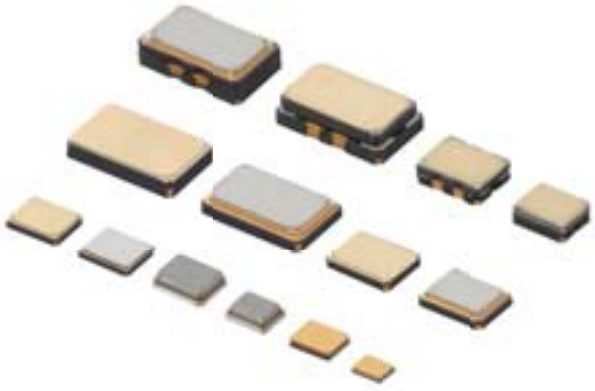
muRata
INNOVATOR IN ELECTRONICS

Crystal Units/Crystal Oscillators



EU RoHS Compliant

- All the products in this catalog comply with EU RoHS.
- EU RoHS is "the European Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment."
- For more details, please refer to our website 'Murata's Approach for EU RoHS' (http://www.murata.com/en-eu/support/compliance/rohs).

Contents

Product specifications are as of March 2015.

Bluetooth® is a registered trademark or trademark of Bluetooth SIG, Inc. in the United States and other countries.

Please check the MURATA website (http://www.murata.com/) if you cannot find the part number in the catalog.

Selection Guide

Applications?

Consumer

Crystal Units

±100ppm

2016

XRCGB_F_L
2.0x1.6x0.7mm
24.0000–48.0000MHz

XRCPB_F_L
2.0x1.6x0.5mm
24.0000–48.0000MHz

2520

XRCHA_F_L
2.5x2.0x0.8mm
16.0000–20.0000MHz

±30/45ppm

2016

XRCGB_F_M
2.0x1.6x0.7mm
24.0000–48.0000MHz

XRCPB_F_M
2.0x1.6x0.5mm
24.0000–48.0000MHz

±20ppm

2016

XRCGB_F_P
2.0x1.6x0.7mm
24.0000–32.0000MHz

XRCPB_F_P
2.0x1.6x0.5mm
24.0000–32.0000MHz

±10ppm

1612

XRCFD
1.6x1.2x0.35mm
24.0000–31.9999MHz

XRCMD
1.6x1.2x0.33mm
32.0000–48.0000MHz

2016

XRCGD
2.0x1.6x0.45mm
26.0000–48.0000MHz

2520

XRCHJ
2.5x2.0x0.5mm
16.0000–52.0000MHz

3225

XRCJK
3.2x2.5x0.8mm
12.0000–52.0000MHz

5032

XRCLK
5.0x3.2x1.05mm
10.0000–52.0000MHz

Automotive

Crystal Units

±100ppm

2016

XRCGB_F_A
2.0x1.6x0.7mm
24.0000–48.0000MHz

XRCGB_F_G
2.0x1.6x0.7mm
24.0000–48.0000MHz

2520

XRCHA_F_A
2.5x2.0x0.8mm
16.0000–24.0000MHz

Industrial

Crystal Units

±100ppm

2016

XRCGB_F_Z
2.0x1.6x0.7mm
24.0000–48.0000MHz

XRCPB_F_Z
2.0x1.6x0.5mm
24.0000–48.0000MHz

2520

XRCHA_F_Z
2.5x2.0x0.8mm
16.0000–20.0000MHz

±10ppm

2520

XRCHH
2.5x2.0x0.5mm
16.0000–52.0000MHz

3225

XRCJH
3.2x2.5x0.6mm
13.0000–52.0000MHz

5032

XRCLH
5.0x3.2x1.0mm
10.0000–52.0000MHz

Crystal Oscillators

±1ppm

2520

XNCHH
2.5x2.0x1.0mm
10.0000–52.0000MHz

XTCHH
2.5x2.0x1.0mm
10.0000–52.0000MHz

3225

XNCJH
3.2x2.5x1.0mm
10.0000–52.0000MHz

XTCJH
3.2x2.5x1.0mm
10.0000–52.0000MHz

5032

XTCLH_E
5.0x3.2x1.5mm
10.0000–40.0000MHz

±0.5ppm

5032

XTCLH_J
5.0x3.2x1.5mm
10.0000–40.0000MHz

● Part Numbering

Crystal Unit

(Part Number)

XR	C	GB	24M000	F	0	L	00	R0
❶	❷	❸	❹	❺	❻	❼	❽	❾

❶Product ID

Product ID	
XR	Crystal Unit

❷Lead Style

Code	Lead Style
C/T	SMD

❸Size · Structure

Code	Size · Structure
FD	1612 (STD) Metal Sealing
MD	1612 (Low Profile) Metal Sealing
GD	2016 (STD) Metal Sealing
GB	2016 (STD) Resin Sealing
PB	2016 (Low Profile) Resin Sealing
HA	2520 Resin Sealing
HH	2520 Metal Sealing
HJ	2520 Seam Sealing
JH	3225 Metal Sealing
JK	3225 Seam Sealing
LH	5032 Metal Sealing
LK	5032 Seam Sealing

❹Nominal Center Frequency

Expressed by six-digit alphanumeric. The unit is in hertz (Hz).
Decimal point is expressed by capital letter "**M**".

❺Overtone Order

Code	Overtone Order
F	Fundamental
K	Customized Fundamental

❻Frequency Tolerance

Code	Frequency Tolerance
0	±100ppm
1	±10ppm
2	±20ppm
3	±30ppm
4	±45ppm/±40ppm*1
A	±25ppm/±15ppm*2
Y	Total*3±20ppm

*1 *2 In the case when ❸ is "HH" or "JK"
*3 Including Initial Torelance+Temperature Characteristics+Aging+Reflow

❼Frequency Shift by Temperature

Code	Frequency Shift by Temperature
A	±100ppm max. (Automotive Grade)
G	±50ppm (Car Multimedia Grade)
L	±50ppm min.
M	±40ppm
N	±25ppm or 30ppm
P	±20ppm
Q	±10ppm to ±15ppm/±10ppm to ±19ppm*1
Z	±100ppm (for Industrial)

*1 In the case when ❸ is "HH" or "JK"

❽Individual Specification

Code	
**	Two-digit alphanumeric express Individual Specification.

00: Standard specification type.

❾Packaging (Quantity and Plastic taping reel diameter are expressed by one-digit number in "*")

Code	Packaging
R*/E*/J*/P*	Plastic Taping

Crystal Oscillator

(Part Number)

XN	C	HH	19M200	T	J	E	A5	P0
❶	❷	❸	❹	❺	❻	❼	❽	❾

❶Product ID

Product ID	
XT	VC-TCXO
XN	TCXO

❷Lead Style

Code	Lead Style
C	SMD

❸Size · Structure

Code	Size · Structure
HH	2520 Metal Sealing
JH	3225 Metal Sealing
LH	5032 Metal Sealing

❹Nominal Center Frequency

Expressed by six-digit alphanumeric. The unit is in hertz (Hz).
Decimal point is expressed by capital letter "**M**".

❺Output Wave

Code	Output Wave
T	Clipped Sign Wave

❻Frequency Tolerance

Code	Frequency Tolerance
J	±1.0 to ±1.4ppm

❼Frequency Shift by Temperature

Code	Frequency Shift by Temperature
E	±0.5ppm max.
J	Less than ±0.3ppm

❽Individual Specification

Code	
**	Two-digit alphanumeric express Individual Specification.

❾Packaging (Quantity and Plastic taping reel diameter are expressed by one-digit number in "∗")

Code	Packaging
E∗/G∗/P∗	Plastic Taping

for Consumer

Crystal Units

RoHS Lead free

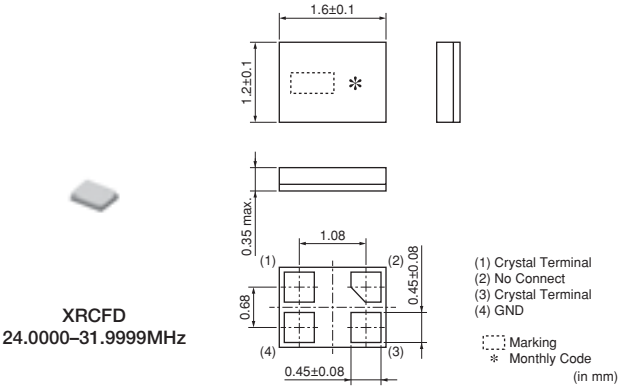
The crystal unit that realized small package and highly accurate frequency, based on Murata's excellent package technology and high grade quartz crystal elements.

■ Features

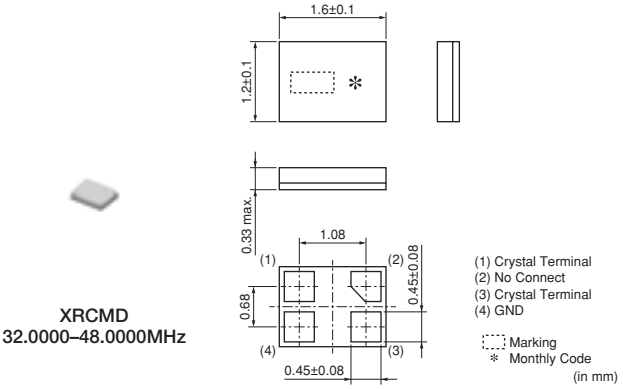
1. The series is available in the applications to be necessary for high accuracy crystal units.
   Especially, it is the best for the communication clocks such as GPS, Wi-Fi, B.T. (Bluetooth®), BLE (Bluetooth® Low Energy), SATA and USB3.0.
2. The crystal units is extremerly small size, and contribute to reduction in mounting area.
3. The series complies to RoHS directive, being lead-free (phase 3).

■ Applications

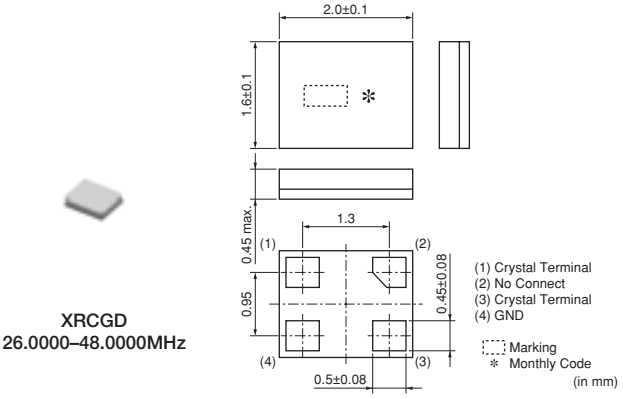
1. Clock for GPS controller ICs
   (smartphone, wearable equipment, module, etc.)
2. Clock for Wi-Fi, B.T.and ACPU controller ICs
   (smartphone, wearable device, module, etc.)
3. Clock for BLE controller ICs
   (wearable, fitness and healthcare devices, module, etc.)
4. Storage devices with SATA interface
   (HDD, SSD, Optical storage device, etc.)
5. Clock for USB (Ultra-Speed and High-Speed) controller ICs (Mobile phone, DVC, DSC, Portable audio, PC peripheral, etc.)
6. Clock for PC, visual equipment controller ICs
7. Audio equipment and musical instrument, etc.
8. Other applications for replacement from the other crystal units or oscillators.



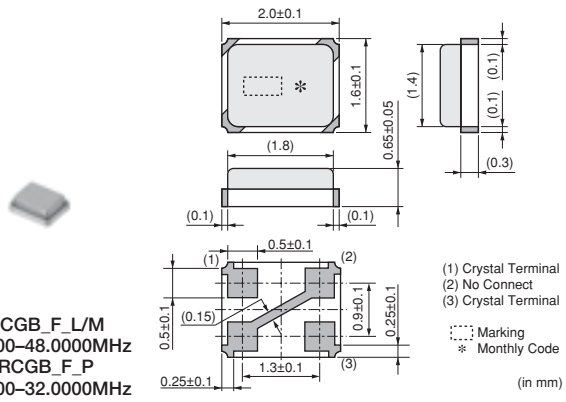
XRCFD
24.0000–31.9999MHz



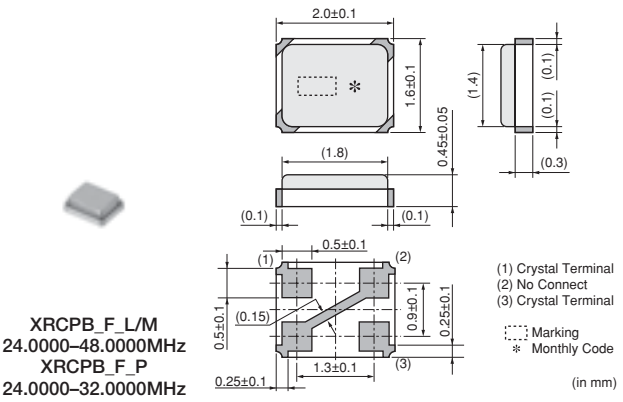
XRCMD
32.0000–48.0000MHz



XRCGD
26.0000–48.0000MHz



XRCGB_F_L/M
24.0000–48.0000MHz
XRCGB_F_P
24.0000–32.0000MHz



XRCPB_F_L/M
24.0000–48.0000MHz
XRCPB_F_P
24.0000–32.0000MHz

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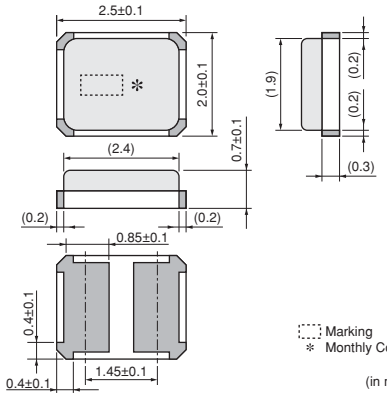
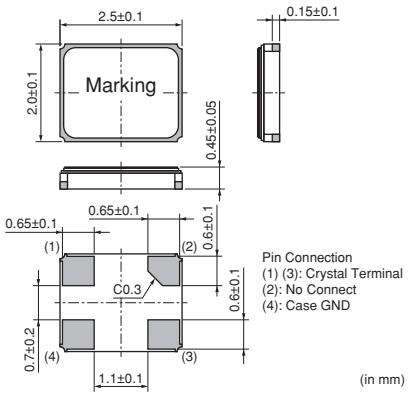
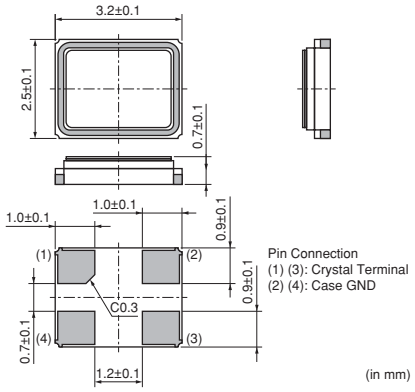
XRCHA_F_L
16.0000–20.0000MHz



