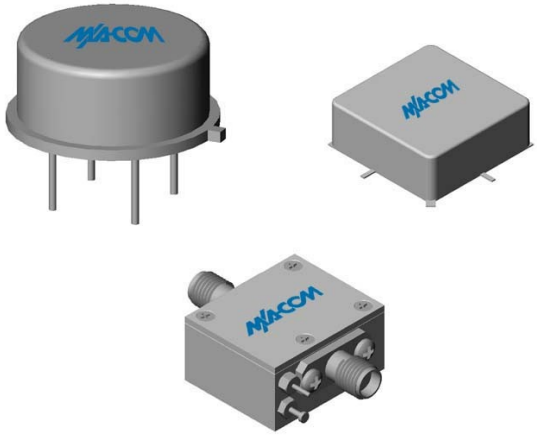
Cascadable Amplifier
10 - 1000 MHz

A1021 / SMA1021
Rev. V4

Features

- Available in Surface Mount
- High Gain: 26.0 dB
- Medium Output Level: +14 dBm @ +5 Vdc
- High Efficiency: 60 mA @ +5 Vdc
- Low VSWR .1.4:1
- Flat Bandwidth ± 0.5 dB
- RoHS* Compliant



Applications

- Aerospace & Defense
- ISM

Description

The A1021 / SMA1021 RF amplifier is a discrete hybrid design, which uses thin film manufacturing processes for consistent performance and high reliability. This 2 stage bipolar transistor feedback amplifier design displays impressive performance over a broadband frequency range. An active DC biasing network insures temperature-stable performance.

Both the TO-8 and the surface mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

Ordering Information

Part Number	Package
A1021	TO-8
SMA1021	Surface Mount
CA1021[1]	SMA Connectorized (non *RoHS Compliant)

1. The connectorized version is not *RoHS compliant.

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

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

Parameter	Units	Typical	Guaranteed	
		25ºC	0º to 50ºC	-54º to +85ºC[2]
Frequency	MHz	5 - 1000	10 - 1000	10 - 1000
Small Signal Gain (min)	dB	26	25	24
Gain Flatness (max)	dB	±0.5	±0.7	±0.9
Reverse Isolation	dB	35	—	—
Noise Figure (max)	dB	3.8	4.5	5.0
Power Output @ 1 dB comp. (min)	dBm	14.5	14.0	13.0
IP3	dBm	26	—	—
IP2	dBm	50	—	—
Second Order Harmonic IP	dBm	55	—	—
VSWR Input / Output (max)	-	1.4:1 / 1.3:1	1.9:1 / 1.9:1	2.0:1 / 2.0:1
DC Current @ 5 Volts (max)	mA	60	60	62

2. Over temperature performance limits for part number CA1021, guaranteed from 0°C to +50°C only.

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

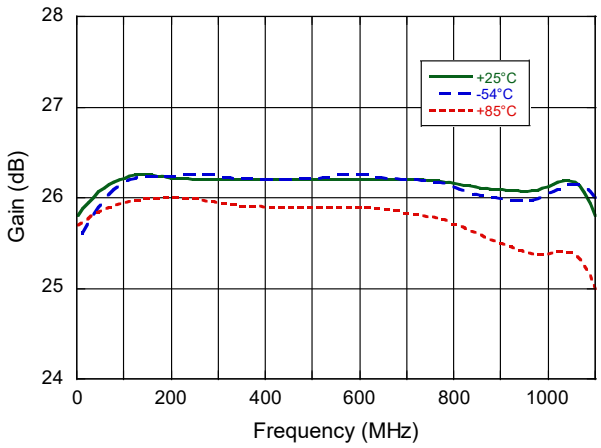
Parameter	Rating
Thermal Resistance (θ_{JC})	126 ºC/W
Transistor Power Dissipation (P_d)	0.159 W
Junction Temperature Rise Above Case (T_{JC})	20 ºC

