



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

38 / 26 / 15 Series

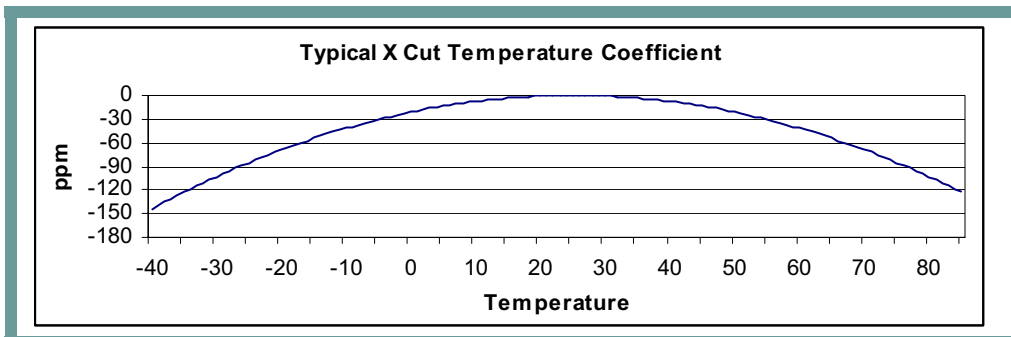
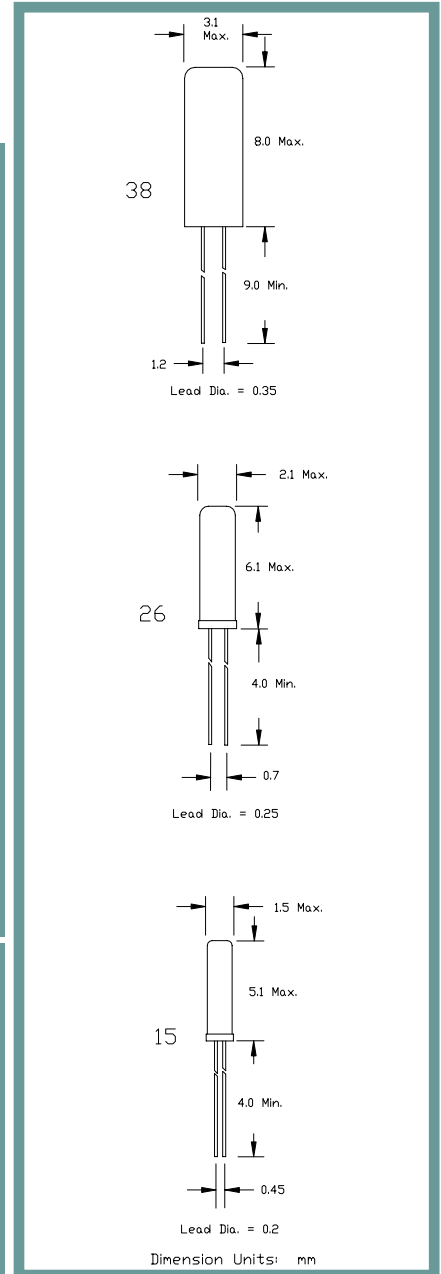
**Product Features:**

- Small Package Option
- Compatible with Leadfree Processing
- Low Cost

**Applications:**

- Real Time Clocks
- Metering
- Industrial Control
- Time Reference

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



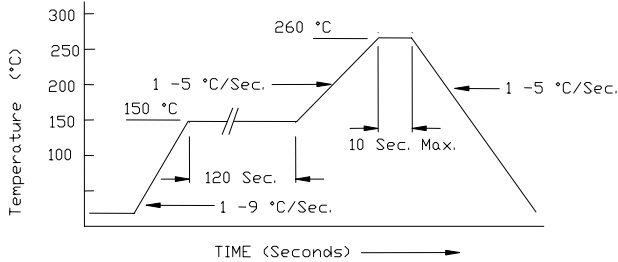
Part Number Guide		Sample Part Number: 26-HX1F12.5 – 32.768 KHz				
Package	Stability (ppm) at Room Temperature	Stability (ppm) over Operating Temperature	Operating Temperature Range	Mode (overtone)	Load Capacitance (pF)	Frequency
38 - (3 mm X 8 mm)	B = ±50 ppm	X = X Cut	0 = 0°C to +50°C	F = Fundamental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

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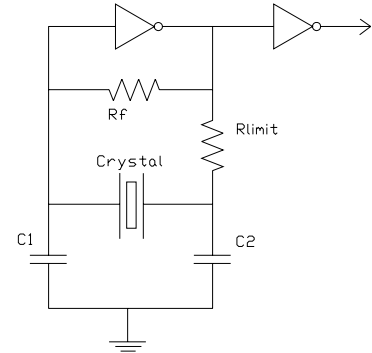
Specifications subject to change without notice

**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

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