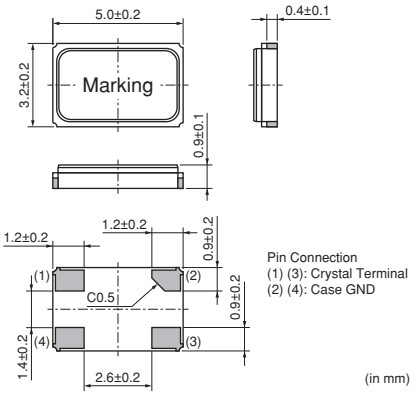
XRCHJ
16.0000–52.0000MHz



XRCJK
12.0000–52.0000MHz



XRCLK
10.0000–52.0000MHz



■ Series

Series	Size	Package	Frequency (MHz)	Frequency Tolerance (ppm max.) [at 25°C±3°C]	Frequency Shift by Temperature (ppm max.) [Standard Condition: +25°C]	Frequency Aging (ppm max./Year)	Drive Level (μW max.)	Operating Temperature Range (°C)
XRCFD	1612	Metal	24.0000 to 31.9999	±10	±10	±1	100	-20 to +70
XRCMD			32.0000 to 48.0000					
XRCGD	2016		26.0000 to 48.0000					
XRCGB_F_L		Resin	24.0000 to 48.0000	±100	±50	±5	300	-30 to +85
XRCPB_F_L								
XRCGB_F_M				±30/45	±40			
XRCPB_F_M								
XRCGB_F_P			24.0000 to 32.0000	±20	±20			
XRCPB_F_P								
XRCHA_F_L	2520		16.0000 to 20.0000	±100	±100			
XRCHJ		Seam	16.0000 to 52.0000	±10	±15	±3	30	
XRCJK	3225		12.0000 to 52.0000					
XRCLK	5032		10.0000 to 52.0000					

XRCPB series is low profile type of XRCGB series.

■ Part Number List

Series	Part Number	Frequency (MHz)	Frequency Tolerance (ppm max.) [at 25°C±3°C]	Frequency Shift by Temperature (ppm max.) [Standard Condition: +25°C]	Frequency Aging (ppm max./Year)	ESR* (Ωmax.)	Load Capacitance (pF)	Drive Level (μW max.)
XRCMD	**XRCMD37M400F1Q01R0**	37.4000	±10	±10 (-20 to +70°C)	±1	60	8	100
XRCGD	**XRCGD26M000K1Q01R0**	26.0000	±10	±10 (-20 to +70°C)	±1	60	8	100
XRCGD	**XRCGD37M400K1Q01R0**	37.4000	±10	±10 (-20 to +70°C)	±1	50	8	100
XRCGD	**XRCGD48M000K1Q01R0**	48.0000	±10	±10 (-20 to +70°C)	±1	22	8	100
XRCGB_F_L	**XRCGB24M000F0L00R0**	24.0000	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCGB_F_L	**XRCGB24M576F0L00R0**	24.5760	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCGB_F_L	**XRCGB25M000F0L00R0**	25.0000	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCGB_F_L	**XRCGB26M000F0L00R0**	26.0000	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCGB_F_L	**XRCGB27M000F0L00R0**	27.0000	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCGB_F_L	**XRCGB27M120F0L00R0**	27.1200	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCGB_F_L	**XRCGB30M000F0L00R0**	30.0000	±100	±50 (-30 to +85°C)	±5	100	6	300

*: Equivalent Series Resistance

Continued from the preceding page.

Series	Part Number	Frequency (MHz)	Frequency Tolerance (ppm max.) [at 25°C±3°C]	Frequency Shift by Temperature (ppm max.) [Standard Condition: +25°C]	Frequency Aging (ppm max./Year)	ESR* (Ωmax.)	Load Capacitance (pF)	Drive Level (μW max.)
XRCGB_F_L	**XRCGB31M250F0L00R0**	31.2500	±100	±50 (-30 to +85°C)	±5	100	6	300
XRCGB_F_L	**XRCGB32M000F0L00R0**	32.0000	±100	±50 (-30 to +85°C)	±5	100	6	300
XRCGB_F_L	**XRCGB33M868F0L00R0**	33.8688	±100	±50 (-30 to +85°C)	±5	100	6	300
XRCGB_F_L	**XRCGB40M000F0L00R0**	40.0000	±100	±50 (-30 to +85°C)	±5	100	6	300
XRCGB_F_L	**XRCGB48M000F0L00R0**	48.0000	±100	±50 (-30 to +85°C)	±5	100	6	300
XRCPB_F_L	**XRCPB24M000F0L00R0**	24.0000	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCPB_F_L	**XRCPB24M576F0L00R0**	24.5760	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCPB_F_L	**XRCPB25M000F0L00R0**	25.0000	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCPB_F_L	**XRCPB26M000F0L00R0**	26.0000	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCPB_F_L	**XRCPB27M000F0L00R0**	27.0000	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCPB_F_L	**XRCPB27M120F0L00R0**	27.1200	±100	±50 (-30 to +85°C)	±5	150	6	300
XRCPB_F_L	**XRCPB30M000F0L00R0**	30.0000	±100	±50 (-30 to +85°C)	±5	100	6	300
XRCPB_F_L	**XRCPB31M250F0L00R0**	31.2500	±100	±50 (-30 to +85°C)	±5	100	6	300
XRCPB_F_L	**XRCPB32M000F0L00R0**	32.0000	±100	±50 (-30 to +85°C)	±5	100	6	300
XRCPB_F_L	**XRCPB33M868F0L00R0**	33.8688	±100	±50 (-30 to +85°C)	±5	100	6	300
XRCPB_F_L	**XRCPB40M000F0L00R0**	40.0000	±100	±50 (-30 to +85°C)	±5	100	6	300
XRCPB_F_L	**XRCPB48M000F0L00R0**	48.0000	±100	±50 (-30 to +85°C)	±5	100	6	300
XRCGB_F_M	**XRCGB24M000F3M00R0**	24.0000	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCGB_F_M	**XRCGB24M576F3M00R0**	24.5760	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCGB_F_M	**XRCGB25M000F3M00R0**	25.0000	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCGB_F_M	**XRCGB26M000F3M00R0**	26.0000	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCGB_F_M	**XRCGB27M000F3M00R0**	27.0000	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCGB_F_M	**XRCGB27M120F3M00R0**	27.1200	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCGB_F_M	**XRCGB27M120F3M10R0**	27.1200	±30	±40 (-30 to +85°C)	±5	80	10	300
XRCGB_F_M	**XRCGB30M000F3M00R0**	30.0000	±30	±40 (-30 to +85°C)	±5	100	6	300
XRCGB_F_M	**XRCGB31M250F3M00R0**	31.2500	±30	±40 (-30 to +85°C)	±5	100	6	300
XRCGB_F_M	**XRCGB32M000F3M00R0**	32.0000	±30	±40 (-30 to +85°C)	±5	100	6	300
XRCGB_F_M	**XRCGB33M868F4M00R0**	33.8688	±45	±40 (-30 to +85°C)	±5	100	6	300
XRCGB_F_M	**XRCGB40M000F4M00R0**	40.0000	±45	±40 (-30 to +85°C)	±5	100	6	300
XRCGB_F_M	**XRCGB48M000F4M00R0**	48.0000	±45	±40 (-30 to +85°C)	±5	100	6	300
XRCPB_F_M	**XRCPB24M000F3M00R0**	24.0000	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCPB_F_M	**XRCPB24M576F3M00R0**	24.5760	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCPB_F_M	**XRCPB25M000F3M00R0**	25.0000	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCPB_F_M	**XRCPB26M000F3M00R0**	26.0000	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCPB_F_M	**XRCPB27M000F3M00R0**	27.0000	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCPB_F_M	**XRCPB27M120F3M00R0**	27.1200	±30	±40 (-30 to +85°C)	±5	150	6	300
XRCPB_F_M	**XRCPB30M000F3M00R0**	30.0000	±30	±40 (-30 to +85°C)	±5	100	6	300
XRCPB_F_M	**XRCPB31M250F3M00R0**	31.2500	±30	±40 (-30 to +85°C)	±5	100	6	300
XRCPB_F_M	**XRCPB32M000F3M00R0**	32.0000	±30	±40 (-30 to +85°C)	±5	100	6	300
XRCPB_F_M	**XRCPB33M868F4M00R0**	33.8688	±45	±40 (-30 to +85°C)	±5	100	6	300
XRCPB_F_M	**XRCPB40M000F4M00R0**	40.0000	±45	±40 (-30 to +85°C)	±5	100	6	300
XRCPB_F_M	**XRCPB48M000F4M00R0**	48.0000	±45	±40 (-30 to +85°C)	±5	100	6	300
XRCGB_F_P	**XRCGB24M000F2P00R0**	24.0000	±20	±20 (-30 to +85°C)	±5	150	6	300
XRCGB_F_P	**XRCGB25M000F2P00R0**	25.0000	±20	±20 (-30 to +85°C)	±5	150	6	300
XRCGB_F_P	**XRCGB26M000F2P00R0**	26.0000	±20	±20 (-30 to +85°C)	±5	150	6	300
XRCGB_F_P	**XRCGB27M000F2P00R0**	27.0000	±20	±20 (-30 to +85°C)	±5	150	6	300
XRCGB_F_P	**XRCGB27M120F2P00R0**	27.1200	±20	±20 (-30 to +85°C)	±5	150	6	300
XRCGB_F_P	**XRCGB27M120F2P10R0**	27.1200	±20	±20 (-30 to +85°C)	±5	80	10	300
XRCGB_F_P	**XRCGB30M000F2P00R0**	30.0000	±20	±20 (-30 to +85°C)	±5	100	6	300
XRCGB_F_P	**XRCGB31M250F2P00R0**	31.2500	±20	±20 (-30 to +85°C)	±5	100	6	300
XRCGB_F_P	**XRCGB32M000F2P00R0**	32.0000	±20	±20 (-30 to +85°C)	±5	100	6	300
XRCPB_F_P	**XRCPB24M000F2P00R0**	24.0000	±20	±20 (-30 to +85°C)	±5	150	6	300
XRCPB_F_P	**XRCPB25M000F2P00R0**	25.0000	±20	±20 (-30 to +85°C)	±5	150	6	300
XRCPB_F_P	**XRCPB26M000F2P00R0**	26.0000	±20	±20 (-30 to +85°C)	±5	150	6	300
XRCPB_F_P	**XRCPB27M000F2P00R0**	27.0000	±20	±20 (-30 to +85°C)	±5	150	6	300
XRCPB_F_P	**XRCPB27M120F2P00R0**	27.1200	±20	±20 (-30 to +85°C)	±5	150	6	300

*: Equivalent Series Resistance

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1

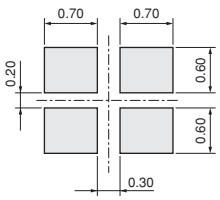
Series	Part Number	Frequency (MHz)	Frequency Tolerance (ppm max.) [at 25°C±3°C]	Frequency Shift by Temperature (ppm max.) [Standard Condition: +25°C]	Frequency Aging (ppm max./Year)	ESR* (Ωmax.)	Load Capacitance (pF)	Drive Level (μW max.)
XRCPB_F_P	**XRCPB30M000F2P00R0**	30.0000	±20	±20 (-30 to +85°C)	±5	100	6	300
XRCPB_F_P	**XRCPB31M250F2P00R0**	31.2500	±20	±20 (-30 to +85°C)	±5	100	6	300
XRCPB_F_P	**XRCPB32M000F2P00R0**	32.0000	±20	±20 (-30 to +85°C)	±5	100	6	300
XRCHA_F_L	**XRCHA16M000F0L01R0**	16.0000	±100	±100 (-30 to +85°C)	±5	100	8	300
XRCHA_F_L	**XRCHA20M000F0L01R0**	20.0000	±100	±100 (-30 to +85°C)	±5	80	8	300
XRCHJ	**XRCHJ16M000F1QB1P0**	16.0000	±10	±15 (-30 to +85°C)	±3	100	8	30
XRCHJ	**XRCHJ19M200F1QA9P0**	19.2000	±10	±15 (-30 to +85°C)	±3	100	8	30
XRCHJ	**XRCHJ20M000F1QA7P0**	20.0000	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCHJ	**XRCHJ26M000F1QD1P0**	26.0000	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCHJ	**XRCHJ36M000F1QA0P0**	36.0000	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCHJ	**XRCHJ40M000F1QB0P0**	40.0000	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCHJ	**XRCHJ52M000F1QA0P0**	52.0000	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCJK	**XRCJK12M000F1QB4P0**	12.0000	±10	±15 (-30 to +85°C)	±3	100	8	30
XRCJK	**XRCJK13M000F1QA3P0**	13.0000	±10	±15 (-30 to +85°C)	±3	100	8	30
XRCJK	**XRCJK15M360F1QA0P0**	15.3600	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCJK	**XRCJK20M000F1QB3P0**	20.0000	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCJK	**XRCJK24M576F1QA0P0**	24.5760	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCJK	**XRCJK26M000F1QC3P0**	26.0000	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCJK	**XRCJK36M000F1QA0P0**	36.0000	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCJK	**XRCJK40M000F1QA2P0**	40.0000	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCJK	**XRCJK52M000F1QA0P0**	52.0000	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCLK	**XRCLK10M000F1QA8P0**	10.0000	±10	±15 (-30 to +85°C)	±3	80	8	30
XRCLK	**XRCLK12M000F1QA6P0**	12.0000	±10	±15 (-30 to +85°C)	±3	60	8	30
XRCLK	**XRCLK14M745F1QB6P0**	14.7456	±10	±15 (-30 to +85°C)	±3	60	8	30
XRCLK	**XRCLK16M000F1QA7P0**	16.0000	±10	±15 (-30 to +85°C)	±3	60	8	30
XRCLK	**XRCLK21M250F1QA8P0**	21.2500	±10	±15 (-30 to +85°C)	±3	60	8	30
XRCLK	**XRCLK52M000F1QA0P0**	52.0000	±10	±15 (-30 to +85°C)	±3	60	8	30

