



CRYSTAL OSCILLATORS LVPECL/LVDS 3.3V

**SURFACE MOUNT
RF Models**



5 x 7 mm Surface Mount 0° to 70°C or -40° to +85°C 750 KHz to 800 MHz

FEATURES

- High speed – Low jitter LVPECL or LVDS output with tristate
- Small SMD package – 5 x 7mm
- Stability options: 100, 50, 25 or 20 ppm
- Commercial or industrial temperature range
- Rugged, hermetic package for automated assembly

TYPICAL APPLICATIONS

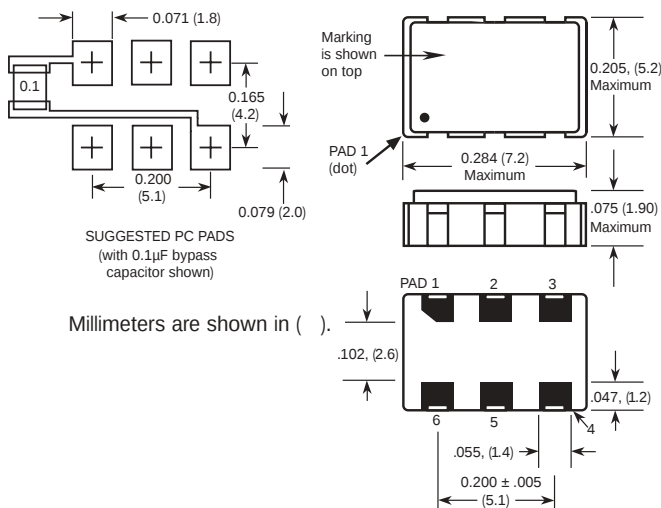
- Telecom/networking systems that require low jitter clocks
 - DSL
 - Gigabit ethernet
 - Fibre Channel
 - Optical networking

Description

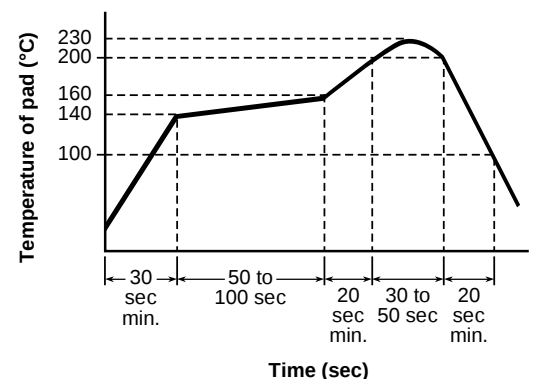
MF Electronics RF surface mount oscillators provide waveforms for clocking LVPECL and LVDS circuits. The new 5 x 7mm footprint package provides the performance of larger oscillators with a new level of board space reduction achieved. ASIC technology is used to accomplish size reduction and enhance performance and reliability. Low jitter output signals are generated. The wide range of frequencies offered, many stability options, and industrial temperature range availability, make this model the solution for many applications. A tristate function is included to allow for easy automated testing of assemblies. Tape and reel packaging is standard.

CONNECTIONS

PIN 1	Tristate
PIN 2	N/C
PIN 3	Ground
PIN 4	Output 1: Q
PIN 5	Output 2: $\bar{Q}$
PIN 6	+V _{DD}



Outline Drawing



Recommended Reflow Soldering Profile





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ELECTRICAL SPECIFICATIONS

Frequency Range 750 KHz to 800 MHz

Frequency Stability

Includes calibration at 25°C, operating temperature, change of input voltage, change of load, shock and vibration. 100, 50, 25 or 20 ppm

	MIN	TYP	MAX	UNITS
Input Voltage, V_{DD}	3.15	3.3	3.45	volts

Jitter

Period jitter RMS

19.44MHz	5		ps
77.76MHz	8		ps
155.52MHz	9		ps
622.08MHz	10		ps

Integrated jitter RMS

12 KHz to 20 MHz @ 155.52MHz	3	5	ps
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Symmetry at $(V_{DD}-1.3)V_{DC}$ (PECL)	40	50	60	percent
at $(1.25 V_{DC})$ (LVDS)	40	50	60	percent

Aging

First year	3	ppm
After first year	1	ppm/yr

Tristate

Input Requirements for Pin 1.:

