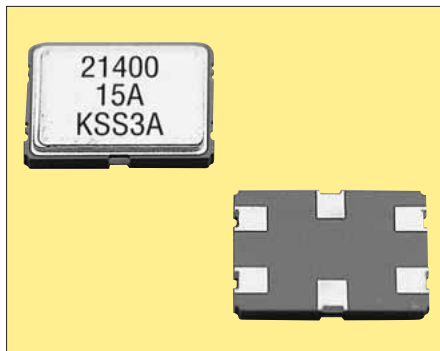




Ph Free

RoHS Conforming

## Features

- Compact and low profile.(Height=1.3mm)
- Excellent vibration resistance and shock resistance.
- Designed for automatic mounting and reflow soldering.

## Applications

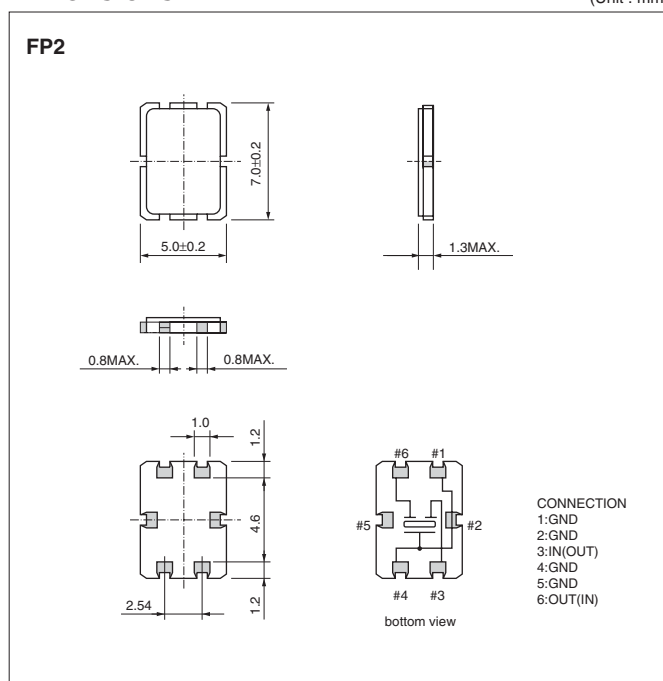
- Mobile communication

## Specifications

| Type            | Number of inner units | Pass Bandwidth |           | Ripple | Insertion Loss | Stop Bandwidth |            | Terminating Impedance | Operating Temp.Range |
|-----------------|-----------------------|----------------|-----------|--------|----------------|----------------|------------|-----------------------|----------------------|
|                 |                       | dB             | kHz MIN   | dB MAX | dB MAX         | dB             | kHz MAX    | $\Omega$ /pF          | °C                   |
| MXF21.4-15A-FP2 | 1                     | 3              | $\pm 7.5$ | 0.5    | 1.5            | 18             | $\pm 25$   | 1.5k//2.5             | -20~+70              |
| MXF21.7-8A-FP2  | 1                     | 3              | $\pm 3.5$ | 1      | 2              | 16             | $\pm 12.5$ | 1.5k//6               | -20~+70              |
| MXF45-15AF-FP2  | 1                     | 3              | $\pm 7.5$ | 1      | 2.5            | 14             | $\pm 25$   | 550//3                | -20~+70              |
| MXF45-30AF-FP2  | 1                     | 3              | $\pm 15$  | 1      | 2              | 15             | $\pm 50$   | 1.2k//1.5             | -20~+70              |
| MXF55-26AF-FP2  | 1                     | 3              | $\pm 13$  | 1      | 3              | 27             | $\pm 100$  | 750//2.7              | -20~+70              |