*: Equivalent Series Resistance

■ Standard Land Pattern Dimensions

XRCFD, XRCMD

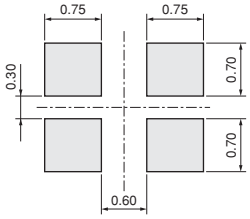
(Recommendable Land Pattern)



(in mm)

XRCGD

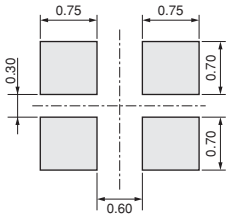
(Recommendable Land Pattern)



(in mm)

XRCGB_F_L/M/P, XRCPB_F_L/M/P

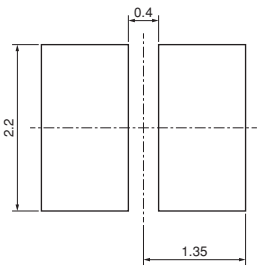
(Recommendable Land Pattern)



(in mm)

XRCHA_F_L

(Recommendable Land Pattern)



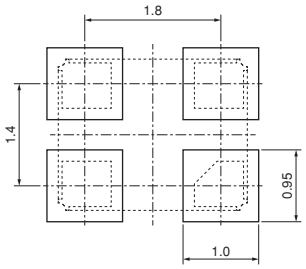
(in mm)

Continued on the following page.

Continued from the preceding page.

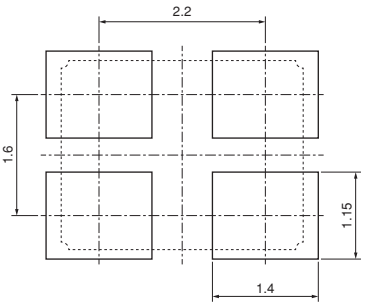
■ Standard Land Pattern Dimensions

XRCHJ



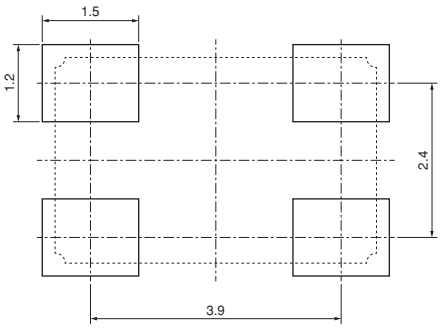
(in mm)

XRCJK



(in mm)

XRCLK



(in mm)

1

Notice -Crystal Units for Consumer-

■ Notice (Soldering and Mounting)

1.1. Soldering Condition

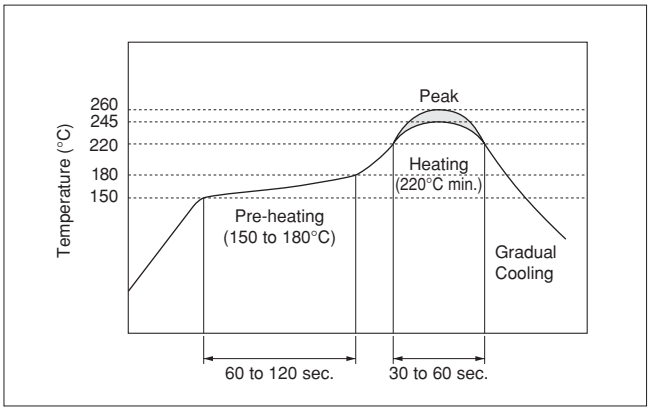
(1) Reflow

Please mount components on a circuit board by the re-flow soldering.

Flux: Please use rosin based flux, but do not use water soluble flux.

Solder: Please use solder (Sn-3.0Ag-0.5Cu) under the following condition.

Standard thickness of soldering paste: 0.10 to 0.15mm



	Condition	
Pre-heating	150 to 180°C	60 to 120 sec.
Heating	220°C min.	30 to 60 sec.
Peak Temperature	245°C min. 260°C max.	5 sec. max.

(2) Soldering Iron

If compelled to mount the component by using soldering iron, please do not directly touch the component with the soldering iron. The component terminals or electrical characteristics may be damaged if excessive thermal stress is applied. Please keep solder off from the metal cap (Lid) portion.

	Condition
Pre-heating	150°C 60 sec.
Heating of the Soldering Iron	350°C max.
Watt	30W max.
Shape of the Soldering Iron	ø3mm max.
Soldering Time	5 sec. max.
Solder	Sn-3.0Ag-0.5Cu

1.2. Optimum Solder Amount for Soldering

Please make the solder volume below the height of the substrate. When exceeding the substrate, the damage of sealing part between the metal cap and the substrate may occur.

2. Wash

The component cannot withstand washing.

3. Notice for Mounting

The component is recommended with placement machines employing optical placement capabilities.

The component might be damaged by mechanical force depending on placement machine and condition.

Make sure that you have evaluated by using placement machines before going into mass production.

Do not use placement machines employing mechanical positioning.

Please contact Murata for details beforehand.

Continued on the following page.

Notice -Crystal Units for Consumer-

Continued from the preceding page.

■ Notice (Storage and Operating Condition)

1. Product Storage Condition
   Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
   Temperature: -10 to + 40 degrees C
   Humidity: 15 to 85% R.H.
2. Expire Date on Storage
   Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in the solderability and/or rusty. Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
   (1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, and/or be degraded in the solderability due to the storage in a chemical atmosphere.
   (2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
   (3) Please do not store the products in the places such as: in a damp heated place, in a place where direct sunlight comes in, in place applying vibrations.
   (4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
   (5) Please do not drop the products to avoid cracking of crystal element.
4. Others
   Conformal coating or washing of the component is not acceptable.
   Please be sure to consult with our sales representative or engineer whenever and prior to using the products.

■ Notice (Rating)

The component may be damaged if excess mechanical stress is applied.

■ Notice (Handling)

1. Irregular or stop oscillation may occur under unmatched circuit conditions.
   Please design your oscillation circuit to get 5 times or more of a negative resistance against the maximum value of the Equivalent Series Resistance, that is specified in order.
2. Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.
3. Please do not use this products in following applications in transportation equipment (vehicles, trains, ships, etc.).
   (example: engine control, brake control, steering control, body control.)

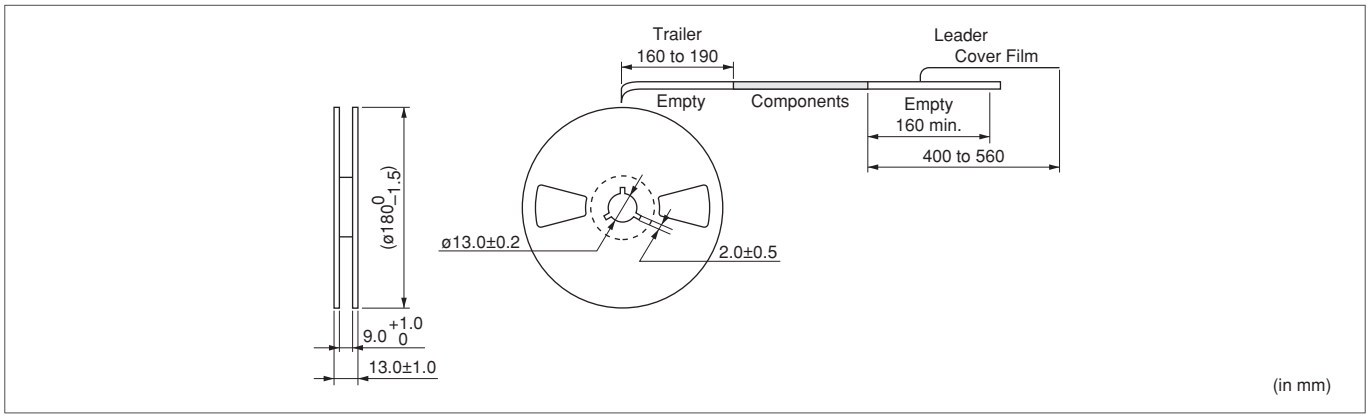
1

Packaging -Crystal Units for Consumer-

■ Minimum Quantity/Dimensions of Reel

Plastic Tape ø180mm	Plastic Tape ø330mm
3,000	9,000

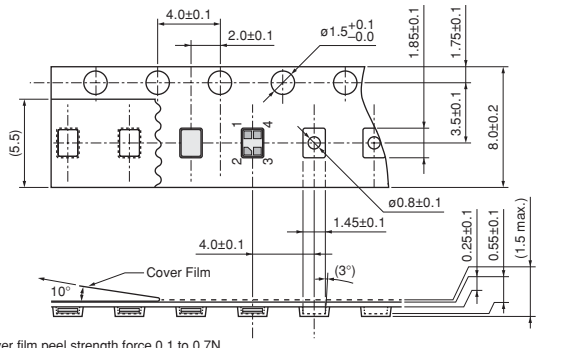
(pcs.)



(in mm)

■ Dimensions of Taping

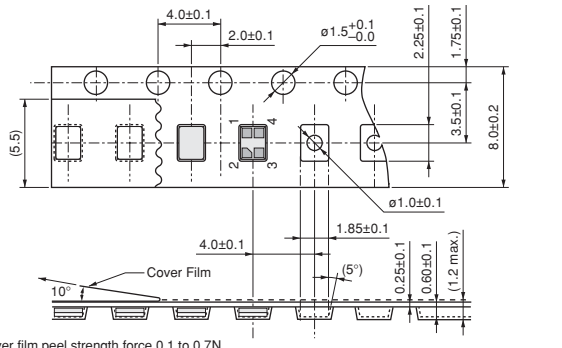
XRCFD, XRCMD



The cover film peel strength force 0.1 to 0.7N
The cover film peel speed 300mm/min.

(in mm)

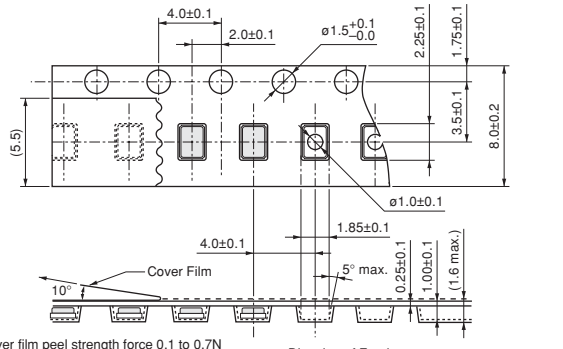
XRCGD



The cover film peel strength force 0.1 to 0.7N
The cover film peel speed 300mm/min.

(in mm)

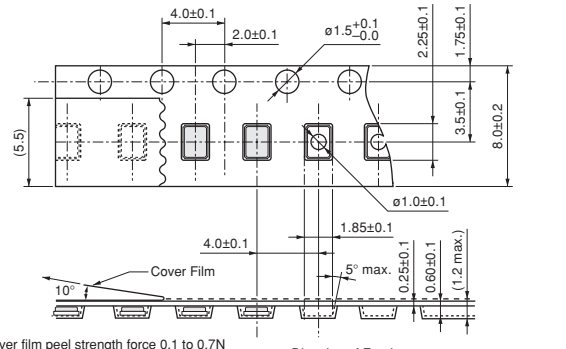
XRCGB_F_L/M/P



The cover film peel strength force 0.1 to 0.7N
The cover film peel speed 300mm/min.

(in mm)

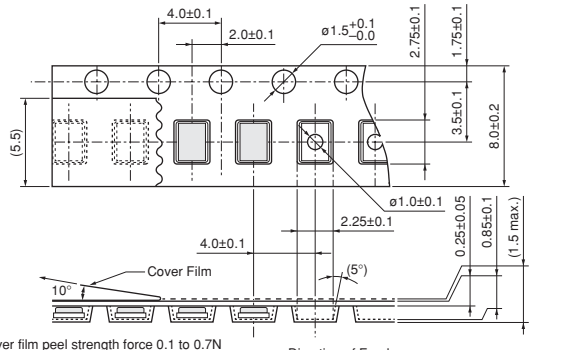
XRCPB_F_L/M/P



The cover film peel strength force 0.1 to 0.7N
The cover film peel speed 300mm/min.

