A3010

Cascadable Amplifier
10 kHz to 2500 MHz

Rev. V5

Features

- GAIN: 9.5 dB (TYP.)
- DC COUPLING REQUIRED*
- +/- 1 dB GAIN FLATNESS
- HIGH DRIVER OUTPUT LEVEL: +18 dBm
- INPUT/OUTPUT MATCH: < 2.0:1 (TYP.)

Description

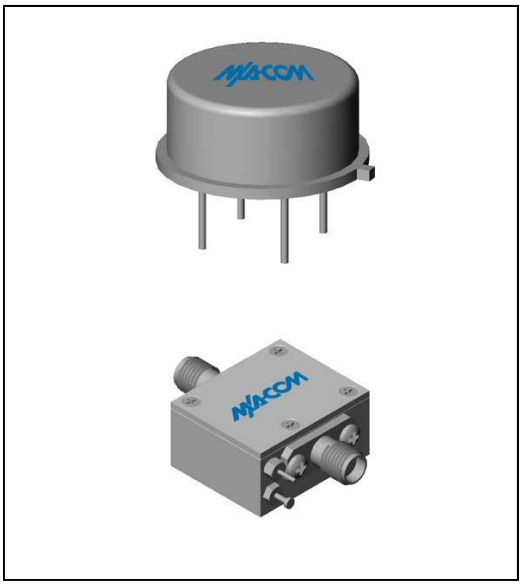
The A3010 RF amplifier is a discrete hybrid design, which uses thin film manufacturing processes for accurate performance and high reliability.

This single stage GaAs FET feedback amplifier design displays impressive performance characteristics over a broadband frequency range. An RF choke is used for DC power supply decoupling.

A voltage sequencing circuit can be used to ensure the negative voltage (-5.2 Vdc) is turned on first and turned off last during normal operation. Reference the application circuit on page 2.

The TO-8 package is hermetically sealed, and MIL-STD-883 environmental screening is available.

Product Image



Ordering Information

Part Number	Package
A3010	TO-8
CA3010 **	SMA Connectorized

** The connectorized version is not RoHs compliant.

Electrical Specifications: Z_0 = 50Ω, V_{CC} = +12 / -5.2 V_{DC}

Parameter	Units	Typical	Guaranteed	
		25ºC	0º to 50ºC	-54º to +85ºC**
Frequency	MHz	0.010-2500	0.010-2500	0.010-2500
Small Signal Gain (min)	dB	9.5	8.5	8.0
Gain Flatness (max)	dB	±0.9	±1.0	±1.2
Reverse Isolation	dB	16		
Noise Figure (max)	dB	4.5	5.5	6.0
Power Output @ 1 dB comp. (min)	dBm	19.0	17.0	16.5
IP3	dBm	+35		
VSWR Input / Output (max)		2.0:1 / 2.0:1	2.3:1 / 2.3:1	2.4:1 / 2.4:1
DC Voltage - Positive	Volts	+12	+12	+12
DC Current - Positive (max)	mA	155	160	165
DC Voltage - Negative	Volts	-5.2	-5.2	-5.2
DC Current - Negative (max)	mA	15	20	25

Absolute Maximum Ratings

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

Thermal Data: V_{CC} = +12/-5.2 V_{DC}

Parameter	Rating
Thermal Resistance θ_{jc}	105.6ºC/W
Transistor Power Dissipation P_d	0.55 W
Junction Temperature Rise Above Case T_{jc}	58.1ºC

***** Model A3010 requires external Input and output DC blocking capacitors (0.36 µF nominal) on the circuit board transmission lines for operation. Model CA3010 has internal DC blocking capacitors integrated in the design, so external blocking capacitors are not required.

