

# M31x Series Multiple Frequency VCXO

5x7 mm, 3.3/2.5/1.8 Volt, LVPECL/LVDS/CML/HCMOS Output



## Product Definition

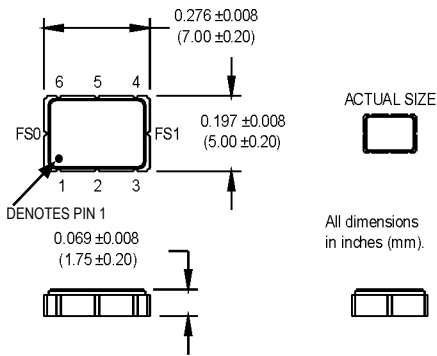
Product Series	M31	x	x	-SXXX
Number of Frequencies	<ul style="list-style-type: none"> <li>2: Two Output</li> <li>3: Three Output</li> <li>4: Four Output</li> </ul>			
Supply Voltage	<ul style="list-style-type: none"> <li>0: 3.3 V</li> <li>1: 2.5 V</li> <li>2: 1.8 V</li> </ul>			
Factory Assigned to Accommodate Customer Specified Frequencies				

### Features:

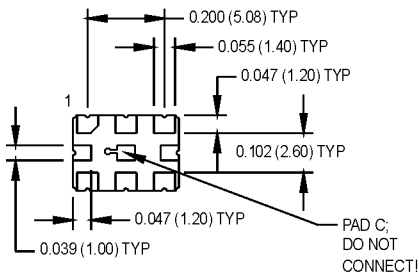
- Multiple Output Frequencies (2, 3, or 4) - Selectable
- **QIK Chip™** Technology
- Superior Jitter Performance (comparable to SAW based)
- Frequencies from 50 MHz - 1.4 GHz (LVDS/LVPECL/CML) and 10 - 150 MHz (CMOS)

### Phase Lock Loop Applications:

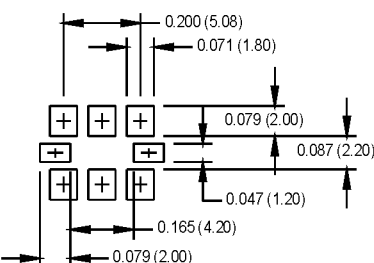
- Where more than one selectable frequency is required for different global regions, FEC (Forward Error Correction) or selectable functionality are required.
- Telecommunications such as SONET / SDH / DWDM / FEC / SERDES / OC-3 thru OC-192
- Wireless base stations / WLAN / Gigabit Ethernet
- Avionic flight controls and military communications



- Pad1: Voltage Control
- Pad2: Enable/Disable (or N/C)
- Pad3: Ground
- Pad4: Output Q (LVPECL, LVDS, CML)
- Pad5: Output  $\bar{Q}$  (LVPECL, LVDS, CML)
- Pad6: Vcc
- PadA: FS0
- PadB: FS1
- PadC: Do not connect!



### SUGGESTED SOLDER PAD LAYOUT



	FS1	FS0
Frequency 1	High	High
Frequency 2	High	Low
Frequency 3	Low	High
Frequency 4	Low	Low

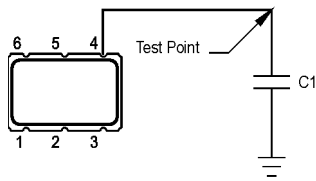
NOTE: Logic Low = 20% Vcc max.  
Logic High = 80% Vcc min.

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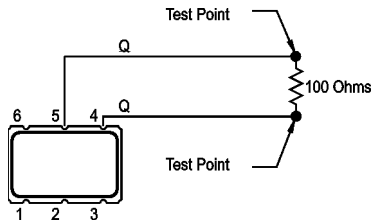
Please see [www.mtronpti.com](http://www.mtronpti.com) for our complete offering and detailed datasheets. Contact us for your application specific requirements: MtronPTI 1-800-762-8800.

