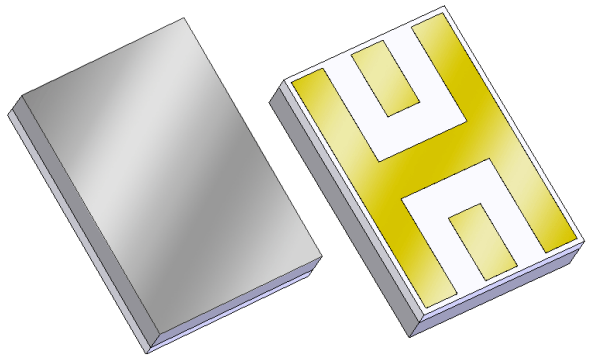
880060

1227.6 MHz GPS L2 BAW Filter

Applications

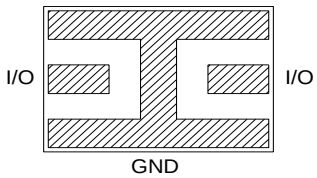
- For GPS L2 Applications
- For high-selectivity applications



Product Features

- Usable bandwidth 25 MHz
- Low loss
- High selectivity
- Single-ended operation
- Ceramic chip-scale Package (CSP)
- Small Size
- Hermetic **RoHS** compliant, **Pb**-free

Functional Block Diagram



Overall width, length, and thickness are the only critical dimensions.
All other dimensions are for reference only.

Dimensions shown are nominal in millimeters
All tolerances are ±0.13mm except overall
length and width ±0.25mm

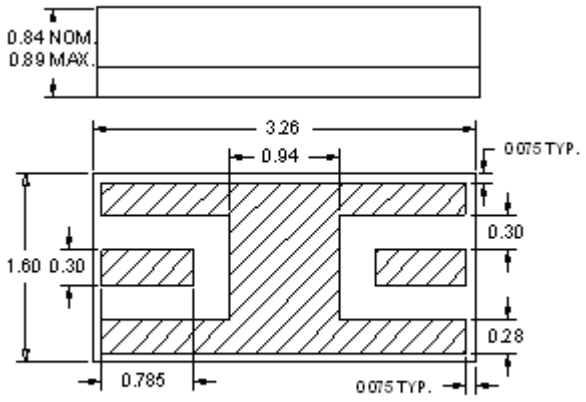
Body: *Sapphire*
Package: *Alumina*
Terminations: *Au* plating 0.5 - 2.5µm, over a 2.0 – 6.0 µm *Ni* plating

Pin Configuration

Pin # SE-Balanced	Description
I/O	Input/Output
GND	Ground

Ordering Information

Part No.	Description
880060	packaged part
880060 Eval Board	evaluation board



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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

Specifications

Electrical Specifications [1]

Specified Temperature Range: [2] -40 to +85 ºC

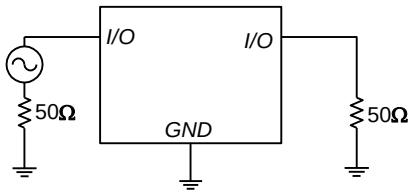
Parameter [3]	Conditions	Min	Typical [4]	Max	Units
Center Frequency		-	1227.6	-	MHz
Maximum Insertion Loss	@ 1227.6 MHz	-	1.8	2.5	dB
3dB Bandwidth	Reference loss at 1227.6 MHz	25	30	-	MHz
20dB Lower Frequency Edge		1195.6	1200	-	MHz
20dB Upper Frequency Edge		-	1254	1259.6	MHz
VSWR	@ 1227.6 MHz	-	1.6	2.0	-
Source Impedance (single-ended) [5]		-	50	-	Ω
Load Impedance (single-ended) [5]		-	50	-	Ω

Notes:
1. All specifications are based on the TriQuint schematic for the main reference design shown on page 3
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
4. Typical values are based on average measurements at room temperature
5. This is the optimum impedance in order to achieve the performance shown

Reference Design

Schematic

50 Ω
Single-ended
Input

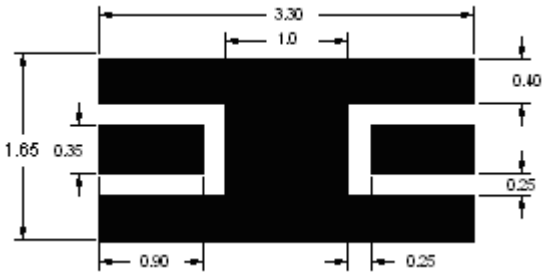


50 Ω
Single-ended
Input

PC Board

Refer to **PCB Layout** for more information.

Mounting Configuration



Notes:
1. All dimensions are in millimeters.
2. This footprint represents a recommendation only.

