1.6 GHz
30W Power Amplifier Module

May 2009 - Rev 12-May-09

XP9003-MB
XRoHS

Features

- Peak-Envelope Power, 30W with Pulsed Signal
- 3W Linear Power
- 38 dB Gain
- 9V Positive Voltage Supply
- Fully Matched Internally
- Thermally Efficient for Higher MTTF
- Balanced Output Construction
- Shielded Metal Lid
- Low Harmonic Content
- Small Size, 40x36mm
- Surface Mount Package

General Description

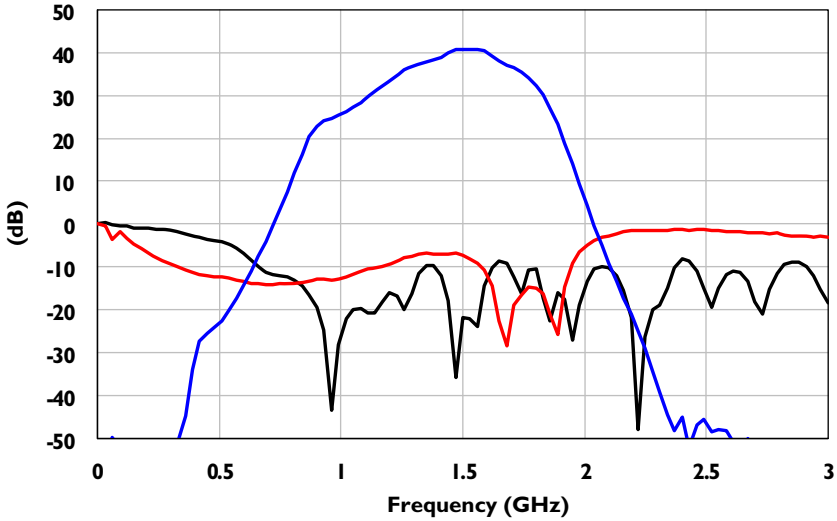
The XP9003-MB is a highly linear 3-stage power amplifier module capable of 38 dB of gain, 30W of peak-power and is housed in a surface mount, thermally efficient package. XP9003-MB is fully matched internally and does not require external components. The module operates off a 9V voltage supply rail and is equipped with active bias circuit and control voltage allowing for current setting and minimizing variation over temperature and voltage. This product is designed specifically for satellite communication transmitters with high peak to average signals. XP9003-MB achieves excess of 35 dBm of linear power and less than -45 dBc adjacent channel power ratio when operated under a 16 QAM traffic signal with 6 dB peak to average ratio.

Absolute Maximum Ratings

Supply Voltage	+9.0V
RF Input Power	+10 dBm
Storage Temperature	-55°C to 125 °C
Junctions Temperature	175°C
Operating Temperature	-40°C to 85 °C
Thermal Resistance	2.25°C/W
Moisture Sensitivity Rating	MSL 3
ESD (HBM)	TBD

Operating this device above any of the above parameters may cause permanent damage

XP9003-MB: Gain

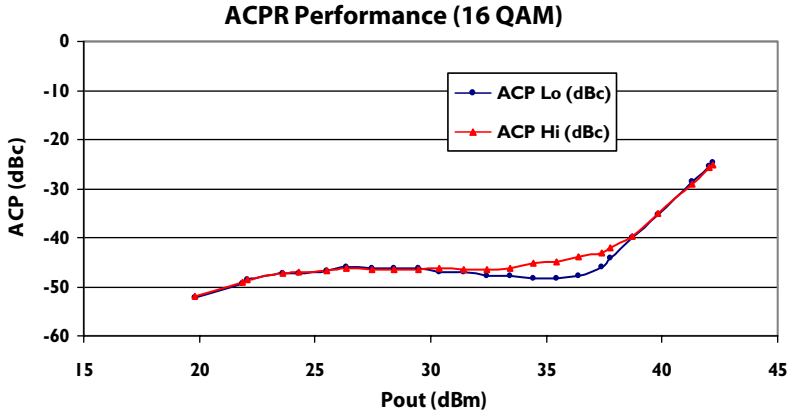


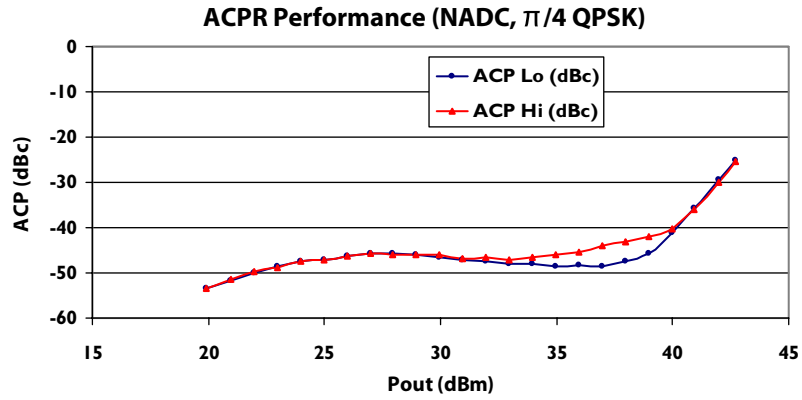
Electrical Characteristics (T = 25°C)

