A531 / SMA531

Cascadable Amplifier
10 to 500 MHz

Rev. V3

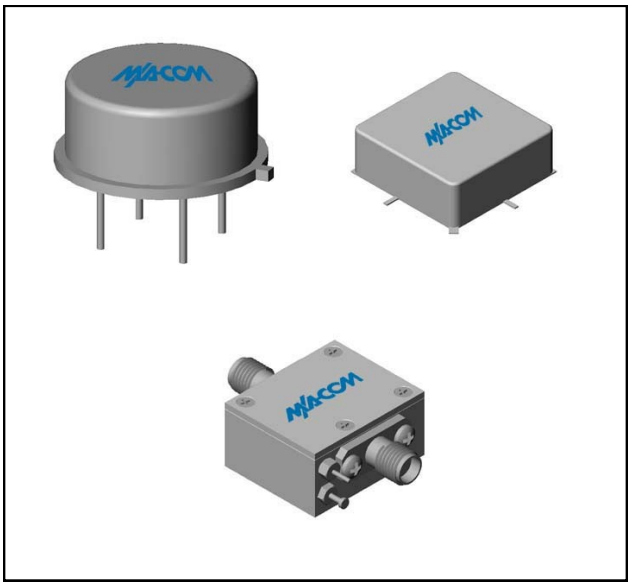
Features

- HIGH GAIN-TWO STAGES: 32 dB (TYP.)
- HIGH EFFICIENCY: 17 mA at +5 Vdc
- LOW NOISE FIGURE: 2.0 dB (TYP.)
- LOW POWER DRAIN: 85 mW at +5 Vdc
- LOW VSWR: 1.3:1 (TYP.)

Description

The A531 RF amplifier is a discrete thin film hybrid design, which incorporates the use of 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 is used for temperature-stable performance, in addition to an RF Choke, used for power supply decoupling.
Both TO-8 and Surface Mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

Product Image



Ordering Information

Part Number	Package
A531	TO-8
SMA531	Surface Mount
CA531 **	SMA Connectorized

** The connectorized version is not RoHs compliant.

Electrical Specifications: Z_0 = 50Ω, V_{CC} = +5 V_{DC}

Parameter	Units	Typical	Guaranteed	
		25ºC	0º to 50ºC	-54º to +85ºC*
Frequency	MHz	1-600	10-500	10-500
Small Signal Gain (min)	dB	31.7	30.0	29.0
Gain Flatness (max)	dB	±0.4	±0.8	±1.0
Reverse Isolation	dB	38		
Noise Figure (max)	dB	2.0	2.5	3.0
Power Output @ 1 dB comp. (min)	dBm	2.5	1.5	0.5
IP3	dBm	+14		
IP2	dBm	+30		
Second Order Harmonic IP	dBm	+36		
VSWR Input / Output (max)		1.3:1 / 1.3:1	1.8:1 / 1.8:1	2.0:1 / 2.0:1
DC Current @ 5 Volts (max)	mA	17	19	21

Absolute Maximum Ratings

Parameter	Absolute Maximum
Storage Temperature	-62ºC to +125ºC
Case Temperature	125ºC
DC Voltage	+10 V
Continuous Input Power	+10 dBm
Short Term Input power (1 minute max.)	50 mW
Peak Power (3 µsec max.)	0.5 W
"S" Series Burn-In Temperature (case)	125ºC

Thermal Data: V_{CC} = +5 V_{DC}

Parameter	Rating
Thermal Resistance θ_{jc}	185ºC/W
Transistor Power Dissipation P_d	0.048 W
Junction Temperature Rise Above Case T_{jc}	9ºC

* Over temperature performance limits for part number CA531, guaranteed from 0°C to +50°C only.

