

# U1, U5

[ 7.8 \* 3.2 \* 8.0 ( 6.0 ) mm ]

# U1SL

[ 7.8 \* 2.6 \* 8.0 mm ]

Thru - Hole Crystals

Fund.

3rd O.T.

5th O.T.

Min.

1.0MHz

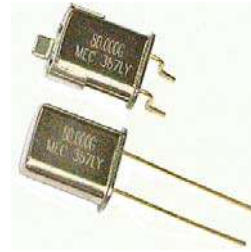
Max.

200MHz

## Features

### Specifications

- A round shaped AT-Cut crystal plate inside.
- Available up to 200 MHz using a 5th overtone crystal mode
- Annealed and pre-aged for low frequency drift over a long-term operation



## General Specifications

Item / Type	U1 ; U1SL ; U5 ; U1MJ ; U5MJ series
Frequency Range	U1 & U1MJ : 1.0 ~ 1.2MHz , 4.0 ~ 200.0MHz ; U5 : 10.0 ~ 200MHz
Load Capacitance	Series or Parallel ( 8 to 32 pF ) resonance
Drive Level	100μ W typical ( 500μ W max. )
Frequency Tolerance	AT-cut : ± 5 ppm , ± 10 ppm , ± 20 ppm or ± 30 ppm at 25°C SL-cut : ± 50 ppm at 25°C
Frequency Stability	See Table 2
Aging	ΔF / F : ± 3 ppm / year ( max. )
Storage Temperature Range	- 50°C to 105°C

Table 1

U1 & U1MJ ESR ( Equivalent Series Resistance )						U5 & U5MJ ESR ( Equivalent Series Resistance )					
Freq.(MHz)	Osc. Mode	E.S.R.	Freq.(MHz)	Osc. Mode	E.S.R.	Freq.(MHz)	Osc. Mode	E.S.R.	Freq.(MHz)	Osc. Mode	E.S.R.
1.0 ~ 1.2	SL, Fund.	5K Ω	11.0 ~ 12.9	AT, Fund.	40 Ω	10.0 ~ 11.9	AT, Fund.	60 Ω	90.1 ~ 135.0	AT, 3rd	40 Ω
6.0 ~ 6.9	AT, Fund.	100 Ω	13.0 ~ 45.0	AT, Fund.	25 Ω	12.0 ~ 14.9	AT, Fund.	50 Ω	90.1 ~ 159.0	AT, 5th	100 Ω
7.0 ~ 7.9	AT, Fund.	90 Ω	30.0 ~ 50.0	AT, 3rd	40 Ω	15.0 ~ 35.0	AT, Fund.	30 Ω	160.0 ~ 200.0	AT, 5th	80 Ω
8.0 ~ 8.9	AT, Fund.	80 Ω	50.1 ~ 100.0	AT, 3rd	50 Ω	35.1 ~ 90.0	AT, 3rd	60 Ω			
9.0 ~ 10.9	AT, Fund.	90 Ω	80.0 ~ 200.0	AT, 5th	80 Ω						

Table 2

Frequency stability vs Operating temperature range									
Stability code	Temp. (°C) \ ppm	± 5	± 10	± 15	± 20	± 25	± 30	± 50	± 100 (SL-cut )
X	-10 to 60°C	○	○	○	○	○	○	○	○
Y	-20 to 70°C	▲	○	○	○	○	○	○	○
I	-40 to 85°C		▲	○	○	○	○	○	○

○ : available ; ▲ : contact Mercury

## Outline Dimensions ( Unit : mm )

Dip type ( U1, U1SL, U5 )				Metal jacket ( U1MJ, U5MJ )		
	H	T1	T2		H	W
U1	8.0 ± 0.2	2.2 ± 0.2	3.2 ± 0.2	U1MJ	8.0 ± 0.2	11.8 ± 0.2
U1SL	8.0 ± 0.2	1.8 ± 0.2	2.6 ± 0.2	U5MJ	6.0 ± 0.2	9.8 ± 0.2
U5	6.0 ± 0.2	2.2 ± 0.2	3.2 ± 0.2			

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



# 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



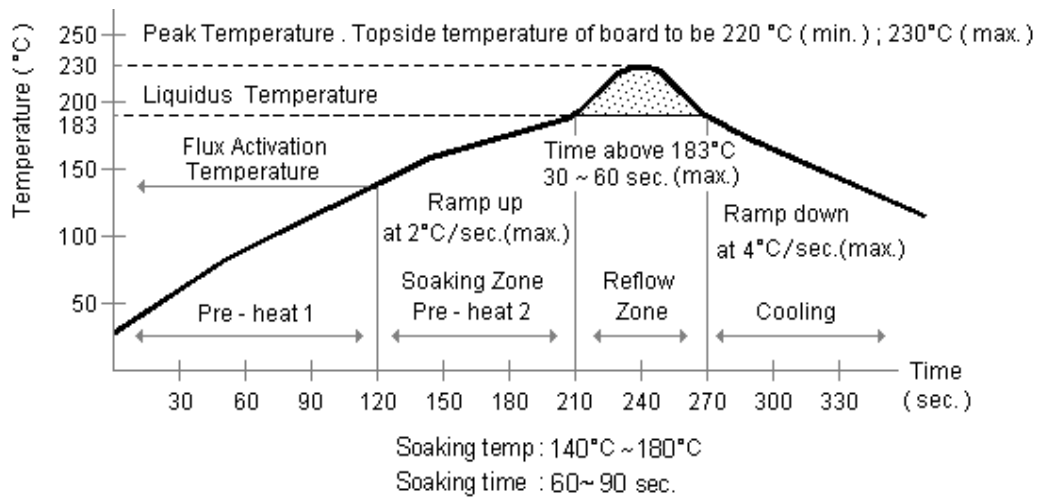
**RoHS Compliant Product  
by Mercury**

### 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 .