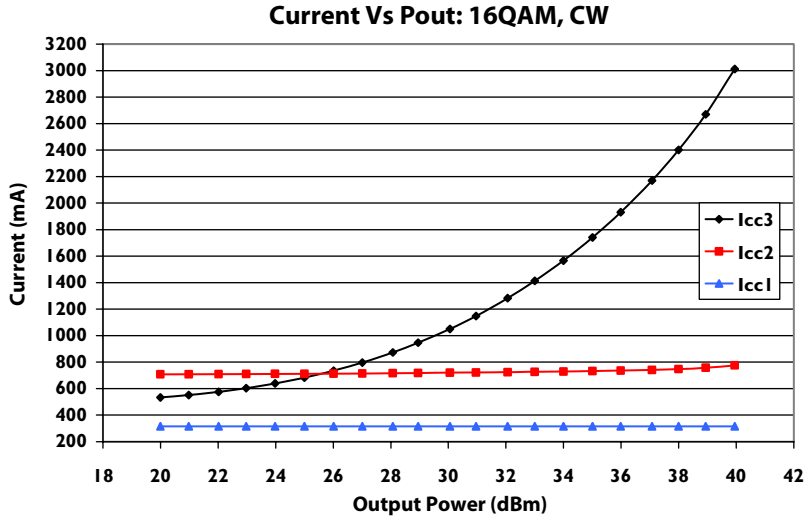
Unless otherwise specified, the following specifications are guaranteed at room temperature in a Mimix test fixture

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Operating Frequency			1620		MHz	
Peak-Envelope Power	Pout		30		W	16 QAM, PAR = 6 dB, pulsed
Average Output Power	Pout Avr	35			dBm	16 QAM, PAR = 6 dB, pulsed, ACPR ≤ -45 dBc
DC Power Consumption	Pdc			40	W	@ Pout = +35 dBm
Efficiency	Eff		15		%	@ Pout = +35 dBm
Power Gain	Gp		38		dB	
Input Return Loss	S11		-10		dB	
Input Impedance	Zin		50		ohm	
Output Impedance	Zout		50		ohm	
Voltage (stage 1)	Vcc1		5		V	
Voltage (Stage 2)	Vcc2		9		V	
Voltage (Stage 3)	Vcc3		9		V	
Current (Stage 1)	Icc1		300		mA	
Current (Stage 2)	Icc2		600		mA	@ Pout = +35 dBm, 16QAM
Current (Stage 3)	Icc3		2000		mA	@ Pout = +35 dBm, 16QAM
Reference Voltage	Vref		9		V	
Reference Current	Iref		50		mA	
Control Voltage	Vcntrl		9		V	
Control Current	Icntrl		2		mA	
Bias Circuit Voltage	VCBias		5		V	
Bias Circuit Current	ICBias		150		mA	

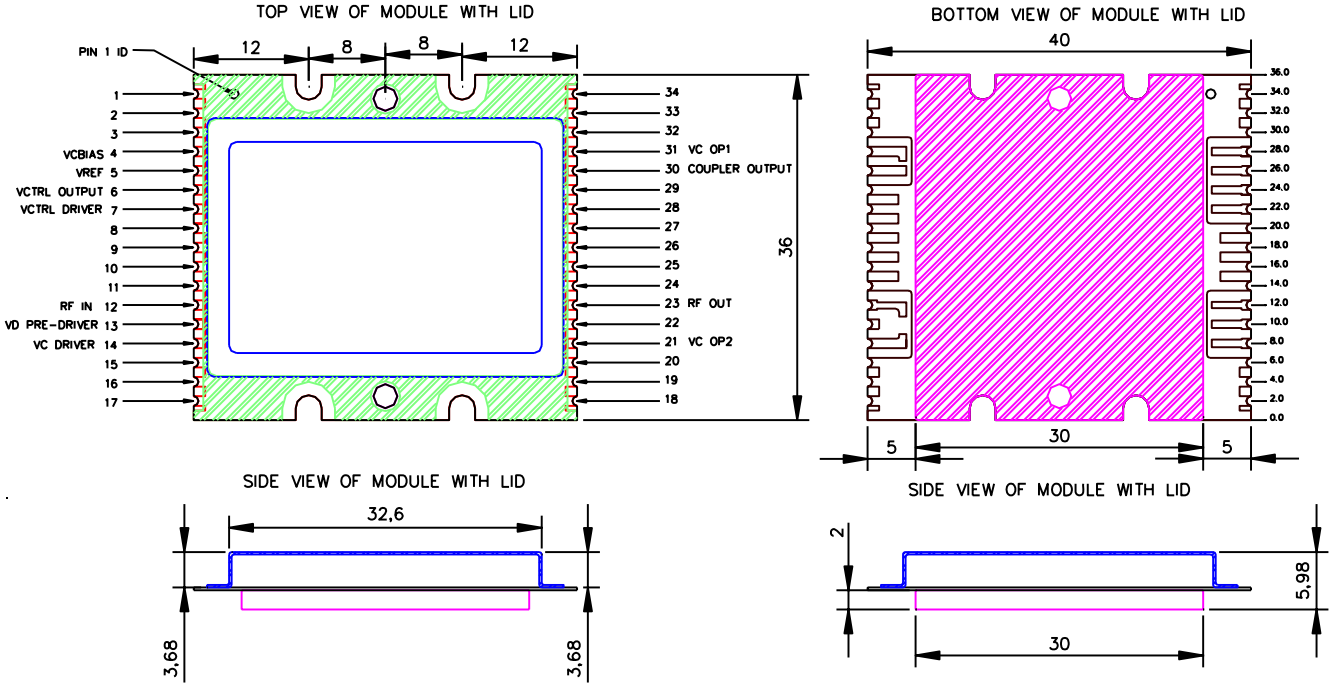
Typical Performance (T = 25°C)