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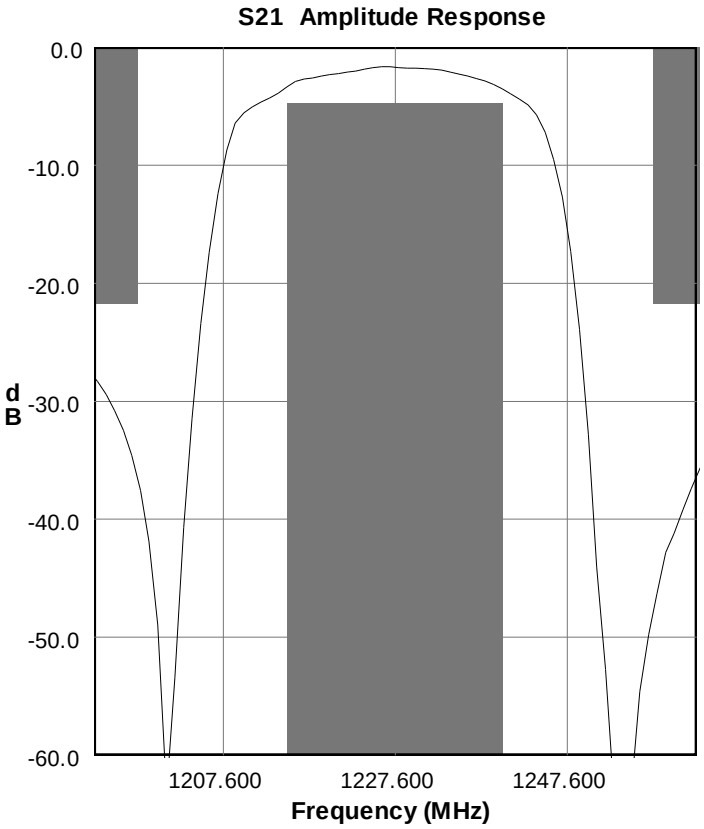
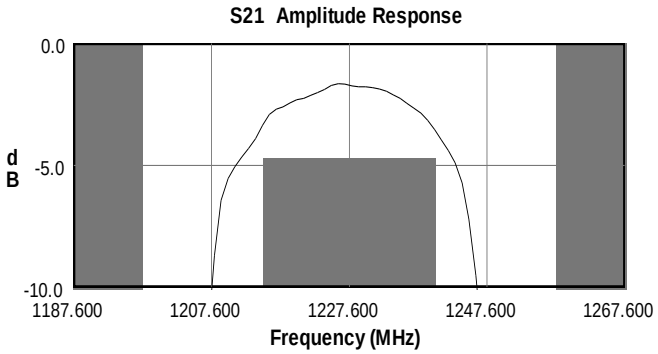
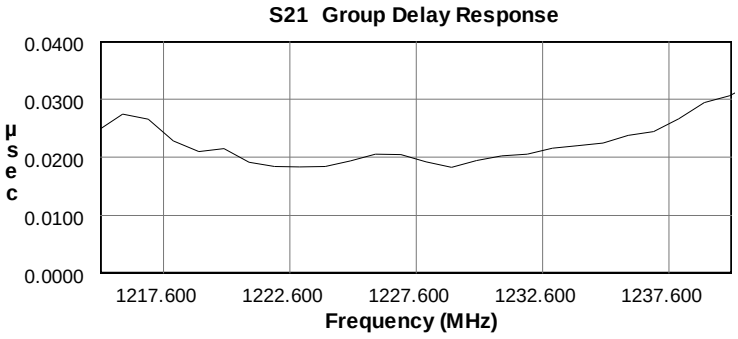
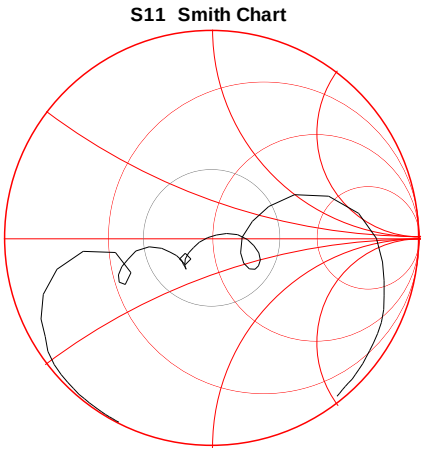
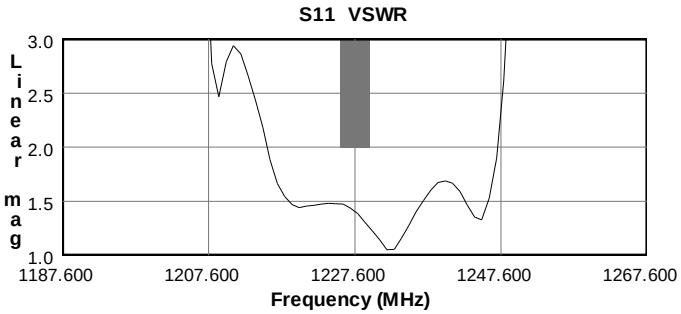
Typical Performance (at room temperature)











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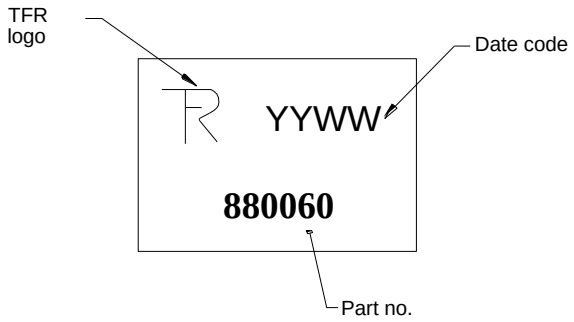
Mechanical Information

Marking



The date code consists of: YY = last digit of year, WW = 2 digit week

Tape and Reel Information

Tape and Reel available upon request
EIA-481

Tinning available per J-STD-001

Absolute Maximum Ratings

Parameter	Rating
Operating Temperature	-40 to +85 °C
Storage Temperature	-55 to +100 °C
Maximum Input Power	+23 dBm

Operation of this device outside the parameter ranges given above may cause permanent damage.

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Product Compliance Information

ESD Information

Caution! ESD-Sensitive Device

Value:	Passes ≥ 8000 V min.
Test:	Human Body Model (HBM)
Standard:	JEDEC Standard JESD22-A114

Value:	Passes ≥ 1600 V min.
Test:	Machine Model (MM)
Standard:	JEDEC Standard JESD22-A115

Refer to **ESD Sensitivity** for data

Solderability

Compatible with the latest version of J-STD-020, lead free solder, 260°C

Refer to **Soldering Profile** for recommended guidelines.

