

Description:

The EX-620 Series offers a ruggedized hybrid thick film construction in a low profile hermetically sealed 4pin HALF DIP package, which can withstand severe environmental conditions. This product utilizes VI's EMXO™ technology resulting in excellent stability performance and fast warm-up with low power consumption.



Features:

- IT Cut Crystal
- Temp Stability to $\pm 5 \times 10^{-8}$ over 0°C to +70°C
- Low Power Consumption: $0.3W$ @ 25°C, $0.6W$ @ -40°C
- Fast Warm-up: 60 seconds @ 25°C
- 4-Pin Half Dip: 0.52"(W)x0.52"(L)x0.30"(H)
- Weight: <math><3gm</math>
- Available in Thru Hole and Surface Mount Package

Frequencies

10Mhz to 30Mhz

Standard Frequencies

10, 11.68, 12.8, 16.384, 19.44, 20, 30Mhz

Frequency Stabilities¹

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code	
vs. operating temperature range (Referenced to frequency at +25°C)	-50		+50	ppb	-0 ... +70°C	C508	
	-75		+75	ppb	-20 ... +70°C	D758	
	-100		+100	ppb	-40... +85°C	F107	
vs. Stratum 3 per GR-1244-CORE	Operating Temperature	-140		+140	ppb	-20 ... +70°C	DST3
		-140		+140	ppb	-40... +85°C	FST3
	Holdover	-370		+370	ppb	24 hours	
	Drift	-4.63		+4.63	$10^{-13}/\text{sec}$	Over 7100 seconds	
MTIE			1×10^{-6}		0.16sec < ObserveTimes < 64sec		
vs. supply voltage change	-20		+20	ppb	$V_s \pm 5\%$ Load $\pm 10\%$ after 30 days of operation after 30 days of operation		
vs. load change	-10		+10	ppb			
vs. aging / day	-2		+2	ppb			
vs aging / year	-300		+300	ppb			
Warm-up Time			60	seconds	$\pm 100\text{ppb}$ of freq at 1hr after turn on @ +25°C		
			90	seconds	$\pm 100\text{ppb}$ of freq at 1hr after turn on @ -40°C		

Supply voltage (Vs)

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code
Supply voltage	4.75	5	5.25	VDC		C
	3.135	3.3	3.465	VDC		D
Power consumption			1.5	Watts	during warm-up	
			0.3	Watts	steady state @ +25°C	
			0.6	Watts	steady state @ -40°C	

RF Output

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code	
HCMOS	Load		15	pF		A	
	Signal Level (Vol)		0.1	Vs	15pF load		
	Signal Level (Voh)	0.8			15pF load		
	Duty cycle	40		60	%		@ (Voh-Vol)/2
Sinewave	Load		50	Ω			
	Output Power	0		4	dBm	50 Ohm load	G
	Output Power	3		7	dBm	50 Ohm load	H
	Harmonics			-30	dBc	50 Ohm load	
	Spurs			-60	dBc	50 Ohm load	

Frequency Tuning (EFC)

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code
Fix Frequency (referenced to nominal frequency)	-1		+1	ppm	No EFC input	F
Tuning Range (referenced to nominal frequency)	±3		±10	ppm	from 0V to Vs	A
Linearity			20	%		
Tuning Slope	Positive					

Additional parameters

Parameter	Min	Typ	Max.	Units	Condition
Phase Noise ³			-100	dBc/Hz	10 Hz
			-130	dBc/Hz	100 Hz
			-140	dBc/Hz	1 kHz
			-145	dBc/Hz	10 kHz
Allan Deviation			2x10 ⁻¹⁰		Tau = 1 second to 10 seconds
Weight			3.0	g	
Processing & Packing	Handling & processing note				

