M4003 & M4004 Series

9x14 mm, 5.0 or 3.3 Volt, PECL, VCSO

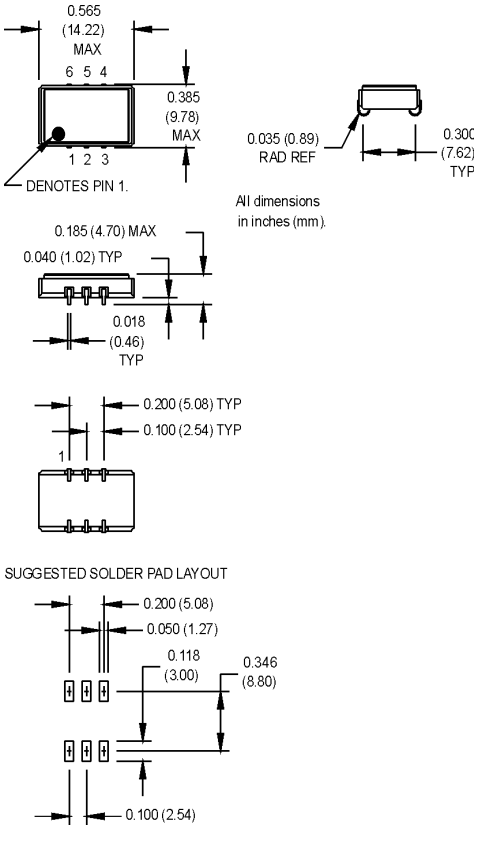
- Integrated phase jitter of less than 0.5 ps from 12 kHz to 20 MHz
- Ideal for SONET and 10 and 40 Gigabit Ethernet applications

Ordering Information

M4003/M4004 1 0 B 1 P J -R 00.0000 MHz

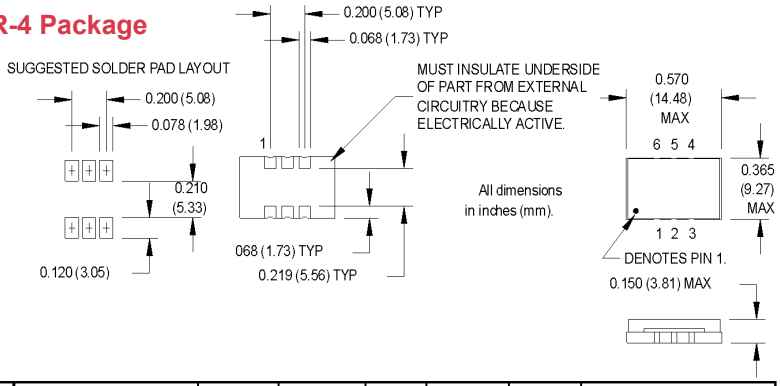
- **Product Series**
  - M4003= 3.3 V
  - M4004 = 5.0 V
- **Temperature Range**
  - 1: 0°C to +70°C
  - 2: -40°C to +85°C *
- **Stability**
  - 0: Nominal per APR selection
- **Output Type**
  - B: Complementary, Enable (Enable High)
  - S: Complementary, Enable (Enable Low)
  - U: Complementary, Fixed
- **Absolute Pull Range**
  - 1: ±50 ppm
  - 2: ±100 ppm
- **Symmetry/Output Logic Type**
  - P: 45/55% PECL
- **Package/Lead Configurations**
  - J: J-lead
  - K: FR-4
- **RoHS Compliance**
  - Blank: non-RoHS compliant part
  - -R: RoHS compliant part
- **Frequency (customer specified)**

J-Lead Package



SUGGESTED SOLDER PAD LAYOUT

FR-4 Package



Pin Connections

PIN	FUNCTION
1	Control Voltage
2	Output Enable or N/C
3	Ground/Case
4	Output Q
5	Output Q or N/C
6	+Vcc

Electrical Specifications

PARAMETER	Symbol	Min.	Typ.	Max.	Units	Condition/Notes
Frequency Range	F	500		1300	MHz	See Note 1
Operating Temperature	TA	(See Ordering Information)				
Storage Temperature	Ts	-55		+125	°C	
Frequency Stability	ΔF/F	(See Ordering Information)				
Aging 1st Year Thereafter (per year)						
Pullability/APR					ppm	See Note 2
Control Voltage	Vc	0 0		3.3 5.0	V V	M4003 M4004
Linearity			±3	±10	%	Positive Monotonic Slope
Modulation Bandwidth	fm	500			kHz	-3 dB bandwidth
Input Impedance	Zin	50k			Ohms	
Input Voltage	Vcc	3.135 4.5	3.3 5.0	3.465 5.5	V V	M4003 M4004
Input Current	Icc		80 73	90 85	mA mA	M4003 M4004
Output Type						PECL
Load		50Ω to Vcc -2V or Thevenin Equivalent				
Symmetry (Duty Cycle)		45	50	55	%	Vcc -1.3
Output Skew						
Logic "1" Level	Voh	Vcc -0.98			V	
Logic "0" Level	Vol			Vcc -1.63	V	
Output Current				20	mA	
Rise/Fall Time	Tr/Tf			0.4	ns	@ 20/80%
Enable Function		PECL high or Vcc: output active PECL low or GND: output disables				Output Option B
		PECL low, GND, or N/C: output active PECL high: output disables				Output Option S
Start up Time						
Phase Jitter @ 622.08 MHz	ϕJ		0.15 0.25	0.30 0.40	ps RMS ps RMS	12 kHz - 20 MHz 50 kHz - 80 MHz
Phase Noise (Typical) @ 622.08 MHz	10 Hz -40	100 Hz -70	1 kHz -100	10 kHz -120	100 kHz -140	Offset from carrier dBc/Hz

1. Consult factory for extended temperature operation and exact frequency availability.
2. APR specification inclusive of initial calibration, deviation over temperature, shock, vibration, supply voltage, and aging.

MtronPTI reserves the right to make changes to the product(s) and service(s) described herein without notice. No liability is assumed as a result of their use or application.