

**MQ**

[ 7.0 \* 5.0 \* 1.3 mm ]

Thru - Hole Crystals

Fund.

21.4 MHz

21.7 MHz

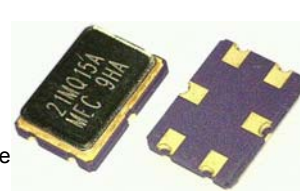
45.0 MHz

2 poles

4 poles

## Features

- Thin and light weight; excellent shock and vibration resistance
- Suitable for automatic pick and place; Solder reflow capable
- Specifically designed for mobile, wireless communications, pagers, cellular and cordless phone



RoHS Compliance

## Surface Mount Type [ Q series ( 21.400 , 21.700 , 45.000 MHz ) ]

Frequency ( MHz )	Model	No. of poles	Pass Bandwidth		Stop Bandwidth		Ripple dB (max.)	Insertion Loss dB (max.)	Guaranteed Attenuation		Terminating Impedance		
			dB	kHz (min.)	dB	kHz (max.)			dB	kHz	ohms // pF	Cc ( pF )	
21.400	21MQ7.5A	2	3	± 3.75	20	± 18	1.0	2.0	70	-910	850 // 6.0		
	21MQ15A	2	3	± 7.5	18	± 25	0.5	1.5	70	-910	1500 // 2.5		
	21MQ15B	4	3	± 7.5	40	± 25	1.0	3.0	70	-910	1800 // 0.35	5.0	
	21MQ30A	2	3	± 15	15	± 50	1.5	2.0	50	-910	2500 // 0		
21.700	21.7MQ15A	2	3	± 7.5	18	± 28	1.0	2.0	70	-910	1500 // 2.5		
	21.7MQ15B	4	3	± 7.5	40	± 25	1.0	3.0	70	-910	1750 // 0.35	5.0	
	21.7MQ30A	2	3	± 15	15	± 50	1.5	2.0	50	-910	2500 // 0		
45.000	45MQ15A	2	3	± 7.5	15	± 25	1.0	2.0	70	-910	560 // 6.0		
	45MQ15B	4	3	± 7.5	30	± 25	1.0	3.0	80	-910	600 // 2.3	7.5	
	45MQ30A	2	3	± 15	15	± 60	1.0	2.0	70	-910	1200 // 1.8		
	45MQ30B	4	3	± 15	30	± 40	1.0	3.0	70	-910	1200 // 1.0	2.5	

( Operating Temperature Range : -20°C to +70°C ; Storage Temperature Range : -40°C to +85°C )

## Environmental and Mechanical Specifications

Green Requirement	RoHS compliant and Pb (lead free)
Gross Leak	60 sec min at +125°C in D.I. water or fluorocarbon fluid
Shock	Half sine wave acceleration of 100G peak amplitude for 11 m. sec. duration, 3 cycles each plane.
Vibration	±5 ppm max. Frequency: 10 to 55 Hz, amplitude: 1.5 mm or 10 Gs rms. Duration : 6 hours.
Drop Test	Free drop onto hard wood board at 75 cm, 3 radon drops.
Humidity	After 48 hours at 85°C, 85% relative humidity non-condensing
Thermal Shock	Temperature cycling: Exposed at -40°C for 30 minutes then to +85°C for 30 minutes for duration of 5 days.
Drop Test	Free drop onto hard wood board at 75 cm, 3 radon drops.

