



# Silicon Bipolar MMIC

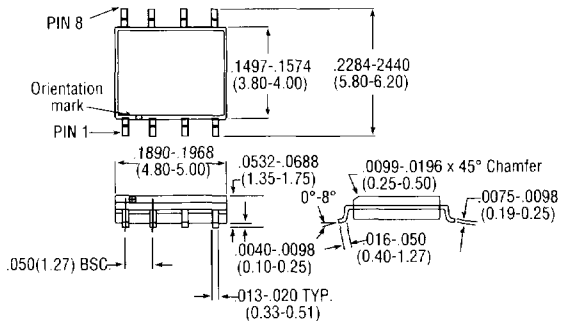
## Active Mixer/IF Amplifier

### MAMD12008

#### Features

- 8 dB Conversion Gain from 50 MHz to 5 GHz
- IF Output from DC to 1000 MHz
- Single Positive Supply: 4 to 8V @ 14 mA
- Termination Insensitive
- LO Power: -10 to 0 dBm
- High Isolation RF/IF, Low LO Leakage
- Low Cost Plastic 8 Lead SOIC Package

#### S0-8



(All dimensions per JEDEC No. MS-012-AA, Issue C)  
Dimensions in ( ) are in mm.

#### Pin Description

1 IF Output	8 RF Ground, Optional
2 AC Ground; 0V	7 V <sub>CC</sub>
3 AC Ground; 0V	6 LO Ground, Optional
4 RF Input	5 LO Input

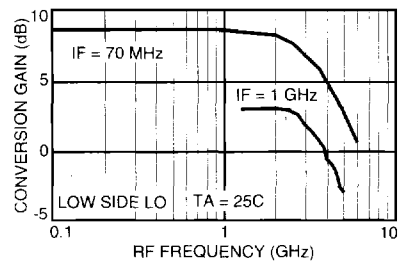
#### Description

M/A-COM's MAMD12008 is a double balanced active mixer in a low cost surface mount plastic SOIC package. The MAMD12008 is ideally suited for use where very low power consumption is required. Typical applications include frequency down conversion, modulation, demodulation and phase detection in systems such as GPS receivers, fiber optic modules, cordless phones and battery powered radio receivers.

The MAMD12008 is based on the Gilbert cell topology. It can operate over a narrow or wide frequency range with RF inputs up to 5 GHz and IF output up to 1 GHz. RF and LO operation can be extended below 50 MHz by adding optional capacitors to ground. The mixer is particularly suitable for applications where insensitivity to termination impedance is required. In addition, the MAMD12008 provides good spurious signal suppression with very low LO power and minimal bias power consumption.

The MAMD12008 is fabricated with a monolithic chip using a mature, 12 GHz  $f_c$  silicon bipolar technology. The process features full IC passivation for increased performance and reliability.

#### RF to IF CONVERSION GAIN vs. RF FREQUENCY



#### Electrical Specifications, T<sub>A</sub> = 25°C

Symbol	Parameters, Test Conditions: V <sub>CC</sub> = 5V, Z <sub>0</sub> = 50Ω, LO = -5dBm, RF = -20dBm	Units	Min.	Typ.	Max.
G <sub>C</sub>	Conversion Gain RF = 2 GHz, LO = 1.75 GHz	dB	6	8.5	10
F <sub>3dB RF</sub>	RF Bandwidth (G <sub>C</sub> 3 dB down) IF = 250 MHz	GHz		3.5	
F <sub>3dB IF</sub>	IF Bandwidth (G <sub>C</sub> 3 dB down) LO = 2 GHz	GHz		0.6	
IP <sub>1dB</sub>	IF Output at 1 dB Gain Compression RF = 2 GHz, LO = 1.75 GHz	dBm		-6	
IP <sub>3</sub>	IF Output Third Order Intercept Point RF = 2 GHz, LO = 1.75 GHz	dBm		+3	
NF	SSB Noise Figure RF = 2 GHz, LO = 1.75 GHz	dB		17	
VSWR	RF Port f = 0.05 to 3.75 GHz			1.5:1	
	LO Port f = 0.05 to 3.75 GHz			2.0:1	
	IF Port f < 1 GHz			1.5:1	
RF/IF	RF Feedthrough at IF Port RF = 2 GHz, LO = 1.75 GHz	dBc		-22	
LO/IF	LO Leakage at IF Port LO = 1.75 GHz	dBm		-23	
LO/RF	LO Leakage at RF Port LO = 1.75 GHz	dBm		-25	
I <sub>CC</sub>	Supply Current	mA	12	14	16

Specifications Subject to Change Without Notice

M/A-COM Inc.

1011 Pawtucket Boulevard, Lowell, MA 01853 USA

Telephone: 800-366-2266