This part is compliant with EU 2002/95/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

This product also has the following attributes:

- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A ($C_{15}H_{12}Br_4O_2$) Free
- PFOS Free
- SVHC Free

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations, and information about TriQuint:

Web: www.triquint.com **Tel:** +1.407.886.8860
Email: info-sales@tqs.com **Fax:** +1.407.886.7061

For technical questions and application information:

Email: info-defense@tqs.com

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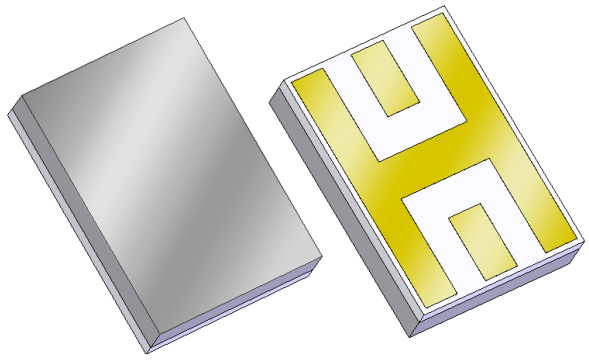
880094

1575.42 ***MHz GPS L1 BAW Filter***

Applications

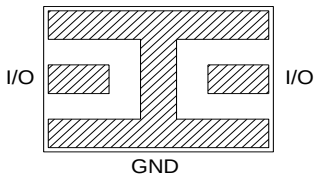
- For GPS L1 Applications
- For high-selectivity applications



Product Features

- Usable bandwidth 25 MHz
- Low loss
- High selectivity
- Single-ended operation
- Ceramic chip-scale Package (CSP)
- Small Size
- Hermetic **RoHS** compliant, **Pb**-free

Functional Block Diagram



Overall width, length, and thickness are the only critical dimensions.
All other dimensions are for reference only.

Dimensions shown are nominal in millimeters
All tolerances are ±0.13mm except overall
length and width ±0.25mm

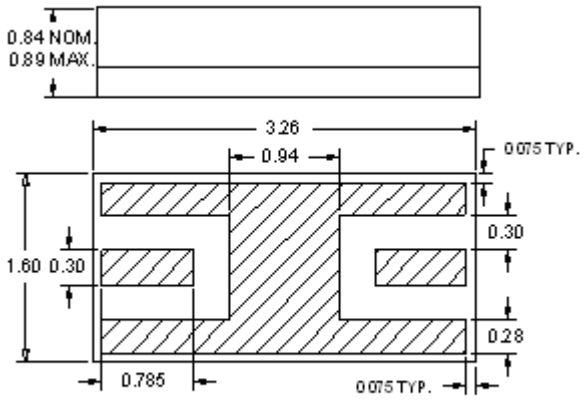
Body: *Sapphire*
Package: *Alumina*
Terminations: *Au* plating 0.5 - 2.5µm, over a 2.0 – 6.0 µm *Ni* plating

Pin Configuration

Pin # SE-Balanced	Description
I/O	Input/Output
GND	Ground

Ordering Information

Part No.	Description
880094	packaged part
880094 Eval Board	evaluation board



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Specifications

Electrical Specifications [1]

Specified Temperature Range: [2] -40 to +85 ºC

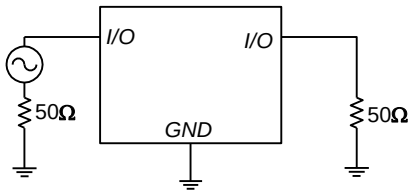
Parameter [3]	Conditions	Min	Typical [4]	Max	Units
Center Frequency		-	1575.42	-	MHz
Maximum Insertion Loss	@ 1575.42 MHz	-	1.8	2.5	dB
3dB Bandwidth	Reference loss at 1575.42 MHz	30	35	-	MHz
20dB Lower Frequency Edge		1543.42	1548	-	MHz
20dB Upper Frequency Edge		-	1602	1607.42	MHz
VSWR	@ 1575.42 MHz	-	1.6	2.0	-
Source Impedance (single-ended) [5]		-	50	-	Ω
Load Impedance (single-ended) [5]		-	50	-	Ω

Notes:
1. All specifications are based on the TriQuint schematic for the main reference design shown on page 3
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
4. Typical values are based on average measurements at room temperature
5. This is the optimum impedance in order to achieve the performance shown

Reference Design

Schematic

50 Ω
Single-ended
Input

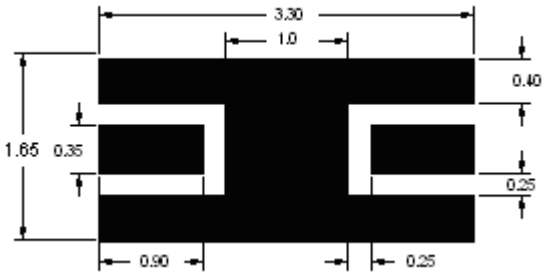


50 Ω
Single-ended
Input

PC Board

Refer to **PCB Layout** for more information.

Mounting Configuration



Notes:
1. All dimensions are in millimeters.
2. This footprint represents a recommendation only.

