

Cascadable Amplifier 5 to 500 MHz

Rev. V3

Features

- HIGH DYNAMIC RANGE: +118 DBM (1 MHz Band)
- HIGH OUTPUT POWER: +22 dBm (TYP.)
- HIGH THIRD ORDER I.P.: +36 dBm (TYP.)
- LOW NOISE FIGURE: 4.3 dB (TYP.)
- WIDE POWER SUPPLY RANGE: +5 to +15 VOLTS

Description

The A59 RF amplifier is a discrete hybrid design, which uses thin film manufacturing processes for accurate performance and high reliability.

This single stage bipolar transistor feedback amplifier design displays impressive performance over a broadband frequency range. An active DC biasing network insures temperature-stable performance.

Both TO-8 and Surface Mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

Ordering Information

Part Number	Package
A59	TO-8
SMA59	Surface Mount
CA59 **	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	MHz	2-700	5-500	5-500
Small Signal Gain (min)	dB	11.5	10.5	10.0
Gain Flatness (max)	dB	±0.3	±0.7	±1.0
Reverse Isolation	dB	16		
Noise Figure (max)	dB	4.3	5.5	6.0
Power Output @ 1 dB comp. (min)	dBm	22.0	20.5	20.0
IP3	dBm	+36		
IP2	dBm	+56		
Second Order Harmonic IP	dBm	+62		
VSWR Input / Output (max)		1.5:1 / 1.5:1	1.9:1 / 1.9:1	2.0:1 / 2.0:1
DC Current @ 15 Volts (max)	mA	88	93	98

Absolute Maximum Ratings

Parameter	Absolute Maximum
Storage Temperature	-62°C to +125°C
Case Temperature	+125°C
DC Voltage	+17 V
Continuous Input Power	+18 dBm
Short Term Input power (1 minute max.)	100 mW
Peak Power (3 µsec max.)	0.5 W
"S" Series Burn-In Temperature (case)	+100°C

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

Parameter	Rating
Thermal Resistance θ_{jc}	75°C/W
Transistor Power Dissipation P_d	0.869 W
Junction Temperature Rise Above Case T_{jc}	+64°C

* Over temperature performance limits for part number CA59, guaranteed from 0°C to +50°C only.

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

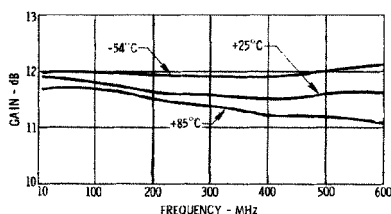
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Rev. V3

Outline Drawing: TO-8 *

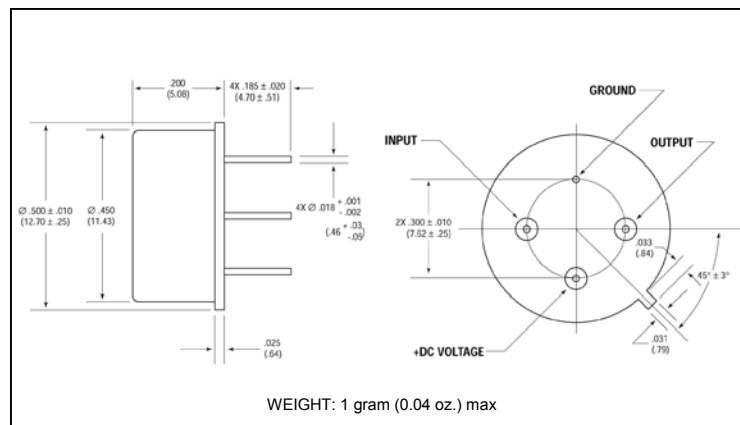


Frequency (MHz)	3RD ORDER TWO-TONE (dBm)	2ND ORDER TWO-TONE (dBm)	2ND HARMONIC (dBm)
0	40	59	64
100	40	60	63
200	40	59	61
300	41	57	62
400	41	58	67
500	42	57	69

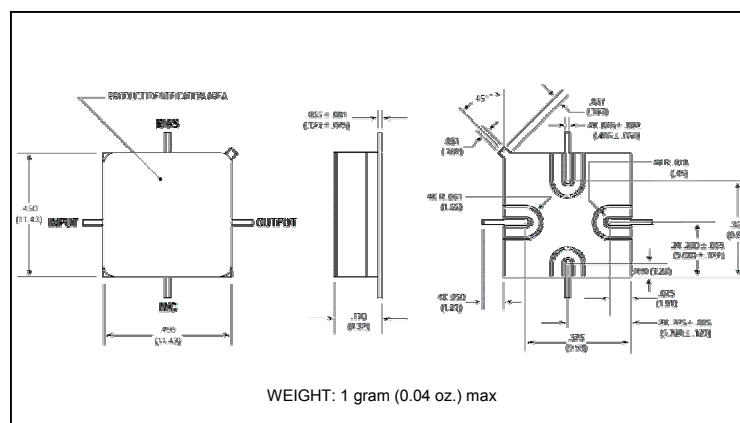
Frequency (MHz)	Noise Figure (dB)
50	5.5
100	5.4
200	5.5
300	5.6
400	5.7
500	5.9
600	6.2
700	6.5

Frequency (MHz)	Power Output (dBm)
1	21.5
50	21.5
100	21.8
200	22.0
300	21.8
400	21.5
500	21.5
600	21.8
700	22.0
800	22.0

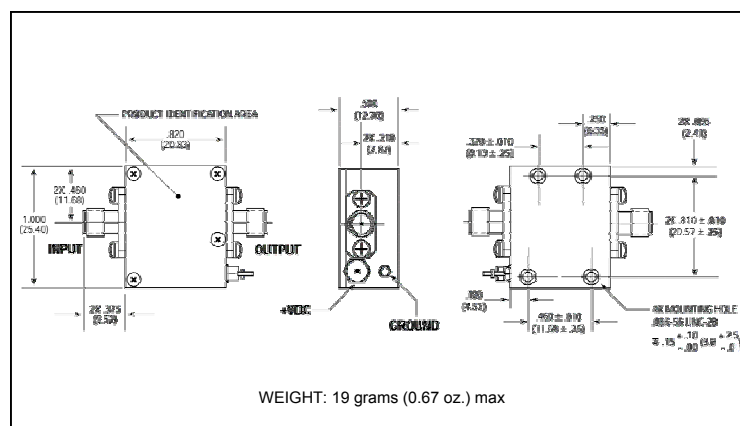
The graph shows the Voltage Standing Wave Ratio (VSWR) on the y-axis (ranging from 1.0 to 3.0) versus Frequency in MHz on the x-axis (logarithmic scale from 1 to 700). Two curves are plotted: 'INPUT' and 'OUTPUT'. Both curves show a minimum VSWR of approximately 1.0 between 10 MHz and 100 MHz. The 'INPUT' curve starts at ~1.8 at 1 MHz and rises to ~1.8 at 700 MHz. The 'OUTPUT' curve starts at ~1.9 at 1 MHz and rises to ~1.9 at 700 MHz.



Outline Drawing: Surface Mount *



Outline Drawing: SMA Connectorized *



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