



2 Lead Metal Package Crystal, 3 mm x 8 mm, 2 mm x 6 mm, 1 mm x 5 mm

38 / 26 / 15 Series

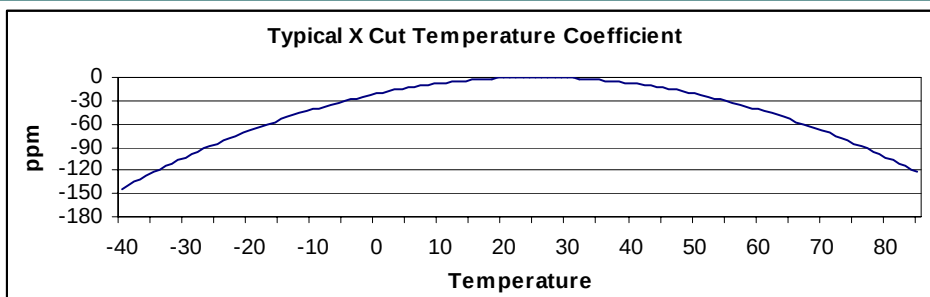
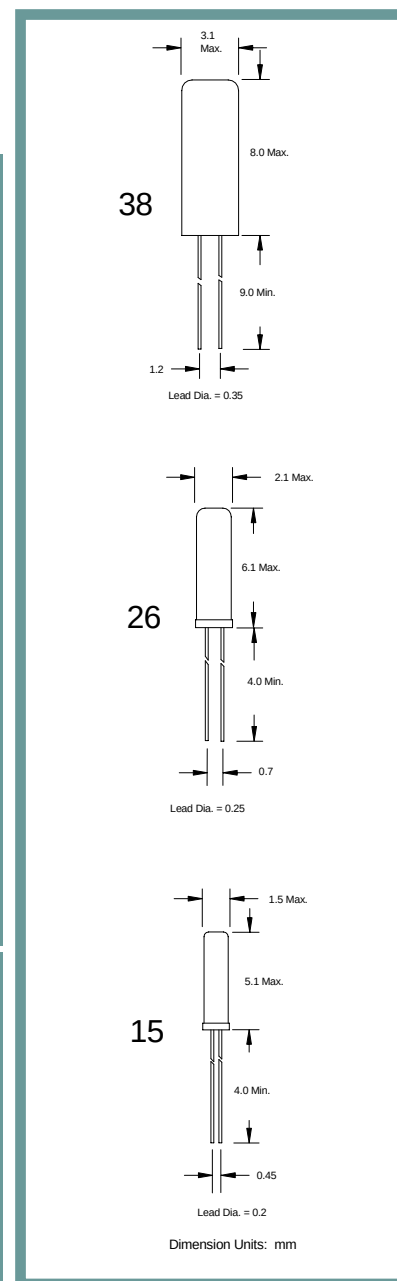
Product Features:

Small Package Option
Compatible with Leadfree Processing
Low Cost

Applications:

Real Time Clocks
Metering
Industrial Control
Time Reference

Frequency	30 kHz to 192.000 kHz (15 package only available at 32.768 kHz)		
ESR (Equivalent Series Resistance) 30 kHz – 31.9 kHz 32 kHz – 39.9 kHz 40 kHz – 59.9 kHz 60 kHz – 99.9 kHz 100 kHz – 192 kHz	15 Package (32.768kHz Only) 40 k Ω Max.	26 Package 40 k Ω Max. 35 k Ω Max. 30 k Ω Max. 25 k Ω Max. 20 k Ω Max.	38 Package 30 k Ω Max. 30 k Ω Max. 30 k Ω Max. 25 k Ω Max. 20 k Ω Max.
Shunt Capacitance (C0)	0.8 pF to 1.7 pF Typical		
Frequency Tolerance @ 25° C	±20 ppm Standard (see Part Number Guide for more options)		
Frequency Stability over Temperature	Parabolic -0.034 ppm / ° C ² Typical. Inflection point approx. 27° C., See Table Below		
Crystal Cut	X cut		
Load Capacitance	12.5 pF Standard		
Drive Level	1 μ W Max.		
Aging	±5 ppm Max. / Year Standard		
Temperature			
Operating	-40° C to +85° C Standard (see Part Number Guide for more options)		
Storage	-40° C to +85° C Standard		



Part Number Guide		Sample Part Number: 26-HX1F12.5 – 32.768 kHz				
Package	Tolerance (ppm) at Room Temperature	Stability (ppm) over Operating Temperature	Operating Temperature Range	Mode (overtone)	Load Capacitance (pF)	Frequency
38 - (3 mm X 8 mm)	B = ±50 ppm	X = X Cut	0 = 0°C to +50°C	F = Fundamental	12.5 pF Standard.	- 32.768 kHz
26 - (2 mm X 6 mm)	F = ±30 ppm		1 = 0°C to +70°C			
15 - (1 mm X 5 mm)	G = ±25 ppm		2 = -10°C to +60°C			
	H = ±20 ppm		3 = -20°C to +70°C			
	I = ±15 ppm		5 = -40°C to +85°C			
	J = ±10 ppm		9 = -10°C to +50°C			

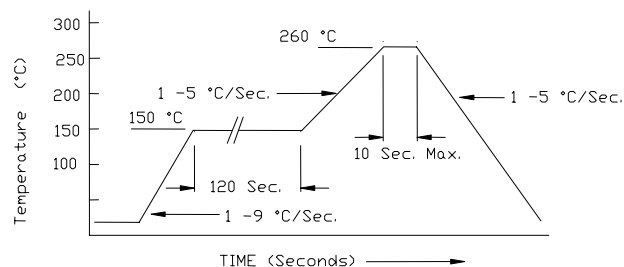


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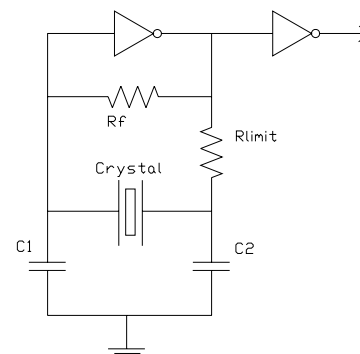
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Pb Free Solder Reflow Profile:

Typical Circuit:



*Units are backward compatible with 240C reflow processes



Package Information:

MSL = 2a

Termination = e1 (Sn / Cu / Ag over Ni over Kovar base metal).

Environmental Specifications

Thermal Shock	MIL-STD-883, Method 1011, Condition A
Moisture Resistance	MIL-STD-883, Method 1004
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Mechanical Vibration	MIL-STD-883, Method 2007, Condition A
Resistance to Soldering Heat	J-STD-020C, Table 5-2 Pb-free devices (except 2 cycles max)
Hazardous Substance	Pb-Free / RoHS / Green Compliant
Solderability	JESD22-B102-D Method 2 (Preconditioning E)
Terminal Strength	MIL-STD-883, Method 2004, Test Condition D
Gross Leak	MIL-STD-883, Method 1014, Condition C
Fine Leak	MIL-STD-883, Method 1014, Condition A2, R1=2x10 ⁻⁸ atm cc/s
Solvent Resistance	MIL-STD-202, Method 215

Marking

N/A –Packaging only