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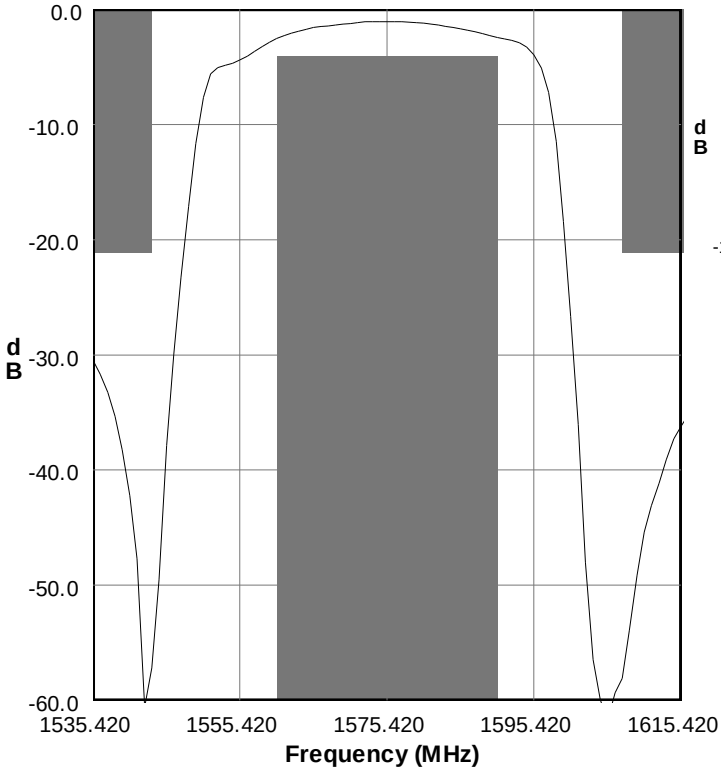
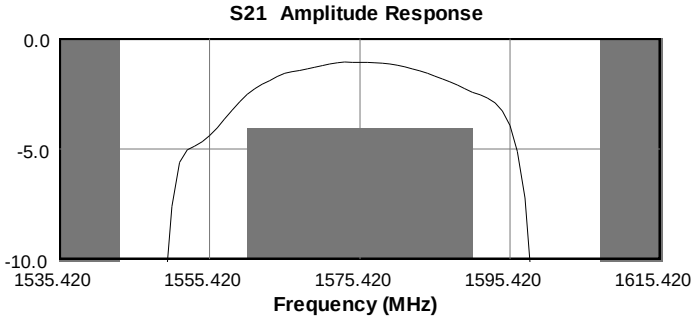
Typical Performance (at room temperature)

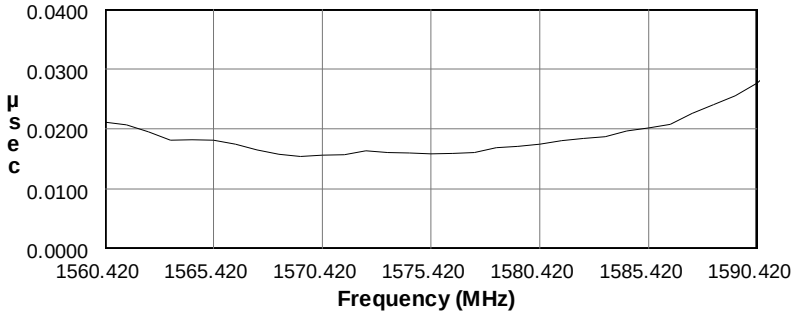
S21 Amplitude Response



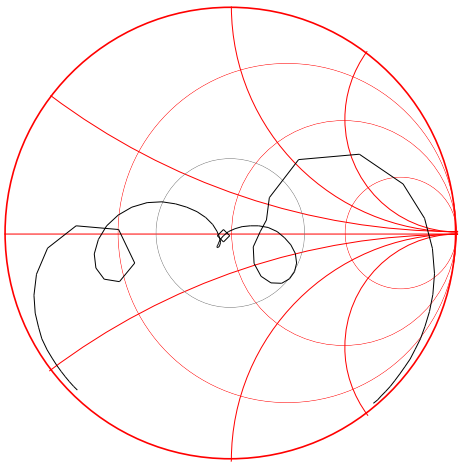
S21 Amplitude Response



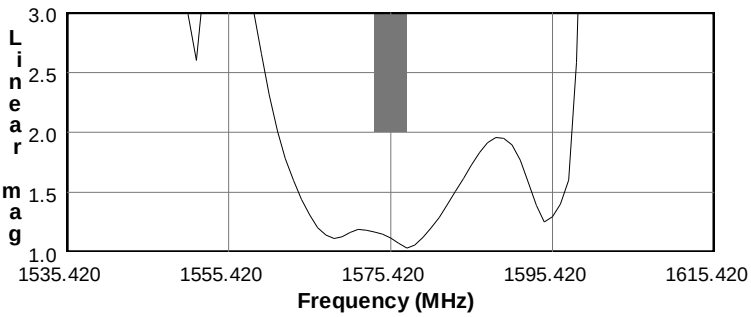
S21 Group Delay Response



S11 Smith Chart



S11 VSWR



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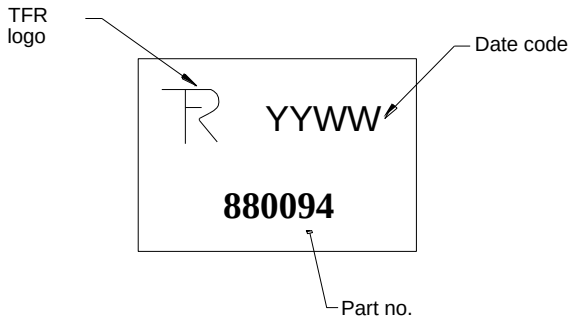
Mechanical Information

Marking



The date code consists of: YY = last digit of year, WW = 2 digit week

Tape and Reel Information

Tape and Reel available upon request
EIA-481

Tinning available per J-STD-001

Absolute Maximum Ratings

Parameter	Rating
Operating Temperature	-40 to +85 °C
Storage Temperature	-55 to +100 °C
Maximum Input Power	+23 dBm

Operation of this device outside the parameter ranges given above may cause permanent damage.

