

# XC Type Crystal

RoHS Compliant Standard

## FEATURE

1. Typical 7.0 x 5.0 x 1.0mm ceramic SMD package.
2. 16 mm width Tape & Reel package for automatic assembly.
3. Good aging.
4. Packing : Tape & Reel, 1000/3000 pcs per Reel.



Actual Size

## ORDERING INFORMATION

X	C	H	B	C	L	N	A	N	F	-	?
X'tal	Package	Load Capacitance (pF)	Freq. Tol. @ 25°C (ppm)	Freq. Stability (ppm)	Temp. Range (°C)	Special Requirement	Oscillator Mode	Appearance	Lead Free	Dash	Freq. (MHz)
	7x5	A: 8 B: 9 C:10 D:12 F:16 G:18 H:20 J:32 S:Series	A: ± 5 B: ±10 P: ±15 C: ±20 D: ±25 E: ±30 G: ±50	A: ± 5 B: ±10 P: ±15 C: ±20 D: ±25 E: ±30	I: -10~+60 C: -20~+70 L: -40~+85	B:Spurious D:DLD H:High C1 L:Low C1 N:No Special P:Pullability Q:Q Value S:Several	A:AT Fundamental T: AT 3 <sup>rd</sup> Overtone	N:Normal	F:RoHS Compliant		xx.xxxxxx

### Ordering example: XCHBCLNANF-14.318180MHz

X'TAL C-TYPE; CL: 20pF; Freq. Tolerance: ±10ppm; Freq. Stability: ±20ppm; Temp Range: -40°C to +85°C. No Special Requirement, AT Fundamental; Normal Appearance; RoHS Compliant; Freq. 14.318180MHz.

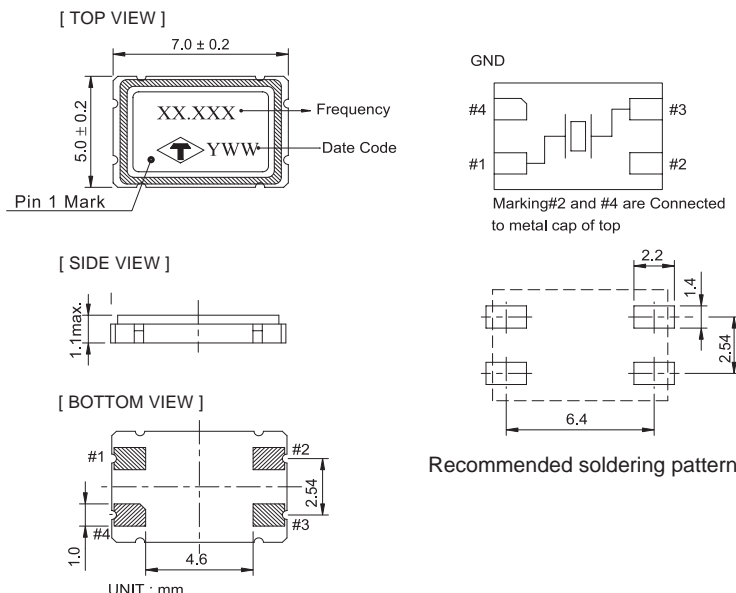
## ELECTRICAL SPECIFICATION

Storage Temp. Range	-55°C ~ 125°C
Drive Level	10 μW typical
Shunt Capacitance (Co)	7.0 pF Max.
Insulation Resistance	500MΩ Min. @ DC 100V
Aging	First year ± 5ppm Sub-year ± 5ppm

## EQUIVALENT SERIES RESISTANCE(ESR)

TYPE FREQUENCY	MODE	E.S.R
8MHz ≤ Freq < 11.0MHz	AT1	< 110 Ω
11MHz ≤ Freq < 14.1MHz	AT1	< 50 Ω
14.1MHz ≤ Freq < 18MHz	AT1	< 45 Ω
18MHz ≤ Freq < 20.1MHz	AT1	< 30 Ω
20.1MHz ≤ Freq	AT1	< 25 Ω
32.0MHz ≤ Freq < 48MHz	AT3	< 110 Ω
48.0MHz ≤ Freq < 70MHz	AT3	< 100 Ω

## OUTLINE DRAWING



## FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm	A:±5	B:±10	P:±15	C:±20
I	-10 ~ +60	○	○	○	○
C	-20 ~ +70	△	○	○	○
L	-40 ~ +85	X	X	△	○

○: Standard △: Available (case by case) X: Not available

### MARK

1 XX.XXX = FREQUENCY (MHz)



Y = LAST DIGIT OF YEAR

WW = WEEK NO.

2 MARK BY CUSTOMER

Max. LINE 3 LINES

Max. CODE OF LINE 6 CODES

# XE Type Crystal

RoHS Compliant Standard



Actual Size

## FEATURE

1. Typical 12.0 x 5.0 x 2.1 mm SMD package.
2. 24 mm width Tape & Reel package for automatic assembly.
3. Frequency range 3.5 ~ 8MHz
4. For PDA application.
5. Low cost.
6. Packing: Tape & Reel, 1000/3000 pcs per Reel.

## ORDERING INFORMATION

X	E	H	C		C		L	N	A	N	F	-	?
X'tal	Package	Load Capacitance (pF)	Freq. Tol. @ 25°C (ppm)		Freq. Stability (ppm)		Temp. Range (°C)	Special Requirement	Oscillator Mode	Appearance	Lead Free	Dash	Freq. (MHz)
	12x5	A:8 B:9 C:10 D:12 F:16 G:18 H: 20 J: 32 S: Series	A: ± 5 B: ±10 C: ±15 D: ±25 Z: Over ±150	E: ± 30 F: ± 40 G: ± 50 H: ±100 I: ±150	A: ± 5 B: ±10 C: ±15 D: ±25 Z: Over ±150	E: ± 30 F: ± 40 G: ± 50 H: ±100 I: ±150	L: -10~+60 C: -20~+70 L: -40~+85	B: Spurious D: DLD H: High C1 L: Low C1 N: No Special P: Pullability Q: Q Value S: Several	A: AT Fundamental	N: Normal	F: RoHS Compliant		XX.XXXXXX

### Ordering Example: XEHCLNANF-3.579500MHz

X'TAL E-TYPE; CL: 20pF; Freq. Tolerance: ±20ppm; Freq. Stability: ±20ppm; Temp. Range: -40°C to +85°C; No Special Requirement; AT Fundamental; Normal Appearance; RoHS Compliant; Freq. 3.579500MHz.

