA, Latching, DC-18GHz, 12VDC, TTL
SP10T-OD-18C	SP10T, SMA, Latching, DC-18GHz, 28VDC, Indicator

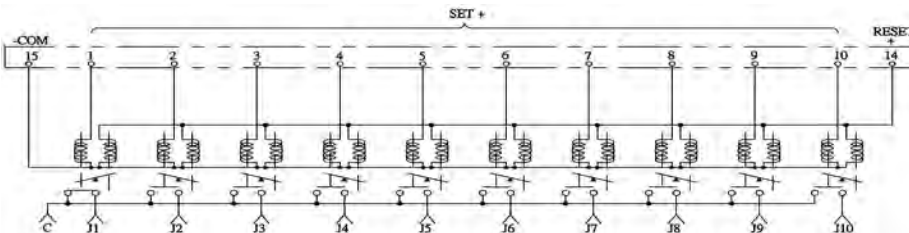
- See backside for a full list of available features and options
- Contact us for high power and custom designs
- Reset current = Current rating x (# of positions)
- * at nominal voltage and +20°C



Schematics



SP10T: Latching, TTL control, 25 pin D-Sub Connector (Position J1)



SP10T: Latching, 15 pin D-Sub Connector (Position J1)

TTL Control

Logic "1": 2.4 to 5.0 VDC
Logic "0": 0 to 0.8 VDC

Actuation Control

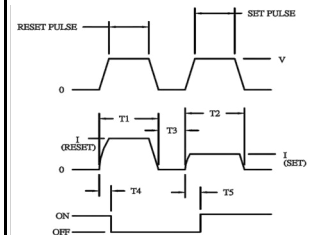
Requires two sequential pulses
"Reset and Set" (see below)

T1 & T2 = 30ms min.

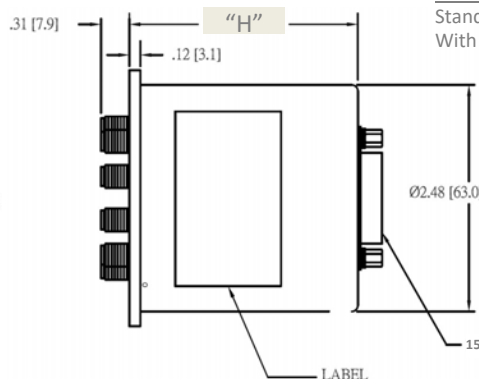
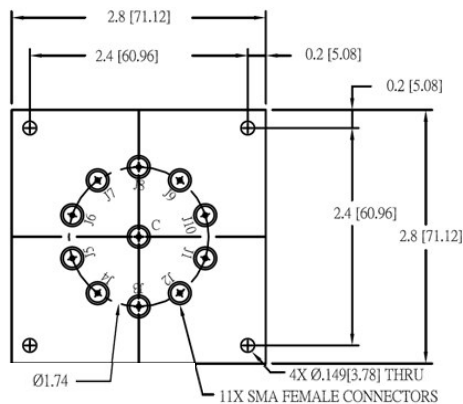
T3 = 10ms min.

T4 & T5 = 20ms max

Contact factory for full operating sequence, pin assignments and truth tables



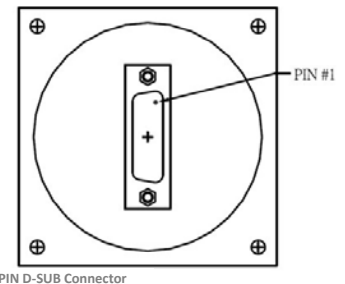
Outline



"H" DIM:

Standard = 2.25

With TTL = 3.12



Model Numbering System

Example: SP10T-0C-20A-D

(SP10T, SMA Connector, Latching without indicator, DC-20GHz, 12VDC, TTL Driver, D-Sub Control)

SP 10 T - 0 C - 2 0 A - D -

No. of Outputs

9 : SP9T
10 : SP10T

Connector Type

0: SMA
1: N
2: TNC
3: RF PIN
4: F (75Ω)
5: SC
6: SMB
7: 7/16 DIN
8: BNC
9: K (2.92mm)
10: Mini DIN

Actuator Type

C : Latching
without Indicator
D : Latching
with Indicator

Frequency Range

03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz
20 : DC-20GHz

Actuator Voltage

A : 12VDC
B : 15VDC
C : 28VDC
D : 24VDC
E : 20VDC
F : 5VDC
G : 18VDC

Control Options

Default : D-Sub Control
PIN : Pin Terminal Control

Options

H : High Power
D : TTL Drivers with
Diodes
P : Positive + Common
A : Auto Reset
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



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Site Web : www.es-france.com

Features:

- Broadband: DC - 20 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- 50Ω Internal Terminations
- Available in 9 or 10 Positions



RF Specification:

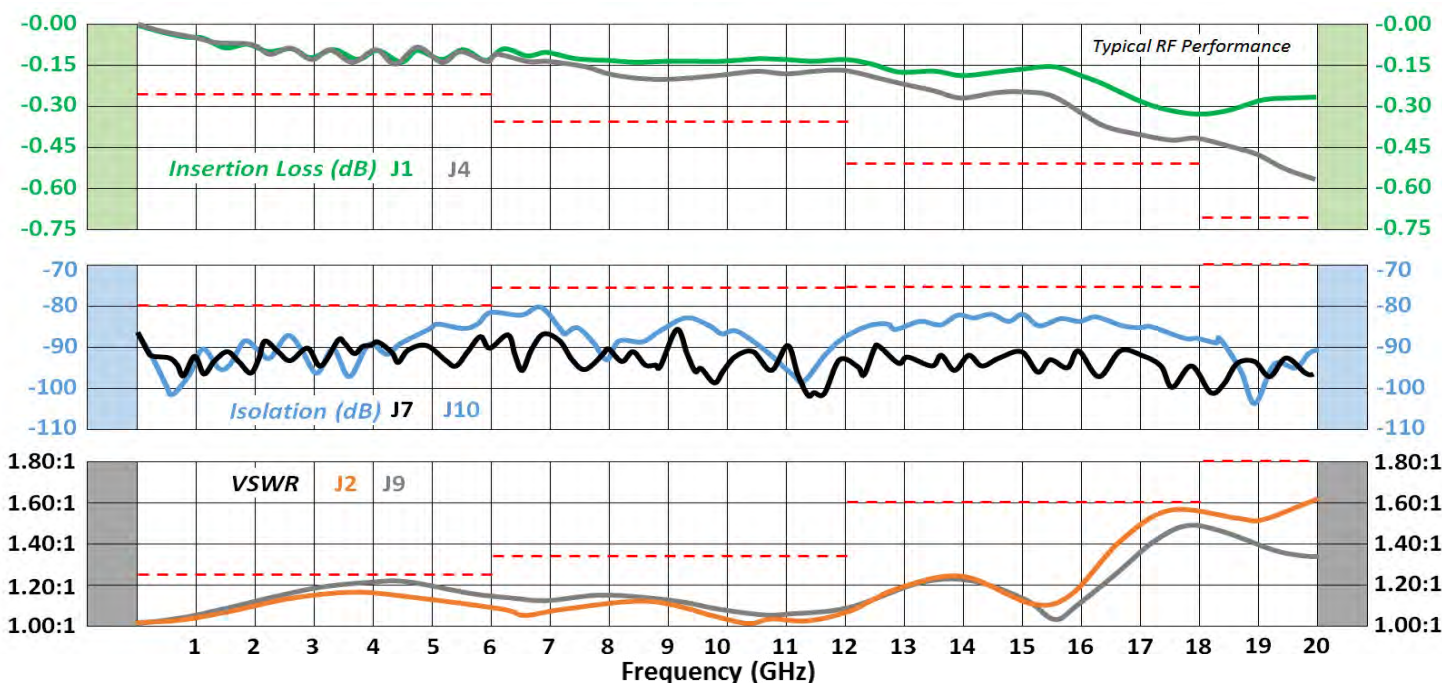
Frequency, (GHz)	DC-6	6-12	12-18	18-20
Ins. Loss dB (max)	0.25	0.35	0.50	0.70
Isolation dB (min)	80	75	75	70
VSWR (max)	1.25:1	1.35:1	1.60:1	1.80:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50Ω (Switch and Terminations)			

Description:

Internal 50 ohm terminations ensure good isolation in the "off" state regardless of the match to which the switch is connected. High reliability and low loss performance makes these switches ideal for all testing applications. Magnetically latched in place after control voltage is removed.

Applications: lab testing and production ATE requirements.

Markets: defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications

Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

Voltages and Current

Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Set Current (mA)*	250	105	190	110
Reset Current (mA)* SP9T	2250	945	1710	990