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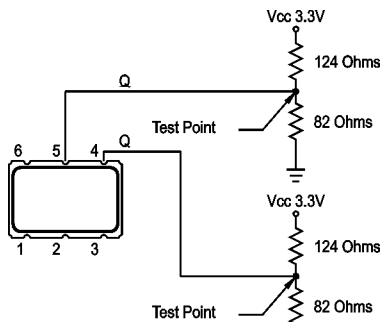
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HCMOS Load Circuit



LVDS Load Circuit



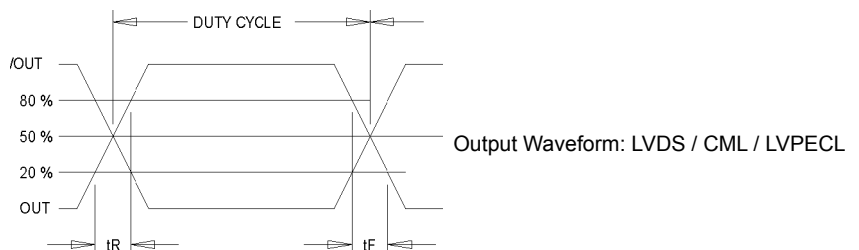
3.3 V LVPECL Load Circuit

PARAMETER	Symbol	Min.	Typ.	Max.	Units	Condition/Notes
Frequency Range	F	150 10		1400 125	MHz MHz	See Note 1 LVPECL/LVDS/CML HCMOS
Operating Temperature	T <sub>A</sub>	(See ordering information)				
Storage Temperature	T <sub>S</sub>	-55		+125	°C	
Frequency Stability	ΔF/F		±25		ppm	
Aging 1st Year Thereafter (per year)		-3 -1		+3 +1	ppm ppm	
Pullability/APR		(See ordering information)				
Gain Transfer Function				90 135	ppm/V ppm/V	See Note 2 For ± 50 ppm APR For ± 100 ppm APR
Control Voltage	V <sub>c</sub>	0.18 0.25 0.30	0.90 1.25 1.65	1.62 2.25 3.0	V V V	@ 1.8V V <sub>cc</sub> @ 2.5V V <sub>cc</sub> @ 3.3V V <sub>cc</sub>
Linearity			1	5	%	Positive Monotonic
Modulation Bandwidth	f <sub>m</sub>	20			KHz	-3 dB bandwidth
Input Impedance	Z <sub>in</sub>	500k	1M		Ohms	@ DC
Supply Voltage	V <sub>cc</sub>	1.71 2.375 3.135	1.8 2.5 3.3	1.89 2.625 3.465	V V V	
Input Current	I <sub>cc</sub>			125 80	mA mA	LVPECL/LVDS/CML HCMOS
Load		50 Ohms to (V <sub>cc</sub> - 2) V <sub>dc</sub> 100 Ohm differential load				See Note 3 LVPECL Waveform LVDS/CML Waveform
Symmetry (Duty Cycle)		45		55	%	CMOS Waveform @ 50% of waveform
Output Skew				80	ps	LVPECL
Differential Voltage		350	425 TBD	500	ps mVppd	LVDS, CML LVDS CML
Common Mode Output Voltage	V <sub>cm</sub>		1.2		V	LVDS
Logic "1" Level	V <sub>oh</sub>	V <sub>cc</sub> - 1.02			V	LVPECL HCMOS
Logic "0" Level	V <sub>ol</sub>			V <sub>cc</sub> - 1.63	V	LVPECL HCMOS
Rise/Fall Time	T <sub>r</sub> /T <sub>f</sub>		0.23	0.35	ns	@ 20/80% LVPECL Ref. 10%-90% V <sub>dd</sub> HCMOS
Enable Function		80% V <sub>cc</sub> min. or N/C: output active 20% V <sub>cc</sub> max: output disables to high-Z				Output Option B
		20% V <sub>cc</sub> max: output active 80% V <sub>cc</sub> min: output disables to high-Z				Output Option S
Frequency Selection		See Truth Table				
Settling Time				10	ms	To within ± 1 ppm of frequency
Start up Time			10		ms	
Phase Jitter @ 622.08 MHz @ 125 MHz	φ <sub>J</sub> φ <sub>J</sub>		0.50	1.0	ps RMS ps RMS	Integrated 12 kHz – 20 MHz HCMOS (12kHz – 20 MHz)