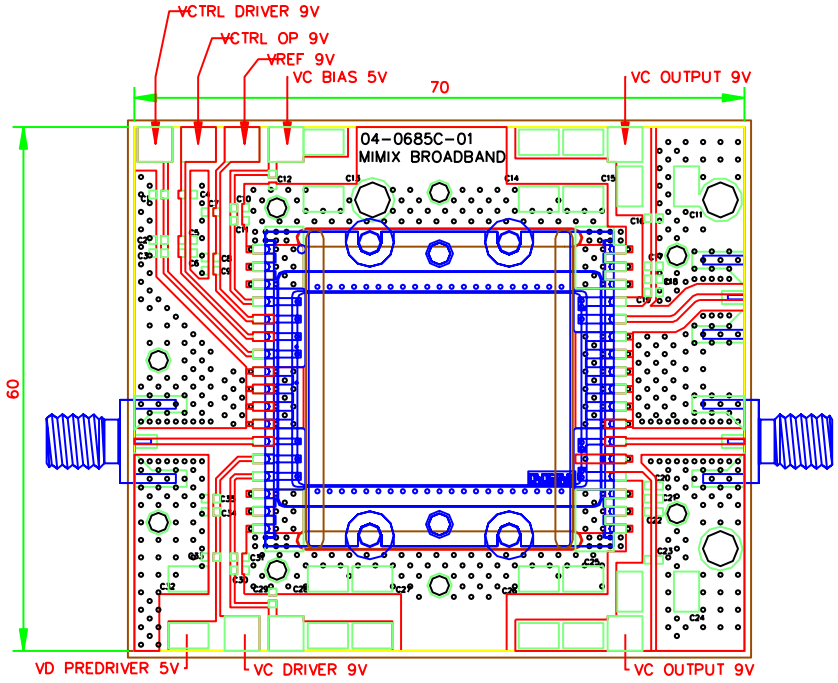


Physical Dimensions and Pin Designation



All Dimensions are in mm

Evaluation Board Components Layout



Handling and Assembly Information

CAUTION! - Mimix Broadband MMIC Products contain gallium arsenide (GaAs) which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- Do not ingest.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

Life Support Policy - Mimix Broadband's products are not authorized for use as critical components in life support devices or systems without the express written approval of the President and General Counsel of Mimix Broadband. As used herein: (1) Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user. (2) A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

Package Attachment - This packaged product from Mimix Broadband is provided as a drop-in package and is not compatible with exposure to reflow soldering processes due to the nature of its internal construction. Mimix will only support hand-soldering processes for this device. Care should be taken not to apply heavy pressure to the top or tabs to avoid package damage. Care should be taken to ensure that there are no voids or gaps in the solder connections and base heat sink so that good RF, DC and ground connections are maintained. Voids or gaps can eventually lead not only to RF performance degradation, but reduced reliability and life of the product due to thermal stress.

Mimix Lead-Free RoHS Compliant Program - Mimix has an active program in place to meet customer and governmental requirements for eliminating lead (Pb) and other environmentally hazardous materials from our products. All Mimix RoHS compliant components are form, fit and functional replacements for their non-RoHS equivalents. Lead plating of our RoHS compliant parts is 100% matte tin (Sn) over copper alloy and is backwards compatible with current standard SnPb low-temperature reflow processes as well as higher temperature (260°C reflow) “Pb Free” processes.

Ordering Information

Part Number	Description
XP9003-MB-0N00	1.6 GHz, 30W Power Amplifier Module
XP9003-MB-EV1	Evaluation Board with SMA Connectors

Caution: ESD Sensitive
Appropriate precautions in handling, packaging and testing devices must be observed.

Proper ESD procedures should be followed when handling this device.