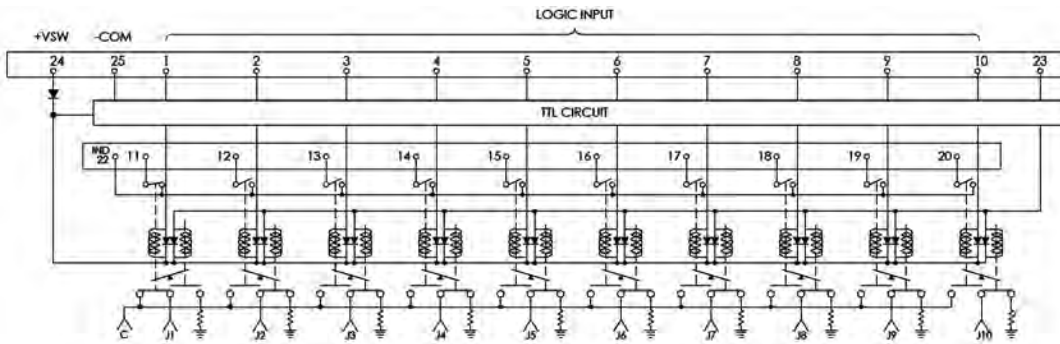
Popular Models

SP9T-OC-18A-T	SP9T, SMA, Latching, DC-18GHz, 12VDC, Internal Termination
SP10T-OC-18A-T	SP10T, SMA, Latching, DC-18GHz, 12VDC, Internal Termination
SP9T-OC-18A-TD	SP9T, SMA, Latching, DC-18GHz, 12VDC, Internal Termination, TTL
SP10T-OC-18A-TD	SP10T, SMA, Latching, DC-18GHz, 12VDC, Internal Termination, TTL

- See backside for a full list of available features and options
- Contact us for high power and custom designs
- Reset current = Current rating x (# of positions)
- * at nominal voltage and +20°C



Schematic



SP10T: Latching, 50Ω terminations, Indicators, TTL control, 25 pin D-Sub Connector
(Position J1)

TTL Control

Logic "1": 2.4 to 5.0 VDC
Logic "0": 0 to 0.8 VDC

Actuation Control

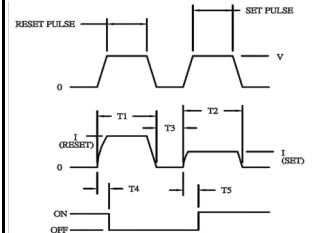
Requires two sequential pulses
"Reset and Set" (see below)

T1 & T2 = 30mS min.

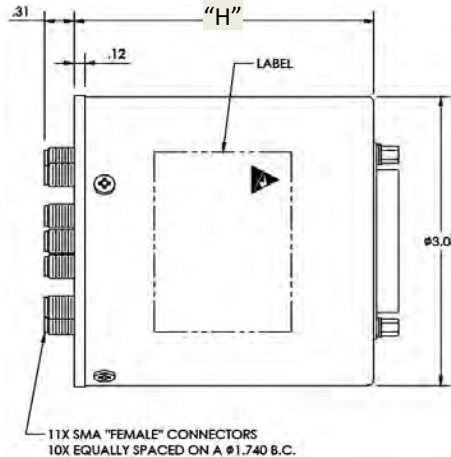
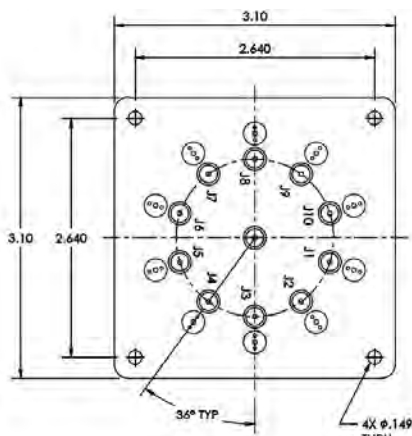
T3 = 10mS min.

T4 & T5 = 20mS max

Contact factory for full operating sequence, pin assignments and truth tables



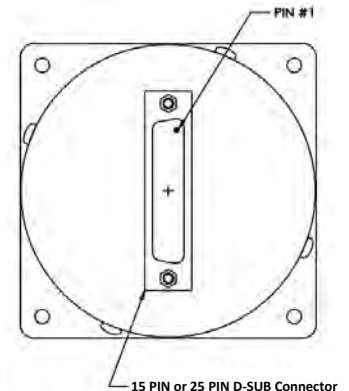
Outline



"H" DIM:

Standard = 2.15

With TTL = 3.30



Model Numbering System

Example: SP10T-OC-18A-T

(SP10T, SMA Connector, Latching without indicator, DC-18GHz, 12VDC, Internal Termination, D-Sub Control)

S P 10 T - 0 C - 1 8 A - T -

No. of Outputs

9 : SP9T
10 : SP10T

Connector Type

0: SMA
1: N
2: TNC
3: RF PIN
4: F (75Ω)
5: SC
6: SMB
7: 7/16 DIN
8: BNC
9: K (2.92mm)
10: Mini DIN

Actuator Type

C : Latching without Indicator
D : Latching with Indicator

Frequency Range

03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz
18 : DC-18GHz
20 : DC-20GHz

Actuator Voltage

A : 12VDC
B : 15VDC
C : 28VDC
D : 24VDC
E : 20VDC
F : 5VDC
G : 18VDC

Control Options

Default : D-Sub Control
PIN : Pin Terminal Control

Options

H : High Power
T : Internal Terminations
D : TTL Drivers with Diodes
P : Positive + Common
A : Auto Reset
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



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Site Web : www.es-france.com

Features:

- Broadband: DC - 12 GHz
- Extended Life: 5 million cycles
- Excellent Repeatability
- Low Insertion Loss
- 50Ω Internal Terminations
- Available in 11 or 12 Positions