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Product Compliance Information

ESD Information

Caution! ESD-Sensitive Device

Value:	Passes ≥ 8000 V min.
Test:	Human Body Model (HBM)
Standard:	JEDEC Standard JESD22-A114

Value:	Passes ≥ 1600 V min.
Test:	Machine Model (MM)
Standard:	JEDEC Standard JESD22-A115

Refer to **ESD Sensitivity** for data

Solderability

Compatible with the latest version of J-STD-020, lead free solder, 260°C

Refer to **Soldering Profile** for recommended guidelines.

This part is compliant with EU 2002/95/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

This product also has the following attributes:

- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A ($C_{15}H_{12}Br_4O_2$) Free
- PFOS Free
- SVHC Free

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations, and information about TriQuint:

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Email: info-sales@tqs.com **Fax:** +1.407.886.7061

For technical questions and application information:

Email: info-defense@tqs.com

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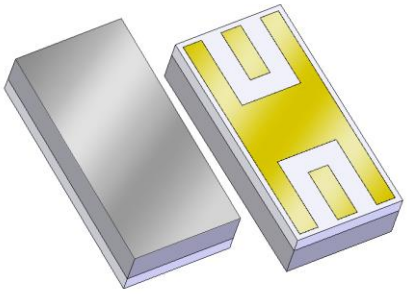
880272
1227 MHz BAW Filter

General Description

The 880272 is a dual-use GPS L2 BAW bandpass filter in a small hermetic package. The filter's 30 MHz bandwidth allows reception of both M-code and Y-code signals. It is optimized for low insertion loss and high rejection.

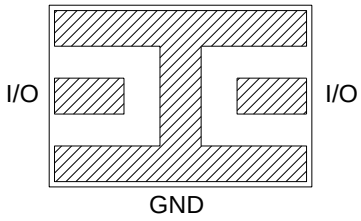


CSP: 3.26 X 1.60 X 0.84 mm

Product Features

- Usable bandwidth 30 MHz
- Single-ended operation
- Ceramic Chip-Scale Package (CSP)
- Hermetically sealed
- Small Package: 3.26 x 1.60 x 0.84 mm

Functional Block Diagram



Bottom View

Applications

- Civil and defense GPS Receivers
- L-Band

Pin Configuration - Single Ended

Pin No.	Label
I/O	Input / Output
GND	Ground

Ordering Information

Part No.	Description
880272	1227 MHz BAW Filter
880272-EVB	Evaluation board

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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

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature (1)	−55 to +100 °C
Operable Temperature (2)	−40 to +85 °C
RF Input Power	TBD

Notes:
1. Operation of this device outside the parameter ranges given may cause permanent damage.
2. Specifications are not guaranteed over all operable conditions

Electrical Specifications (1)

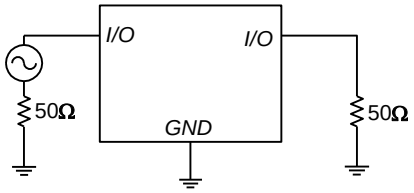
Test conditions unless otherwise noted: (2) Temp = −40 to +85 °C

Parameter (3)	Conditions	Min	Typical (4)	Max	Units
10 dB Center Frequency		1222	1227	1232	MHz
Insertion Loss	@ Fo	-	2.25	3.75	dB
3 dB Bandwidth (5)		30	35	-	MHz
40 dB Bandwidth (5)		-	100	110	MHz
Amplitude Variation (6)	1212 – 1242 MHz	-	1.2	2	dB
Input / Output VSWR	@ Fo	-	1.8:1	2.2:1	
Source Impedance (7)	Single-ended	-	50	-	Ω
Load Impedance (7)	Single-ended	-	50	-	Ω

Notes:
1. All specifications are based on the Qorvo schematics for the reference designs shown on page 3.
2. In production, devices will be tested at room temperature to a guard banded specification to ensure electrical compliance over temperature.
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances.
4. Typical values are based on average measurements at room temperature (25 °C ±5 °C).
5. Referenced to the insertion loss at the center frequency
6. Measured as maximum peak to adjacent valley amplitude variation over frequency range
7. Optimum impedance to achieve the performance shown