Absolute Maximum Ratings

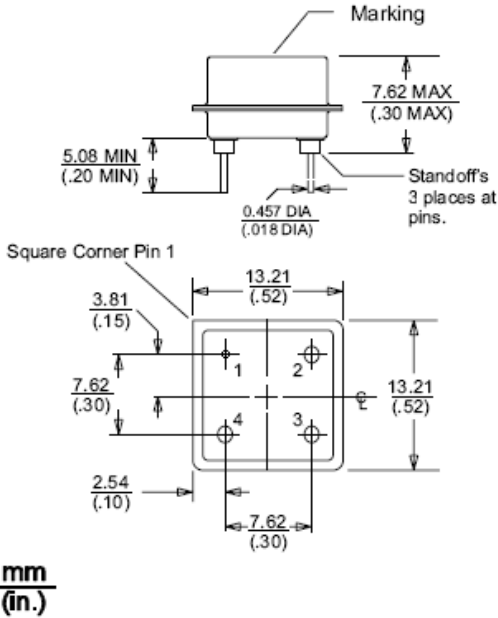
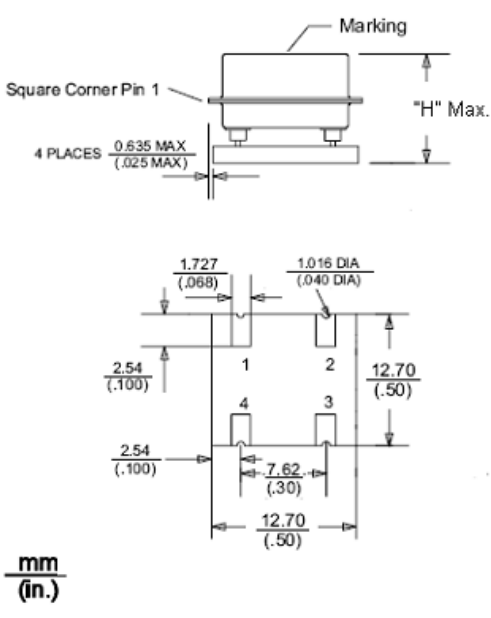
Parameter	Min	Typ	Max.	Units	Condition
Supply voltage (Vs)			5.5	V	with Vs=5.0VDC
			5.5	V	with Vs=3.3VDC
Output Load			30	pF	
Operable temperature range	-55		+85	°C	
Storage temperature range	-55		+85	°C	

Environmental Conditions

Parameter	Condition
Mechanical Shock (survive):	MIL-STD-202, Test Method 213, Condition E (1000G, 0.5msec)
Vibration Random (survive):	MIL-STD-202, Test Method 214, Condition I-H (20Grms, 3 minutes/axis)
Vibration Sine (survive):	MIL-STD-202, Test Method 204, Condition D (20Grms, 20 minutes/axis)
Thermal Shock (survive):	MIL-STD-202, Test Method 107, Condition A-2 (50 Cycles, -55°C to +85°C)

Enclosures

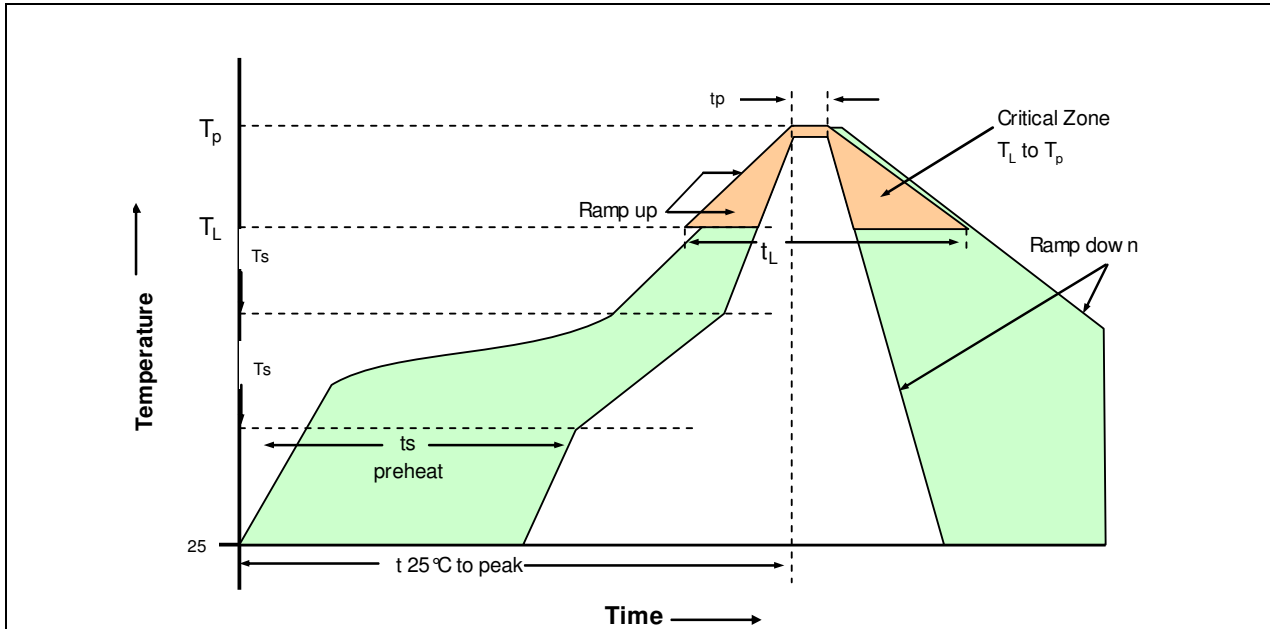
Thru Hole			SMD		
Package Codes	Type	Height	Package Codes	Type	Height: "H"
EX-620	A1	7.62 (.30) mm(in.)	EX-625	A2	8.89 (.35) mm(in.)
			EX-621	A3	9.65 (.38) mm(in.)