(in mm)

XRCHA_F_L



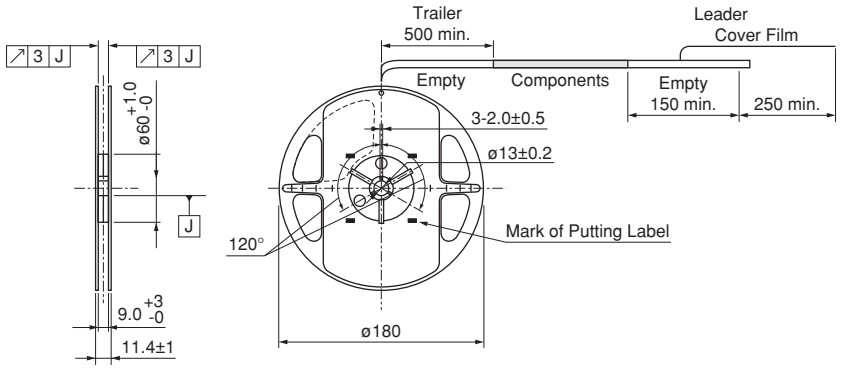
The cover film peel strength force 0.1 to 0.7N
The cover film peel speed 300mm/min.

(in mm)

■ Minimum Quantity/Dimensions of Reel

Plastic Tape ø180mm
3,000

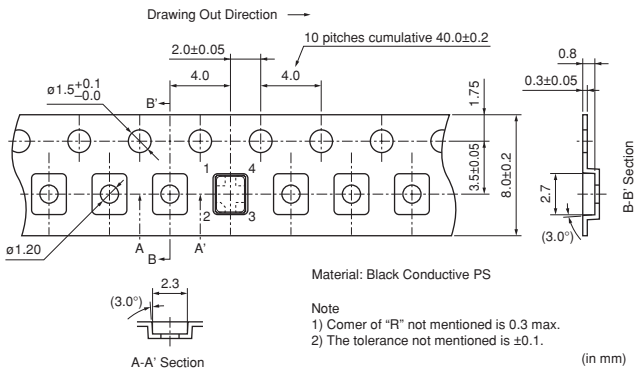
(pcs.)



(in mm)

■ Dimensions of Taping

XRCHJ

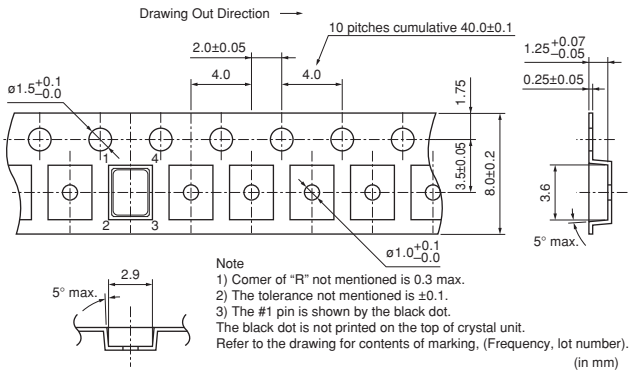


Material: Black Conductive PS

Note
1) Comer of "R" not mentioned is 0.3 max.
2) The tolerance not mentioned is ±0.1.

(in mm)

XRCJK



Note
1) Comer of "R" not mentioned is 0.3 max.
2) The tolerance not mentioned is ±0.1.
3) The #1 pin is shown by the black dot.
The black dot is not printed on the top of crystal unit.
Refer to the drawing for contents of marking, (Frequency, lot number).

(in mm)

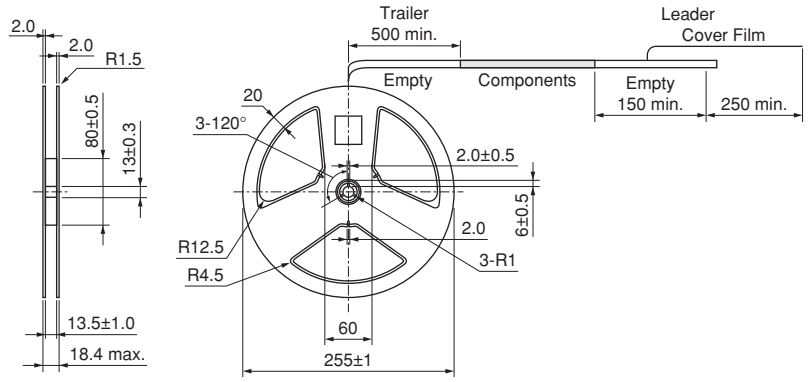
1

Packaging -Crystal Units for Consumer-

■ Minimum Quantity/Dimensions of Reel

Plastic Tape ø255mm
3,000

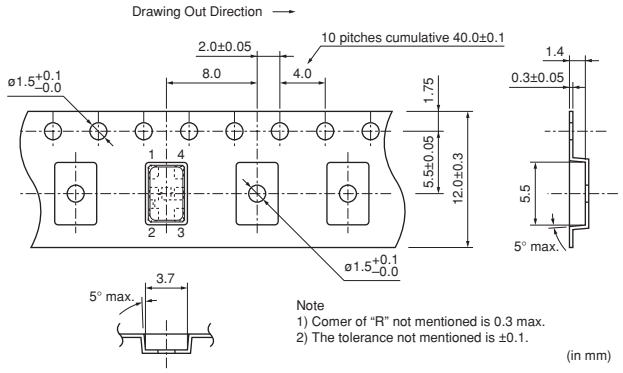
(pcs.)



(in mm)

■ Dimensions of Taping

XRCLK



Note
1) Comer of "R" not mentioned is 0.3 max.
2) The tolerance not mentioned is ±0.1.

(in mm)

for Automotive

Crystal Units

AEC-Q200 RoHS Lead free

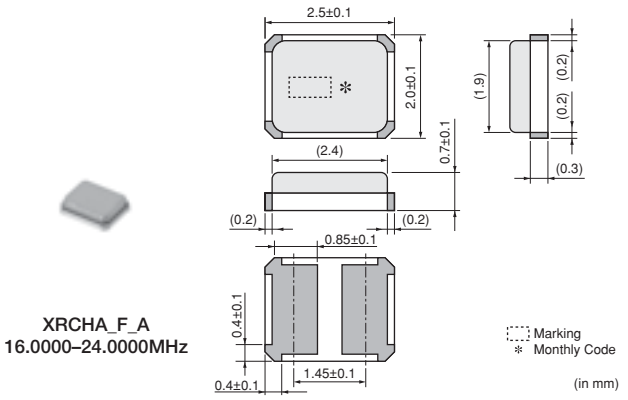
The crystal unit for automotive that realized small package and highly accurate frequency, based on Murata's excellent package technology and high grade quartz crystal elements.

■ Features

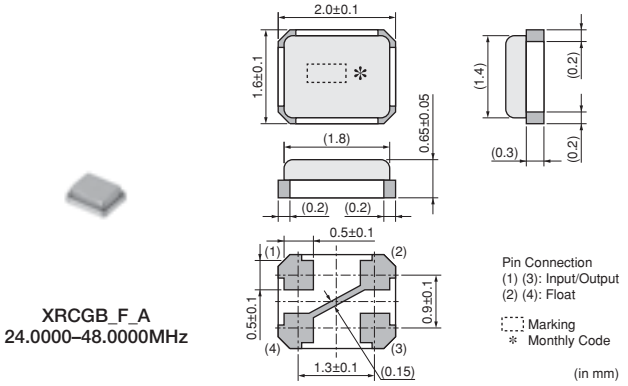
1. The series has high reliability and is available for a wide temperature range.
2. The crystal unit is small size, and contribute to reduction in mounting area.
3. The series complies to RoHS and ELV directives, being lead-free (phase 3).
4. The series complies to AEC-Q200.

■ Applications

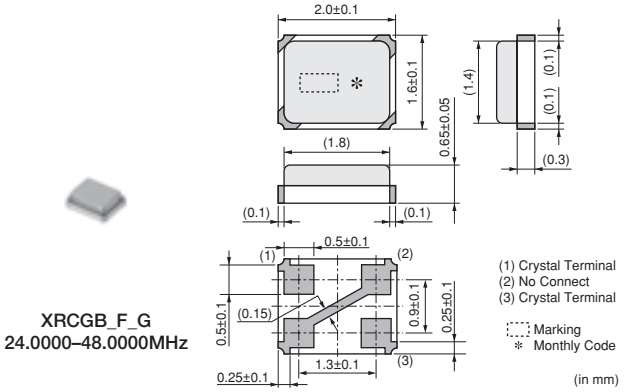
1. Power Train (ex. Engine/Transmission management ECU)
2. ADAS (ex. Camera for driverr assist, Image processing, Emergency Brake Assist ECU)
3. Chassis, Safety applications, etc.
4. Car multimedia equipments.



XRCHA_F_A
16.0000–24.0000MHz



XRCGB_F_A
24.0000–48.0000MHz



XRCGB_F_G
24.0000–48.0000MHz

■ Series

Series	Size	Package	Frequency (MHz)	Frequency Tolerance (ppm max.) [at 25°C±3°C]	Frequency Shift by Temperature (ppm max.) [Standard Condition: +25°C]	Frequency Aging (ppm max./Year)	Operating Temperature Range (°C)	Applications
XRCHA_F_A	2520	Resin	16.0000 to 24.0000	±100	±100	±5	-40 to +125*	ADAS, Power Train, Chassis, Safety
XRCGB_F_A	2016		24.0000 to 48.0000	±30/±50	±35/±65	±2	-40 to +125	ADAS, Power Train, Chassis, Safety
XRCGB_F_G				±50	±50	±5	-40 to +85	Car Multimedia

*: +150°C is available.

2

■ Part Number List

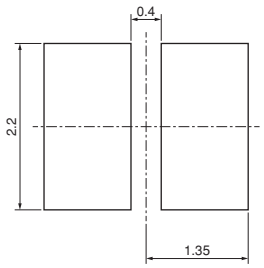
Series	Part Number	Frequency (MHz)	Frequency Tolerance (ppm max.) [at 25°C±3°C]	Frequency Shift by Temperature (ppm max.) [Standard Condition: +25°C]	Frequency Aging (ppm max./Year)	ESR* (Ωmax.)	Load Capacitance (pF)	Drive Level (μW max.)
XRCHA_F_A	**XRCHA16M000F0A01R0**	16.0000	±100	±100 (-40 to +125°C)	±5	100	8	300
XRCHA_F_A	**XRCHA16M000F0A11R0**	16.0000	±100	±100 (-40 to +125°C)	±5	100	8	600
XRCHA_F_A	**XRCHA16M000F0A12R0**	16.0000	±100	±100 (-40 to +150°C)	±5	100	8	300
XRCHA_F_A	**XRCHA16M000F0A13R0**	16.0000	±100	±100 (-40 to +150°C)	±5	100	8	600
XRCHA_F_A	**XRCHA20M000F0A01R0**	20.0000	±100	±100 (-40 to +150°C)	±5	80	8	300
XRCHA_F_A	**XRCHA20M000F0A11R0**	20.0000	±100	±100 (-40 to +125°C)	±5	80	8	600
XRCHA_F_A	**XRCHA20M000F0A12R0**	20.0000	±100	±100 (-40 to +150°C)	±5	80	8	300
XRCHA_F_A	**XRCHA20M000F0A13R0**	20.0000	±100	±100 (-40 to +150°C)	±5	80	8	600
XRCHA_F_A	**XRCHA24M000F0A01R0**	24.0000	±100	±100 (-40 to +125°C)	±5	80	8	300
XRCHA_F_A	**XRCHA24M000F0A11R0**	24.0000	±100	±100 (-40 to +125°C)	±5	80	8	600
XRCHA_F_A	**XRCHA24M000F0A12R0**	24.0000	±100	±100 (-40 to +150°C)	±5	80	8	300
XRCHA_F_A	**XRCHA24M000F0A13R0**	24.0000	±100	±100 (-40 to +150°C)	±5	80	8	600
XRCGB_F_A	**XRCGB24M000F3A00R0**	24.0000	±30	±35 (-40 to +125°C)	±2	120	6	300
XRCGB_F_A	**XRCGB25M000F3A00R0**	25.0000	±30	±35 (-40 to +125°C)	±2	100	6	300
XRCGB_F_A	**XRCGB27M000F3A00R0**	27.0000	±30	±35 (-40 to +125°C)	±2	80	6	300
XRCGB_F_A	**XRCGB27M120F3A00R0**	27.1200	±30	±35 (-40 to +125°C)	±2	80	6	300
XRCGB_F_G	**XRCGB24M000F0G00R0**	24.0000	±100	±50 (-40 to +85°C)	±5	150	6	300
XRCGB_F_G	**XRCGB24M000F3G00R0**	24.0000	±30	±50 (-40 to +85°C)	±5	150	6	300
XRCGB_F_G	**XRCGB24M576F0G00R0**	24.5760	±100	±50 (-40 to +85°C)	±5	150	6	300
XRCGB_F_G	**XRCGB24M576F3G00R0**	24.5760	±30	±50 (-40 to +85°C)	±5	150	6	300
XRCGB_F_G	**XRCGB25M000F0G00R0**	25.0000	±100	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB25M000F3G00R0**	25.0000	±30	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB26M000F0G00R0**	26.0000	±100	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB26M000F3G00R0**	26.0000	±30	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB27M000F0G00R0**	27.0000	±100	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB27M000F3G00R0**	27.0000	±30	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB27M120F3G00R0**	27.1200	±30	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB30M000F0G00R0**	30.0000	±100	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB30M000F3G00R0**	30.0000	±30	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB33M868F0G00R0**	33.8688	±100	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB33M868F4G00R0**	33.8688	±45	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB40M000F0G00R0**	40.0000	±100	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB40M000F4G00R0**	40.0000	±45	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB48M000F0G00R0**	48.0000	±100	±50 (-40 to +85°C)	±5	100	6	300
XRCGB_F_G	**XRCGB48M000F4G00R0**	48.0000	±45	±50 (-40 to +85°C)	±5	100	6	300

*: Equivalent Series Resistance

■ Standard Land Pattern Dimensions

XRCHA_F_A

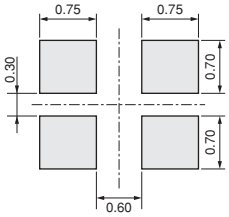
(Recommendable Land Pattern)



(in mm)

XRCGB_F_A/G

(Recommendable Land Pattern)



(in mm)

Notice -Crystal Units for Automotive-

■ Notice (Soldering and Mounting)

1.1. Soldering Condition

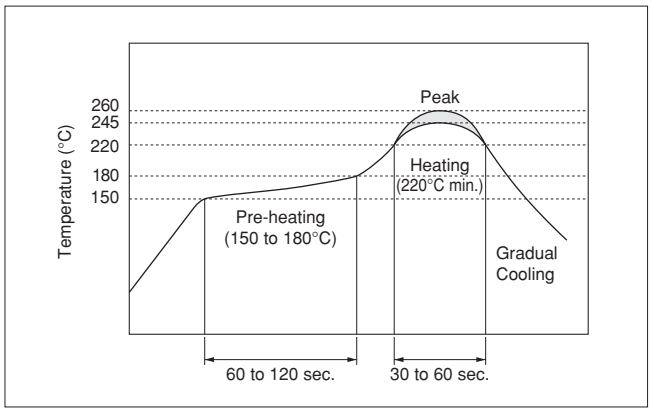
(1) Reflow

Please mount components on a circuit board by the re-flow soldering.