RF Specification:

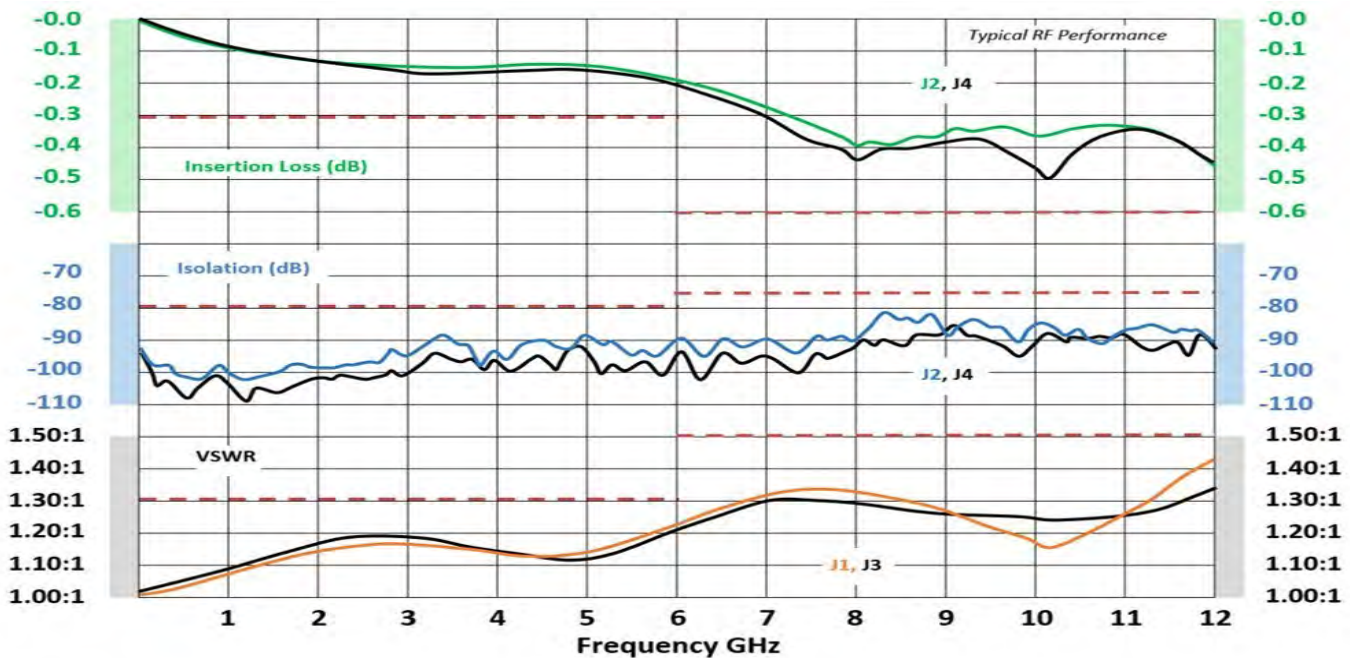
Frequency, (GHz)	DC-2	2-4	4-6	6-8
Ins. Loss dB (max)	0.25	0.30	0.30	0.60
Isolation dB (min)	100	95	95	90
VSWR (max)	1.25:1	1.30:1	1.30:1	1.50:1
Switching Time	20 mS (max)			
Switching Action	Break-Before-Make			
Impedance	50Ω (Switch and Terminations)			

Description:

Internal 50 ohm terminations ensure good isolation in the “off” state regardless of the match to which the switch is connected. High reliability and low loss performance makes these switches ideal for all testing applications. Magnetically latched in place after control voltage is removed.

Applications: lab testing and production ATE requirements.

Markets: defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-25° C to +65° C
Oper Temp	-54° C to +85° C (M version)
Storage Temp	-55° C to +100° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	5M cycles (may vary based on selected options)

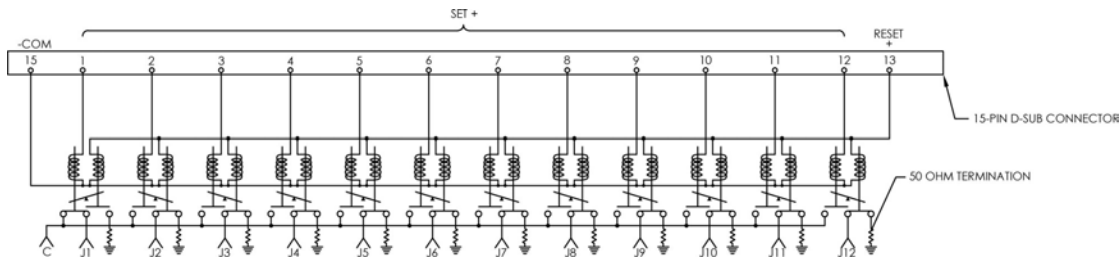
Voltages and Current				
Nominal Voltage, Vdc	12	15	24	28
Voltage Range, Vdc	11-13	14-16	22-26	26-30
Set Current (mA)*	140	105	90	105
Reset Current (mA)*	1680	1260	1080	1260