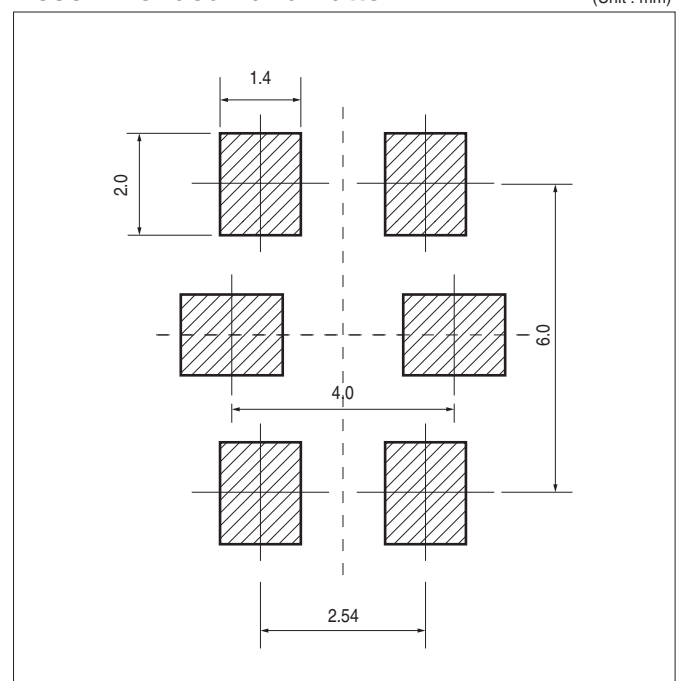
## Dimensions

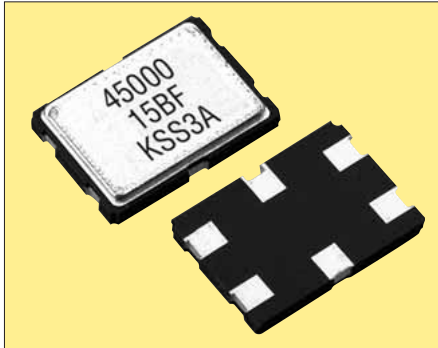
(Unit : mm)



## Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Comforming

## Features

- Compact size.(7x5x1.3mm, 4pole)
- Excellent vibration resistance and shock resistance.
- Designed for automatic mounting and reflow soldering.

## Applications

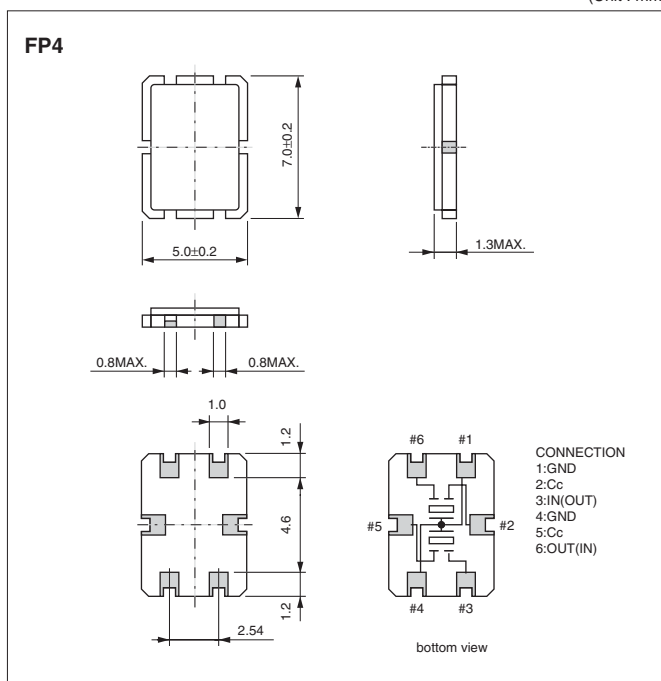
- Mobile communication

## Specifications

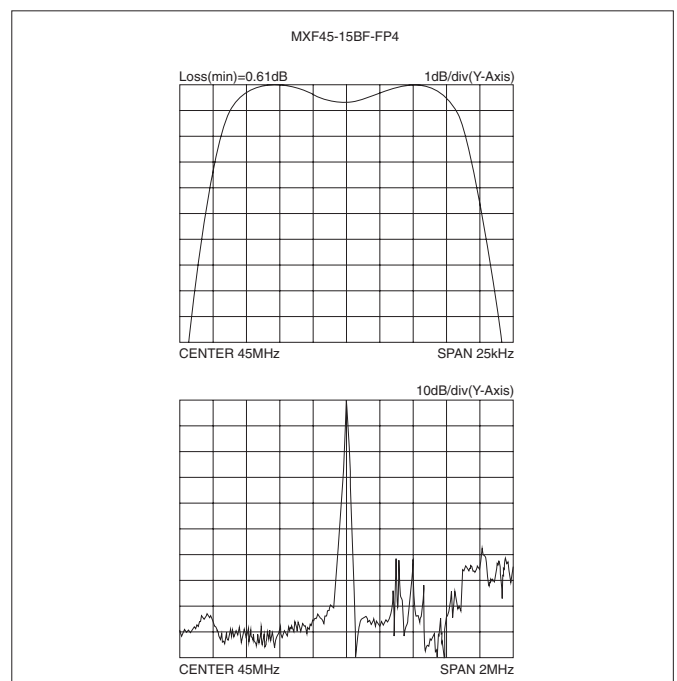
| Type            | Number of inner units | Pass Bandwidth |            | Ripple | Insertion Loss | Stop Bandwidth |          | Terminating Impedance | Operating Temp.Range |
|-----------------|-----------------------|----------------|------------|--------|----------------|----------------|----------|-----------------------|----------------------|
|                 |                       | dB             | kHz MIN    | dB MAX | dB MAX         | dB             | kHz MAX  | $\Omega$ //pF         | °C                   |
| MXF45-7.5BF-FP4 | 1                     | 3              | $\pm 3.75$ | 1      | 4              | 30             | $\pm 15$ | 500//4.5<br>Cc(13pF)  | -20~+70              |
| MXF45-15BF-FP4  | 1                     | 3              | $\pm 7.5$  | 1.5    | 2              | 30             | $\pm 25$ | 600//2.3<br>Cc(7.5pF) | -20~+70              |
| MXF45-30BF-FP4  | 1                     | 3              | $\pm 15$   | 1      | 3              | 30             | $\pm 40$ | 1.2k//1<br>Cc(2.5pF)  | -20~+70              |

