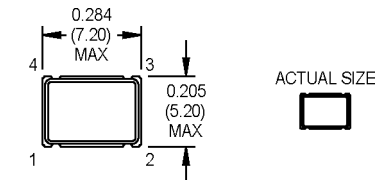


# MM Series 5.0 X 7.0 X 2.0 mm HCMOS/TTL Compatible Miniature Surface Mount Oscillators

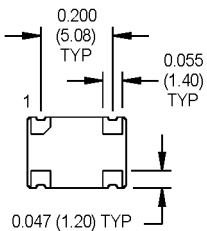
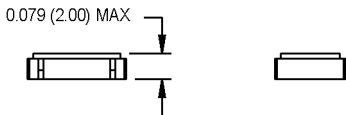


## High Performance HCMOS/TTL Compatible Surface Mount Oscillators

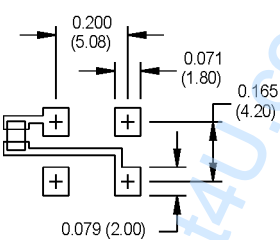
M-tron MM series quartz crystal oscillators offer HCMOS technology and an AT-strip crystal in a miniature ceramic surface mount package. Output is TTL and HCMOS compatible. Tri-state output is optional.



ACTUAL SIZE

All dimensions  
in inches (mm)

### SUGGESTED SOLDER PAD LAYOUT



## Pin Connections

PIN	FUNCTION
1	N/C or Tri-state
2	Ground
3	Output
4	+Vdd

### Tri-state Control Logic

Pin 1 high or floating: clock signal output.  
Pin 1 low: output disabled to high impedance.

## Ordering Information

Product Series	Temperature Range	Stability	Output Type	Symmetry/Logic Compatibility	Package/Lead Configurations	Frequency (customer specified)
MM	1: 0°C to +70°C 2: -40°C to +85°C 6: -20°C to +70°C	3: ±100 ppm 4: ±50 ppm 5: ±35 ppm 6: ±25 ppm 8: ±20 ppm	F: Fixed T: Tristate	A: 40/60 HCMOS/TTL (Up to 50.000 MHz) C: 45/55 HCMOS G: 40/60 HCMOS (50.001 to 67.000 MHz)	N: Leadless	00.0000 MHz

## Electrical Specifications

Standard Operating Conditions • 0°C to +70°C; Vdd = 5.0 ±10% VDC

Storage Temperature • -55°C to +125°C

PARAMETERS	A SYMMETRY/LOGIC				UNITS
	TTL Load		HCMOS Load		
Frequency Range <sup>1</sup>	MIN. 1.500	MAX. 50.000	MIN. 1.500	MAX. 50.000	MHz
Output Load <sup>2</sup>		10		50	TTL/pF
Symmetry <sup>3</sup>	40/60	60/40	40/60	60/40	%
Logic "0" Level		0.5		10% Vdd	V
Logic "1" Level	Vdd-0.5		90% Vdd		V
Rise/Fall Time <sup>4</sup>		6		10	ns
Supply Current					
1.500 to 15.000 MHz		20		25	mA
15.001 to 32.000 MHz		25		30	mA
32.001 to 50.000 MHz		40		45	mA
PARAMETERS	G SYMMETRY/LOGIC				UNITS
Frequency Range <sup>1</sup>			50.001	67.000	MHz
Output Load <sup>2</sup>				50	pF
Symmetry <sup>3</sup>			40/60	60/40	%
Logic "0" Level				10% Vdd	V
Logic "1" Level			90% Vdd		V
Rise/Fall Time <sup>4</sup>				10	ns
Supply Current				60	mA

<sup>1</sup> Because this product is based on AT-strip technology, not all frequencies in the range stated are available. Contact the factory for availability of specific frequencies.

<sup>2</sup> TTL load - See load circuit diagram #1 on page 137. HCMOS load - See load circuit diagram #2 on page 137.

<sup>3</sup> Symmetry is measured at 1.4 V with TTL load, and at 50% Vdd with HCMOS load.

<sup>4</sup> Rise/Fall times are measured between 0.5 V and 2.4 V with TTL load, and between 10% Vdd and 90% Vdd with HCMOS load. See page 136, Figure "1" for suggested solder profile.

**NOTE:** A capacitor of value 0.01 μF or greater between Vdd and Ground is recommended.

M-tron 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. No rights under any patent accompany the sale of such product.

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