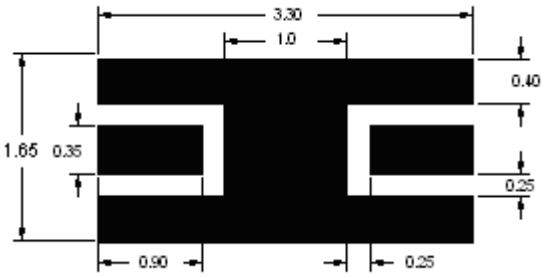
Matching Schematics

50 Ω
Single-ended
Input



50 Ω
Single-ended
Output

PCB Mounting Pattern

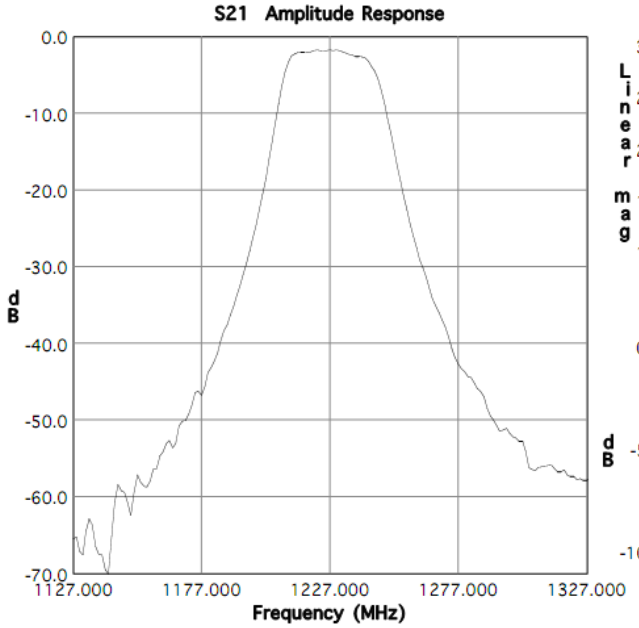


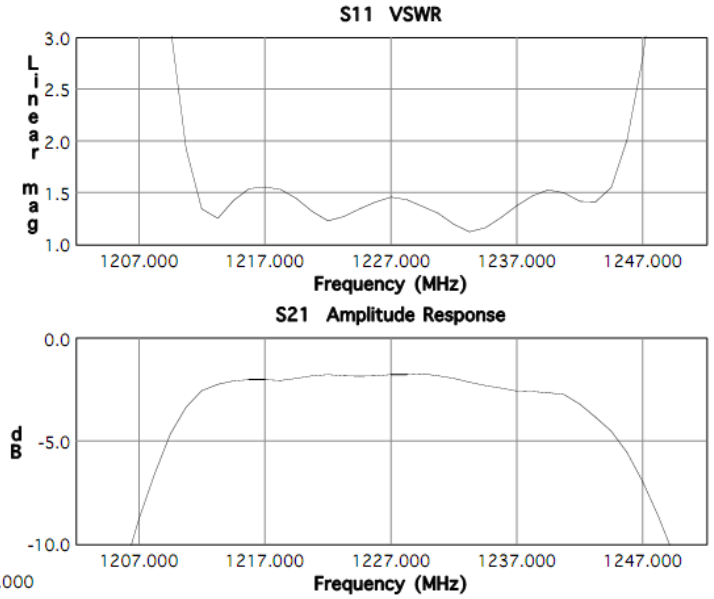
Notes:

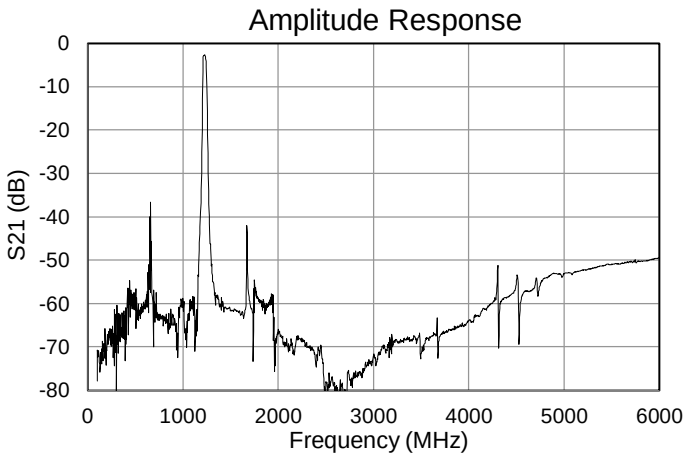
1. All dimensions are in millimeters. Angles are in degrees.
2. This drawing specifies the mounting pattern used on the Qorvo evaluation board for this product. Some modification may be necessary to suit end user assembly materials and processes.

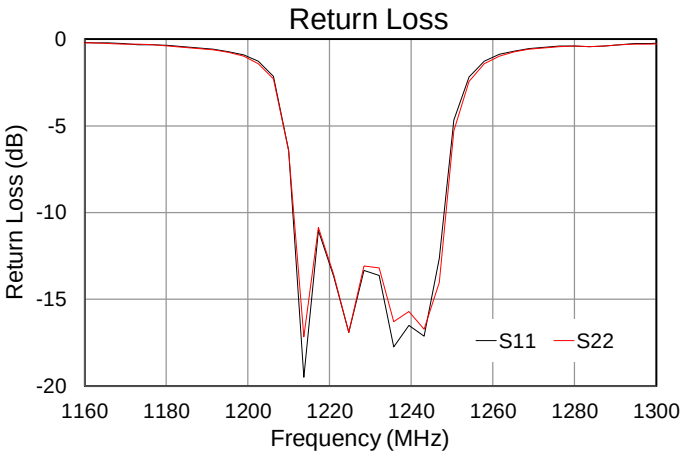
Typical Performance

Test conditions unless otherwise stated: Temp. = 25 °C









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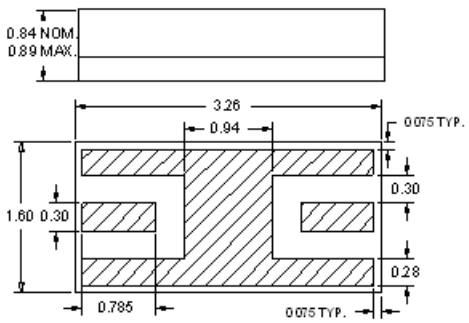
Package Information, Marking and Dimensions

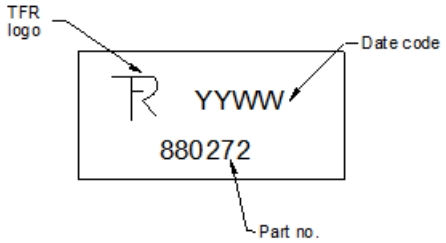


Package Style: CSP
Dimensions: 3.26 x 1.60 x 0.84 mm

Body: *Sapphire*
Package: Alumina
Terminations: *Au* plating 0.5 – 1.0µm, over a 2-6µm *Ni* plating

All dimensions shown are nominal in millimeters
All tolerances are ±0.13mm except overall length and width ±0.25mm

The date code consists of, YY = last 2 digits of the year, and WW = 2 digits of worked week



Tape and Reel Information

Tape and reel available upon request (EIA-481)

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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

Handling Precautions

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	Class 2	ANSI/ ESD / JEDEC JS-001
ESD – Charged Device Model (CDM)	Class C3	ANSI/ ESD / JEDEC JS-002
MSL – Moisture Sensitivity Level	Level 1	IPC/JEDEC J-STD-020

Caution!
ESD-Sensitive Device

Solderability

Compatible with both lead-free (260°C max. reflow temp.) and tin/lead (245°C max. reflow temp.) soldering processes.
Solder profiles available upon request.

