QMEM1 Series

SMD MEMS Oscillator, 2.0x1.6mm, LVCMOS

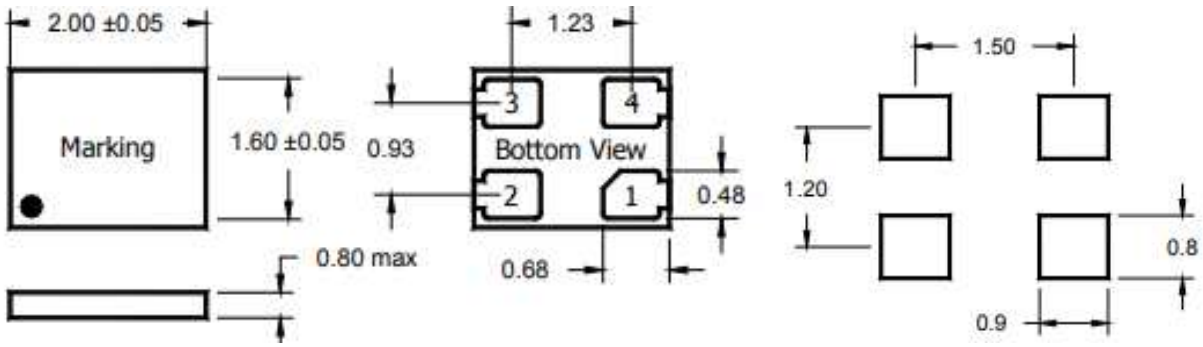
RoHS Compliant

Supply Voltage (V_{DD})	1.8V	2.5V	2.8V	3.3V
Frequency	1.000000 MHz to 110.000000 MHz			
Output Voltage Logic	Logic "1" = 90% V_{DD} Min Logic "0" = 10% V_{DD} Max			
Duty Cycle	Measured at 50% of waveform, 50 ±5%			
Rise / Fall Time (20% to 80% of waveform)	1.3 nSec typical, 2.5 nSec max	1.0 nSec typical, 2.0 nSec max		
Load Drive Capability	15pF max			
Frequency Stability	See Frequency Stability Table in Part Number Guide (Note 1)			
Standby Terminal Function (Pin 1)	0.7 V_{DD} min = Output enable 0.3 V_{DD} max = Oscillation stop and High impedance output			
Current				
During Standby	1.3 µA max	2.5 µA max	4.3 µA max	
During Operation (No load condition, F=20MHz)	4.1 mA max	4.2 mA max	4.5 mA max	
Temperature Range				
Operating	See Operating Temperature Table in Part Number Guide			
Storage	-65ºC to +150ºC			
Period Jitter (RMS) (F=75Mhz)	1.8 pSec typ, 3.0 pSec max			
RMS Phase Jitter (F=75Mhz) (Fj=900kHz to 7.5MHz: Random)	0.5 pSec typ, 1 pSec max			
RMS Phase Jitter (F=75Mhz) (Fj=12kHz to 20MHz: Random)	1.5 pSec typ, 2.0 pSec max			
Notes:	Above specifications are typical values are at 25 ºC and nominal supply voltage.			

Part Number Guide **Sample Part Number: QMEM1-1A2T-3.579545**

Package	Supply Voltage	Operating Temperature	Stability (in ppm)	Function	Frequency (in MHz)
QMEM1	1 = +1.8V	A = 0ºC to +70ºC	2 = ±50	T = Tristate	
	2 = +2.5V	B = -20ºC to +70ºC	3 = ±25	S = Standby	3.579545
	3 = +3.3V	E = -40ºC to +85ºC	4 = ±20	N = N/C	
	8 = +2.8V	F = -40ºC to +105ºC	5 = ±10		
		G = -40ºC to +125ºC			

Suggested Pad Layout



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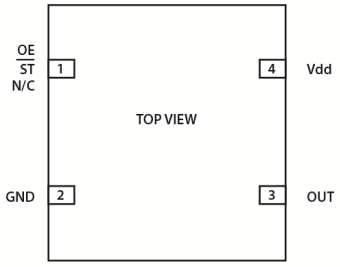
Pin Description			
Pin No	Symbol	Functionality	
1	OE	Tri-state	High or Open =specified frequency output. Low = Output is high impedance, only output is disabled.
	ST	Standby	High or Open =specified frequency output Low = Output is low. Device goes to sleep mode. Supply current reduces to standby current.
	N/C	No Connect	Any voltage between 0.0V to V_{DD} or Open = specified frequency output. Pin 1 has no function.
2	GND	Power	Electrical ground
3	Out	Output	Oscillator output
4	V_{DD}	Power	Power supply voltage

Notes:
1. In OE or ST mode, a pull-up resistor of 10.0 kΩ or less is recommended if Pin 1 is not externally driven; If Pin 1 needs to be left floating, use the N/C option.
2. A capacitor of value 0.1 µF or higher between Pin 4 (V_{DD}) and Pin 1 (GND) is required.



Pin 1 Configuration Options (OE, ST or N/C)
Pin 1 of the QMEM1 Series can be factory programmed to support three modes: Output Enable (OE), Standby (ST) or No Connect (NC).

Output Enable Mode (OE)
In the OE mode, applying logic law Low to the OE pin only disables the output driver and puts it in Hi-Z mode. The core of the device continues to operate normally. Power consumption is reduced due to the inactivity of the output. When OE pin is pulled High, the output is typically enabled in <1 µSec.

Standby Mode (ST)
In the ST mode, a device enters into the standby mode when Pin 1 is pulled Low. All internal circuits of the device are turned off. The current is reduced to a standby current, typically in the range of a few µA. When ST is pulled High, the device goes through the "resume" process which can take up to 5mSec.

No Connect Mode (N/C)
In the N/C mode, the device always operates in its normal mode and outputs the specified frequency regardless of the logic level on Pin 1.

Key parameters in the operation of the device in OE, ST or N/C mode			
Parameters	**OE**	**ST**	**N/C**
Active current 20.0MHz (max +1.80VDC)	4.1 mA	4.1 mA	4.1 mA
OE disable current (max +1.80VDC)	4.0 mA	N/A	N/A
Standby current (typical +1.80VDC)	N/A	0.6 µA	N/A
OE enable time at 20.0 MHz (max)	200 nSec	N/A	N/A
Resume time from standby (max all frequencies)	N/A	5 mSec	N/A

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Output driver in OE disable/standby mode	High Z	Pulled to Logic Low	N/A

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