Popular Models	
SP12T-0C-08A-T	SP12T, SMA, Latching, DC-8GHz, 12VDC, Internal Termination

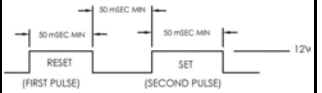
- See backside for a full list of available features and options
- Contact us for high power and custom designs
- Reset current = Current rating x (# of positions)
- * at nominal voltage and +20°C



Schematic

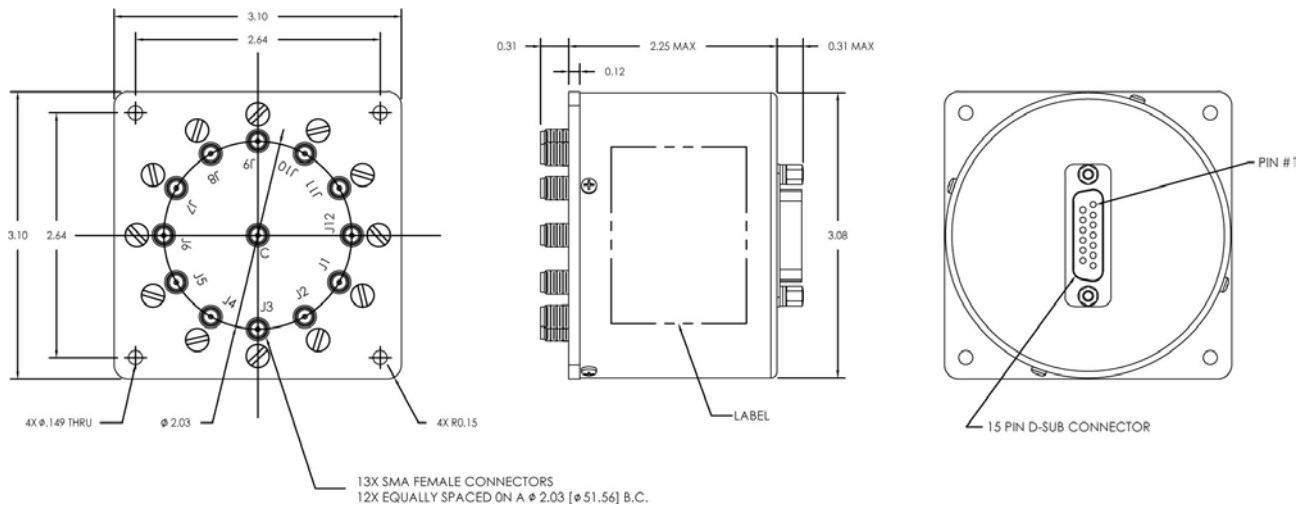


Contact factory for full operating sequence, pin assignments and truth tables



SP12T: Latching, 50Ω terminations, 15 pin D-Sub Connector
(Position J1)

Outline



Model Numbering System

Example: SP12T-0C-08A-T

(SP12T, SMA Connector, Latching without indicator, DC-8GHz, 12VDC, Internal Termination, D-Sub Control)

SP12T - 0C - 08A - T -

No. of Outputs	
11 : SP11T	
12 : SP12T	

Connector Type	
0: SMA	6: SMB
1: N	7: 7/16 DIN
2: TNC	8: BNC
3: RF PIN	9: K (2.92mm)
4: F (75Ω)	10: Mini DIN
5: SC	

Actuator Type
C : Latching without Indicator
D : Latching with Indicator

Frequency Range
03 : DC-3GHz
08 : DC-8GHz
12 : DC-12GHz

Actuator Voltage	
A : 12VDC	E : 20VDC
B : 15VDC	F : 5VDC
C : 28VDC	G : 18VDC
D : 24VDC	

Control Options
Default : D-Sub Control
PIN : Pin Terminal Control

Options
H : High Power
T : Internal Terminations
D : TTL Drivers with Diodes
P : Positive + Common
A : Auto Reset
S : Self Cutoff
I : Suppression Diodes
E : Decoder
Y : Moisture Seal
C : Custom



RoHS



* D-Sub connectors are standard for SPMT, no designation on model number needed



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Site Web : www.es-france.com

Features:

- Broadband: DC - 14 GHz
- Extended Life: 2 million cycles
- Excellent Repeatability
- Low Insertion Loss
- High Isolation

