

## M220x Series

9x14 mm, 3.3/2.5/1.8 Volt, PECL/LVDS/CML, Clock Oscillator



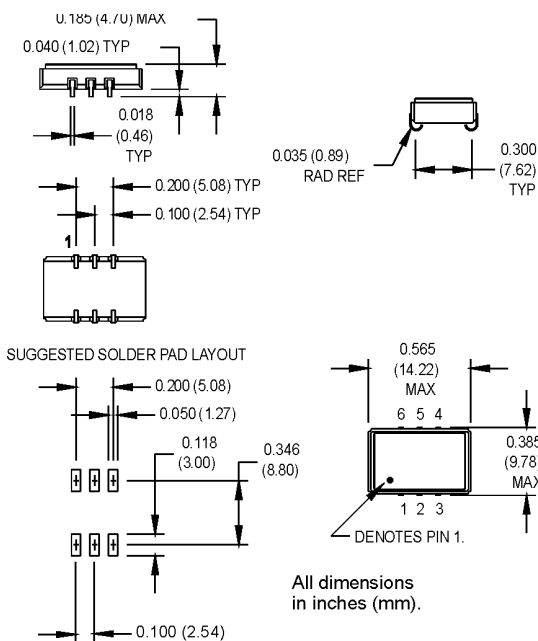
- Featuring *QiK Chip™* Technology
- Superior Jitter Performance (comparable to SAW based)
- Frequencies from 150 MHz to 1.4 GHz
- Designed for a short 2 week cycle time

### Applications:

- 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

### Ordering Information

	M220	0	6	8	B	P	J	00.0000	MHz
Product Series									
Supply Voltage									
0: 3.3 V									
1: 2.5 V									
2: 1.8 V									
Temperature Range									
2: -40°C to +85°C (see note 1)									
6: -20°C to +70°C									
Stability									
4: ±50 ppm									
3: ±100 ppm									
8: ±20 ppm									
Enable/Disable									
B: Enable High (pin 1)									
G: Enable High (pin 2)									
S: Enable Low (pin 1)									
M: Enable Low (pin 2)									
U: No Enable/Disable									
Logic Type									
P: LVPECL									
L: LVDS									
M: CML									
Package/Lead Configuration									
J: 9x14 mm J-lead									
Frequency (customer specified)									



#### PIN 1 ENABLE

Pin1: Enable/Disable  
Pin2: N/C  
Pin3: Ground  
Pin4: Output Q (LVPECL, LVDS, CML)  
Pin5: Output  $\bar{Q}$  (LVPECL, LVDS, CML)  
Pin6: Vcc

#### PIN 2 ENABLE

Pin1: N/C  
Pin2: Enable/Disable  
Pin3: Ground  
Pin4: Output Q (LVPECL, LVDS, CML)  
Pin5: Output  $\bar{Q}$  (LVPECL, LVDS, CML)  
Pin6: Vcc

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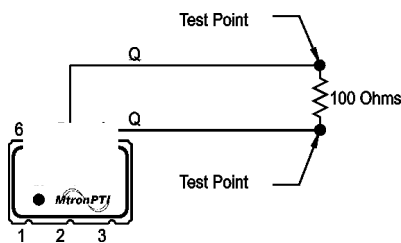
PARAMETER	Symbol	Min.	Typ.	Max.	Units	Condition/Notes
Frequency Range	F	150		1400	MHz	See Note 2
Operating Temperature	T <sub>A</sub>	(See ordering information)				See Note 1
Storage Temperature	T <sub>S</sub>	-55		+125	°C	
Frequency Stability	ΔF/F	(See ordering information)				See Note 3
Aging						
1st Year		-3		+3	ppm	
Thereafter (per year)		-1		+1	ppm	
Supply Voltage	V <sub>CC</sub>	1.71	1.8	1.89	V	
		2.375	2.5	2.625	V	
		3.135	3.3	3.465	V	
Input Current	I <sub>CC</sub>			125	mA	LVPECL/LVDS/CML
Load		50 Ohms to (V <sub>CC</sub> - 2) V <sub>DC</sub> 100 Ohm differential load				See Note 4 LVPECL Waveform LVDS/CML Waveform
Symmetry (Duty Cycle)		45		55	%	@ 50% of waveform
Output Skew			TBD			
Differential Voltage		350	425 TBD	500	mVppd	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
Logic "0" Level	V <sub>OL</sub>			V <sub>CC</sub> - 1.63	V	LVPECL
Rise/Fall Time	T <sub>r</sub> /T <sub>f</sub>		0.23	0.50	ns	@ 20/80% LVPECL
Enable Function		80% V <sub>CC</sub> min.: output active 20% V <sub>CC</sub> max.: output disables to high-Z				Output Option B or G
		20% V <sub>CC</sub> max.: output active 80% V <sub>CC</sub> min.: output disables to high-Z				Output Option S or M
Start up Time			10		ms	
Phase Jitter @ 622.08 MHz	φ <sub>J</sub>		0.3		ps RMS	Integrated 12 kHz – 20 MHz
Phase Noise						@ 622.08 MHz
10 Hz			-50			dBc/Hz
100 Hz			-80			dBc/Hz
1 KHz			-106			dBc/Hz
10 KHz			-117			dBc/Hz
100 KHz			-120			dBc/Hz
1 MHz			-130			dBc/Hz
10 MHz			-147			dBc/Hz
40 MHz			-150			dBc/Hz
Mechanical Shock		Per MIL-STD-202, Method 213, Condition C (100 g's, 6 ms duration, ½ sinewave)				
Vibration		Per MIL-STD-202, Method 201 & 204 (10 g's from 10-2000 Hz)				
Hermeticity		Per MIL-STD-202, Method 112, (1x10 <sup>-8</sup> atm. cc/s of Helium)				
Thermal Cycle		Per MIL-STD-883, Method 1010, Condition B (-55°C to +125°C, 15 min. dwell, 10 cycles)				
Solderability		Per EIAJ-STD-002				
Soldering Conditions		+240°C max. for 10 secs.				

Note 1: If the device is powered up below -20°C and then the ambient temperature rises 105°C during normal operation, the output will be interrupted for approximately 2-3 ms. A correction is in process and will be available Q1 2007.

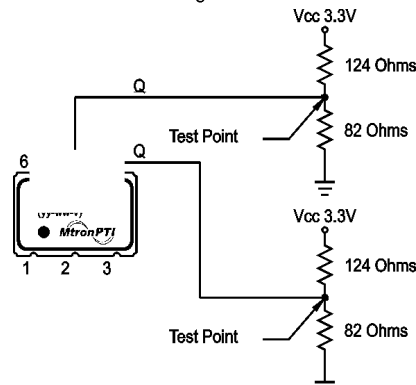
Note 2: Contact factory for exact frequency availability over 945 MHz

Note 3: Stability is inclusive of initial tolerance, deviation over temperature, shock, vibration, supply voltage, and aging for one year at 50°C mean ambient temperature.

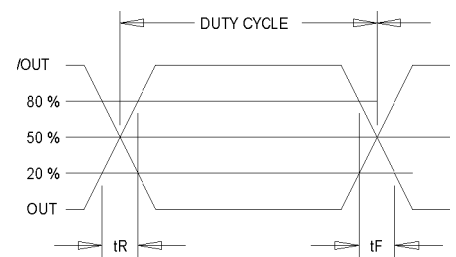
Note 4: See Load Circuit Diagram in this Datasheet. Consult factory with nonstandard output load requirements.



LVDS Load Circuit



3.3V LVPECL Load Circuit



Output Waveform: LVDS/CML/PECL

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