Refer to **Soldering Profile** for recommended guidelines

RoHS Compliance

This part is compliant with EU 2002/95/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment). This product also has the following attributes:

- Lead Free
- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A ($C_{15}H_{12}Br_4O_2$) Free
- PFOS Free
- SVHC Free
- Qorvo Green

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

Web: www.qorvo.com
Tel: 1-844-890-8163
Email: customer.support@qorvo.com

For technical questions and application information: **Email:** appsupport@qorvo.com

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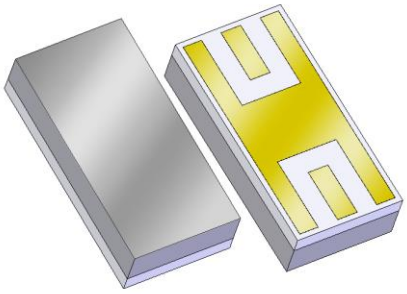
880273

1575 MHz BAW Filter

General Description

The 880273 is a dual-use GPS L1 BAW bandpass filter in a small hermetic package. The filter's 30 MHz bandwidth allows reception of both M-code and Y-code signals. It is optimized for low insertion loss and high rejection.

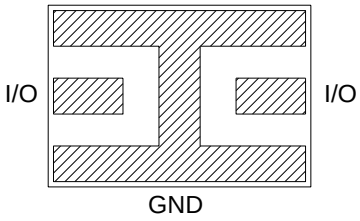


CSP: 3.26 X 1.60 X 0.84 mm

Product Features

- Usable bandwidth 30 MHz
- Single-ended operation
- Ceramic Chip-Scale Package (CSP)
- Hermetically sealed
- Small Package: 3.26 x 1.60 x 0.84 mm

Functional Block Diagram



Bottom View

Applications

- Civil and Defense GPS Receivers
- L-Band

Pin Configuration - Single Ended

Pin No.	Label
I/O	Input / Output
GND	Ground

Ordering Information

Part No.	Description
880273	1575 MHz BAW Filter
880273-EVB	Evaluation board

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature (1)	−55 to +100 °C
Operable Temperature (2)	−40 to +85 °C
RF Input Power	TBD

Notes:
1. Operation of this device outside the parameter ranges given may cause permanent damage.
2. Specifications are not guaranteed over all operable conditions

Electrical Specifications (1)

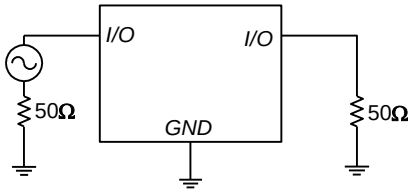
Test conditions unless otherwise noted: (2) Temp = −40 to +85 °C

Parameter (3)	Conditions	Min	Typical (4)	Max	Units
10 dB Center Frequency		1570	1575	1580	MHz
Insertion Loss	@ Fo	-	2.35	3.75	dB
3 dB Bandwidth (5)		40	45	-	MHz
40 dB Bandwidth (5)		-	120	140	MHz
Amplitude Variation (6)	1565 – 1585 MHz	-	1.2	2	dB
Input / Output VSWR	@ Fo	-	1.8:1	2.2:1	
Source Impedance (7)	Single-ended	-	50	-	Ω
Load Impedance (7)	Single-ended	-	50	-	Ω

Notes:
1. All specifications are based on the Qorvo schematics for the reference designs shown on page 3.
2. In production, devices will be tested at room temperature to a guard banded specification to ensure electrical compliance over temperature.
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances.
4. Typical values are based on average measurements at room temperature
5. Referenced to the insertion loss at the center frequency
6. Measured as maximum peak to adjacent valley amplitude variation over frequency range
7. This is the optimum impedance in-order to achieve the performance shown