****** Over temperature performance limits for part number CA3010, guaranteed from 0°C to +50°C only.

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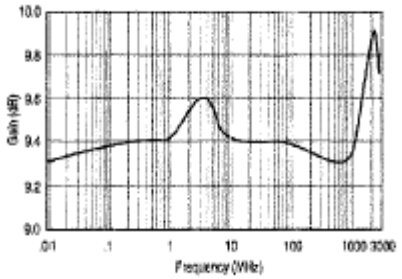
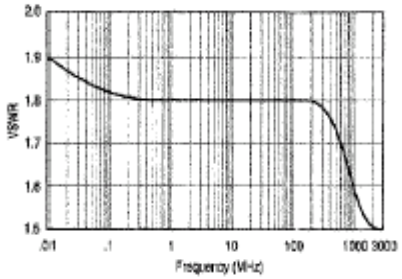
Typical Performance Curves at +25°C

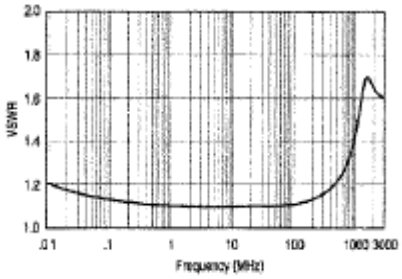
Gain vs. Frequency



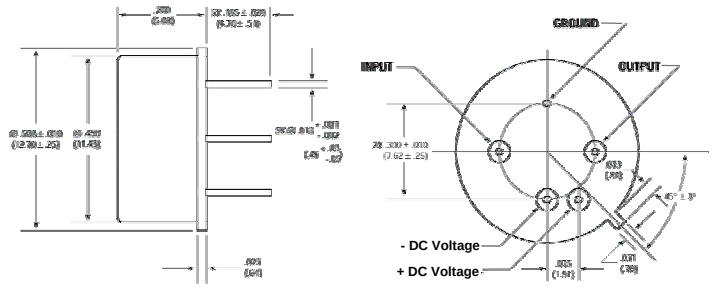
Input VSWR vs. Frequency



Output VSWR vs. Frequency

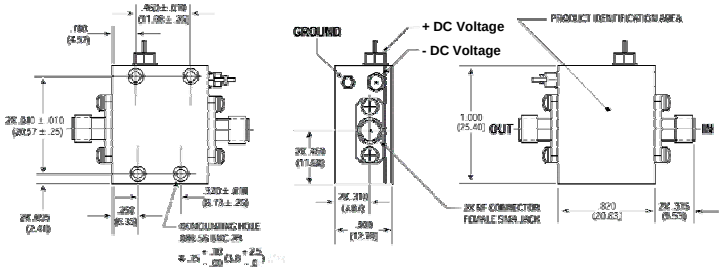


Outline Drawing: TO-8 *



WEIGHT: 1 gram (0.04 oz.) max

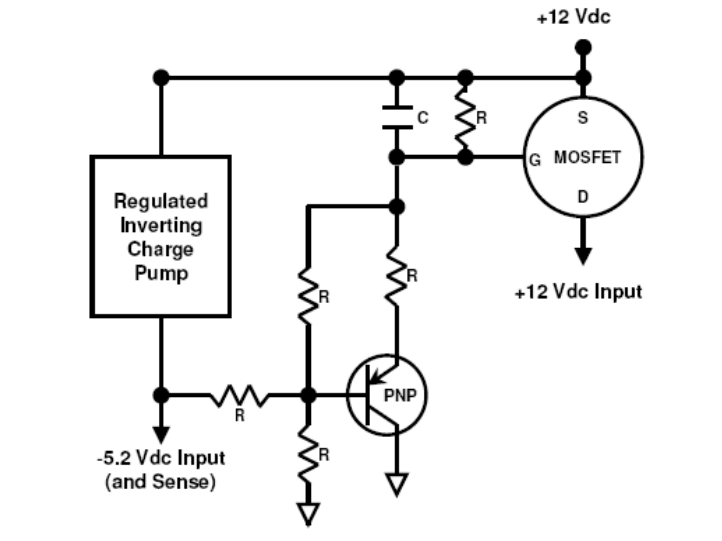
Outline Drawing: SMA Connectorized *



WEIGHT: 19 grams (0.67 oz.) max

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

Application Sequencing Circuit Block Diagram



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PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

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