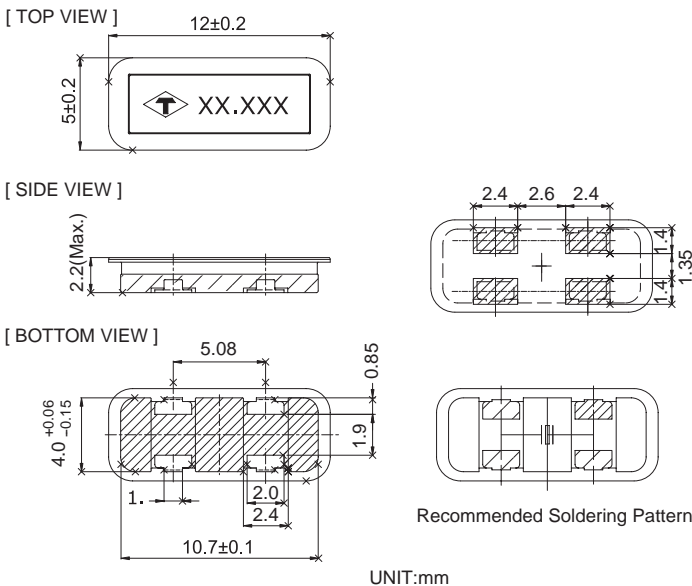
## ELECTRICAL SPECIFICATION

Storage Temp. Range	-55°C ~ 125°C
Drive Level	10 μW typical
Shunt Capacitance (Co)	7.0 pF Max.
Insulation Resistance	500MΩ Min. @ DC 100V
Aging	First year ± 5ppm Sub-year ± 5ppm

## EQUIVALENT SERIES RESISTANCE (ESR)

TYPE	FREQUENCY	MODE	E.S.R
Freq < 4MHz		AT1	< 140Ω
4MHz ≤ Freq < 5MHz		AT1	< 120Ω
5MHz ≤ Freq < 6MHz		AT1	< 80Ω
6MHz ≤ Freq < 7MHz		AT1	< 70Ω
7MHz ≤ Freq ≤ 8MHz		AT1	< 45Ω

## OUTLINE DRAWING



## FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm					
	A: ±5	B: ±10	P: ±15	C: ±20	D: ±25	E: ±30
I -10~+60	-	○	○	○	○	○
C -20~+70	-	○	○	○	○	○
L -40~ +85	-	X	X	X	X	○

○:Standard △:Available (case by case) X:Not available

### MARK

- 1 XX.XXX = FREQUENCY (MHz)
- 2 XX.X = FREQUENCY(MHz)  
M = MONTH  
A-JAN G-JUL  
B-FEB H-AUG  
C-MAR I-SEP  
D-APR J-OCT  
E-MAY K-NOV  
F-JUN L-DEC  
Y=LAST DIGIT OF YEAR
- 3 MARK BY CUSTOMER  
Max. CODE OF LINE 6 CODES

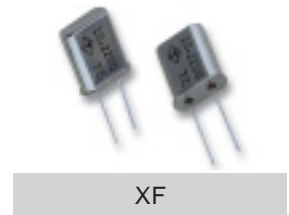
# XF / XH / XG Type Crystal

RoHS Compliant Optional

## FEATURE

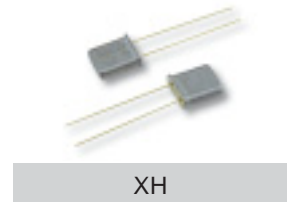
### XF

- Typical 11.05x4.65x13.0 mm standard package.
- Low cost.
- Tight specifications available.
- Packing: 200/500pcs plastic bag, 1000pcs (800pcs) Ammopack.



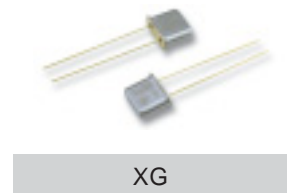
### XH

- Typical 8.0x3.5x8.05 mm standard miniature package.
- Low cost.
- Fundamental mode up to 50MHz available.
- Tight specifications available.
- Packing: 200/500pcs plastic bag.



### XG

- Typical 8.0x3.5x6.0 mm standard miniature package.
- Fundamental mode up to 52MHz available.
- Tight specifications available.
- Packing: 200/500pcs plastic bag.



## ORDERING INFORMATION

X	?	B	B	B	I	N	A	N	F	-	?
X'tal	Package	Load Capacitance (pF)	Freq. Tol. at 25°C (ppm)	Freq. Stability (ppm)	Temp. Range (°C)	Special Requirement	Oscillator Mode	Appearance	Lead Free	Dash	Freq. (MHz)
F:49U H:UM1 G:UM5		A: 8 B: 9 C: 10 D: 12 F: 16 G: 18 H: 20 J: 32 S: Series	A:± 5 B:± 10 P:± 15 C:± 20 E:± 30 G:± 50 H:±100	A:± 5 B:± 10 P:± 15 C:± 20 E:± 30 G:± 50 H:±100	I: -10~+60 C: -20~+70 L: -40~+85	B:Spurious D:DLD H:High C1 L:Low C1 N:No Special P:Pullability Q:Q Value S:Several	A:AT Fundamental T:AT 3 <sup>rd</sup> Overtone F:AT 5 <sup>th</sup> Overtone S:AT 7 <sup>th</sup> Overtone	I:Insulator N:Normal S:Lead Cut (by Customer Request) H: Insulator & Lead Cut	F:RoHS Compliant L:Not RoHS Compliant		xx.xxxxxx

\* If you have special requirement or the requirement of appearance, please provide detail data to us.