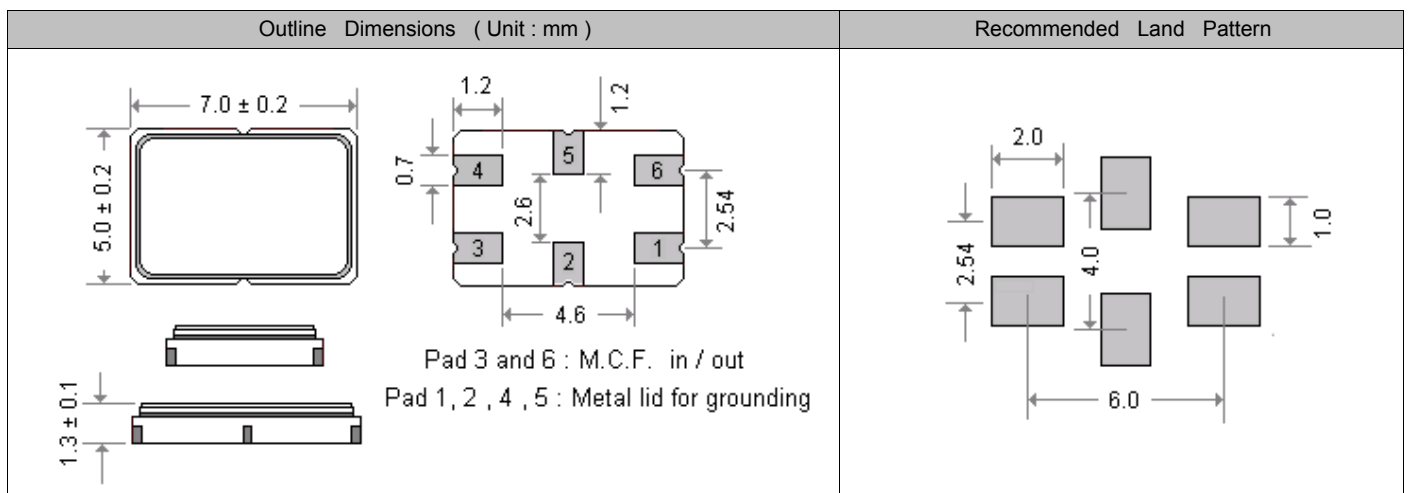
## Part Number Format and Example

[1] Center Freq. Code M	[2] Package Q	[3] Band width	[4] Poles code
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[1]	Freq. code : " 21 " for 21.400MHz , " 21.7 " for 21.700MHz , " 45 " for 45.000MHz ,
[2]	" Q " series for ( 7.0 * 5.0 * 1.3mm ) package
[3]	Pass band width ( 3dB ) (min.) * 2 [ " 7.5 " for ± 3.75kHz , " 15 " for ± 7.5kHz , " 30 " for ± 15kHz ]
[4]	No. of poles [ " A " for 2 poles ]

## Outline Dimensions ( Unit : mm )

## Recommended Land Pattern

Mercury [www.mercury-crystal.com](http://www.mercury-crystal.com)

## Part Number Format and Example

SMD Type Part Number Format			
[1]	[2]	[3]	[4]
Frequency Code	MQ	Width Code	Poles Code

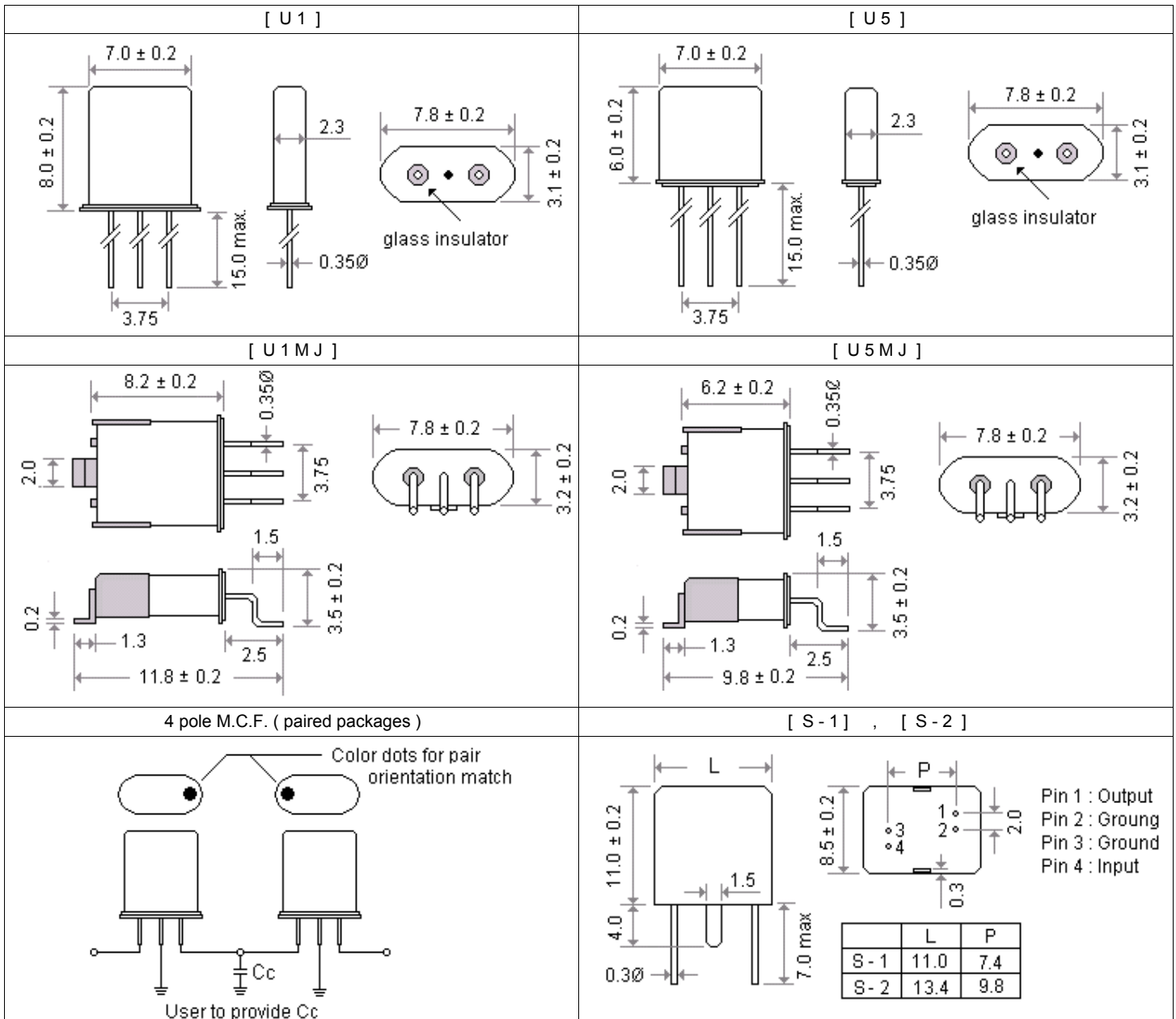
Examples	45	MQ	30	A
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Dip Type Part Number Format					
[1]	[2]	[3]	[4]	[5]	[6]
Frequency Code	M	Width Code	Poles Code	Holder Type	G