Flux: Please use rosin based flux, but do not use water soluble flux.

Solder: Please use solder (Sn-3.0Ag-0.5Cu) under the following condition.

Standard thickness of soldering paste: 0.10 to 0.15mm



	Condition	
Pre-heating	150 to 180°C	60 to 120 sec.
Heating	220°C min.	30 to 60 sec.
Peak Temperature	245°C min. 260°C max.	5 sec. max.

(2) Soldering Iron

If compelled to mount the component by using soldering iron, please do not directly touch the component with the soldering iron. The component terminals or electrical characteristics may be damaged if excessive thermal stress is applied.

	Condition
Pre-heating	150°C 60 sec.
Heating of the Soldering Iron	350°C max.
Watt	30W max.
Shape of the Soldering Iron	ø3mm max.
Soldering Time	5 sec. max.
Solder	Sn-3.0Ag-0.5Cu

1.2. Optimum Solder Amount for Soldering

Please make the solder volume below the height of the substrate. When exceeding the substrate, the damage of sealing part between the metal cap and the substrate may occur.

1.3. Others

Do not reuse components once mounted onto a circuit board.

2. Wash

The component cannot withstand washing.

3. Notice for Mounting

The component is recommended with placement machines employing optical placement capabilities.

The component might be damaged by mechanical force depending on placement machine and condition.

Make sure that you have evaluated by using placement machines before going into mass production.

Do not use placement machines employing mechanical positioning.

Please contact Murata for details beforehand.

Continued on the following page.

Notice -Crystal Units for Automotive-

Continued from the preceding page.

■ Notice (Storage and Operating Condition)

1. Product Storage Condition
   Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
   Temperature: -10 to + 40 degrees C
   Humidity: 15 to 85% R.H.
2. Expire Date on Storage
   Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in the solderability and/or rusty. Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
   (1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, and/or be degraded in the solderability due to the storage in a chemical atmosphere.
   (2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
   (3) Please do not store the products in the places such as: in a damp heated place, in a place where direct sunlight comes in, in place applying vibrations.
   (4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
   (5) Please do not drop the products to avoid cracking of crystal element.
4. Others
   Conformal coating or washing of the component is not acceptable because it is not hermetically sealed. Please be sure to consult with our sales representative or engineer whenever and prior to using the products.

■ Notice (Rating)

The component may be damaged if excess mechanical stress is applied.

■ Notice (Handling)

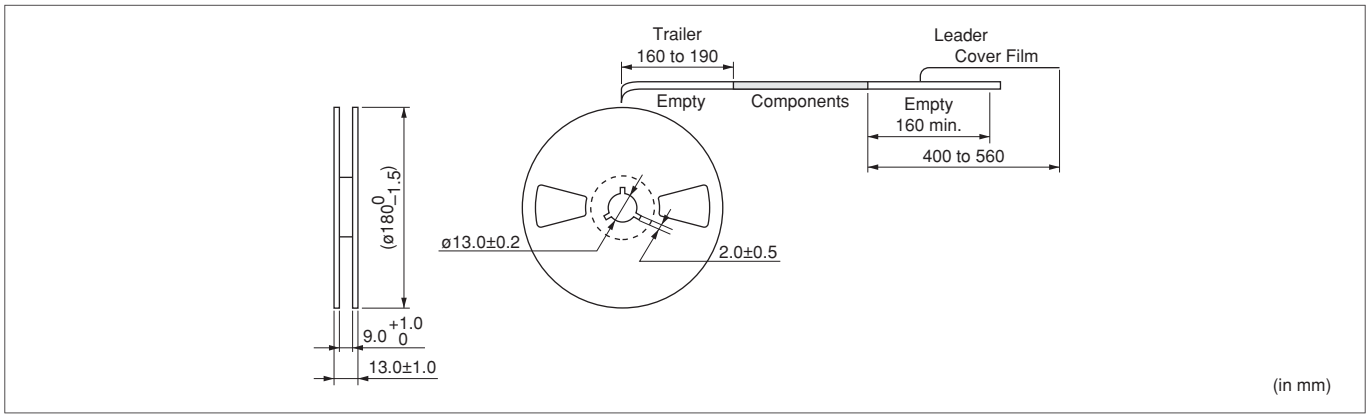
1. Irregular or stop oscillation may occur under unmatched circuit conditions.
   Please design your oscillation circuit to get 5 times or more of a negative resistance against the maximum value of the Equivalent Series Resistance, that is specified in order.
2. Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.

Packaging -Crystal Units for Automotive-

■ Minimum Quantity/Dimensions of Reel

Plastic Tape ø180mm	Plastic Tape ø330mm
3,000	9,000

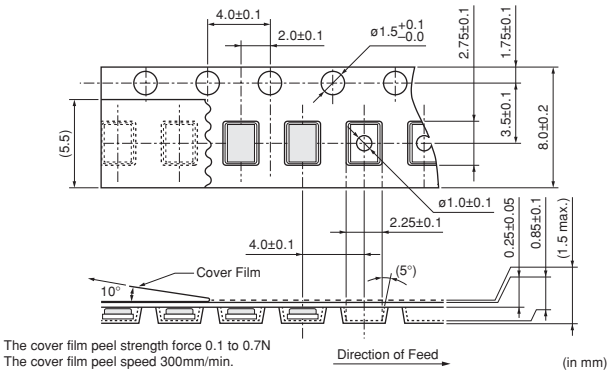
(pcs.)



(in mm)

■ Dimensions of Taping

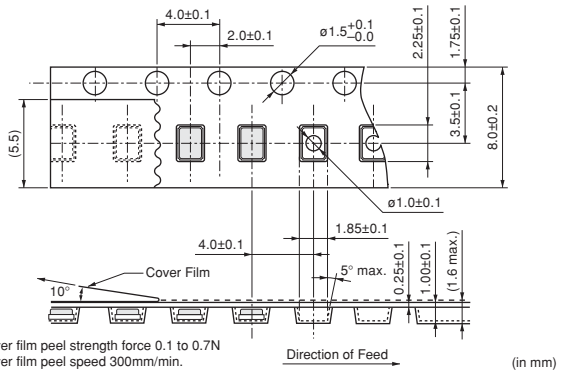
XRCHA_F_A



The cover film peel strength force 0.1 to 0.7N
The cover film peel speed 300mm/min.

(in mm)

XRCGB_F_A/G



The cover film peel strength force 0.1 to 0.7N
The cover film peel speed 300mm/min.

(in mm)

for Industrial

Crystal Units

RoHS Lead free

The crystal unit that realized small package and highly accurate frequency. Based on Murata's excellent package technology and high grade quartz crystal elements, achieving small size and high accuracy crystal units.

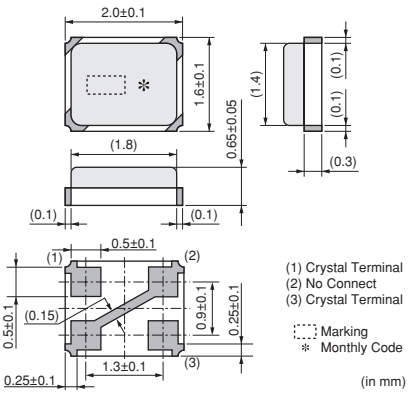
■ Features

1. The series is available in the applications to be necessary for high accuracy crystal units.
2. The crystal units is extremerly small size, and contribute to reduction in mounting area.
3. The series complies to RoHS directive, being lead-free (phase 3).

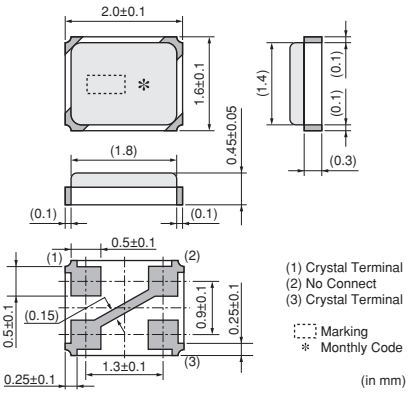
■ Applications

1. Clock for PLC, Inverter, Servo Amp, Servo Motor, etc. controller ICs
2. Clock for LCD, Programmable display and Visual equipment controller ICs
3. Storage devices with SATA interface (Server, HDD, SSD, Optical storage device, etc.)
4. Clock for USB (Ultra-Speed and High-speed) controller ICs (Mobile phone, DVC, DSC, Portable audio, PC peripheral, etc.)
5. Other applications for replacement from the other crystal units or oscillators

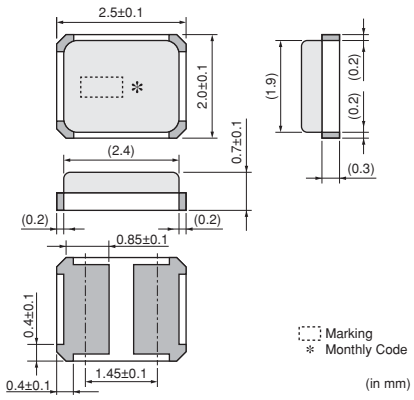
XRCGB_F_Z
24.0000–48.0000MHz



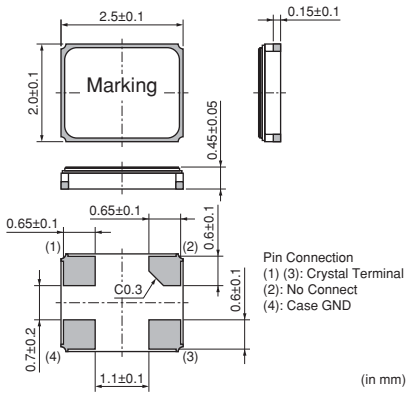
XRCPB_F_Z
24.0000–48.0000MHz



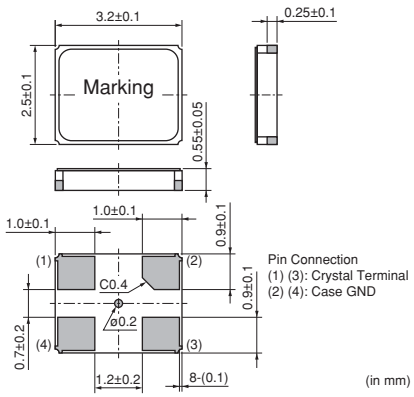
XRCHA_F_Z
16.0000–20.0000MHz



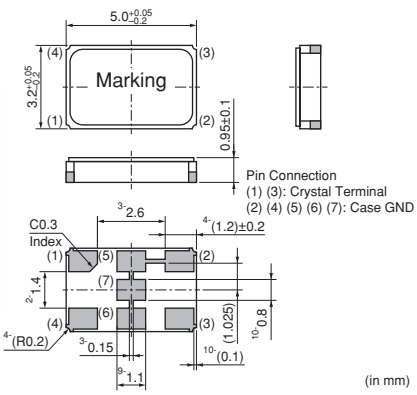
XRCHH
16.0000–52.0000MHz



XRCJH
13.0000–52.0000MHz



XRCLH
10.0000–52.0000MHz



■ Series

Series	Size	Package	Frequency (MHz)	Frequency Tolerance (ppm max.) [at 25°C±3°C]	Frequency Shift by Temperature (ppm max.) [Standard Condition: +25°C]	Frequency Aging (ppm max./Year)	Drive Level (μW max.)	Operating Temperature Range (°C)
XRCGB_F_Z	2016	Resin	24.0000 to 48.0000	±100	±100	±5	300	-40 to +105
XRCPB_F_Z								
XRCHA_F_Z	2520		16.0000 to 20.0000					
XRCHH		Metal	16.0000 to 52.0000	±10	±15	±1 (±3/5Years)	30	-30 to +85
XRCJH	3225		13.0000 to 52.0000					
XRCLH	5032		10.0000 to 52.0000					

XRCPB series is low profile type of XRCGB series.