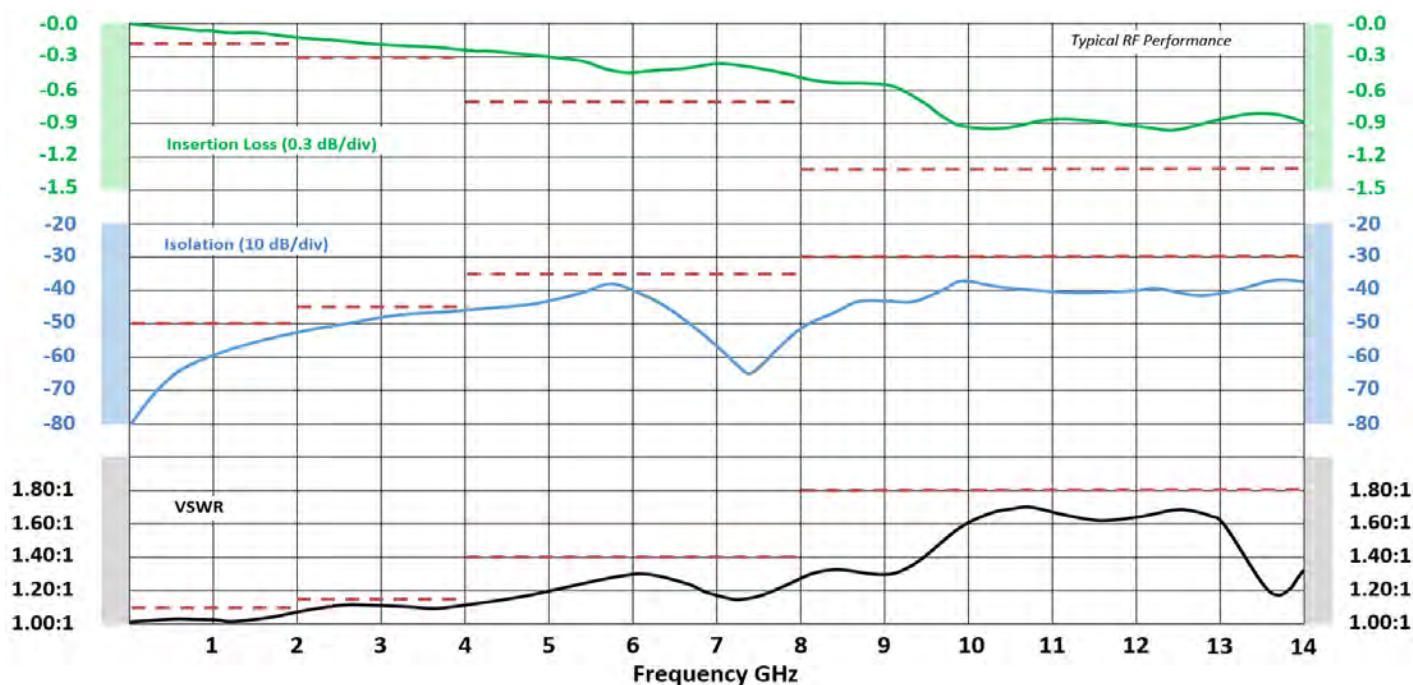


RF Specification:

Frequency (GHz)	DC - 3	3 - 7	7 - 14
Insertion Loss (max.) dB	0.30	0.50	0.90
Isolation (min.) dB	45	35	30
VSWR (max.)	1.45:1	1.50:1	1.65:1
Switching Time	3 mS (max.)		
Switching Action	Break-Before-Make		
Nominal Impedance	50 Ohms		

Description:

High reliability and low loss performance makes these switches ideal for testing and end product applications. A wide selection of connectors and features is available to meet most requirements. Good low to medium power handling. **Applications:** test stations, stand-by switch, Tx/Rx antenna switch, distribution switch. **Markets:** defense, telecom, aerospace, enterprise, consumer and IoT.



Specifications	
Oper Temp	-10° C to +65° C
Storage Temp	-55° C to +85° C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)
Cycle Life	2M cycles (may vary based on selected options)

Voltages and Current	
Nominal Voltage, Vdc	12
Voltage Range, Vdc	11-13
Current (mA)*	45