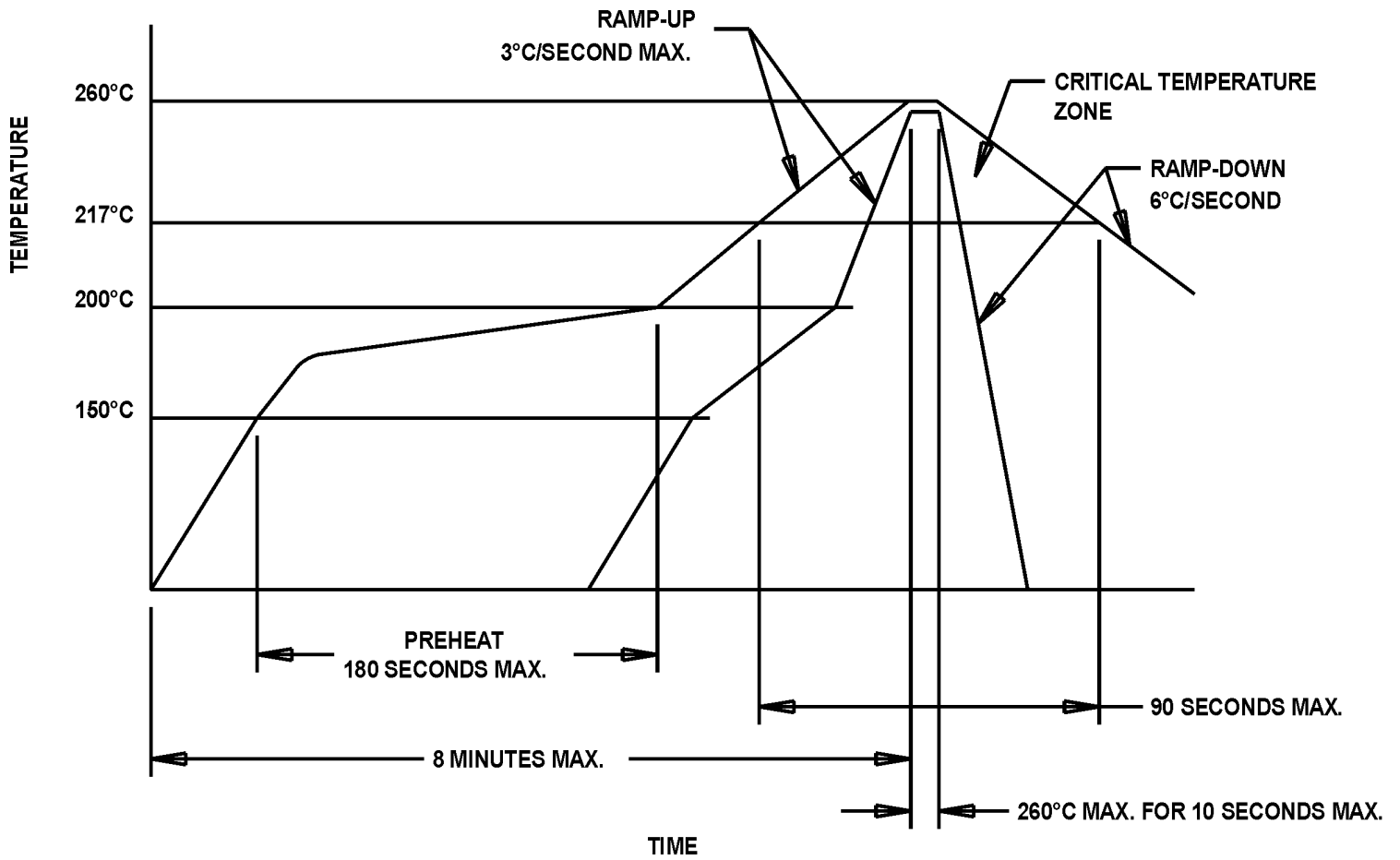
Note 1: Contact factory for exact frequency availability over 945 MHz.

Note 2: APR specification is inclusive of initial tolerance, deviation over temperature, shock, vibration, supply voltage, and aging for one year at 50°C mean ambient temperature.

Note 3: See Load Circuit Diagram in this Datasheet. Consult factory with nonstandard output load requirements.



# MtronPTI Lead Free Solder Profile



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