■ Part Number List

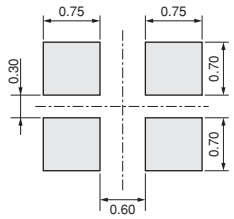
Series	Part Number	Frequency (MHz)	Frequency Tolerance (ppm max.) [at 25°C±3°C]	Frequency Shift by Temperature (ppm max.) [Standard Condition: +25°C]	Frequency Aging (ppm max./Year)	ESR* (Ωmax.)	Load Capacitance (pF)	Drive Level (μW max.)
XRCGB_F_Z	XRCGB24M000F0Z00R0	24.0000	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCGB_F_Z	XRCGB24M576F0Z00R0	24.5760	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCGB_F_Z	XRCGB25M000F0Z00R0	25.0000	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCGB_F_Z	XRCGB26M000F0Z00R0	26.0000	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCGB_F_Z	XRCGB27M000F0Z00R0	27.0000	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCGB_F_Z	XRCGB27M120F0Z00R0	27.1200	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCGB_F_Z	XRCGB30M000F0Z00R0	30.0000	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCGB_F_Z	XRCGB31M250F0Z00R0	31.2500	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCGB_F_Z	XRCGB32M000F0Z00R0	32.0000	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCGB_F_Z	XRCGB33M868F0Z00R0	33.8688	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCGB_F_Z	XRCGB40M000F0Z00R0	40.0000	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCGB_F_Z	XRCGB48M000F0Z00R0	48.0000	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCPB_F_Z	XRCPB24M000F0Z00R0	24.0000	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCPB_F_Z	XRCPB24M576F0Z00R0	24.5760	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCPB_F_Z	XRCPB25M000F0Z00R0	25.0000	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCPB_F_Z	XRCPB26M000F0Z00R0	26.0000	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCPB_F_Z	XRCPB27M000F0Z00R0	27.0000	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCPB_F_Z	XRCPB27M120F0Z00R0	27.1200	±100	±100 (-40 to +105°C)	±5	150	6	300
XRCPB_F_Z	XRCPB30M000F0Z00R0	30.0000	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCPB_F_Z	XRCPB31M250F0Z00R0	31.2500	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCPB_F_Z	XRCPB32M000F0Z00R0	32.0000	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCPB_F_Z	XRCPB33M868F0Z00R0	33.8688	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCPB_F_Z	XRCPB40M000F0Z00R0	40.0000	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCPB_F_Z	XRCPB48M000F0Z00R0	48.0000	±100	±100 (-40 to +105°C)	±5	100	6	300
XRCHA_F_Z	XRCHA16M000F0Z01R0	16.0000	±100	±100 (-40 to +105°C)	±5	100	8	300
XRCHA_F_Z	XRCHA20M000F0Z01R0	20.0000	±100	±100 (-40 to +105°C)	±5	80	8	300
XRCHH	XRCHH16M000F1QB7P0	16.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	80	8	30
XRCHH	XRCHH20M000F1QB1P0	20.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCHH	XRCHH26M000F1QD8P0	26.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCHH	XRCHH36M000F1QA3P0	36.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCHH	XRCHH40M000F1QB3P0	40.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCHH	XRCHH52M000F1QA2P0	52.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCJH	XRCJH13M000F1QA0P0	13.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	80	8	30
XRCJH	XRCJH16M000F1QB5P0	16.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	80	8	30
XRCJH	XRCJH20M000F1QB3P0	20.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCJH	XRCJH26M000F1QC1P0	26.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCJH	XRCJH36M000F1QA1P0	36.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCJH	XRCJH40M000F1QB2P0	40.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCJH	XRCJH52M000F1QA1P0	52.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCLH	XRCLH10M000F1QA4P0	10.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCLH	XRCLH12M000F1QA0P0	12.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	60	8	30
XRCLH	XRCLH14M745F1QA0P0	14.7456	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	40	8	30
XRCLH	XRCLH16M000F1QA2P0	16.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	40	8	30
XRCLH	XRCLH21M250F1QA0P0	21.2500	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	40	8	30
XRCLH	XRCLH52M000F1QA1P0	52.0000	±10	±15 (-30 to +85°C)	±1 (±3/5Years)	40	8	30

*: Equivalent Series Resistance

■ Standard Land Pattern Dimensions

XRCGB_F_Z, XRCPB_F_Z

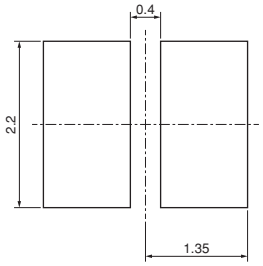
(Recommendable Land Pattern)



(in mm)

XRCHA_F_Z

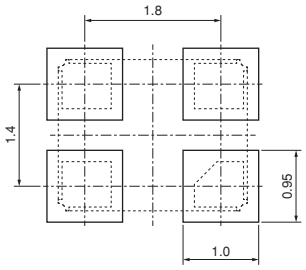
(Recommendable Land Pattern)



(in mm)

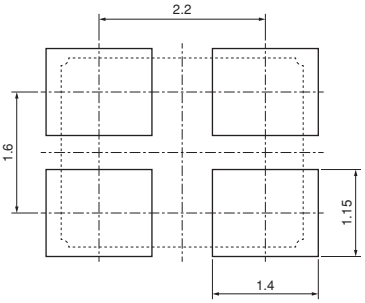
3

XRCHH



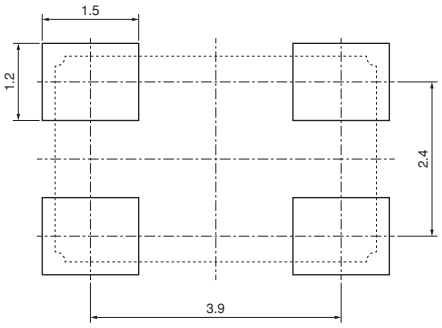
(in mm)

XRCJH



(in mm)

XRCLH



Avoid to put on signal lines under the product except refference land pattern.

(in mm)

Notice -Crystal Units for Industrial-

■ Notice (Soldering and Mounting)

1.1. Soldering Condition

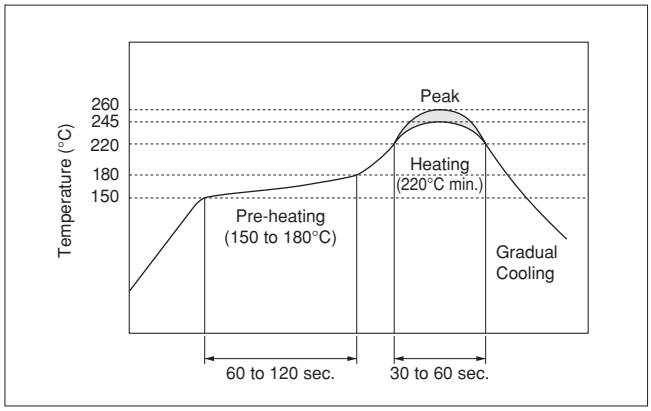
(1) Reflow

Please mount components on a circuit board by the re-flow soldering.

Flux: Please use rosin based flux, but do not use water soluble flux.

Solder: Please use solder (Sn-3.0Ag-0.5Cu) under the following condition.

Standard thickness of soldering paste: 0.10 to 0.15mm



	Condition	
Pre-heating	150 to 180°C	60 to 120 sec.
Heating	220°C min.	30 to 60 sec.
Peak Temperature	245°C min. 260°C max.	5 sec. max.

(2) Soldering Iron

If compelled to mount the component by using soldering iron, please do not directly touch the component with the soldering iron. The component terminals or electrical characteristics may be damaged if excessive thermal stress is applied. Please keep solder off from the metal cap (Lid) portion.

	Condition
Pre-heating	150°C 60 sec.
Heating of the Soldering Iron	350°C max.
Watt	30W max.
Shape of the Soldering Iron	ø3mm max.
Soldering Time	5 sec. max.
Solder	Sn-3.0Ag-0.5Cu

1.2. Optimum Solder Amount for Soldering

Please make the solder volume below the height of the substrate. When exceeding the substrate, the damage of sealing part between the metal cap and the substrate may occur.

2. Wash

The component cannot withstand washing.

3. Notice for Mounting

The component is recommended with placement machines employing optical placement capabilities.

The component might be damaged by mechanical force depending on placement machine and condition.

Make sure that you have evaluated by using placement machines before going into mass production.

Do not use placement machines employing mechanical positioning.

Please contact Murata for details beforehand.

Continued on the following page.

Notice -Crystal Units for Industrial-

Continued from the preceding page.

■ Notice (Storage and Operating Condition)

1. Product Storage Condition
   Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
   Temperature: -10 to + 40 degrees C
   Humidity: 15 to 85% R.H.
2. Expire Date on Storage
   Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in the solderability and/or rusty. Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
   (1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, and/or be degraded in the solderability due to the storage in a chemical atmosphere.
   (2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
   (3) Please do not store the products in the places such as: in a damp heated place, in a place where direct sunlight comes in, in place applying vibrations.
   (4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
   (5) Please do not drop the products to avoid cracking of crystal element.
4. Others
   Conformal coating or washing of the component is not acceptable.
   Please be sure to consult with our sales representative or engineer whenever and prior to using the products.

■ Notice (Rating)

The component may be damaged if excess mechanical stress is applied.

■ Notice (Handling)

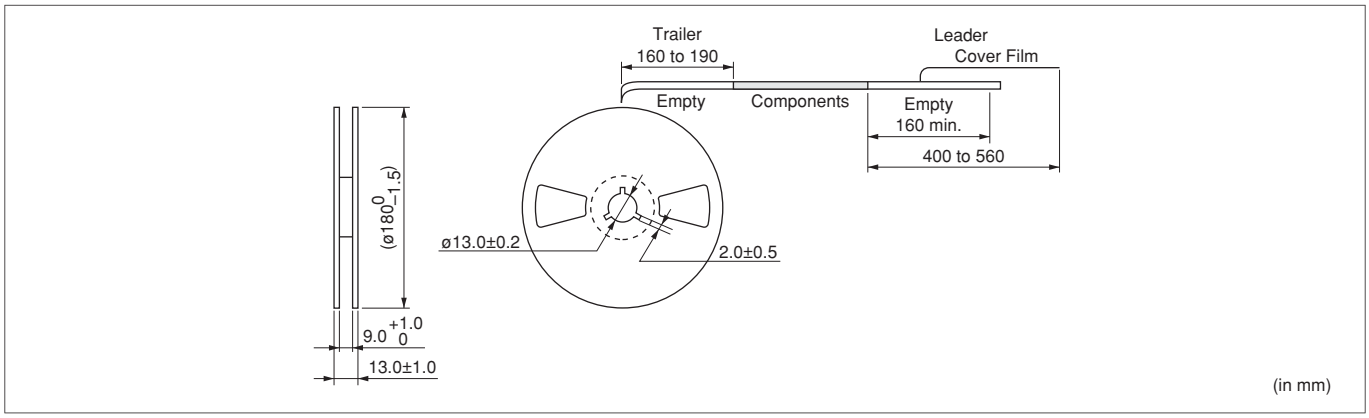
1. Irregular or stop oscillation may occur under unmatched circuit conditions.
   Please design your oscillation circuit to get 5 times or more of a negative resistance against the maximum value of the Equivalent Series Resistance, that is specified in order.
2. Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.
3. Please do not use this products in following applications in transportation equipment (vehicles, trains, ships, etc.).
   (example: engine control, brake control, steering control, body control.)

Packaging -Crystal Units for Industrial-

■ Minimum Quantity/Dimensions of Reel

Plastic Tape ø180mm	Plastic Tape ø330mm
3,000	9,000

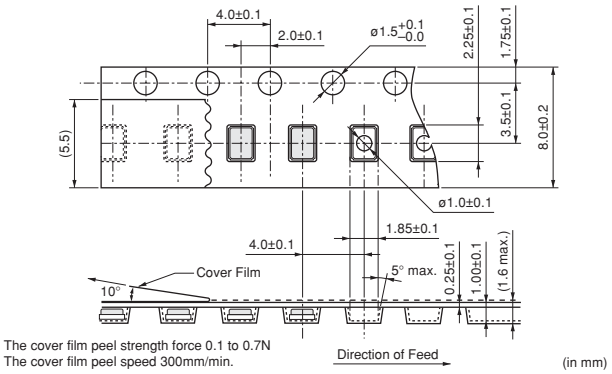
(pcs.)



(in mm)

■ Dimensions of Taping

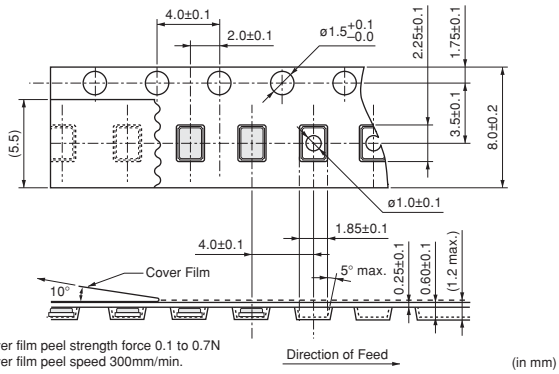
XRCGB_F_Z



The cover film peel strength force 0.1 to 0.7N
The cover film peel speed 300mm/min.

(in mm)

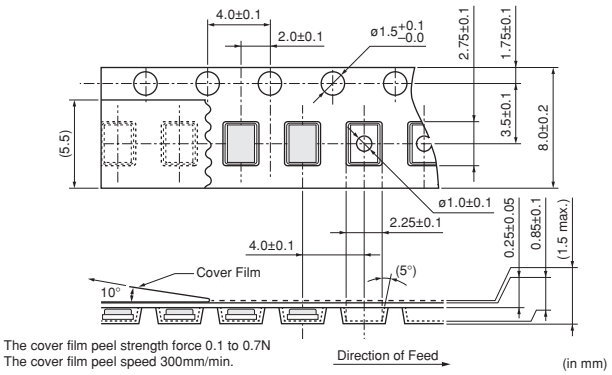
XRCPB_F_Z



The cover film peel strength force 0.1 to 0.7N
The cover film peel speed 300mm/min.

(in mm)

XRCHA_F_Z



The cover film peel strength force 0.1 to 0.7N
The cover film peel speed 300mm/min.

