SC CUT Crystals: CFPX-2000 series

LEADED QUARTZ CRYSTALS

ISSUE 2; 12 OCTOBER 1999

- The CFPX-2000 series of the SC cut quartz resonators are double rotated crystals that offer considerbale advantages over single rotated AT or BT cuts for certain applications. The term SC stands for "Stress Compensated" and it was the property of compensation for thermal transient and planar stress effects that was sought in its original developement. The frequency/ temperature characteristics of the SC cut are most suitable for oven controlled oscillator applications for precision frequency control.

Key Features

- Thermal transient compensation - fast warm up
- Low frequency/temperature response slope suitable for ovened applications
- Smooth frequency/temperature characteristics reduce coupled mode problems
- Low thermal hysteresis
- Ageing as low as $1x10^{-10}$ /day at 85°C (3rd overtone) can be achieved
- Low acceleration sensitivity
- Q factor > 1.0 million for 10.0MHz 3rd overtone crystal

Environmental Specification

- Bump: IEC 60068-2-29 Test Eb, 4000 ±10 bumps at 400m/s² (40_{gn}) in each of three mutually perpendicular planes
- Vibration: IEC 60068-2-6 Test Fc Procedure B4 (MIL- STD-202 Method 204), Duration 12 hours, 10 to 55Hz 0.75mm D.A., 55 to 2000Hz 98m/s² (10_{gn})
- Shock: IEC 60068-2-27 Test Ea, (MIL-STD-202 Method 213) $^1/_2$ sine wave, 981m/s² (100_{gn}) 11ms, 6 shocks in each plane
- Damp Heat: IEC 60068-2-3 Test Ca (Steady State), Duration 56 days, recovery time 12 hours
- Change of temperature: IEC 60068-2-14 Test Na (Rapid Change) (MIL-STD-202 Method 107), 10 cycles of 30 minutes duration each for -55/+125°C cycle
- Solderability: IEC 60068-2-20 Test Ta Method 1 (Solder Bath) (MIL-STD-202 Method 208), Temperature 235°C
- Robustness of Termination: IEC 60068-2-21 Test Ua (Tensile or Thrust)(MIL-STD-202 Method 211), 10 Newtons (Tensile) or 20 Newtons (Thrust)
- Hermetic Seal: IEC 60068-2-17 Test Qk (Fine Leak), (MIL-STD-202 Method 112 Test condition C) and IEC 60068-2-17 Test Qc (Gross Leak) (MIL-STD-202 Method 112 Test condition D)
- Marking: Engraving

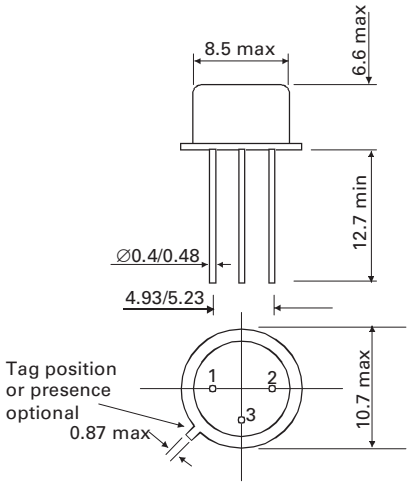
Frequency/Holder Range

Frequency Range	Mode	Holder	IEC Code
30.0 to 100.0MHz	3rd Overtone	HC35/U (TO5)	DK
8.0 to 20.0MHz	3rd Overtone	HC37/U (TO8)	DL
4.0 to 10.0MHz	3rd Overtone	HC40/U	DU, DM, DR
15.0 to 70.0MHz	3rd Overtone	HC43/U	

General Characteristics

- Turnover temperature: 50 to 90°C
- Ageing: < $1x10^{-9}$/day at 85°C
- Note: Tighter specifications available
- Q - factor: > 1.0 million for 10.0MHz 3rd overtone
- g - sensitivity: < $5x10^{-9}$/g typical for HC35, HC37, HC40 or HC43
- Note: g - sensitivity: < 1 x 10^{-9}/g achievable using 4-point mounting upon request for holders HC35, HC37 or HC40
- Material: Premium Q, low inclusion density or swept
- HC37: The crystal may be connected to Pin 1 and Pin 3 or Pin 2 and Pin 4
- To determine your exact requirements please contact our Applications Support Department

