

Cascadable Amplifier 200 to 2000 MHz

Rev. V4

Features

- WIDE BANDWIDTH: 200-2400 MHz (TYP.)
- HIGH OUTPUT LEVEL: +23.0 dBm (TYP.)
- LOW NOISE FIGURE: 4.0 dB (TYP.)
- HIGH THIRD ORDER I.P.: +34 dBm (TYP.)

Description

The PA38 RF amplifier is a discrete hybrid design, which uses thin film manufacturing processes for accurate performance and high reliability.

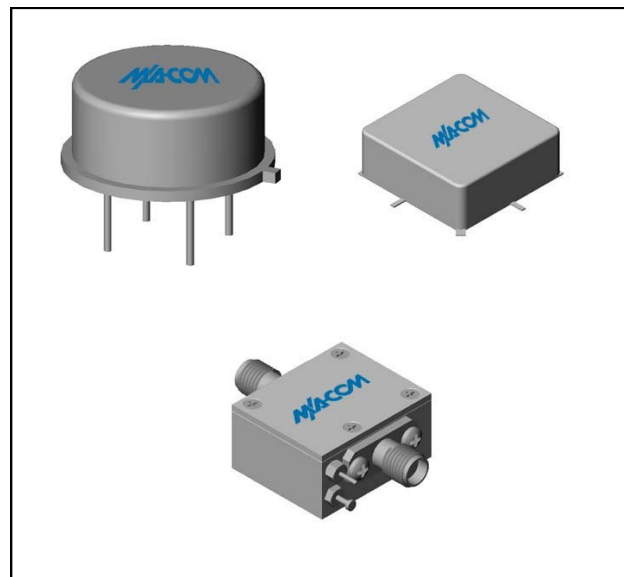
This two stage GaAs FET feedback amplifier design displays impressive performance characteristics over a broadband frequency range. Both TO-8 and Surface Mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

Ordering Information

Part Number	Package
PA38	TO-8
SMPA38	Surface Mount
CPA38 **	SMA Connectorized

** The connectorized version is not RoHs compliant.

Product Image



Electrical Specifications: $Z_0 = 50\Omega$, $V_{CC} = +15 V_{DC}$

Parameter	Units	Typical	Guaranteed	
		25°C	0° to 50°C	-54° to +85°C*
Frequency	GHz	0.2-2.4	0.2-2.0	0.2-2.0
Small Signal Gain (min)	dB	10.0	8.5	8.0
Gain Flatness (max)	dB	±0.3	±0.7	±1.0
Reverse Isolation	dB	17		
Noise Figure (max)	dB	4.0	4.7	5.2
Power Output @ 1 dB comp. (min)	dBm	23.0	21.5	21.0
IP3	dBm	+34		
IP2	dBm	+55		
Second Order Harmonic IP	dBm	+60		
VSWR Input / Output (max)		1.7:1 / 1.5:1	1.9:1 / 1.9:1	2.0:1 / 2.0:1
DC Current @ 15 Volts (max)	mA	150	158	160

Absolute Maximum Ratings

Parameter	Absolute Maximum
Storage Temperature	-62°C to +125°C
Case Temperature	85°C
DC Voltage	+16 V
Continuous Input Power	+17 dBm
Short Term Input power (1 minute max.)	100 mW
Peak Power (3 µsec max.)	1 W
"S" Series Burn-In Temperature (case)	85°C

Thermal Data: $V_{CC} = +15 V_{DC}$

Parameter	Rating
Thermal Resistance θ_{jc}	125.8°C/W
Transistor Power Dissipation P_d	0.578 W
Junction Temperature Rise Above Case T_{jc}	72°C

* Over temperature performance limits for part number CPA38, guaranteed from 0°C to +50°C only.

Rev. V4

Outline Drawing: TO-8 *

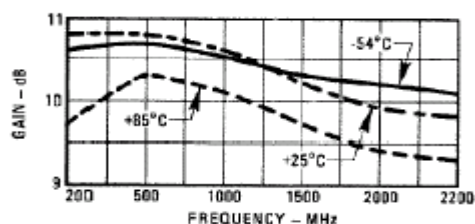
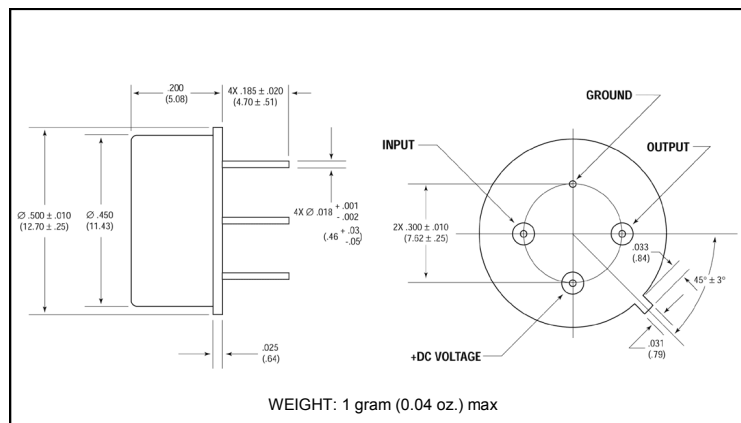