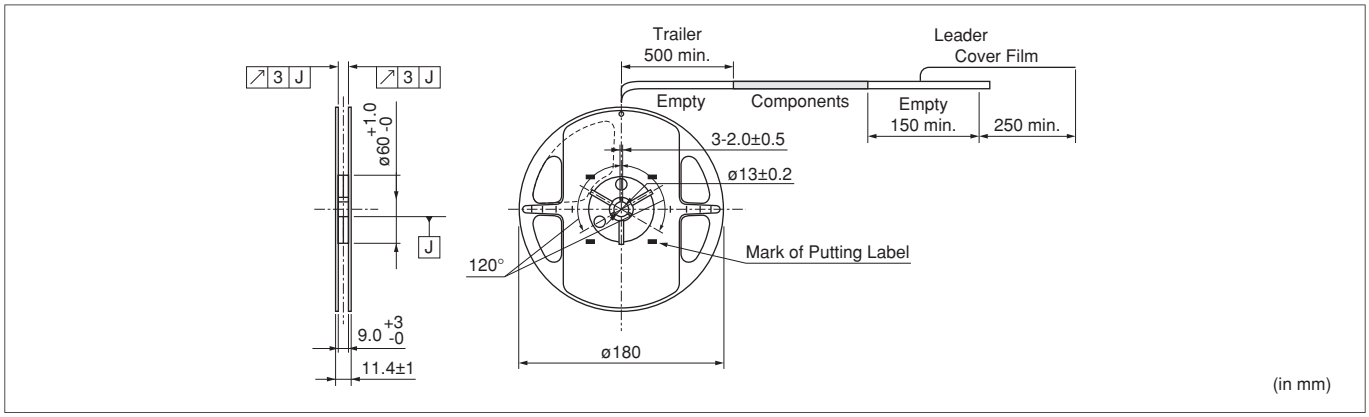
(in mm)

Packaging -Crystal Units for Industrial-

■ Minimum Quantity/Dimensions of Reel

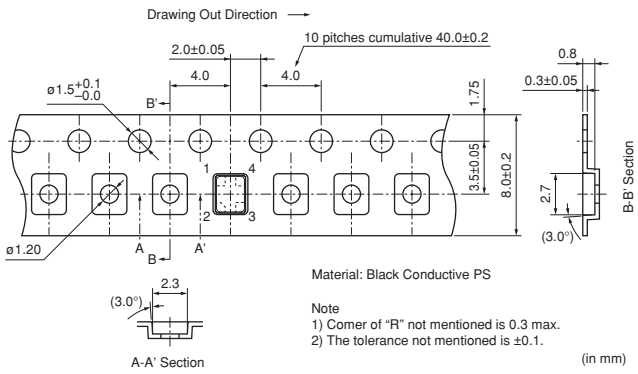
Plastic Tape ø180mm
3,000

(pcs.)



■ Dimensions of Taping

XRCHH

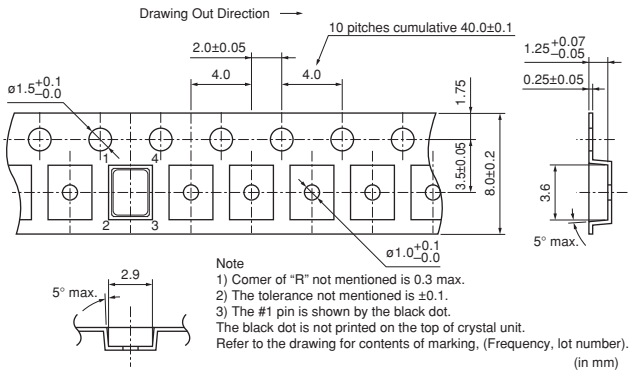


Material: Black Conductive PS

Note
1) Comer of "R" not mentioned is 0.3 max.
2) The tolerance not mentioned is ±0.1.

(in mm)

XRCJH



Note
1) Comer of "R" not mentioned is 0.3 max.
2) The tolerance not mentioned is ±0.1.
3) The #1 pin is shown by the black dot.
The black dot is not printed on the top of crystal unit.
Refer to the drawing for contents of marking, (Frequency, lot number).

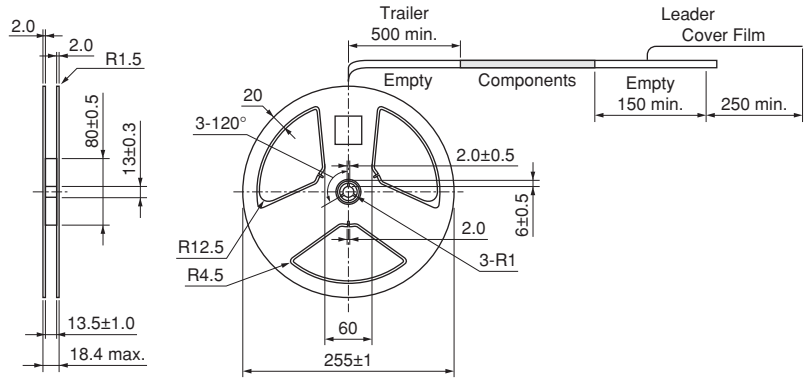
(in mm)

Packaging -Crystal Units for Industrial-

■ Minimum Quantity/Dimensions of Reel

Plastic Tape ø255mm
3,000

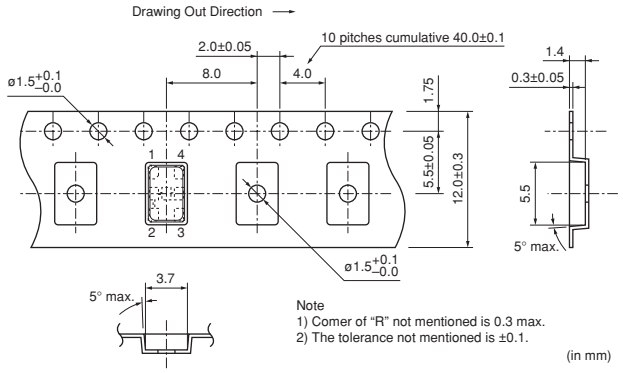
(pcs.)



(in mm)

■ Dimensions of Taping

XRCLH



Note
1) Comer of "R" not mentioned is 0.3 max.
2) The tolerance not mentioned is ±0.1.

(in mm)

for Industrial

Crystal Oscillators

RoHS Lead free

We offer various lineup of TCXO (Temperature compensated crystal oscillator)/VC-TCXO (Voltage-controlled temperature-compensated crystal oscillator) based on highly reliable crystal units, superior temperature compensation and adjusting method which is fostered by our long experience and activity.

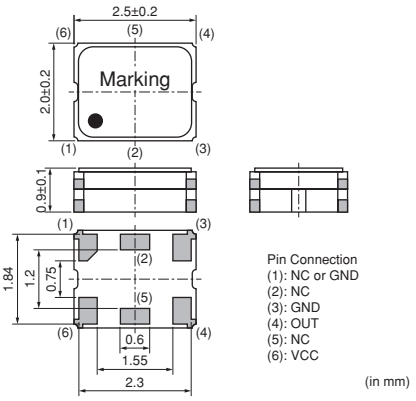
■ Features

1. Excellent frequency stability over temperature
2. Low profile
3. Low supply voltage
4. SMD type (Reflow soldering available)
5. The series complies to RoHS directive, being lead-free (phase 3).

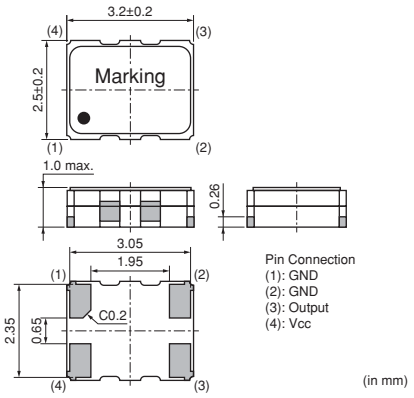
■ Applications

1. Business Radio
2. GPS (GNSS) system
3. Small cells
4. Wireless devices

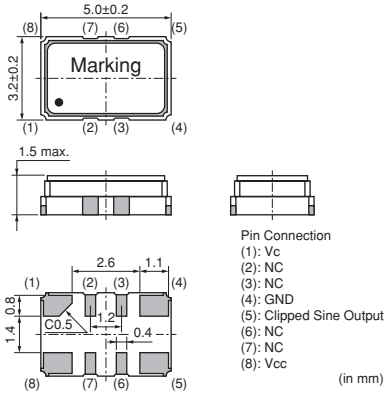
XNCHH, XTCHH
10.0000–52.0000MHz



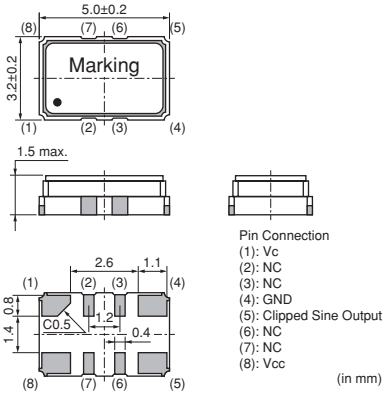
XNCJH, XTCJH
10.0000–52.0000MHz



XTCLH_E
10.0000–40.0000MHz



XTCLH_J
10.0000–40.0000MHz



■ Series

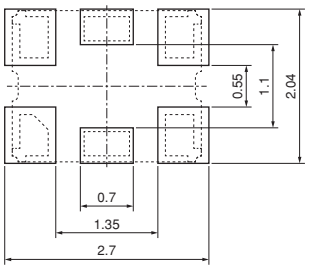
Series	Size	Package	Frequency (MHz)	Frequency Tolerance (ppm max.) [at 25°C±3°C]	Frequency Shift by Temperature (ppm max.) [Standard Condition: +25°C]	Frequency Aging (ppm max./Year)	Operating Temperature Range (°C)	Supply Voltage (Vp-p)	VC Function
XNCHH	2520	Metal	10.0000 to 52.0000	±1.0	±0.5	±1.0	-30 to +85	+3.0±5%	—
XTCHH									○
XNCJH	3225								—
XTCJH									○
XTCLH_E	5032		10.0000 to 40.0000						
XTCLH_J				±0.5	±0.2	±0.5	-40 to +85		

■ Part Number List

Series	Part Number	Frequency (MHz)	Frequency Tolerance (ppm max.) [at 25°C±3°C]	Frequency Shift by Temperature (ppm max.) [Standard Condition: +25°C]	Frequency Aging (ppm max./Year)	Current Consumption (mA max.)	Frequency Controlled Range (ppm)
XNCHH	**XNCHH10M000TJEA2P0**	10.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCHH	**XNCHH15M300TJEA0P0**	15.3000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCHH	**XNCHH16M368TJEA4P0**	16.3680	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCHH	**XNCHH16M800TJEA3P0**	16.8000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCHH	**XNCHH19M200TJEC1P0**	19.2000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCHH	**XNCHH26M000TJEE5P0**	26.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCHH	**XNCHH28M800TJEA1P0**	28.8000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCHH	**XNCHH32M000TJEB5P0**	32.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCHH	**XNCHH38M400TJEB3P0**	38.4000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCHH	**XNCHH52M000TJEA1P0**	52.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XTCHH	**XTCHH10M000TJEA3P0**	10.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCHH	**XTCHH15M300TJEA2P0**	15.3000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCHH	**XTCHH16M800TJEA2P0**	16.8000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCHH	**XTCHH19M200TJEB4P0**	19.2000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCHH	**XTCHH20M950TJEA0P0**	20.9500	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCHH	**XTCHH21M250TJEA0P0**	21.2500	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCHH	**XTCHH26M000TJEB1P0**	26.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCHH	**XTCHH28M800TJEA0P0**	28.8000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCHH	**XTCHH38M400TJEA1P0**	38.4000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCHH	**XTCHH52M000TJEA1P0**	52.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XNCJH	**XNCJH10M000TJEA8P0**	10.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCJH	**XNCJH15M300TJEA0P0**	15.3000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCJH	**XNCJH16M800TJEA1P0**	16.8000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCJH	**XNCJH19M200TJEA5P0**	19.2000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCJH	**XNCJH26M000TJEB4P0**	26.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCJH	**XNCJH28M800TJEA1P0**	28.8000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCJH	**XNCJH38M400TJEA3P0**	38.4000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XNCJH	**XNCJH52M000TJEA0P0**	52.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	–
XTCJH	**XTCJH10M000TJEB0P0**	10.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCJH	**XTCJH15M300TJEA3P0**	15.3000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCJH	**XTCJH16M800TJEB0P0**	16.8000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCJH	**XTCJH19M200TJEB6P0**	19.2000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCJH	**XTCJH26M000TJEB4P0**	26.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCJH	**XTCJH28M800TJEA0P0**	28.8000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCJH	**XTCJH38M400TJEA3P0**	38.4000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCJH	**XTCJH52M000TJEA5P0**	52.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±5min. to ±15max.
XTCLH_E	**XTCLH10M000TJEB4P0**	10.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±3min. to ±15max.
XTCLH_E	**XTCLH13M000TJEA3P0**	13.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±3min. to ±15max.
XTCLH_E	**XTCLH16M800TJED2P0**	16.8000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±3min. to ±15max.
XTCLH_E	**XTCLH19M200TJEC4P0**	19.2000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±3min. to ±15max.
XTCLH_E	**XTCLH20M000TJEB7P0**	20.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±3min. to ±15max.
XTCLH_E	**XTCLH21M250TJEA0P0**	21.2500	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±3min. to ±15max.
XTCLH_E	**XTCLH26M000TJEA7P0**	26.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±3min. to ±15max.
XTCLH_E	**XTCLH38M400TJEA0P0**	38.4000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±3min. to ±15max.
XTCLH_E	**XTCLH40M000TJEB0P0**	40.0000	±1.0	±0.5 (-30 to +85°C)	±1.0	2	±3min. to ±15max.
XTCLH_J	**XTCLH19M200TJJC3P0**	19.2000	±0.5	±0.2 (-40 to +85°C)	±0.5	3	±3min. to ±6max.
XTCLH_J	**XTCLH25M000TJJA5P0**	25.0000	±0.5	±0.2 (-40 to +85°C)	±0.5	3	±3min. to ±6max.
XTCLH_J	**XTCLH26M000TJJA6P0**	26.0000	±0.5	±0.2 (-40 to +85°C)	±0.5	3	±3min. to ±6max.