Examples	21.7	M	7.5	D	U5SM	G
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[1]	Freq. code : "10" for 10.700MHz , "21" for 21.400MHz , "21.7" for 21.700MHz , "45" for 45.000MHz , Freq. code : If none standard freq. please show frequency with one decimal point .
[2]	"M" Dip Type series , "MQ" SMD Type ( 7.0 * 5.0 * 1.3 mm )
[3]	Pass band width ( 3dB ) (min.) "7.5" for $\pm 3.75\text{kHz}$ , "15" for $\pm 7.5\text{kHz}$ , "20" for $\pm 10\text{kHz}$ , "30" for $\pm 15\text{kHz}$ ,
[4]	No. of poles "A" for 2 poles , "B" for 4 poles , "C" for 6 poles , "D" for 8 poles
[5]	Dip type holder type
[6]	Please add "G" after the "type code" for RoHS compliant ( Does not apply to MQ series ) .
[7]	Standard operating temperature range is $-20^{\circ}\text{C}$ to $70^{\circ}\text{C}$ , If non-standard please enter the desired temp. range after "/" , for example "/-30+70" : $-30^{\circ}\text{C}$ to $70^{\circ}\text{C}$

## Package Dimensions ( unit : mm )



# Mercury Green Program

## Common points for all crystal products

### Mercury Green Program

Mercury's Green Program is implemented in accordance with the European Union's directive on "Restriction of the use of certain Hazardous Substance(RoHS)". Mercury's Lead-Free and RoHS Compliant products follow the EU directive (2002/95/EC) and include test reports issued by SGS Group on hazardous substances levels for the six substances: lead(pb), cadmium(cd), mercury (Hg), hexavalent chromium(Cr+6), polybrominated biphenyl(PBB), and polybrominated diphenyl ether (PBDE).

- Crystal Green Program-Crystals
- Crystal Oscillator Green Program-XO、VCXO、VCTCXO、TCXO、OCXO
- Crystal Filter Green Program-Filters



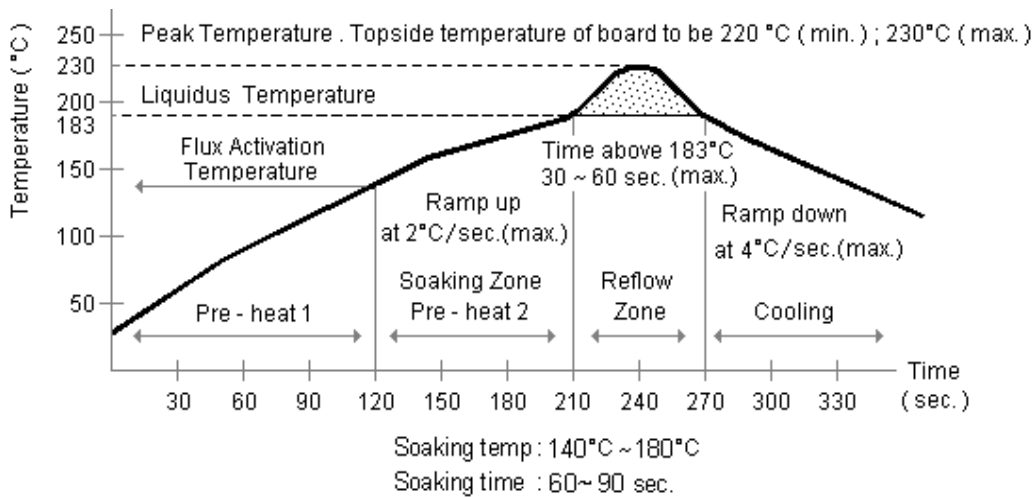
**RoHS Compliant Product  
by Mercury**

### Soldering conditions

- (1) Lead wires should be soldered within 3 seconds with the iron heated to a temperature of 380°C ( max. ).
- (2) In solder-dip mounting , it should be within 10 seconds with a temperature of 260°C ( max. ).  
Heating the whole crystal unit in the dip mounting process should be avoided .  
Upright mounting is recommended ( to prevent applying heat directly to the body of a crystal unit ).
- (3) Heating the whole body of the crystal unit , for example , in a reflow oven may affect the performance.  
The holder is small and is sealed by solder material by press sealing , so that such a reflow process is not allowed to be applied .

### Suggested Reflow Profile [ SMD type products ]

(1) Low temperature solder reflow : For Sn62 , Pb36 , Ag2 , Sn63 , Pb37 alloy .



(2) High temperature solder reflow : For Sn96.5% , Ag3.5% , Cu0.5% alloy .