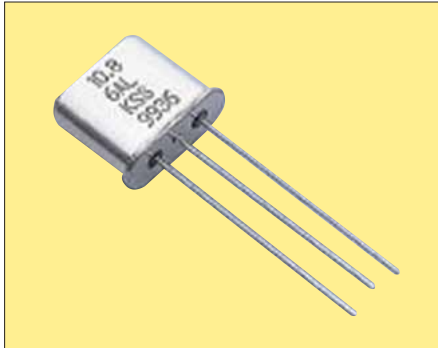
## Dimensions

(Unit : mm)



## Electrical Characteristics





## Features

- Compact and light weight.
- Excellent vibration resistance and shock resistance.
- Stable temperature characteristics.

## Applications

- Car audio

\*Pb Free and RoHS conformance planned on Jan. 2005.

## Specifications

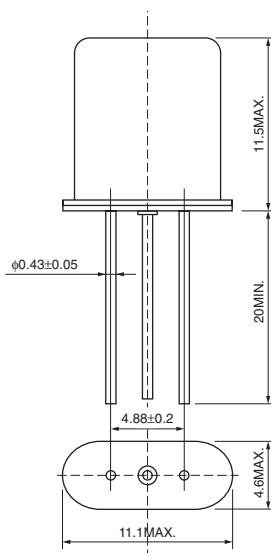
| Type          | Number of inner units | Pass Bandwidth |                   | Ripple | Insertion Loss | Stop Bandwidth |          | Terminating Impedance | Operating Temp.Range | Outline |
|---------------|-----------------------|----------------|-------------------|--------|----------------|----------------|----------|-----------------------|----------------------|---------|
|               |                       | dB             | kHz               | dB MAX | dB MAX         | dB             | kHz MAX  | $\Omega/\mu\text{F}$  | $^{\circ}\text{C}$   |         |
| MXF10.7-6A    | 1                     | 3              | $\pm(2.5\sim3.5)$ | 1      | 1.5            | 30             | 55       | 1.5k//3               | $-40\sim+85$         | Fig.1   |
| MXF10.7-6AL   | 1                     | 3              | $\pm(2.5\sim3.5)$ | 1      | 3              | 30             | 55       | 1.5k//3               | $-40\sim+85$         | Fig.2   |
| MXF10.7-7.5A  | 1                     | 3              | $\pm 3.75$ MIN    | 0.5    | 1.5            | 20             | $\pm 18$ | 1.8k//5               | $-40\sim+85$         | Fig.1   |
| MXF10.7-7.5AL | 1                     | 3              | $\pm 3.75$ MIN    | 0.5    | 3              | 20             | $\pm 18$ | 1.8k//5               | $-40\sim+85$         | Fig.2   |
| MXF10.8-6A    | 1                     | 3              | $\pm(2.5\sim3.5)$ | 1      | 1.5            | 30             | 55       | 1.5k//3               | $-40\sim+85$         | Fig.1   |
| MXF10.8-6AL   | 1                     | 3              | $\pm(2.5\sim3.5)$ | 1      | 3              | 30             | 55       | 1.5k//3               | $-40\sim+85$         | Fig.2   |
| MXF10.8-16AL  | 1                     | 3              | $\pm(7.5\sim8.5)$ | 1      | 3              | 20             | 55       | 2.2k//2.5             | $-40\sim+85$         | Fig.2   |