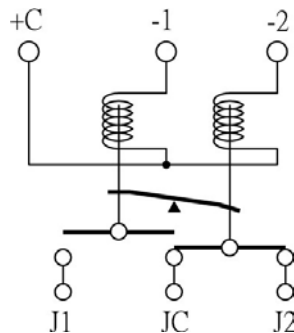
* at nominal voltage and +20°C

Popular Models	
P12-LAT0	SPDT, SMT, Latching, DC-14GHz, 12VDC

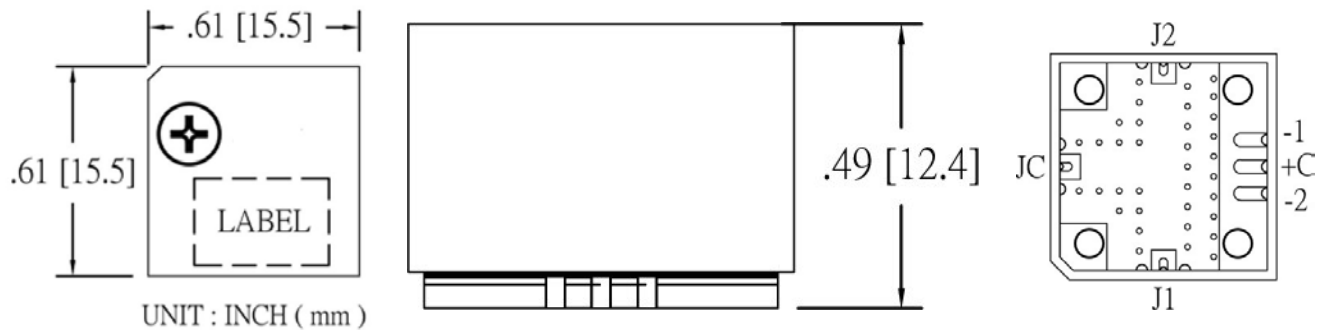
- See backside for a full list of available features and options
- DC-3GHz and DC-7GHz with better performance are available, please consult us for more information.
- Contact us for custom designs



Schematics:

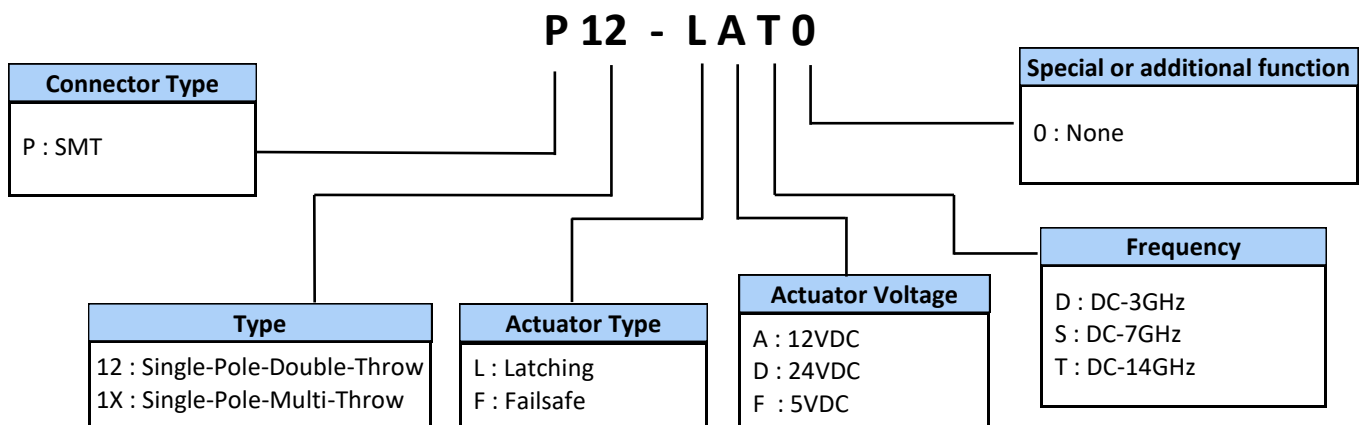


Outline:



Model Numbering System

Example: P12-LAT0
(SPDT, SMT, Latching, DC-14GHz, 12VDC)



Description:

EPX is a leading supplier of ultra-low passive intermodulation performance switches. Available in a variety of configurations and connector solutions including SMA, Type-N, 7/16 DIN and 4.3–10 mini DIN. Our switches are commonly used in infrastructure applications as well as the testing of other components and cabling. Our low PIM switches are ideal for ensuring overall system PIM performance remains at a low level. Designed for long life and repeatability these switches reduce costs and provide excellent reliability. High isolation reduces cross talk between adjacent channels for overall system signal integrity.


Features:

Features / Type		SPDT	TRAN	SPMT
Connector		SMA, N, 7/16 DIN, 4.3/10 Mini DIN	SMA, N, 7/16 DIN, 4.3/10 Mini DIN	SMA, N, 7/16 DIN, 4.3/10 Mini DIN
Actuator Type		Failsafe, Latching	Failsafe, Latching	Normally Open, Latching
Frequency Range		DC- 4.0 GHz	DC- 4.0 GHz	DC- 4.0 GHz
Available Actuator Voltage (dc)		5V to 28V	5V to 28V	5V to 28V
Oper. Temp. degrees C		-25 to +65	-25 to +65	-25 to +65
Control Connection		Pin Terminal, D-Sub	Pin Terminal, D-Sub	Pin Terminal, D-Sub
Value	SMA	Type-N	7/16 DIN	4.3-10 mini DIN
Typical PIM Performance	-160 dBc	-163 dBc	-165 dBc	-165 dBc

* Contact our sales or applications engineers for more information on these options.



