
Broadband Voltage Controlled Oscillators

0.5 - 20 GHz

MLO 50000 Series

V3.00

Features

- Broadband Frequency Ranges
- Fast Tuning Speed
- Low Tuning Voltage
- High Output Power
- High Reliability

Description

M/A-COM's range of broadband voltage controlled oscillators (VCOs) offers excellent tuning characteristics over octave frequency bandwidths for wideband systems applications. These designs use a negative resistance transistor oscillator, for the lower frequencies this is a silicon bipolar device with GaAs FET devices extending the range to 20GHz. The frequency of oscillation is determined by one or more GaAs hyperabrupt varactor diodes acting as voltage variable capacitors in a resonant microstrip circuit. Careful selection of the varactor diodes, manufactured in house by M/A-COM, produces a very large capacitance change together with a high degree of linearity which greatly simplifies the external voltage driver circuit required. This design provides extremely high tuning rates, limited primarily by the internal impedance of the external driver circuit.

M/A-COM VCOs are constructed using discrete chip devices integrated into a conventional alumina MIC with laser welding of the finished VCO package providing an hermetic seal. This compact, rugged construction makes these VCOs suitable for the most severe environmental conditions encountered in military and hi-rel applications. The coaxial packages have removable SMA connectors, with the connectors removed the devices can be integrated directly into microstrip or stripline circuits.

These VCOs have a wide variety of applications where highly reliable oscillators with fast frequency agility over wide bandwidths are required. VCOs give improved LO frequency tuning speed and output power flatness in wideband EW receivers and rapid generation of jamming signals in ECM transmitters. The wide bandwidths and compatibility with digital to analog converters make these VCOs ideal building blocks for digitally tuned oscillators operating over multi-octave bandwidths.

The standard VCOs described cover a range of commonly used bandwidths with a choice of three output powers. M/A-COM also manufactures a wide range of custom designs to meet specific system specifications and VCO assemblies for multi-octave applications. To discuss your requirements in detail please contact the factory for applications assistance.

Specifications Subject to Change Without Notice.

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SPECIFICATIONS (guaranteed -55°C to +85°C)

Centre Freq (GHz) Min/Max	Tuning Band (MHz) Min	Freq Drift (MHz) Max	Phase Noise @ +25°C (dBc/Hz)		Harmon Related Outputs (dBc) Max	Output Power (dBm) Min	Output Power Variation (dB) Max	Current Consumption @ +15V (mA) Max	Package Style	Part Number
			@100KHz Max	@1MHz Max						
0.75 - 1.49	200	45	-108	-128	-12	+10	±2.0	100	VCOD	MLO 52100
						+15	±2.0	150	VCOD	MLO 52200
						+20	±2.0	200	VCOA	MLO 52300
	500	55	-105	-125	-10	+10	±2.0	100	VCOD	MLO 53100
						+15	±2.0	150	VCOD	MLO 53200
						+20	±2.0	200	VCOA	MLO 53300
1.5 - 2.99	200	78	-105	-125	-12	+10	±2.0	100	VCOD	MLO 52100
						+15	±2.0	150	VCOD	MLO 52200
						+20	±2.0	200	VCOA	MLO 52300
	500	82	-100	-120	-10	+10	±2.0	100	VCOD	MLO 53100
						+15	±2.0	150	VCOD	MLO 53200
						+20	±2.0	200	VCOA	MLO 53300
3.0 - 4.49	1000	88	-100	-120	-10	+10	±2.0	100	VCOD	MLO 54100
						+15	±2.0	150	VCOD	MLO 54200
						+20	±2.0	200	VCOA	MLO 54300
	500	106	-100	-120	-12	+10	±2.0	100	VCOD	MLO 53100
						+15	±2.0	150	VCOD	MLO 53200
						+20	±2.0	200	VCOA	MLO 53300
4.5 - 5.99	1000	113	-98	-118	-10	+10	±2.0	110	VCOD	MLO 54100
						+15	±2.0	175	VCOD	MLO 54200
						+20	±2.0	250	VCOA	MLO 54300
	2000	124	-95	-115	-10	+10	±2.5	110	VCOD	MLO 55100
						+15	±2.5	175	VCOA	MLO 55200
						+20	±2.5	260	VCOA	MLO 55300
3000	130	-98	-118	-12	+10	±2.5	110	VCOD	MLO 54100	
					+15	±2.5	175	VCOA	MLO 54200	
					+20	±2.5	260	VCOA	MLO 54300	
	2000	140	-94	-114	-10	+10	±2.5	110	VCOD	MLO 55100
						+15	±2.5	175	VCOA	MLO 55200
						+20	±2.5	260	VCOA	MLO 55300
3000	150	-93	-113	-10	+10	±2.5	110	VCOD	MLO 56100	
					+15	±2.5	175	VCOA	MLO 56200	
					+20	±2.5	260	VCOA	MLO 56300	