Outline in mm - HC35/U (TO5) DK



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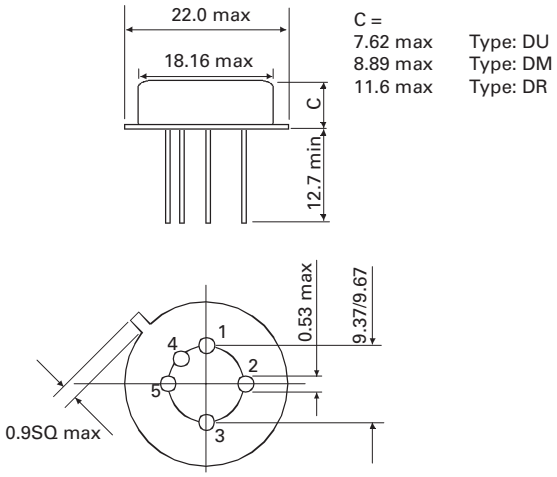
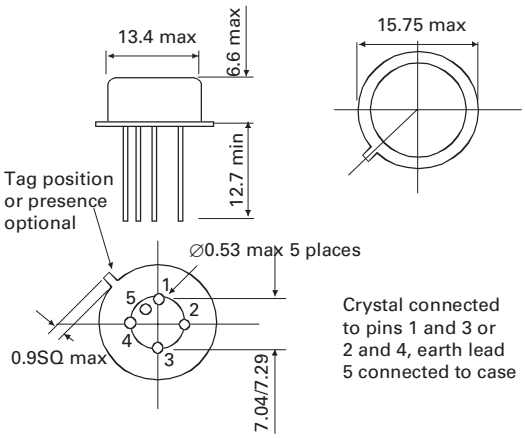
CFPX-2000 Series Outline Drawings

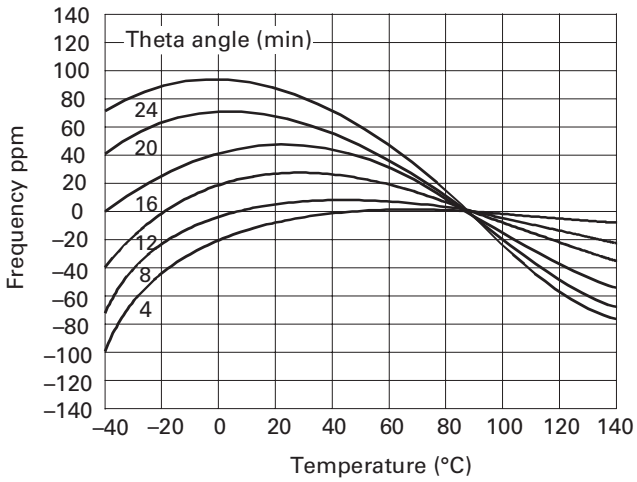
Outline in mm - HC40/U, DU, DM, DR



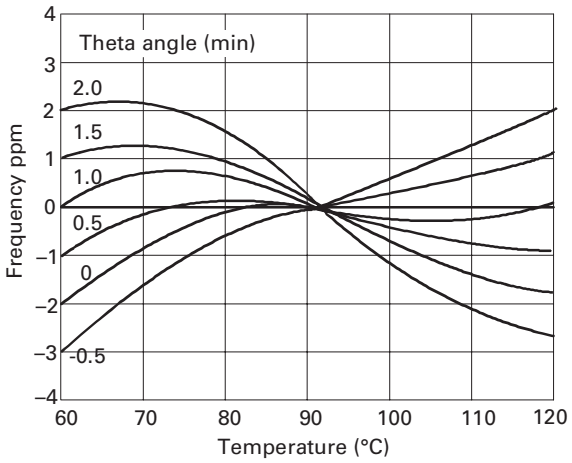
Outline in mm - HC37/U (TO8) DL



Frequency/Temperature Curves SC Cut -40+140°C



Frequency/Temperature Curves SC Cut -60+120°C



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