Figure 1 is a line graph titled "200-MHz RECEIVER". The vertical axis is labeled "INTERCEPT POINT—dBm" and ranges from 20 to 70 in increments of 10. The horizontal axis is labeled "FREQUENCY—MHz" and ranges from 100 to 2300 in increments of 100. There are three data series plotted:

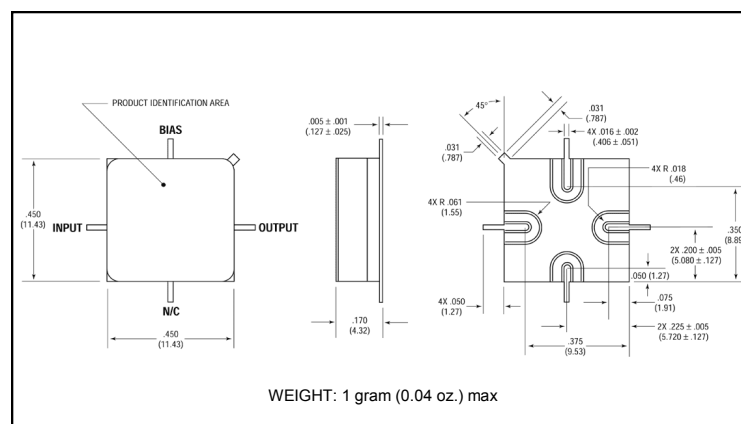
- 2nd ORDER TWO-TONE**: Represented by a solid line. It starts at approximately 55 dBm at 100 MHz, rises to about 60 dBm at 1000 MHz, and then levels off around 62 dBm at 2300 MHz.
- 2nd HARMONIC**: Represented by a dashed line. It starts at approximately 50 dBm at 100 MHz, rises to about 55 dBm at 1000 MHz, and then levels off around 58 dBm at 2300 MHz.
- 3rd ORDER TWO-TONE**: Represented by a dotted line. It starts at approximately 35 dBm at 100 MHz, rises to about 38 dBm at 1000 MHz, and then levels off around 40 dBm at 2300 MHz.

The graph shows that the intercept point for the 2nd order two-tone test is the highest, followed by the 2nd harmonic, and the 3rd order two-tone test has the lowest intercept point across the entire frequency range.

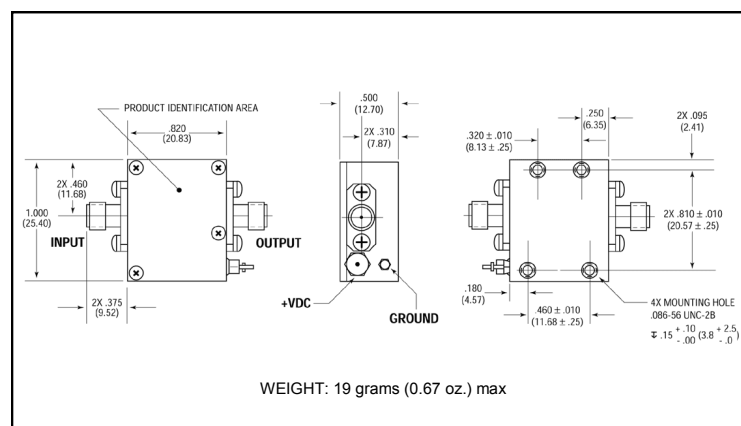
The graph plots VSWR on the y-axis (ranging from 1.0 to 2.0) against Frequency in MHz on the x-axis (ranging from 200 to 2200). A solid line represents the 'INPUT' VSWR, which remains fairly constant between 1.2 and 1.3. A dashed line represents the 'OUTPUT' VSWR, which starts at approximately 1.35 at 200 MHz, dips to a minimum of about 1.05 at 1200 MHz, and then rises to about 1.6 at 2200 MHz.



Outline Drawing: Surface Mount *



Outline Drawing: SMA Connectorized *



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