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			@100KHz Max	@1MHz Max						
6.0 - 7.99	2000	158	-90	-110	-12	+10	±2.5	120	VCOA	MLO 55100
						+15	±2.5	185	VCOA	MLO 55200
						+20	±2.5	270	VCOA	MLO 55300
	3000	166	-90	-110	-12	+10	±3.0	120	VCOA	MLO 56100
						+15	±3.0	185	VCOA	MLO 56200
						+20	±3.0	270	VCOA	MLO 56300
8.0 - 11.99	3000	203	-70	-90	-15	+10	±3.0	120	VCOA	MLO 56100
						+15	±3.0	185	VCOA	MLO 56200
						+20	±3.0	270	VCOA	MLO 56300
	4000	210	-70	-90	-12	+10	±3.0	120	VCOA	MLO 57100
						+15	±3.0	185	VCOA	MLO 57200
						+20	±3.0	270	VCOA	MLO 57300
12.0 - 16.0	4000	225	-58	-78	-20	+10	±3.0	150	VCOA	MLO 57100
						+15	±3.0	200	VCOA	MLO 57200
						+20	±3.0	290	VCOA	MLO 57300
	5000	232	-58	-78	-15	+10	±3.0	150	VCOA	MLO 58100
						+15	±3.0	200	VCOA	MLO 58200
						+20	±3.0	290	VCOA	MLO 58300
7000	260	-50	-70	-15	+10	±3.0	150	VCOA	MLO 59100	
					+15	±3.0	200	VCOA	MLO 59200	
						+20	±3.0	290	VCOA	MLO 59300

NOTES

- 1) Frequency pushing 100 KHz/V maximum for voltages +13V TO +18V.
- 2) Frequency pulling 1MHz maximum into a 1.5:1 VSWR load all phases
- 3) Spurious outputs -60dBc maximum
- 4) Tuning voltage in the range 0 to +20V, or other if required, please contact the factory for details.
- 5) Case Operating temperature range -55°C to +85°C
Storage temperature range -55°C to +100°C
- 6) All devices are supplied with removable SMA female connectors for RF output and tuning voltage and solder pins for dc supplies and ground. For other combinations contact the factory.
- 7) When ordering please specify the centre frequency required in MHz as a 5 digit suffix to the part number above e.g. for a centre frequency of 6000 MHz, bandwidth of 4000 MHz and output power of +10dBm the part number would be MLO 57100-06000.

