

50 - 4000 MHz Cascadable InGaP HBT MMIC Amplifier Preliminary Data Sheet June 2008

#### Features:

Wideband: 50 to 4000 MHz

Medium Output Power: 20 dBm P1dB up to 2200 MHz

Excellent Linearity: 40 dBm OIP3

Gain: 18 dB up to 2700 MHz
 Excellent Gain Flatness: +/- 0.2 up to 3500 MHz

Single +5V Supply With On-Chip Active-Bias For Ease Of Operation

• Lead Free RoHS Compliant Surface-Mount SOT-89 Package

#### **Applications:**

- WiMax
- Wireless IPTV
- Cellular/PCS/3G Base Stations
- Microwave Radios
- CATV/Cable Modem
- Instrumentations
- Homeland Security
- General Purpose Gain Block

## **Description:**

The MHA-054020-89 is a broadband cascadable MMIC amplifier utilizing high-reliability InGaP/GaAs HBT technology. Packaged in low cost SOT-89 lead-free Green Package, the MMIC is ideally suited for driver amplifier or gain block in wireless applications such as Cellular, PCS, GSM and UMTS base stations as well as CATV, wireless IPTV, microwave radio, instrumentation, homeland security systems etc. It has excellent linearity and gain flatness over a broad frequency range. The third order intercept point performance is excellent, typically 19 dB above P-1dB below 500 MHz and 18 dB above P-1dB @ 900 MHz. It has on-chip bias circuit to provide bias stability and ease of use.





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Electrical Specifications: @ Vcc=+5.0V, Icc=100mA, Ta=25 ℃ Z0=50 ohm (1)

Parameter	Units		Typical
Frequency Range	MHz	50-4000	
Gain	dB	18	50-2700 MHz
		17	2800 - 4000 MHz
Gain Flatness	+/-dB	0.75	
Input Return Loss	dB	18	900 MHz
		13	1950 MHz
		12	2700 MHz
Output Return Loss	dB	15	
Output P-1dB	dBm	20	<= 2200 MHz
	dDill	18.5	2700 MHz
		16.5	3500 MHz
		15.0	4000 MHz
Output IP3	dBm	40	<= 500 MHz
<ul> <li>@ 5 dBm/tone,</li> <li>1 MHz separation &lt; 2 GHz</li> <li>@ 0 dBm/tone,</li> <li>1 MHz separation &gt; 2 GHz</li> </ul>		38	900 MHz
		32	1950 MHz
		29	2500 MHz
		26	3500 MHz
Noise Figure	dB	4.5	< 1000 MHz
Operating Bias Conditions: Vcc	V	+ 5	
lcc	mA	100	

<sup>(1)</sup> All Data is measured on Evaluation PCB optimized for wideband (50-4000 MHz) performance referenced to RF connectors

## **Absolute Maximum Ratings:**

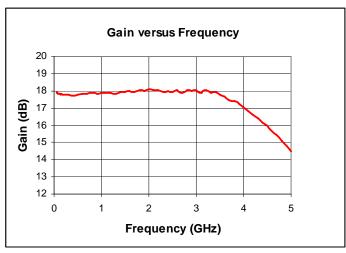
SYMBOL	PARAMETERS	UNITS	ABSOLUTE MAXIMUM
Vcc	Collector Voltage	V	6
lcc	Collector Current	mA	125
Pdiss	DC Power Dissipation	W	TBD
Pin max	RF Input Power	dBm	TBD
Toper	Operating Case/Lead Temperature Range	°C	- 40 to + 85
Tch	Channel Temperature	°C	150
Tstg	Storage Temperature	°C	-60 to +150

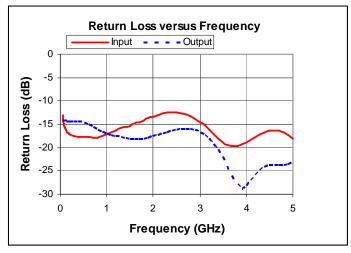
<sup>\*</sup>Operation of this device above any one of these parameters may cause permanent damage.

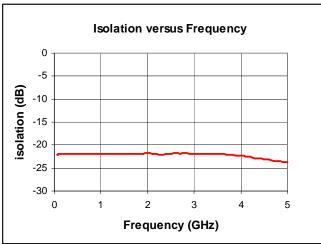


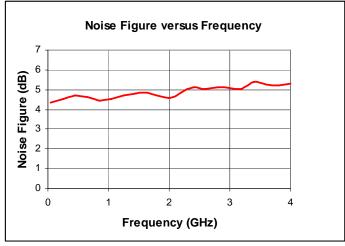
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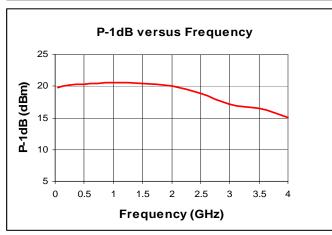
### Typical RF Performance: Vcc=5V, Icc=100mA, Ta=25 ℃ Z0 = 50 Ohm system on Evaluation PCB

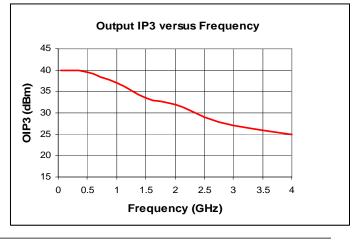














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### **Mechanical Information:**

This Package is RoHs-compliant lead free Green Package: SOT-89

Pin1: RF input, Needs DC blocking capacitor

Pin2/Pin4: RF/DC Ground, Must be Grounded Properly for Best Performance Pin3: RF Output/ DC Bias Input, External DC blocking Capacitor required