"1": On – Pin 1 may float or 2.8V min

"0": Tristate – Pin 1 requires 0.4V max

Typical Phase Noise (dBc/Hz)	10Hz	100Hz	1KHz	10KHz	100KHz
Oscillator Frequency					
19.44MHz	-60	-90	-112	-140	-140
106.25MHz	-60	-90	-112	-127	-125
155.52MHz	-60	-90	-112	-125	-123
622.08MHz	-60	-90	-109	-110	-109

ENVIRONMENTAL SPECIFICATIONS

Temperature

Operating	Commercial: 0° to 70°C, Industrial: -40° to +85°C
Storage	-55° to +125°C

Shock – 1000 Gs, 0.35 ms, 1/2 sine wave, 3 shocks in each plane

Vibration – 10-2000 Hz of .06" d.a. or 20 Gs, whichever is less

Humidity – Resistant to 85° R.H. at 85°C

MECHANICAL SPECIFICATIONS

Leak – MIL STD 883, Method 1014, condition A1

Case – Ceramic with hermetic resistance-welded metal lid

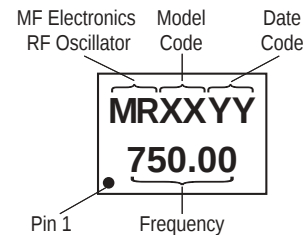
Pads – Solderable gold over nickel

Marking – Epoxy ink or laser engraved

Resistance to Solvents – MIL STD 202, Method 215

MARKING SPECIFICATION

The format for the marking is:





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SURFACE MOUNT
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PECL OUTPUT MODELS
ELECTRICAL SPECIFICATIONS

	MIN	TYP	MAX	UNITS
RL = 50 Ω to (V _{DD} - 2V) (see figure)				
Output High Voltage, V _{OH}		V _{DD} - 1.025		V
Output Low Voltage, V _{OL}			V _{DD} - 1.620	V
Input Current, PECL				
0.75 – 24 MHz			25	mA
24 – 160 MHz			65	mA
160 – 800 MHz			100	mA
Switching Characteristics				
Clock Rise Time, tr @20/80%		0.3	0.35	ns
Clock Fall Time, tf @80/20%		0.3	0.35	ns

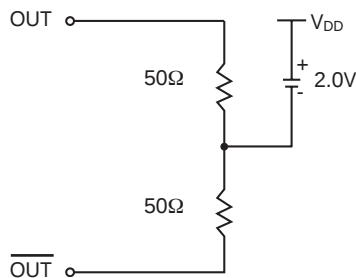


Fig 1.
PECL Levels Test Circuit

LVDS OUTPUT MODELS
ELECTRICAL SPECIFICATIONS

	MIN	TYP	MAX	UNITS
RL = 100 Ω (see figure)				
Output Differential Voltage, V _{OD}	247	355	454	mV
Output High Voltage, V _{OH}		1.4	1.6	V
Output Low Voltage, V _{OL}	0.9	1.1		V
Offset Voltage, V _{OS}	1.125	1.2	1.375	V
Input Current, LVDS				
0.75 – 24 MHz			25	mA
24 – 96 MHz			45	mA
96 – 800 MHz			80	mA
Switching Characteristics				
Differential Clock Rise Time, tr		0.3	0.4	ns
Differential Clock Fall Time, tf		0.3	0.4	ns

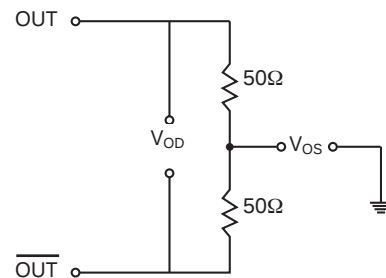


Fig 2.
LVDS Test Load

HOW TO ORDER

For Part Number, insert option codes after model type, and add frequency, for example:

RF	A	A	T	A	125	M
Frequency Stability	A = ±100 ppm B = ±50 ppm C = ±25 ppm D = ±20 ppm		Tristate T = Tristate N = No Tristate		Frequency	M = MHz K = KHz
Temperature Range of Operation	A = 0 to 70°C B = -40 to +85°C			Output Logic A = 45/55% LVDS B = 40/60% LVDS C = 45/55% PECL D = 40/60% PECL		

SS#	Rev.
RF	A

MF ELECTRONICS

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