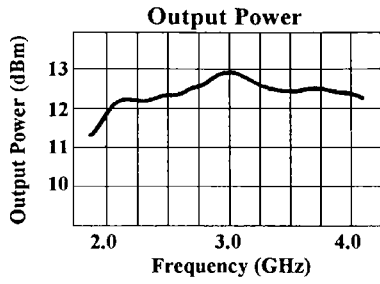
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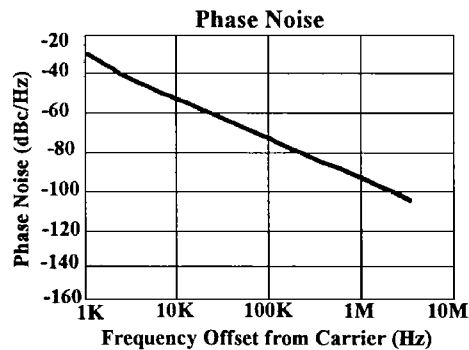
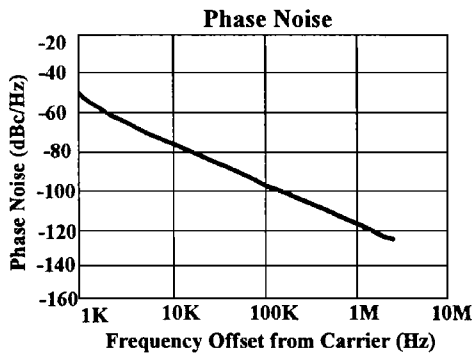
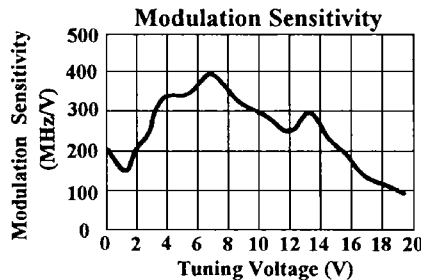
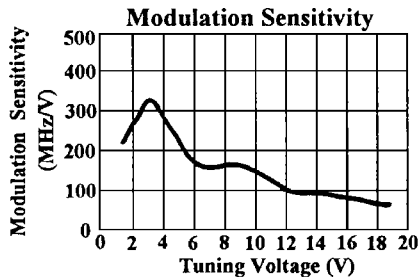
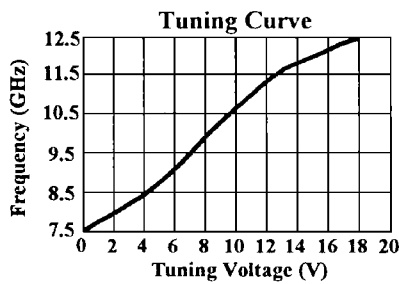
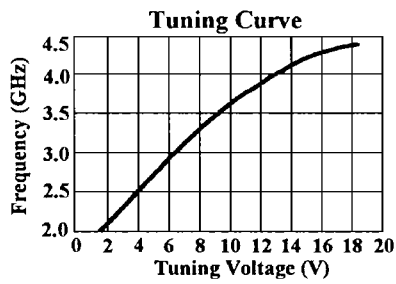
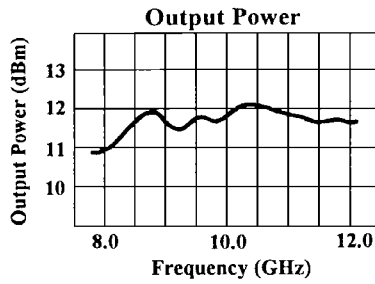
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TYPICAL PERFORMANCE

PART NO. MLO55100-03000



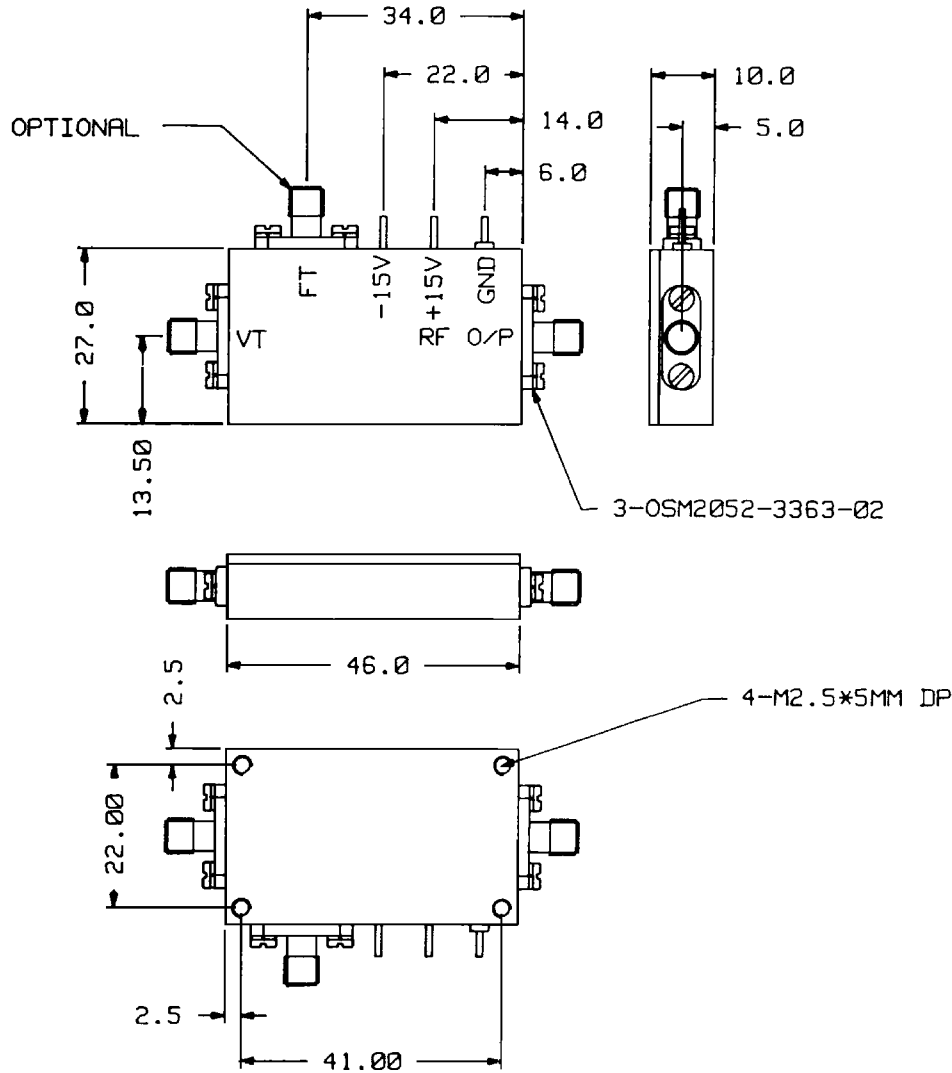
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OUTLINE DRAWINGS