## EQUIVALENT SERIES RESISTANCE(ESR)

TYPE FREQUENCY	MODE	XH/XG	XF	TYPE FREQUENCY	MODE	XH/XG	XF
1.8MHz ≤ Freq < 2MHz	A1	—	1000Ω	5MHz ≤ Freq < 6MHz	A1	—	45Ω
2MHz ≤ Freq < 2.45MHz	A1	—	350Ω	6MHz ≤ Freq < 7MHz	A1	—	30Ω
2.45MHz ≤ Freq < 3MHz	A1	—	150Ω	7MHz ≤ Freq < 11.5MHz	A1	—	25Ω
3MHz ≤ Freq < 3.5MHz	A1	—	100Ω	11.5MHz ≤ Freq < 13MHz	A1	45Ω	20Ω
3.5MHz ≤ Freq < 4MHz	A1	—	85Ω	13MHz ≤ Freq < 50MHz	A1	45Ω	20Ω
4MHz ≤ Freq < 4.4MHz	A1	—	75Ω	25MHz ≤ Freq < 48MHz	A3	50Ω	50Ω
4.4MHz ≤ Freq < 5MHz	A1	—	50Ω	48MHz ≤ Freq ≤ 100MHz	A3	40Ω	40Ω

**FREQ. TORLANCE vs. LOAD CAPACITANCE**

Load Capacitance	ppm	A: ±5	B: ±10	P: ±15	C: ±20
A	8pF	X	X	△	○
C	10pF	X	X	△	○
D	12pF	X	△	○	○
F	16pF	X	△	△	○
S	Series	○	○	○	○

○:Standard △:Available (case by case) ✕:Not available

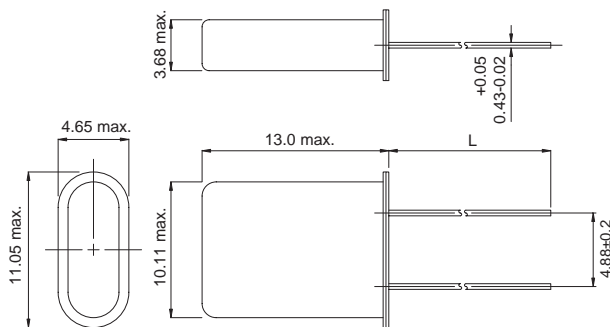
**FREQ. STABILITY vs. TEMP. RANGE**

Temp.(°C)	ppm	A: ±5	B: ±10	P: ±15	C: ±20	D: ±25
I	-10 to +60	X	○	○	○	○
C	-20 to +70	X	○	○	○	○
L	-40 to +85	X	X	X	△	○

○:Standard △:Available (case by case) ✕:Not available

**ELECTRICAL SPECIFICATION**

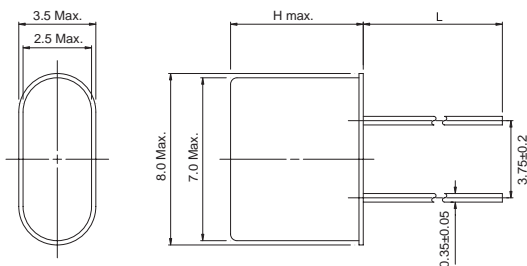
Storage Temp. Range	-50°C ~ 125°C
Drive Level	10 μW typical
Shunt Capacitance (Co)	7.0 pF Max.
Insulation Resistance	500MΩ Min. @ DC 100V
Aging	First year ± 5ppm

**OUTLINE DRAWING**
**XF**


No.	L
1	13.2±1
2	20.0±1
3	Refer to specifications sheet.

UNIT : mm

MARK	
1	MARK1: XX.XXX ⬆ A XX.XXX = FREQ. ⬆ LOGO A PRODUCTION LINE
2	MARK2: XX.XXX ⬆ YYWW A XX.XXX = FREQ. ⬆ LOGO A PRODUCTION LINE
3	MARK BY CUSTOMER

**XH / XG**


MODEL	H(Max.)
XH	8.05
XG	6.00

No.	L
1	13.2 ± 1
2	20.0 ± 1
3	Refer to specifications sheet.

UNIT:mm

# XO/XI/XP/XJ Type Crystal

RoHS Compliant Optional

## FEATURE

### XO/XI

- XO Typical 11.1 x 4.68 x 2.5 mm standard footprint.
- XI Typical 11.1 x 4.68 x 3.51 mm standard footprint.
- Low cost.
- Low profile for close PCB stacking.
- Aging:  $\pm 5$ ppm/year.
- Packing: Plastic bag 200/500 pcs or Ammopack 1000 pcs (800 pcs).



XO/XI

### XP/XJ

- XP Typical 13.0 x 4.85 x 3.15 mm metal can SMD package.
- XJ Typical 13.0 x 4.85 x 4.2 mm metal can SMD package.
- 24mm width Tape & Reel package for automatic assembly.
- Aging:  $\pm 5$ ppm/year.
- Packing: Tape & Reel, standard 1000 pcs per Reel.



XP/XJ

## ORDERING INFORMATION

X	?	H	C	C	C	N	A	N	F	-	?
X'tal	Package	Load Capacitance (pF)	Freq. Tol. at 25°C (ppm)	Freq. Stability (ppm)	Temp. Range (°C)	Special Requirement	Oscillator Mode	Appearance	Lead Free	Dash	Freq. (MHz)
I: U4 J: U4B O: U3 P: U3B		A: 8 B: 9 C: 10 D: 12 F: 16 G: 18 H: 20 I: 30 J: 32 S: Series	A: $\pm 5$ B: $\pm 10$ P: $\pm 15$ E: $\pm 30$ G: $\pm 50$ H: $\pm 100$	A: $\pm 5$ B: $\pm 10$ P: $\pm 15$ E: $\pm 30$ G: $\pm 50$ H: $\pm 100$	I: -10~+60 C: -20~+70 L: -40~+85	B: Spurious D: DLD H: High C1 L: Low C1 N: No Special P: Pullability Q: Q Value S: Several	A: AT Fundamental T: AT 3 <sup>rd</sup> Overtone	I: Insulator N: Normal S: Lead Cut (by Customer Request) H: Insulator & Lead Cut	F: RoHS Compliant L: Not RoHS Compliant		xx.xxxxxx

\* If you have special requirement or the requirement of appearance, please provide detail data to us.