## Dimensions

(Unit : mm)

Fig. 1

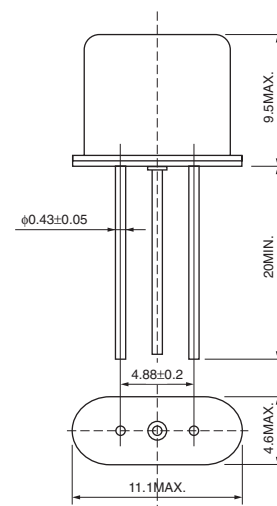
49/U-11



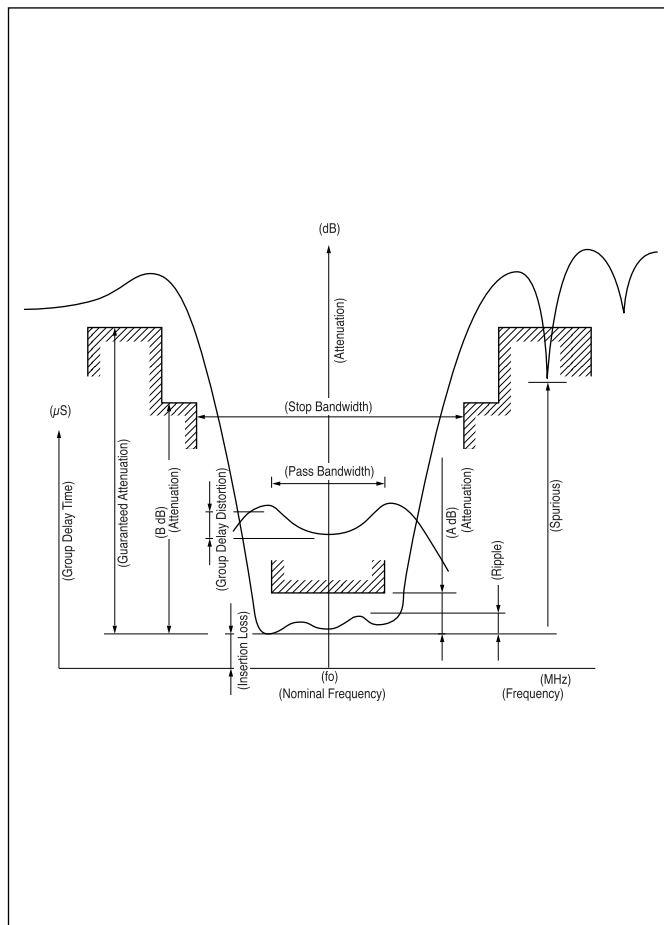
(Unit : mm)

Fig. 2

49/U-9



## Characteristic diagram and terms of crystal filters

**■Nominal Frequency**

This is the nominal value of the center frequency ( $f_0$ ) and is used as the reference frequency of related standards.

**■Pass Bandwidth**

This is the frequency interval in which the relative attenuation (the attenuation from the minimum insertion loss) is equal to the specified value "A dB" (Usually 3dB).

**■Insertion Loss**

This is the difference of attenuation when a filter is and isn't inserted. The minimum insertion loss is the minimum value of insertion loss and becomes as the reference level of attenuation characteristics specification. The constant loss is the insertion loss at the nominal frequency.

**■Ripple**

This is the maximum value of the difference between the peak value of attenuation in the pass band and the minimum insertion loss.

**■Stop Bandwidth**

This is the frequency interval in which the relative attenuation is equal to the specified value "B dB".

**■Guaranteed Attenuation**

This is the relative attenuation guaranteed in the specified range within attenuation band scope.

**■Spurious Response**

This is the value of relative attenuation generated by the secondary vibration in the specified range within attenuation band scope.

**■Group Delay Time**

This is the difference between the maximum and the minimum value of the group delay in the specified range of the pass band.

**■Terminating Impedance**

This is the impedance value terminated to the input and the output side of filter and is indicated by the resistance portion and the parallel capacity portion including the floating capacity.

## ORDERING FORMAT for CRYSTAL FILTERS

Please specify the following items when ordering crystal filters.