 <p>Diagram showing Thru Hole enclosure dimensions. Key features include: Marking, 7.62 MAX (.30 MAX) height, 5.08 MIN (.20 MIN) standoff, 0.457 DIA (.018 DIA) pins, 3 places at pins, Square Corner Pin 1, 13.21 (.52) width, 7.62 (.30) height, 3.81 (.15) offset, 13.21 (.52) width, 2.54 (.10) offset, and 7.62 (.30) width.</p> <p style="text-align: center;">mm (in.)</p>	 <p>Diagram showing SMD enclosure dimensions. Key features include: Marking, "H" Max. height, 4 PLACES 0.635 MAX (.025 MAX) spacing, 1.727 (.068) width, 1.016 DIA (.040 DIA) pins, 2.54 (.100) offset, 12.70 (.50) width, 2.54 (.100) offset, 7.62 (.30) width, and 12.70 (.50) width.</p> <p style="text-align: center;">mm (in.)</p>
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Pin Connections			Pin Connections		
Pin #	With EFC Input	Fix Frequency	Pin #	With EFC Input	Fix Frequency
1	Electrical Frequency Adjust Input (EFC)	No Connection	1	Electrical Frequency Adjust Input (EFC)	No Connection
2	Ground (Case)	Ground (Case)	2	Ground (Case)	Ground (Case)
3	RF Output	RF Output	3	RF Output	RF Output
4	Supply Voltage Input	Supply Voltage Input	4	Supply Voltage Input	Supply Voltage Input

Pin numbers are for reference only. They do not appear on the unit.

Recommended Reflow Profile



Profile Feature	Sn-Pb Assembly	Profile Feature	Sn-Pb Assembly
PRECAUTION: EX-62x Series shall not expose to temperature higher than 230°C. If exposing to temperature higher than 230°C, stability and power consumption may permanently degrade.			
Average ramp-up rate (T _L to T _p)	3°C/second max.	Time 25°C to Peak Temperature	4 minutes max.
Preheat -Temperature Min T _{s(min)} -Temperature Min T _{s(max)} -Time (min to max) (t _s)	135°C 155°C 60-90 seconds	Time maintained above - Temperature (T _L) - Time (t _L)	183°C 45-60 seconds
T _{s(max)} to T _L - Ramp-up Rate	3°C/second max.		
Time maintained above - Temperature (T _L) - Time (t _L)	183°C 45-60 seconds	Time within 5°C of actual Peak Temperature (t _p)	10-20 seconds max.
Peak Temperature (T _p)	max 220°C	Ramp-down Rate	6°C/second max.

Note: All temperatures refer to topside of the package, measured on the package body surface.

How to Order this Product:

Step 1	Use this ordering information to specify the required parameters and forward it to your factory representative
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