## EQUIVALENT SERIES RESISTANCE(ESR)

TYPE FREQUENCY	MODE	E.S.R
Freq. $\leq 4$ MHz	A1	140 $\Omega$
4MHz < Freq. < 5MHz	A1	120 $\Omega$
5MHz $\leq$ Freq. < 6MHz	A1	80 $\Omega$
6MHz $\leq$ Freq. < 7MHz	A1	70 $\Omega$
7MHz $\leq$ Freq. < 9MHz	A1	45 $\Omega$
9MHz $\leq$ Freq. < 13MHz	A1	40 $\Omega$
13MHz $\leq$ Freq. < 16MHz	A1	35 $\Omega$
16MHz $\leq$ Freq. < 20MHz	A1	30 $\Omega$
20.00MHz $\leq$ Freq. $\leq 24$ MHz	A1	25 $\Omega$
24MHz $\leq$ Freq. < 32MHz	A3	120 $\Omega$
32MHz $\leq$ Freq. $\leq 80$ MHz	A3	80 $\Omega$

A1: AT cut fundamental  
A3: AT Third Overtone

## ELECTRICAL SPECIFICATON

Storage Temp. Range	-55°C~125 °C
Drive Level	10 $\mu$ W typical
Shunt Capacitance (Co)	7.0 pF Max.
Insulation Resistance	500M $\Omega$ Min. @ DC 100V
Aging	First year $\pm 5$ ppm Sub-year $\pm 5$ ppm

### FREQ. TORLANCE vs. LOAD CAPACITANCE

Load Capacitance	ppm	A:±5	B:±10	P:±15	C:±20	E:±30
A	8pF	X	X	△	○	○
C	10pF	X	X	△	○	○
D	12pF	X	△	○	○	○
F	16pF	X	△	○	○	○
S	Series	△	○	○	○	○

○:Standard △:Available (case by case) X:Not available

### FREQ. STABILITY vs. TEMP. RANGE

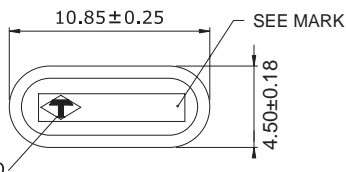
Temp.(°C)	ppm	A:±5	B:±10	P:±15	C:±20
I	-10 to +60	X	○	○	○
C	-20 to +70	X	△	○	○
L	-40 to +85	X	X	X	○

○:Standard △:Available (case by case) X:Not available

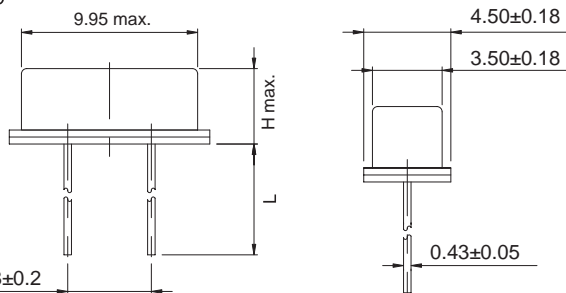
### OUTLINE DRAWING

#### XO/XI

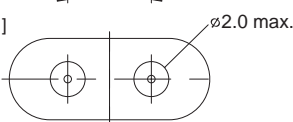
[ TOP VIEW ]



[ SIDE VIEW ]



[ BOTTOM VIEW ]



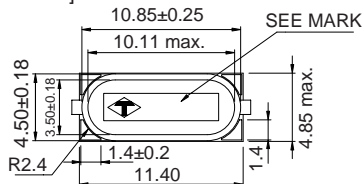
UNIT : mm

MODEL	H(mm)
XO	2.50
XI	3.51

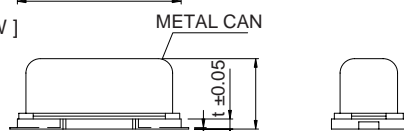
MARK
1 MARK 1: XX.X MY XX.X=FREQUENCY UNIT:MHz M:MONTH A→JAN G→JUL B→FEB H→AUG C→MAR I→SEP D→APR J→OCT E→MAY K→NOV F→JUN L→DEC Y:YEAR 200X
2 MARK 2: XX.XXX UNIT:MHz
3 MARK BY CUSTOMER

#### XP/XJ

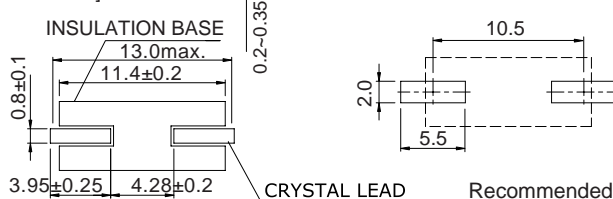
[ TOP VIEW ]



[ SIDE VIEW ]



[ BOTTOM VIEW ]



Recommended soldering pattern

UNIT : mm

\* Contact [Sales@taitien.com.tw](mailto:Sales@taitien.com.tw) for special request.

# XQ Type Crystal

RoHS Compliant Optional



Actual Size

## FEATURE

1. Typical 8.0 x 4.5 x 1.7 mm full ceramic SMD package.
2. 16mm width Tape & Reel package for automatic assembly.
3. Good aging.
4. Packing : Tape & Reel, 1000/3000 pcs per Reel.