Description:

M version switch is a switch specifically designed to operate reliably in harsh usage environments and conditions, such as extreme temperatures and wet or dusty conditions. we offer a full line of RF/microwave switches capable of operating in extreme temperatures ranging from -54° C to +85° C and high humidity conditions with two levels of moisture sealing from water resistant/splash proof to full immersion sealing.

**To order a M version part, select the desired switch type with all the required features and options and add the letter “M” in front of the model number.
See model numbering system for a complete list of features and options.**


Features:

Enhancements	Specification	Notes
Operating Temperature	-54° C to +85° C	-40° C to +85° C with TTL or Indicators Options
Storage Temperature	-54° C to +85° C	
Moisture Seal : Level I	Splash-Proof (resistant)	IP64
Moisture Seal: Level II	Water-Proof (Immersion)	IP68 (up to 1m and 30 minutes)

* Contact our sales or applications engineers for more information on these options.

Applications :

The Miniature Switch Matrix performs up to 26.5 GHz and can be configured with up to 2 inputs and up to 12 outputs. Users can easily access this matrix through RS 485, USB and Ethernet controls. Housed in a low profile rack mountable chassis.

Features :

- Low Insertion Loss
- High Isolation
- Compatible with 32/64 bit Windows
- Counter Recorder

RF Characteristics

Impedance:	50 Ohms
Operating Frequency:	DC – 26.5 GHz
Switching Time:	20ms
Operating Life :	5,000,000 cycles (Cold Switching)

Voltage Standing Wave Ratio (VSWR)

Frequency (GHz)			
DC-6	6-12	12-18	18-26.5
1.25	1.40	1.50	1.80

Insertion Loss (dB)

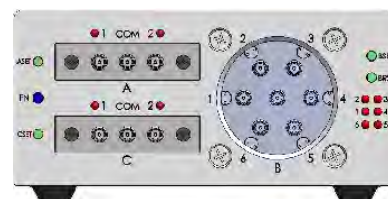
Frequency (GHz)			
DC-6	6-12	12-18	18-26.5
0.2	0.4	0.5	0.8

Open Channel Isolation (dB)

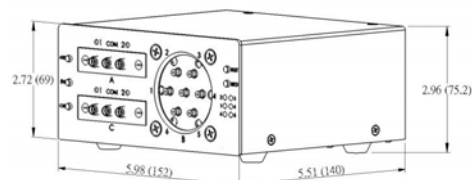
Frequency (GHz)			
DC-6	6-12	12-18	18-26.5
70	60	60	50

Environmental

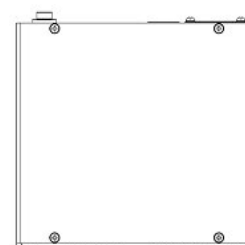
Fuse/Breaker:	Externally accessible/replaceable
Storage Temp:	-15° to +60° C
Operating Temp:	0° to +50° C
Operating humidity:	10 – 80% (non-condensing)



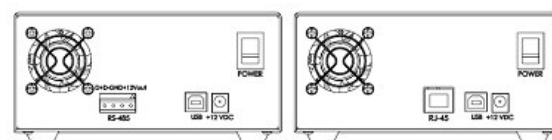
Outlines :



Top View



Back View



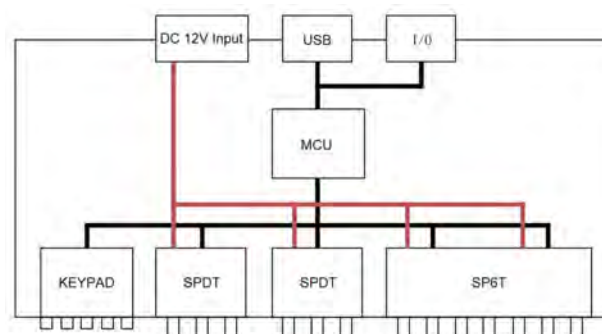
Command and Control

Local mode control / Remote mode control

I/O : 1. USB/RS-485 : RS485 (female 4 pin)

2. USB/Ethernet : RJ45

Block Diagram



* Contact our sales or applications engineers for more information on these options.





EPX microwave inc.

For nearly 20 years, EPX Microwave has been designing, developing and manufacturing advanced RF/Microwave switching solutions. Based in the United States with an office in Hong Kong to service Asia, EPX Microwave provides standard and custom switches to industry leading companies in telecom, consumer electronics, CATV, wireless, medical, defense and aerospace applications.

Our products are manufactured in a world class facility that is ISO9001 certified and RoHS and REACH compliant. With hundreds of thousands of standard designs available coupled with custom design options, the possibilities are endless.

We specialize in testing applications from product development testing to full rate production ATE requirements optimized for quality, reliability and performance for enduring operation.

We specialize in fast delivery of standard designs and precision solutions for high RF power and Low Intermodulation requirements.

EPX Microwave is your partner for RF/Microwave switching solutions.

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