**I. Standard product in catalog Indicate type name.**

for example : MXF10.7-6A

**II. Indicate following items in specification if you order special type.****1. Electrical Characteristics**

- |                           |                                     |
|---------------------------|-------------------------------------|
| (1)Nominal Frequency      | _____MHz                            |
| (2)Pass Bandwidth         | at _____dB $\pm$ _____kHz MIN.      |
| (3)Stop Bandwidth         | at _____dB $\pm$ _____kHz MAX.      |
| (4)Guaranteed Attenuation | _____dB MINn. ( $f_0 \pm$ _____kHz) |
| (5)Spurious Response      | _____dB MIN.                        |
| (6)Ripple                 | _____dB MAX.                        |
| (7)Insertion Loss         | _____dB MAX.                        |
| (8)Terminating Impedance  | _____Ω//_____pF                     |

**2. Environmental Condition**

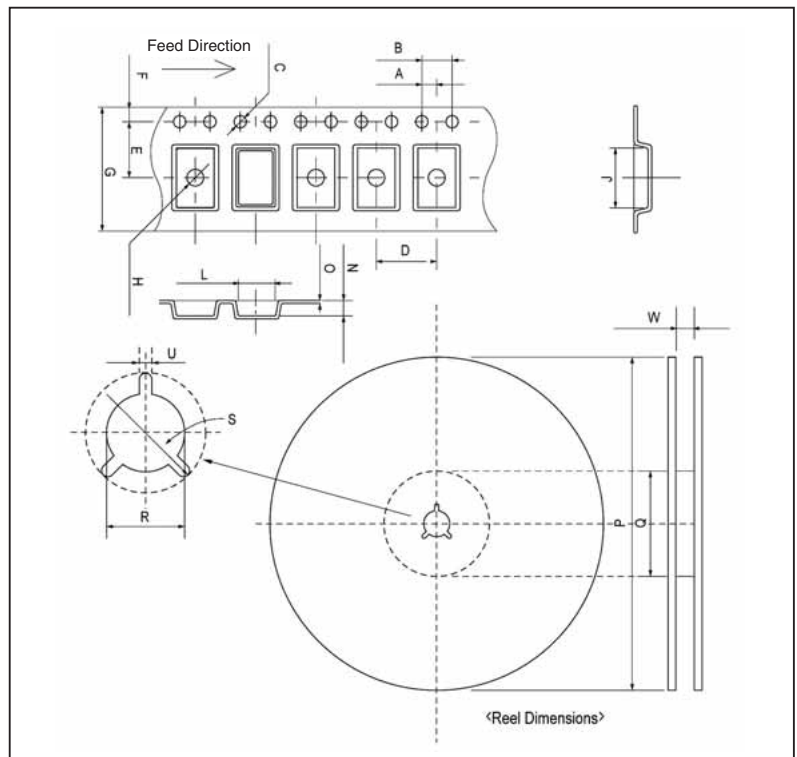
- (1)Operating Temperature Range \_\_\_\_\_°C ~ \_\_\_\_\_°C

**3. Dimensions****4. Application**

## Tape & Reel Specifications

### SAW FILTERS / MCFs

| SAW FILTERS |   |           |              |              |
|-------------|---|-----------|--------------|--------------|
|             |   | SF16      | SF25         | SF30         |
| T A P E     | A | 2.0±0.05  | 2.0±0.05     | 2.0±0.05     |
|             | B | 4.0±0.1   | 4.0±0.1      | 4.0±0.1      |
|             | C | φ1.5±0.1  | φ1.55±0.1/-0 | φ1.55±0.1/-0 |
|             | D | 4.0±0.1   | 4.0±0.1      | 8.0±0.1      |
|             | E | 3.5±0.05  | 5.5±0.05     | 5.5±0.05     |
|             | F | 1.75±0.1  | 1.75±0.1     | 1.75±0.1     |
|             | G | 8.0±0.2   | 12.0±0.2     | 12.0±0.2     |
|             | H | φ1.1±0.1  | φ1.1±0.1     | φ1.55±0.1    |
|             | J | 1.9±0.1   | 2.9±0.1      | 3.3±0.1      |
|             | L | 1.85±0.1  | 2.4±0.1      | 3.3±0.1      |
|             | N | 0.95±0.1  | 1.2±0.1      | 1.85±0.1     |
| R E E L     | O | 0.25±0.05 | 0.3±0.05     | 0.3±0.05     |
|             | P | φ178±2    | φ330±2       | φ330±2       |
|             | Q | φ80±2     | φ100±2       | φ100±2       |
|             | R | φ13±0.2   | φ13±0.2      | φ13±0.2      |
|             | S | φ21±0.8   | φ21±0.8      | φ21±0.8      |
|             | U | 2±0.5     | 2±0.5        | 2±0.5        |
| Qty         |   | 3000      | 3000         | 3000         |