Package Style VCO A



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North America:

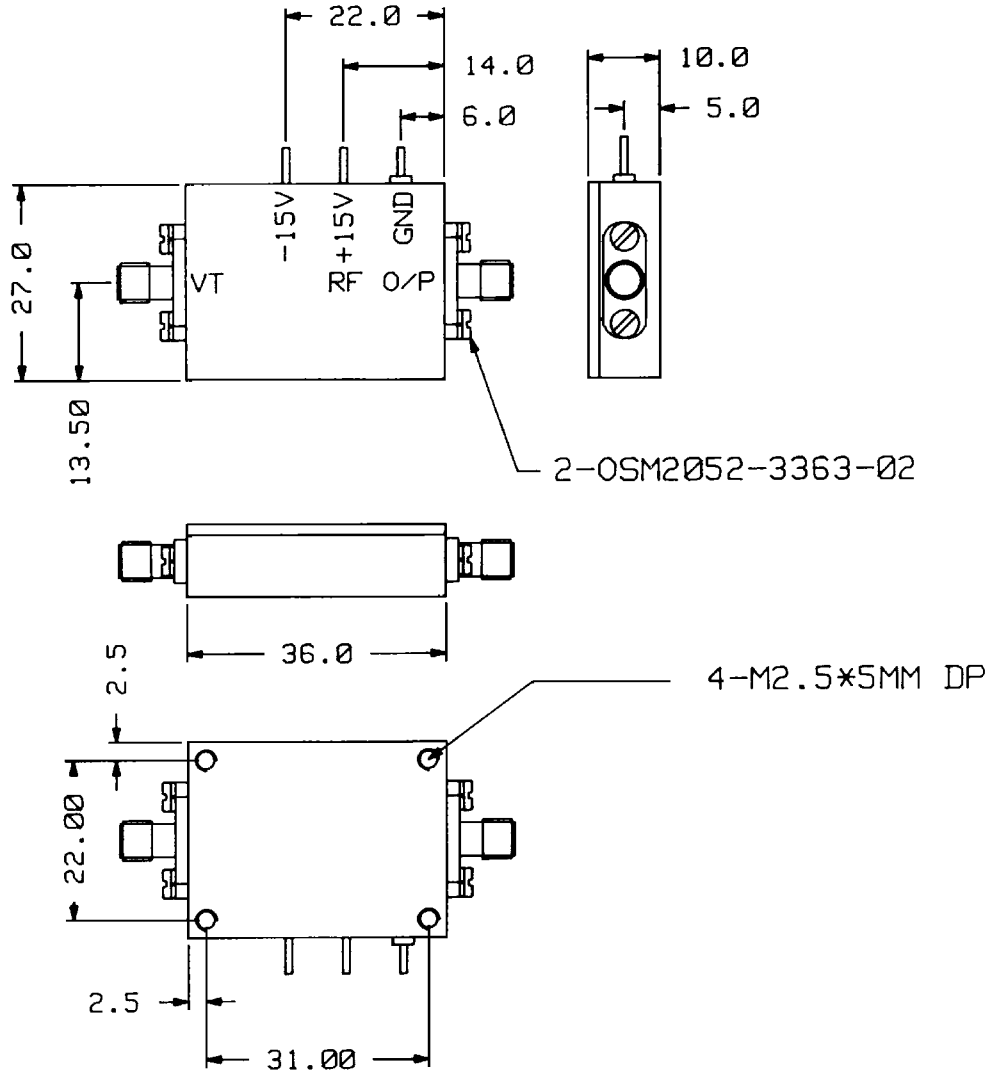
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OUTLINE DRAWINGS

Package Style VCO D



DRAWING NOTES

Third Angle Projection

All dimensions in mm

Tolerances x.x = ±0.5mm
 x.xx = ±0.2mm

Standard Finish: Ni plate housing with alochrome lid.

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