



Double Balanced Mixer Miniature Drop-In

3601 Series

Features

- Double-Balanced 4-18 GHz
- Ruggedized Construction Techniques
- Hermetic Seal

Description

Miniature broadband double-balanced mixers in a drop-in module configuration for direct integration into stripline or microstrip circuitry. Designed for use in high-rel military system environments.

Environmental

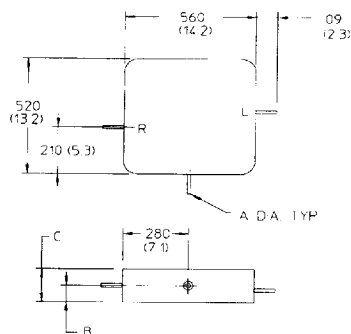
These devices are designed to meet the following screening conditions:

Test	MIL-STD	Method	Cond	
Non-Destructive Bond Pull	883	2023		
Internal Visual	M/A-COM	QCP	H076	
Stabilization Bake	883	1008	B	
Thermal Cycle	883	1010	B	
Constant Acceleration	883	2001	A (Y1 Axis)	
Burn-in	883	1015	125°C	
Seal	Fine	883	1014	AI
	Gross	883	1014	CI
External Visual	883	2009		

High-rel screening is available. See Appendix at the end of this section for options.

Maximum Ratings

Parameter	LO Drive Level	
	Low Medium (L, M Suffix)	High (H Suffix)
Operating Temp. Max.	-55°C to +100°C	-55°C to +100°C
Storage Temp. Max.	-65°C to +125°C	-65°C to +125°C
RF Input Power Max.	100 mW	200 mW



	Dim. Inches (mm)		
	A ±.002	B	C
-05-Series	.012 (0.3)	.075 (1.9)	.150 (3.8)
-07-Series	.015 (0.4)	.095 (2.4)	.190 (4.8)

Specifications Subject to Change Without Notice.

M/A-COM Inc. ■ 1011 Pawtucket Boulevard, Lowell, MA 01853 USA

■ Telephone: 800-366-2266

Double Balanced Mixer, Miniature Drop-In

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Specifications* 25°C

RF/LO Frequency Range (GHz)	L-R Isolation (dB min.)	L-I Isolation (dB min.)	3 dB IF Bandwidth (GHz min.)	LO Range (dBm) Min./Max.	Conversion Loss (dB) Max./Typ.	Input 1 dB Compression Pt. (dBm Min.)	Input 3 rd Order Intercept Pt. (dBm Min.)	Part Number
4.0-18.0	18	15	dc-1.0	+7/+11	9.5/6..5	+2	+12	3601-05-DBL [†]
				+11/+15	9.5/6.5	+5	+15	3601-05-DBM
				+15/+18	10.0/7.0	+8	+18	3601-05-DBH
	18	15	dc-1.0	+7/+11	9.5/6.5	+2	+12	3601-07-DBL
				+11/+15	9.5/6.5	+5	+15	3601-07-DBM
				+15/+18	10.0/7.0	+8	+18	3601-07-DBH

Notes:

1. All measurements performed in a 50 ohm system.
2. Available in phase and amplitude matched sets; consult factory for details.
3. Low-cost test fixture available. Consult factory for details.

* Consult the factory for typical performance over frequency.

† Available from stock at local authorized distributors.

Integration of Drop-In Mixers

Drop-in mixers support the continual trend toward smaller, more reliable systems. The mixer modules are typically installed directly on a stripline or microstrip circuit board, adding the following advantages:

- Space savings (no connectors or cables)
- Mixer can be tested outside the system, as a stand-alone device
- Connector and cable losses are eliminated

To ensure proper correlation between the mixer manufacturer's test results and the user's evaluation data on the same device, it is important that both parties use the same type of test fixture and test methods. It is recommended that the test fixture itself closely resemble the conditions the mixer will see in the actual system. For example, a mixer to be used in a stripline medium with a ground plane spacing of .062 and an effective dielectric constant of 2.32, should be tested in a fixture of similar construction.

M/A-COM offers the following interface guidelines:

- 1) Attention must be paid to proper electrical interface as the operating frequency increases, especially above 8 GHz.
- 2) Ground plane contact between the motherboard and the mixer should be smooth and continuous. Solid ground contact is absolutely necessary.
- 3) Minimize gaps or other discontinuities at all RF launches. This usually requires tight mechanical tolerances.
- 4) Use radiation shielding techniques at least comparable to the isolation performance of the mixer.
- 5) Use 50 ohm "dummy" modules to evaluate and troubleshoot the motherboard assembly. These "dummy" modules are mechanically identical to the mixer modules, but contain 50 ohm transmission lines instead of mixer circuitry. This is often particularly useful in conjunction with time-domain reflectometer measurements to troubleshoot the mixer module interface. Consult factory for price, availability and options on "dummy" modules.

The contact pins on microwave modules are fragile. They are usually made of Kovar and are about .015" in diameter in order to achieve 50 ohm impedance through the glass bead. Assembly personnel should be trained to work with drop-in modules. Bending may weaken the lead or degrade the quality of the glass seal. The use of anti-static work stations and approved personnel grounding straps are required since these are ESD sensitive devices.

M/A-COM's engineering staff has extensive experience in integrating drop-in modules as part of complex microwave subsystems. Please contact the factory with your specific integration requirements.

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