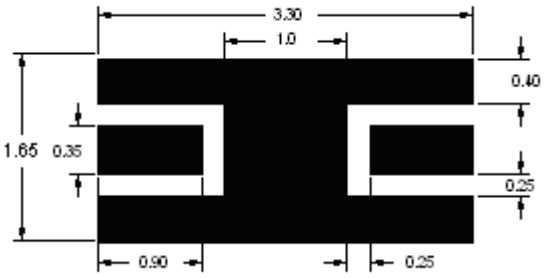
Matching Schematics

50 Ω
Single-ended
Input



50 Ω
Single-ended
Output

PCB Mounting Pattern

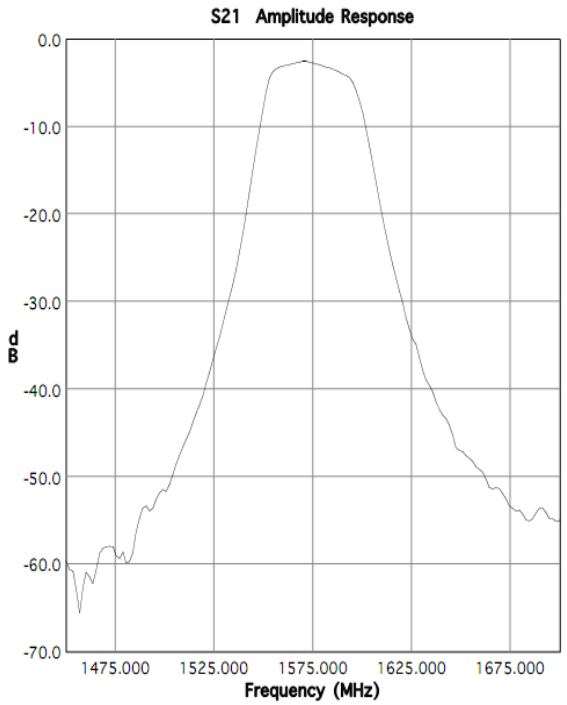


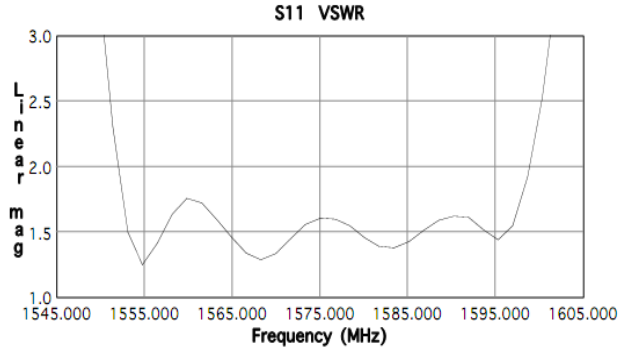
Notes:

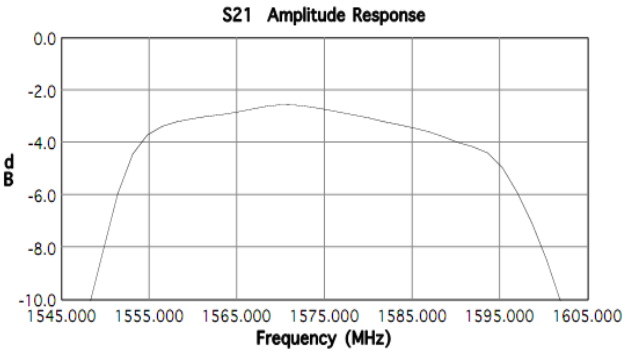
1. All dimensions are in millimeters. Angles are in degrees.
2. This drawing specifies the mounting pattern used on the Qorvo evaluation board for this product. Some modification may be necessary to suit end user assembly materials and processes.

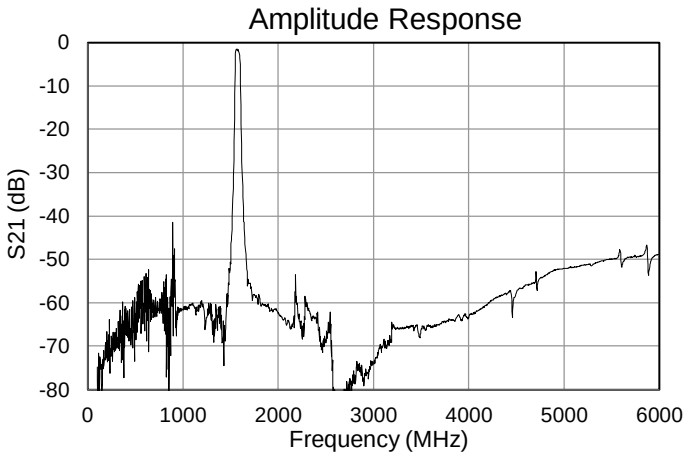
Typical Performance

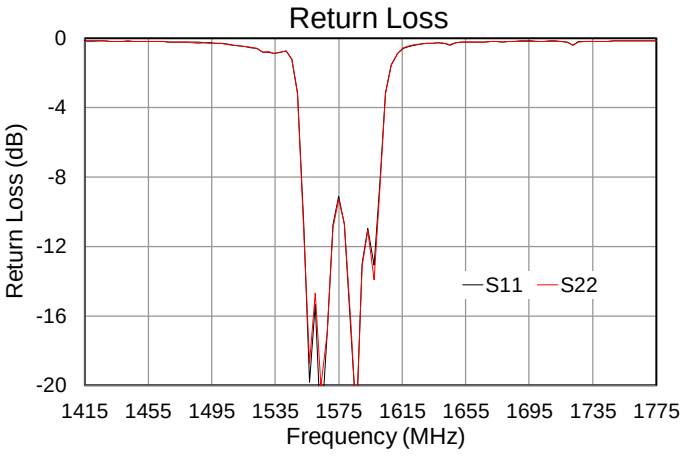
Test conditions unless otherwise stated: Temp. = 25 °C











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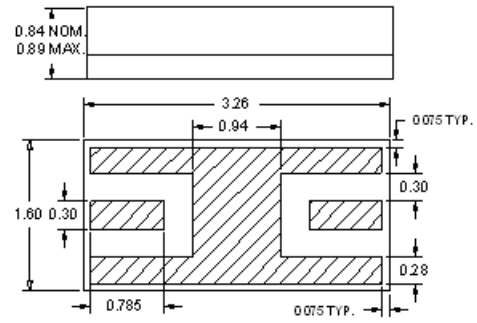

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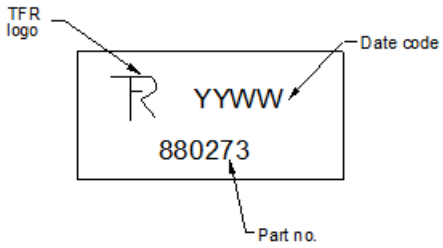

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- SVHC Free
- Qorvo Green

Contact Information

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Email: customer.support@qorvo.com

For technical questions and application information: **Email:** appsupport@qorvo.com

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