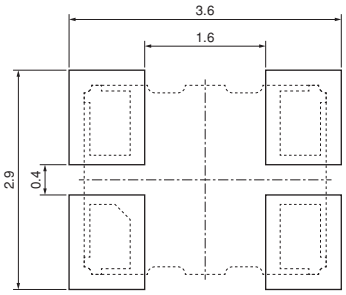
■ Standard Land Pattern Dimensions

XNCHH, XTCHH



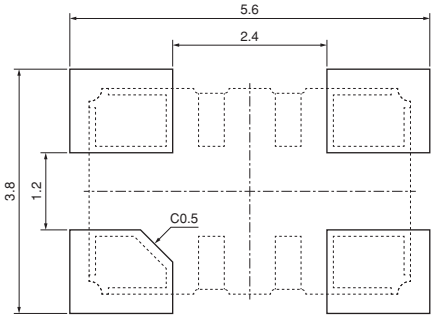
(in mm)

XNCJH, XTCJH



(in mm)

XTCLH_E/J



(in mm)

4

Notice -Crystal Oscillators for Industrial-

■ Notice (Soldering and Mounting)

1.1. Soldering Condition

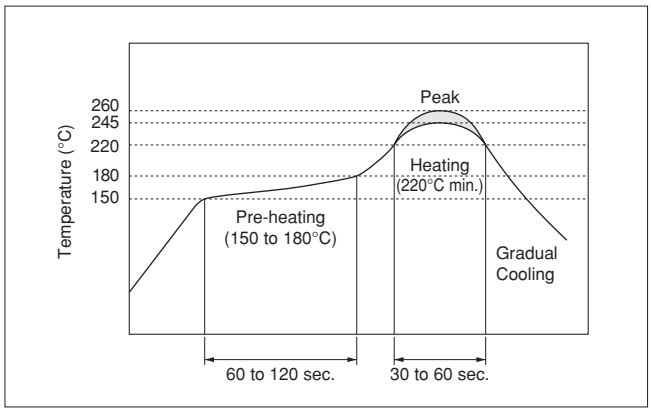
(1) Reflow

Please mount components on a circuit board by the re-flow soldering.

Flux: Please use rosin based flux, but do not use water soluble flux.

Solder: Please use solder (Sn-3.0Ag-0.5Cu) under the following condition.

Standard thickness of soldering paste: 0.10 to 0.15mm



	Condition	
Pre-heating	150 to 180°C	60 to 120 sec.
Heating	220°C min.	30 to 60 sec.
Peak Temperature	245°C min. 260°C max.	5 sec. max.

(2) Soldering Iron

If compelled to mount the component by using soldering iron, please do not directly touch the component with the soldering iron. The component terminals or electrical characteristics may be damaged if excessive thermal stress is applied.

	Condition
Pre-heating	150°C 60 sec.
Heating of the Soldering Iron	350°C max.
Watt	30W max.
Shape of the Soldering Iron	ø3mm max.
Soldering Time	5 sec. max.
Solder	Sn-3.0Ag-0.5Cu

1.2. Optimum Solder Amount for Soldering

Please make the solder volume below the height of the substrate. When exceeding the substrate, the damage of sealing part between the metal cap and the substrate may occur.

2. Wash

The component cannot withstand washing.

3. Notice for Mounting

The component is recommended with placement machines employing optical placement capabilities.

The component might be damaged by mechanical force depending on placement machine and condition.

Make sure that you have evaluated by using placement machines before going into mass production.

Do not use placement machines employing mechanical positioning.

Please contact Murata for details beforehand.

Continued on the following page.

Notice -Crystal Oscillators for Industrial-

Continued from the preceding page.

■ Notice (Storage and Operating Condition)

1. Product Storage Condition
   Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
   Temperature: -10 to + 40 degrees C
   Humidity: 15 to 85% R.H.
2. Expire Date on Storage
   Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in the solderability and/or rusty. Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
   (1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, and/or be degraded in the solderability due to the storage in a chemical atmosphere.
   (2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
   (3) Please do not store the products in the places such as: in a damp heated place, in a place where direct sunlight comes in, in place applying vibrations.
   (4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
   (5) Please do not drop the products to avoid cracking of crystal element.
4. Others
   Conformal coating or washing of the component is not acceptable.
   Please be sure to consult with our sales representative or engineer whenever and prior to using the products.

■ Notice (Rating)

The component may be damaged if excess mechanical stress is applied.

■ Notice (Handling)

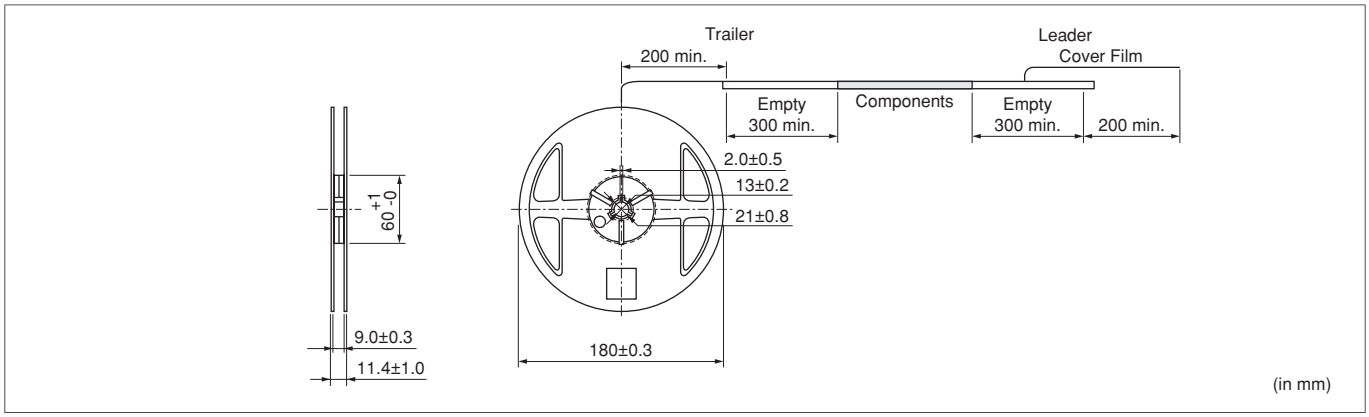
1. Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.
2. Please do not use this products in following applications in transportation equipment (vehicles, trains, ships, etc.).
   (example: engine control, brake control, steering control, body control.)

Packaging -Crystal Oscillators for Industrial-

■ Minimum Quantity/Dimensions of Reel

Plastic Tape ø180mm
3,000

(pcs.)

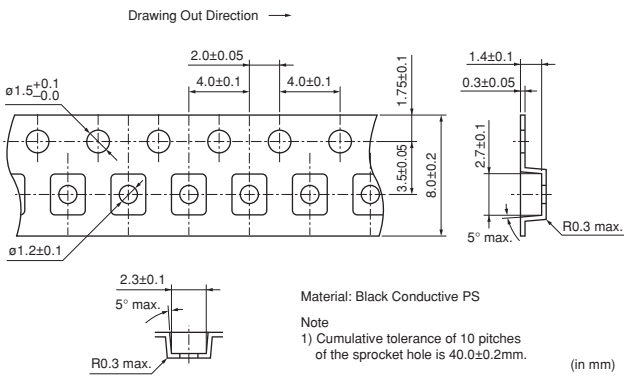


(in mm)

4

■ Dimensions of Taping

XNCHH, XTCHH

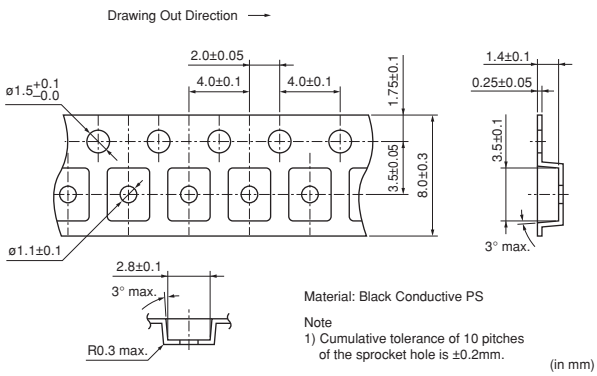


Material: Black Conductive PS

Note
1) Cumulative tolerance of 10 pitches of the sprocket hole is 40.0±0.2mm.

(in mm)

XNCJH, XTCJH



Material: Black Conductive PS

Note
1) Cumulative tolerance of 10 pitches of the sprocket hole is ±0.2mm.

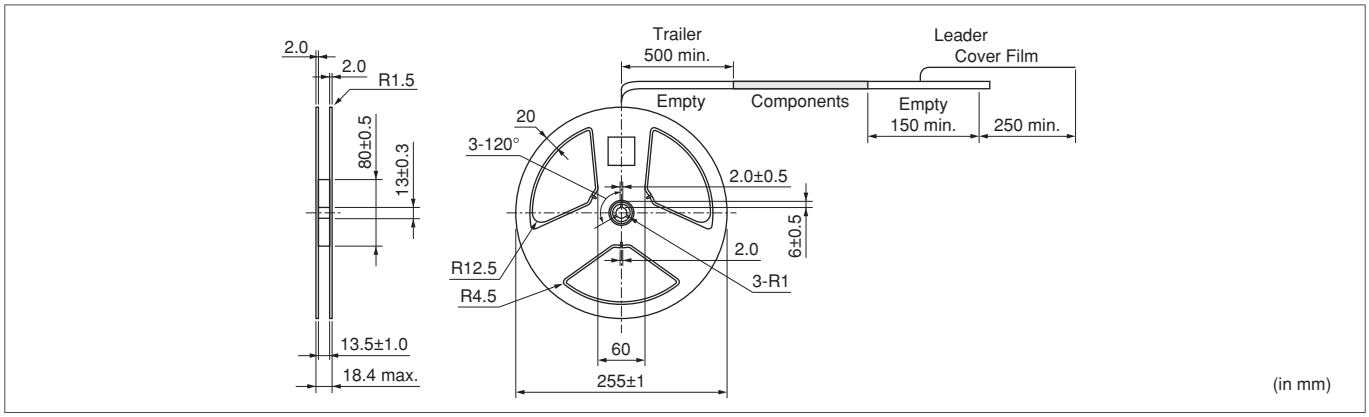
(in mm)

Packaging -Crystal Oscillators for Industrial-

■ Minimum Quantity/Dimensions of Reel

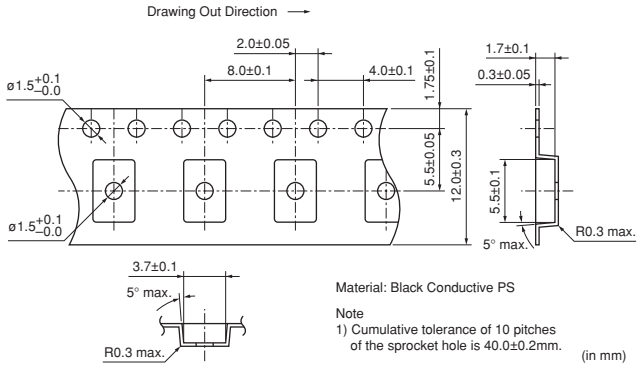
Plastic Tape ø255mm
3,000

(pcs.)



■ Dimensions of Taping

XTCLH_E/J



Material: Black Conductive PS

Note
1) Cumulative tolerance of 10 pitches of the sprocket hole is 40.0±0.2mm.

(in mm)

Measuring Circuit of Crystal Units

■ Measuring Circuit

1. Frequency Measuring Method

The load resonance frequency (Lower frequency of the two given when the electrical impedance of the component becomes resistant near its resonance point) measured by network analyzer (Agilent E5100A or the equivalent) and the circuit in Figure 1. DUT is shown in Figure 2, and the value of Cs is referred to the load capacitance value in specifications.

2. Equivalent Series Resistance

The equivalent series resistance (R1) is measured by network analyzer (Agilent E5100A or equivalent) and the circuit in Figure 1. DUT is shown in Figure 3.

3. Measuring Condition

Standard conditions for the measurement shall be +25±3°C temperature and the humidity of 45 to 85%R.H.

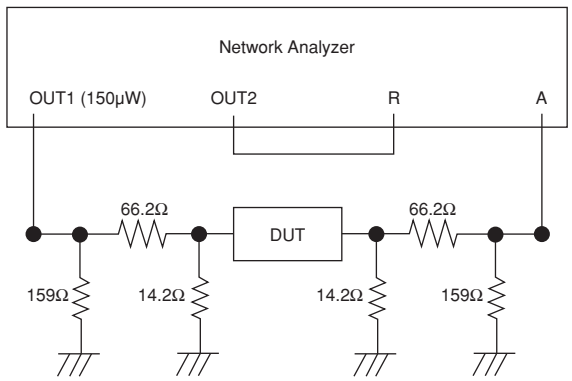


Figure 1 Frequency Measuring Circuit

Figure 2 DUT (Device Under Test)

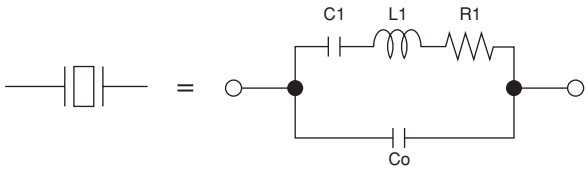


Figure 3 DUT (Device Under Test)

Cat. No. P79E-7

Global Locations

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⚠Note

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