## ORDERING INFORMATION

X	Q	H	G	G	I	N	A	N	F	-	?
X'tal	Package	Load Capacitance (pF)	Freq. Tol. @ 25°C (ppm)	Freq. Stability (ppm)	Temp. Range (°C)	Special Requirement	Oscillator Mode	Appearance	Lead Free	Dash	Freq. (MHz)
	8x4.5	A: 8 B: 9 C:10 D:12 F:16 G:18 H: 20 J : 32 S: Series	E: ± 30 G: ± 50 H: ±100	A: ± 5 B: ±10 P: ±15 C: ±20 E: ±30 G ±50 H ±100	I: -10~+60 C: -20~+70 L: -40~+85	B:Spurious D:DLD H:High C1 L:Low C1 N:No Special P:Pullability Q:Q Value S:Several	A:AT Fundamental T:AT 3 <sup>rd</sup> Overtone	N:Normal	F:RoHS Compliant L:Not RoHS Compliant		xx.xxxxxx

### Ordering Example: XQHGGINANF-24.576000MHZ

X'TAL Q-TYPE CL; 20pF; Freq. Tolerance: ±50ppm; Freq. Stability: ±50ppm; Temp. Range: -10°C to +60°C; No Special Requirement; AT Fundamental; Normal Appearance; RoHS Compliant; Freq. 24.576000MHZ.

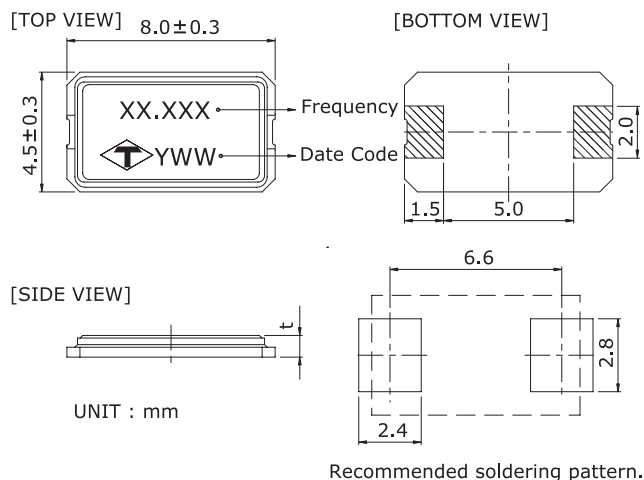
## ELECTRICAL SPECIFICATION

Storage Temp. Range	-55°C ~ 125°C
Drive Level	10 μW typical.
Shunt Capacitance (Co)	7.0 pF Max.
Insulation Resistance	500MΩ MIN @ DC 100V
Aging	±5ppm/year

## EQUIVALENT SERIES RESISTANCE(ESR)

TYPE FREQUENCY	MODE	E.S.R
7.3728MHz ≤ Freq < 11MHz	AT1	< 110Ω
11MHz ≤ Freq < 14.1MHz	AT1	< 50Ω
14.1MHz ≤ Freq < 18MHz	AT1	< 45Ω
18MHz ≤ Freq < 20.1MHz	AT1	< 30Ω
20.1MHz ≤ Freq.	AT1	< 25Ω
32MHz ≤ Freq < 48MHz	AT3	< 110Ω
48MHz ≤ Freq < 70MHz	AT3	< 100Ω

## OUTLINE DRAWING



## FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm	A:±5	B:±10	P:±15	C:±20
I	-10 ~ +60	△	○	○	○
C	-20 ~ +70	X	△	○	○
L	-40 ~ +85	X	△	△	○

○:Standard △:Available (case by case) X:Not available

### MARK

1 XX.XXX = FREQUENCY (MHz)

YWW

Y = LAST DIGIT OF YEAR

WW = WEEK NO.

2 MARK BY CUSTOMER

Max. LINE 2 LINES

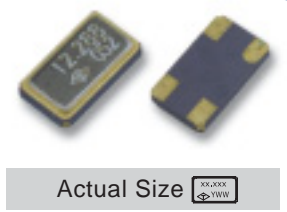
Max. CODE OF LINE 6 CODES

# XR Type Crystal

RoHS Compliant Standard

## FEATURE

1. Typical 6.0 x 3.5 x 1.0 mm ceramic SMD package.
2. 16 mm width Tape & Reel package for automatic assembly.
3. Tight Tolerance 10 ppm available.
4. Packing : Tape & Reel, 1000/2000/3000/5000 pcs per Reel.



## ORDERING INFORMATION

X	R	H	B	B	I	N	A	N	F	-	?
X'tal	Package	Load Capacitance (pF)	Freq. Tol. @ 25°C (ppm)	Freq. Stability (ppm)	Temp. Range (°C)	Special Requirement	Oscillator Mode	Appearance	Lead Free	Dash	Freq. (MHz)
	6 x 3.5	A: 8 B: 9 C:10 D:12 F:16 G:18 H:20 J:32 S:Series	A: ± 5 B: ±10 C: ±10 D: ±20 E: ±30 G: ±50	A: ± 5 B: ±10 P: ±15 C: ±20 D: ±25 E: ±30	I: -10~+60 C: -20~+70 L: -40~+85	B:Spurious D:DLD H:High C1 L:Low C1 N:No Special P:Pullability Q:Q Value S:Several	A:AT Fundamental	N:Normal	F:RoHS Compliant		xx.xxxxxx

### Ordering Example: XRHBBINANF-13.000000MHz

X'TAL R-TYPE; CL: 20pF; Freq. Tolerance: ±10ppm; Freq. Stability: ±10ppm; Temp. Range: -10°C to +60°C; No Special Requirement; AT Fundamental; Normal Appearance; RoHS Compliant; Freq. 13.000000MHz.

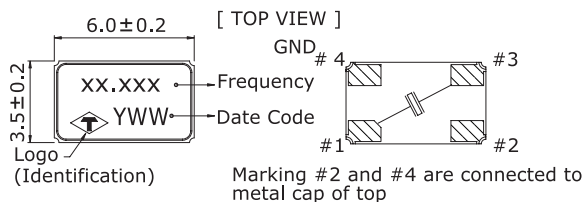
## ELECTRICAL SPECIFICATION

Storage Temp. Range	-55°C ~ 125°C
Drive Level	10 μW typical, 100 μW Max.
Shunt Capacitance (Co)	7.0 pF Max.
Insulation Resistance	500MΩ Min. @ DC 100V
Aging	± 1.0ppm/year

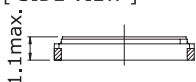
## EQUIVALENT SERIES RESISTANCE(ESR)