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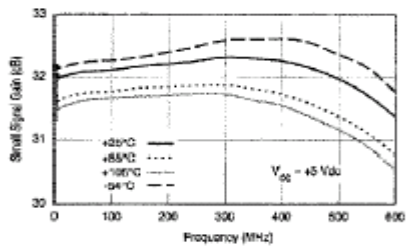
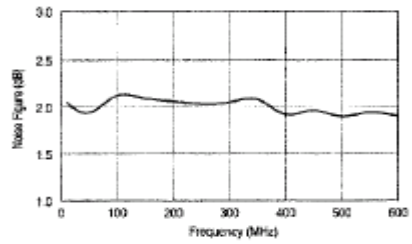
Typical Performance Curves at +25°C

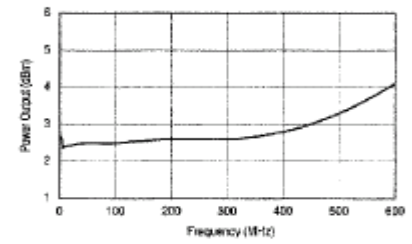
Small Signal Gain



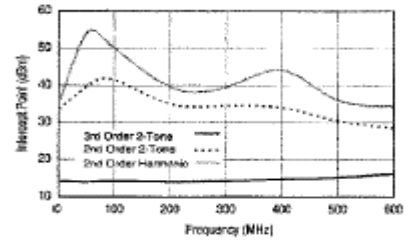
Noise Figure



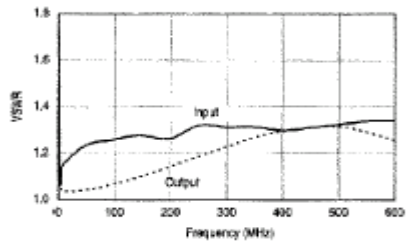
Power Output (1dB Gain Compression)



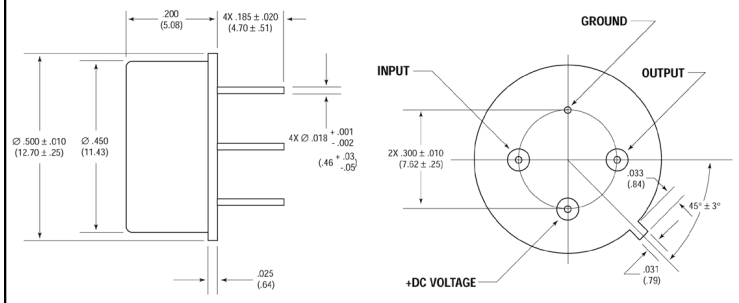
Intercept Point



VSWR

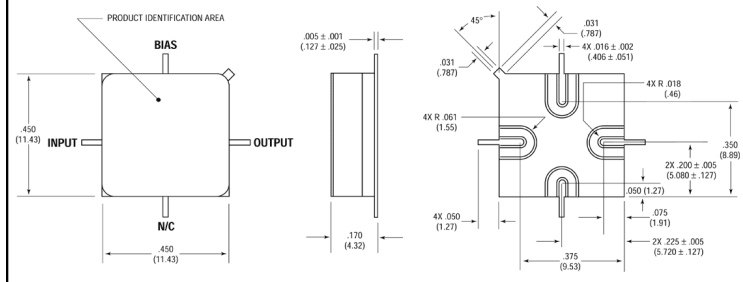


Outline Drawing: TO-8 *



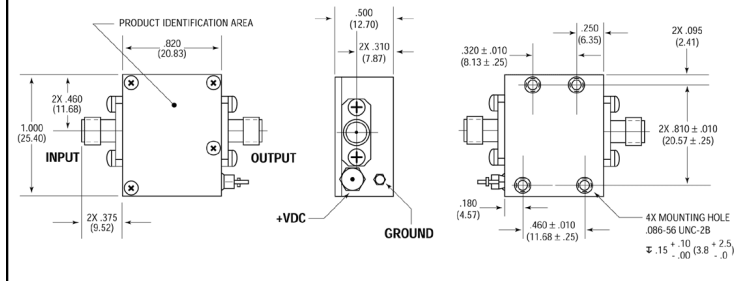
WEIGHT: 1 gram (0.04 oz.) max

Outline Drawing: Surface Mount *



WEIGHT: 1 gram (0.04 oz.) max

Outline Drawing: SMA Connectorized *



WEIGHT: 19 grams (0.67 oz.) max

* Dimensions are inches (millimeters) ±0.015 (0.38) unless otherwise specified.

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