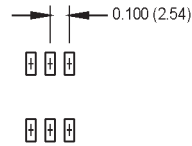
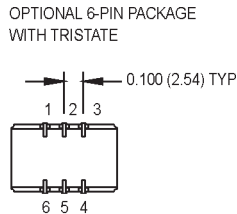
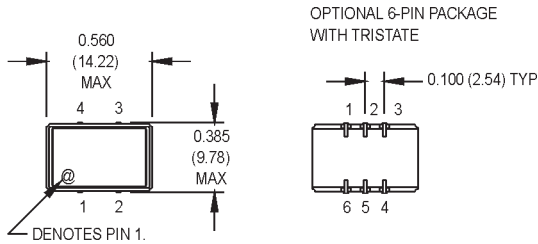


# MVS Series

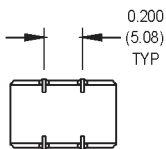
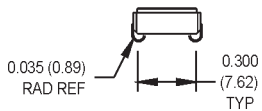
## 9x14 mm, 5.0 Volt, HCMOS/TTL, VCXO



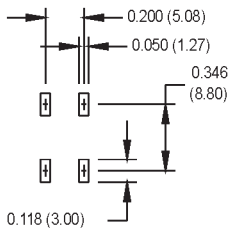
- HCMOS/TTL output to 160 MHz and excellent jitter (2.1 ps typ.) in a SMT package
- Phase-Locked Loops (PLL's), Clock Recovery, Reference Signal Tracking, Synthesizers, Frequency Modulation/Demodulation



All dimensions in inches (mm).



### SUGGESTED SOLDER PAD LAYOUT



### Ordering Information

	MVS	1	3	V	2	C	J	00.0000 MHz
<b>Product Series</b>								
<b>Temperature Range</b>								
1: 0°C to +70°C								
2: -40°C to +85°C								
6: -20°C to +70°C								
<b>Stability</b>								
1: ±1000 ppm								
2: ±500 ppm								
3: ±100 ppm								
4: ±50 ppm								
5: ±35 ppm								
6: ±25 ppm								
*8: ±20 ppm								
<b>Output Type</b>								
V: Voltage Controlled								
T: Tri-state								
<b>Pull Range (Vc = .5 to 4.5 V)</b>								
1: ±50 ppm min.								
2: ±100 ppm min. (Up to 70.000 MHz)								
<b>Symmetry/Logic Compatibility</b>								
A: 40/60 CMOS/TTL								
C: 45/55 HCMOS								
<b>Package/Lead Configurations</b>								
J: J Lead								
<b>Frequency (customer specified)</b>								

\*Contact factory for availability.

### APR Equivalents

APR	Pull Range	Stability
±25 ppm	±50 ppm	±25 ppm
±50 ppm	±100 ppm	±50 ppm
±75 ppm	±100 ppm	±25 ppm

### Pin Connections

FUNCTION	4 Pin Pkg.	6 Pin Pkg.
Control Voltage	1	1
Tri-State		2
Circuit/Case Ground	2	3
Output	3	4
N/C		5
+Vdd	4	6

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M-tron Industries Limited, 1104 Shanghai Industrial Investment Building, 48-62 Hennessy Road, Wanchai, Hong Kong, China Phone: 852-2866-8023 Fax: 852-2529-1822

# MVS Series

## 9x14 mm, 5.0 Volt, HCMOS/TTL, VCXO



Electrical Specifications	PARAMETER	Symbol	Min.	Typ.	Max.	Units	Condition	
	Frequency Range	F	1.544		160	MHz	See Note 1	
	Frequency Stability	ΔF/F	(See Ordering Information)					
	Operating Temperature	T <sub>A</sub>	(See Ordering Information)					
	Storage Temperature	T <sub>s</sub>	-55		+125	°C		
	Input Voltage	V <sub>cc</sub>	4.75	5.0	5.25	V		
	Input Current	I <sub>dd</sub>		25 35 55	35 60 90	mA mA mA	1.544 to 24.999 MHz 25 to 69.999 MHz 70 to 160 MHz	
	Symmetry (Duty Cycle)		(See Ordering Information)				See Note 2	
	Load		10 TTL or 50 pF				See Note 3	
	Rise/Fall Time	Tr/Tf		3	10	ns	See Note 4	
	Logic “1” Level	V <sub>oh</sub>	90% V <sub>dd</sub> V <sub>dd</sub> -0.5			V V	HCMOS load TTL load	
	Logic “0” Level	V <sub>ol</sub>			10% V <sub>dd</sub> 0.5	V V	HCMOS load TTL load	
	Phase Jitter @ 77.76 MHz @ 155.52 MHz	ϕ <sub>J</sub>		.15 10	.5 15	ps RMS ps RMS	Integrated 12 kHz - 20 MHz	
	Peak to Peak Jitter (+/-) @ 77.76 MHz @ 155.52 MHz	T <sub>j</sub>		1.05 70	3.5 105	ps ps	@ BER 1E-12	
	Phase Noise (Typical) @ 77.76 MHz @ 155.52 MHz	10Hz -66 -62	100 Hz -98 -93	1 kHz -124 -113	10 kHz -146 -115	100 kHz -157 -114	Offset from carrier dBc/Hz dBc/Hz	
	Modulation Bandwidth	f <sub>m</sub>			10	kHz		
	Input Impedance (Pin 1)	Z <sub>in</sub>	50			KΩ		
	Control Voltage	V <sub>c</sub>	0.5		4.5	V		
	Center Frequency	V <sub>c0</sub>		2.5		V		
	Pullability		(See Ordering Information)				Over control voltage	
	Linearity				10	%		
	Tri-State Function		Input Logic “1” or floating; output active Input Logic “0”; output to High-Z					
	Environmental	Mechanical Shock	Per MIL-STD-202, Method 213, Condition C					
		Vibration	Per MIL-STD-202, Method 201 & 204					
		Reflow Solder Conditions	See “Figure 2” on page 147					
Hermeticity		Per MIL-STD-202, Method 112 (1 x 10 <sup>-8</sup> atm.cc/s of helium)						
Solderability		Per EIAJ-STD-002						

1. Frequencies above 90 MHz utilize a PLL design. Fundamental and PLL designs are available at other frequencies. Contact factory.
2. Symmetry is measured at 1.4 V with TTL load, and at 50% V<sub>dd</sub> with HCMOS load.
3. TTL load - see load circuit diagram #1 on page 148. HCMOS load - see load circuit diagram #2 on page 148.
4. Rise/Fall times are measured between 0.5 V and 2.4 V with TTL load, and between 10% V<sub>dd</sub> and 90% V<sub>dd</sub> with HCMOS load.

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