TYPE FREQUENCY	MODE	E.S.R
9.6MHz ≤ Freq < 12MHz	AT1	< 60Ω
12MHz ≤ Freq < 13MHz	AT1	< 50Ω
13MHz ≤ Freq < 19MHz	AT1	< 45Ω
19MHz ≤ Freq < 20MHz	AT1	< 40Ω
20MHz ≤ Freq < 30MHz	AT1	< 35Ω
30MHz ≤ Freq	AT1	< 30Ω

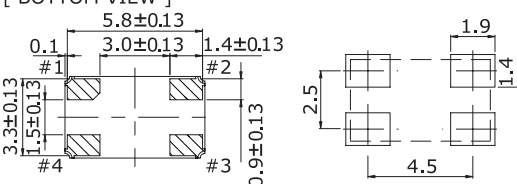
## OUTLINE DRAWING



### [ SIDE VIEW ]



### [ BOTTOM VIEW ]



UNIT:mm

Recommend Soldering Pattern

## FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm	A:±5	B:±10	P:±15	C:±20
I -10 ~ +60		○	○	○	○
C -20 ~ +70		△	○	○	○
L -40 ~ +85		X	X	△	○

○:Standard △:Available (case by case) X:Not available

### MARK

- 1 XX.XXX = FREQUENCY (MHz)  
 YWW  
 Y = LAST DIGIT OF YEAR  
 WW = WEEK NO.
- 2 MARK BY CUSTOMER  
 Max. LINE 2 LINES  
 Max. CODE OF LINE 6 CODES



# XS Type Crystal

RoHS Compliant Optional



Actual Size

## FEATURE

1. Typical 5.0 x 3.2 x 1.3 mm full ceramic SMD package.
2. 16mm width Tape & Reel package for automatic assembly.
3. Good aging.
4. Packing : Tape & Reel, 1000/2000/3000/5000 pcs per Reel.

## ORDERING INFORMATION

X	S	H	G	G	I	N	A	N	F	-	?
X'tal	Package	Load Capacitance (pF)	Freq. Tol. @ 25°C (ppm)	Freq. Stability (ppm)	Temp. Range (°C)	Special Requirement	Oscillator Mode	Appearance	Lead Free	Dash	Freq.(MHz)
	5x3.2	A: 8 B: 9 C:10 D:12 F:16 G:18 H:20 J:32 S:Series	E: ± 30 G: ± 50 H: ±100	A: ± 5 B: ± 10 P: ± 15 C: ± 20 E: ± 30 G: ± 50 H: ± 100	I: -10~+60 C: -20~+70 L: -40~+85	B:Spurious D:DLD H:High C1 L:Low C1 N:No Special P:Pullability Q:Q Value S:Several	A:AT Fundamental	N:Normal	F:RoHS Compliant L: Not RoHS Compliant		xx.xxxxxx

### Ordering Example: XSHGINANF-24.576000MHZ

X'TAL S-TYPE; CL: 20pF; Freq. Tolerance: ±50ppm; Frequency Stability: ±50ppm; Temp Range: -10°C to +60°C; No Special Requirement; AT Fundamental; Normal Appearance; RoHS Compliant; Freq. 24.576000MHz.

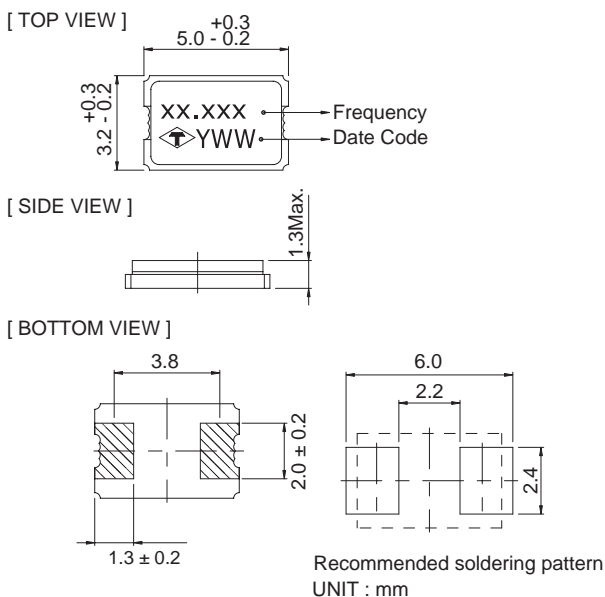
## ELECTRICAL SPECIFICATION

Storage Temp. Range	-55°C ~ 125°C
Drive Level	10 μW typical
Shunt Capacitance (Co)	7.0 pF Max.
Insulation Resistance	500MΩ Min. @ DC 100V
Aging	± 5ppm/year

## EQUIVALENT SERIES RESISTANCE(ESR)

TYPE FREQUENCY	MODE	E.S.R
10MHz ≤ Freq < 16MHz	AT1	< 150 Ω
16MHz ≤ Freq < 20MHz	AT1	< 100 Ω
20MHz ≤ Freq < 30MHz	AT1	< 70 Ω
30MHz ≤ Freq < 50MHz	AT1	< 50 Ω

## OUTLINE DRAWING



## FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm			
	A:± 5	B:±10	P:±15	C:±20
I -10 ~ +60	△	○	○	○
C -20 ~ +70	X	△	○	○
L -40 ~ +85	X	△	△	○

○ : Standard △ : Available (case by case) X : Not available

### MARK

1 XX.XXX = FREQUENCY (MHz)

YWW

Y = LAST DIGIT OF YEAR

WW = WEEK NO.

2 MARK BY CUSTOMER

Max. LINE 2 LINES

Max. CODE OF LINE 6 CODES

# XV Type Crystal

RoHS Compliant Standard



Actual size

## FEATURE

1. Typical 5.0 x 3.2 x 0.9 mm ultra thin ceramic package.
2. 16 mm width Tape & Reel package for automatic assembly.
3. Tight Tolerance 10 ppm available.
4. Packing : Tape & Reel, 1000/2000/3000/5000 pcs per Reel.