| SAW FILTERS |   |            |             |             |              |            |            |            |            | MCF        |
|-------------|---|------------|-------------|-------------|--------------|------------|------------|------------|------------|------------|
|             |   | PAFA       | PAFC243B    | PAFC433.92A | B54          | B22<br>B43 | B19<br>B25 | C12<br>C30 | B44        | FP2<br>FP4 |
| T A P E     | A | 2.0±0.05   | 2.0±0.05    | 2.0±0.05    | 2.0±0.10     | 2.0±0.10   | 2.0±0.05   | 2.0±0.10   | 2.0±0.10   | 2.0±0.1    |
|             | B | 4.0±0.1    | 4.0±0.1     | 4.0±0.1     | 4.0±0.1      | 4.0±0.1    | 4.0±0.1    | 4.0±0.1    | 4.0±0.1    | 4.0±0.1    |
|             | C | φ1.55±0.05 | φ1.5±0.1/-0 | φ1.5±0.1/-0 | φ1.55±0.05   | φ1.55±0.05 | φ1.55±0.05 | φ1.55±0.05 | φ1.55±0.05 | φ1.55±0.05 |
|             | D | 8.0±0.1    | 8.0±0.1     | 8.0±0.1     | 8.0±0.1      | 8.0±0.1    | 8.0±0.1    | 8.0±0.1    | 8.0±0.1    | 8.0±0.1    |
|             | E | 5.5±0.05   | 5.5±0.05    | 5.5±0.05    | 5.5±0.1      | 7.5±0.1    | 5.5±0.05   | 7.5±0.1    | 5.5±0.05   | 7.5±0.1    |
|             | F | 1.75±0.1   | 1.75±0.1    | 1.75±0.1    | 1.75±0.1     | 1.75±0.1   | 1.75±0.1   | 1.75±0.1   | 1.75±0.1   | 1.75±0.1   |
|             | G | 12.0±0.2   | 12.0±0.2    | 12.0±0.3    | 12.0±0.3     | 16.0±0.3   | 12.0±0.15  | 16.0±0.3   | 12.0±0.2   | 16.0±0.3   |
|             | H | φ1.55±0.05 | φ1.55±0.1   | φ1.55±0.1   | φ1.5±0.05/-0 | φ1.55±0.05 | φ1.55±0.05 | φ1.55±0.05 | φ1.55±0.05 | φ1.55±0.05 |
|             | J | 3.3±0.1    | 4.3±0.1     | 5.3±0.1     | 5.25±0.1     | 9.4±0.1    | 4.2±0.1    | 7.6±0.1    | 3.95±0.2   | 7.5±0.1    |
|             | L | 3.3±0.1    | 4.3±0.1     | 5.3±0.1     | 3.45±0.1     | 5.1±0.1    | 4.2±0.1    | 5.6±0.1    | 3.95±0.2   | 5.5±0.1    |
|             | N | 1.85±0.1   | 2.05±0.1    | 2.1±0.1     | 1.5±0.1/-0   | 2.0±0.1    | 1.8±0.1    | 1.94±0.1   | 1.35±0.1   | 1.8±0.1    |
| R E E L     | O | 0.3±0.05   | 0.3±0.05    | 0.3±0.05    | 0.3±0.1      | 0.3±0.05   | 0.3±0.05   | 0.3±0.05   | 0.2±0.05   | 0.3±0.05   |
|             | P | φ255±2     | φ255±2      | φ255±2      | φ330±1       | φ330±1     | φ178±2     | φ330±1     | φ178±2     | φ178±2     |
|             | Q | φ100±2     | φ80±2       | φ80±2       | φ100±1       | φ100±1     | φ80±1      | φ100±1     | φ80±1      | φ80±2      |
|             | R | φ13±0.2    | φ13±0.2     | φ13±0.2     | φ13±0.3      | φ13±0.3    | φ13±0.5    | φ13±0.3    | φ13±0.5    | φ13±0.5    |
|             | S | φ21±0.8    | φ21±0.8     | φ21±0.8     | φ21±0.5      | φ21±0.5    | φ21±0.5    | φ21±0.5    | φ21±0.5    | φ21±0.8    |
|             | U | 2±0.5      | 2±0.5       | 2±0.5       | 2±0.5        | 2±0.5      | 2±0.5      | 2±0.5      | 2±0.5      | 2±0.5      |
| Qty         |   | 2000       | 2000        | 2000        | 3000         | 3000       | 1000       | 3000       | 1000       | 1000       |