## ORDERING INFORMATION

X	V	B	B	B	I	N	A	N	F	-	?
X'tal	Package	Load Capacitance (pF)	Freq. Tol. @ 25°C (ppm)	Freq. Stability (ppm)	Temp. Range (°C)	Special Requirement	Oscillator Mode	Appearance	Lead Free	Dash	Freq. (MHz)
	5 x 3.2	A: 8 B: 9 C: 10 D: 12 F: 16 G: 18 H: 20 J: 32 S: Series	A: ± 5 B: ±10 P: ±15 C: ±20 D: ±25 E: ±30 G: ±50 H: ±100	A: ± 5 B: ±10 P: ±15 C: ±20 D: ±25 E: ±30 G: ±50 H: ±100	I: -10~+60 C: -20~+70 L: -40~+85	B:Spurious D:DLD H:High C1 L:Low C1 N:No Special P:Pullability Q:Q Value S:Several M:Mask	A:AT Fundamental	N:Normal	F:RoHS Compliant		xx.xxxxxx

### Ordering Example: XVBBBINANF-13.00000MHz

X'TAL V-TYPE; CL: 9pF; Frequency Tolerance: ±10ppm; Frequency Stability: ±10ppm; Temp. Range: -10°C to +60°C. ; No Special Requirement; AT Fundamental; Normal Appearance; RoHS Compliant; Freq. 13.00000MHz.

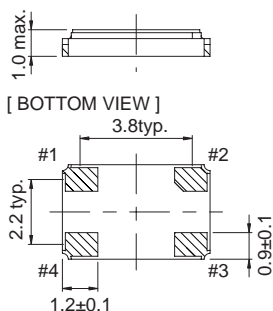
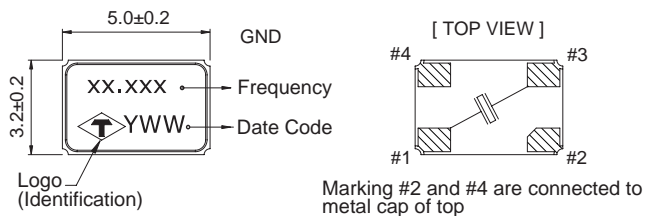
## ELECTRICAL SPECIFICATION

Storage Temp. Range	-55°C~125°C
Drive Level	10 μW typical, 100 μW Max.
Shunt Capacitance (Co)	7.0 pF Max.
Insulation Resistance	500MΩ Min. @ DC 100V
Aging	± 1.0ppm/year

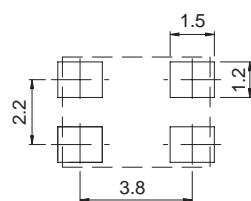
## EQUIVALENT SERIES RESISTANCE(ESR)

TYPE FREQUENCY	MODE	E.S.R
11MHz ≤ Freq < 12MHz	A1	65 Ω
12MHz ≤ Freq < 13MHz	A1	60 Ω
13MHz ≤ Freq < 16MHz	A1	55 Ω
16MHz ≤ Freq < 24MHz	A1	50 Ω
24MHz ≤ Freq < 48MHz	A1	45 Ω
48MHz ≤ Freq < 53.125MHz	A1	40 Ω
Freq = 80MHz	A3	60 Ω

## OUTLINE DRAWING



UNIT:mm



Recommend Soldering Pattern

## FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm	A:±5	B:±10	P:±15	C:±20
I	-10 ~ +60	△	○	○	○
C	-20 ~ +70	x	○	○	○
L	-40 ~ +85	x	x	△	○

○:Standard △:Available (case by case) x :Not available

## MARK

1 XX.XXX = FREQUENCY (MHz)



Y = LAST DIGIT OF YEAR

WW = WEEK NO.

2 MARK BY CUSTOMER

Max. LINE 2 LINES

Max. CODE OF LINE 6 CODES

# XW Type Crystal

RoHS Compliant Standard



Actual Size

## FEATURE

1. Typical 4.0 x 2.5 x 0.8 mm ultra thin ceramic package.
2. For Bluetooth and mobile phone.
3. Packing : Tape & Reel, 1000/2000/3000/5000 pcs per Reel.

## ORDERING INFORMATION

X	W	B	B	B	I	N	A	N	F	-	?
X'tal	Package	Load Capacitance (pF)	Freq. Tol. @ 25°C (ppm)	Freq. Stability (ppm)	Temp. Range(°C)	Special Requirement	Oscillator Mode	Appearance	Lead Free	Dash	Freq.(MHz)
	4 x 2.5	A: 8 B: 9 C: 10 D: 12 F: 16 G: 18 H: 20 J: 32 S: Series	B: ±10 P: ±15 C: ±20 D: ±25 E: ±30 G: ±50 H: ±100	A: ± 5 B: ±10 C: ±20 D: ±25 E: ±30 G: ±50 H: ±100	I: -10~+60 C: -20~+70 L: -40~+85	B:Spurious D:DLD H:High C1 L:Low C1 N:No Special P:Pullability Q:Q Value S:Several M:Mask	A:AT Fundamental	N:Normal	F:RoHS Compliant		xx.xxxxxx

### Ordering Example: XWBBBINANF-13.00000MHZ

X'TAL W-TYPE; CL: 9pF; Freq. Tolerance: ±10ppm; Freq. Stability: ±10ppm; Temp. Range: -10°C to +60°C ; No Special Requirement; AT Fundamental; Normal Appearance; RoHS Compliant; Freq. 13.000000MHz.

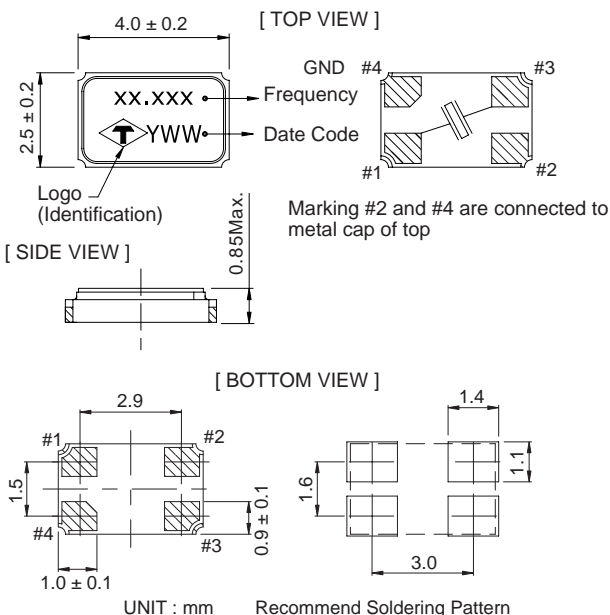
## ELECTRICAL SPECIFICATION

Storage Temp. Range	-55°C~125 °C
Drive Level	10 μW typical, 100 μW Max.
Shunt Capacitance (Co)	3.0 pF Max.
Insulation Resistance	500MΩ Min. @ DC 100V
Aging	± 1.0ppm/year

## EQUIVALENT SERIES RESISTANCE(ESR)

TYPE	FREQUENCY	MODE	E.S.R
12MHz ≤ Freq < 16MHz	A1	≤70 Ω	
16MHz ≤ Freq < 32MHz	A1	≤50 Ω	
32MHz ≤ Freq ≤ 36.864MHz	A1	≤20 Ω	

## OUTLINE DRAWING



## FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm	A:±5	B:±10	P:±15	C:±20
I	-10~+60	△	○	○	○
C	-20~+70	x	○	○	○
L	-40~+85	x	x	△	○

○: Standard △: Available (case by case) x: Not available

### MARK

- 1 XX.XXX = FREQUENCY (MHz)  
 YWW  
 Y = LAST DIGIT OF YEAR  
 WW = WEEK NO.
- 2 MARK BY CUSTOMER  
 Max. LINE 2 LINES  
 Max. CODE OF LINE 6 CODES

# XX Type Crystal

RoHS Compliant Standard

preliminary

## FEATURE

1. Typical 3.2 x 2.5 x 0.6 mm ultra thin ceramic package.
2. 12 mm width Tape & Reel package for automatic assembly.
3. Tight Tolerance 10 ppm available.
4. Packing : Tape & Reel, 1000/2000/3000/5000 pcs per Reel.



Actual Size

## ORDERING INFORMATION

X	X	B	B	B	I	N	A	N	F	-	?
X'tal	Package	Load Capacitance (pF)	Freq. Tol. @ 25°C (ppm)	Freq. Stability (ppm)	Temp. Range(°C)	Special Requirement	Oscillator Mode	Appearance	Lead Free	Dash	Freq. (MHz)
	3.2x2.5	A: 8 B: 9 C: 10 D: 12 F: 16 G: 18 H: 20 J: 32 S: Series	A: ± 5 B: ±10 P: ±15 C: ±20 D: ±25 E: ±30 G: ±50 H: ±100	A: ± 5 B: ±10 P: ±15 C: ±20 D: ±25 E: ±30 G: ±50 H: ±100	I: -10~+60 C: -20~+70 L: -40~+85	B: Spurious Requested D: DLD Requested H: High C1 Requested L: Low C1 Requested N: No Special P: Pullability Requested Q: Q Value Requested S: Several Requested	A: AT Fundamental	N: Normal	F: RoHS Compliant		xx.xxxxxx

### Ordering Example : XXBBBINANF-16.000000MHZ

X'TAL X-TYPE; CL: 9pF, Freq. Tolerance: ±10ppm, Freq. Stability: ±10ppm; Temp. Range: -10°C to +60°C, No Special Requirement; AT Fundamental; Normal Appearance; RoHS Compliant; Freq. 16.000000MHz.

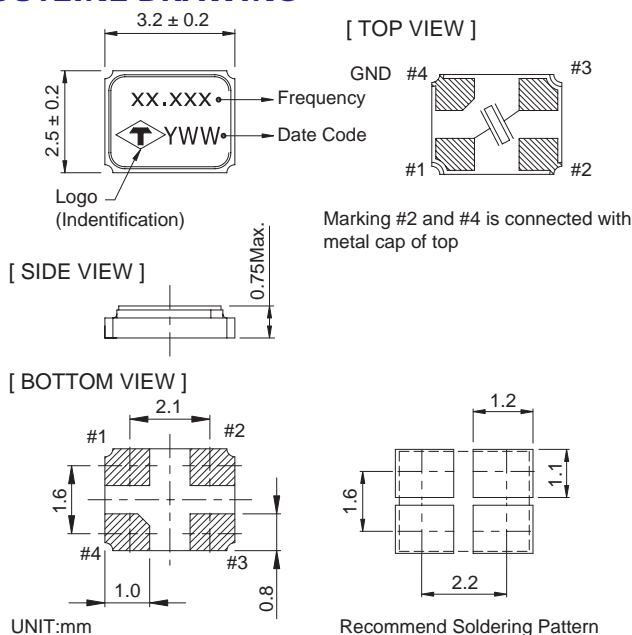
## ELECTRICAL SPECIFICATION

Storage Temp. Range	-55 °C 125 °C
Drive Level	10 μW typical, 100 μW Max.
Shunt Capacitance (Co)	7.0 pF Max.
Insulation Resistance	500M Min. @ DC 100V
Aging	±1.0ppm/year

## EQUIVALENT SERIES RESISTANCE

TYPE FREQUENCY	MODE	E.S.R
13MHz ≤ Freq	A1	150
13MHz < Freq ≤ 19.5MHz	A1	100
19.5MHz < Freq ≤ 27MHz	A1	80
27MHz < Freq ≤ 48MHz	A1	60

## OUTLINE DRAWING



## STANDARD FREQUENCY(MHz)

16 , 19.5 , 24 , 26

## FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm		
	A: ±5	B: ±10	P: ±15
I -10 ~ +60	△	○	○
C -20 ~ +70	X	○	○
L -40 ~ +85	X	X	○

○: Standard X: Not available

△: Available (case by case)

### MARK

1 XX.XXX = FREQUENCY (MHz)

YWW

Y = LAST DIGIT OF YEAR

WW = WEEK NO.

2 MARK BY CUSTOMER

Max. LINE 2 LINES

Max. CODE OF LINE 6 CODES