Absolute Maximum Ratings

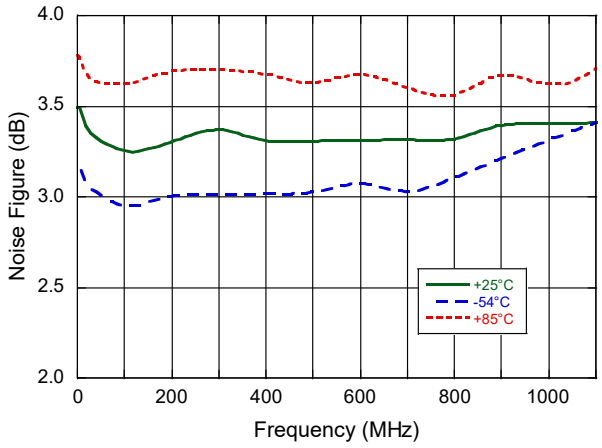
Parameter	Absolute Maximum
DC Voltage	8 V
Continuous Input Power	10 dBm
Short Term Input Power	50 mW (1 minute max.)
Peak Power	0.5 W (3 µs max.)
“S” Series Burn-In Temperature (case)	125ºC
Case Temperature	125ºC
Storage Temperature	-62ºC to +150ºC

Typical Performance Curves

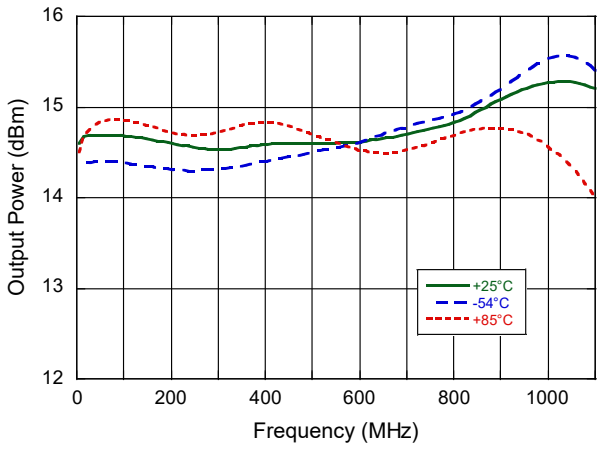
Gain



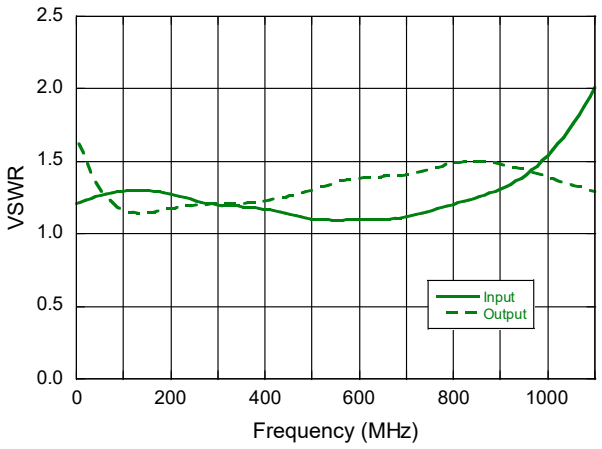
Noise Figure



Output Power @ 1 dB Gain Compression

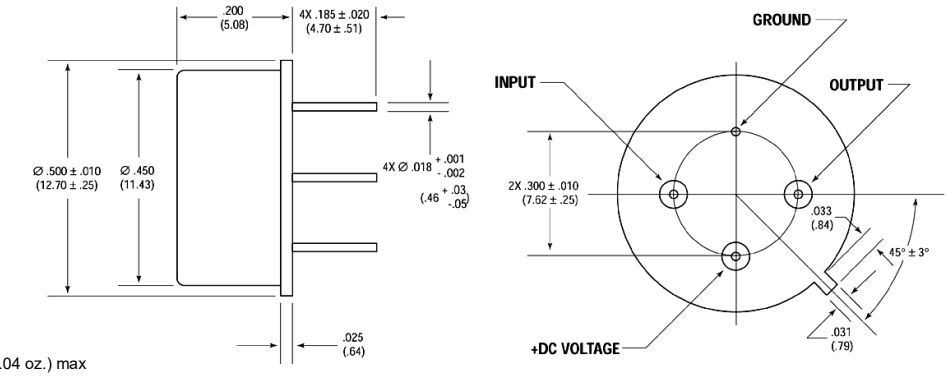


VSWR



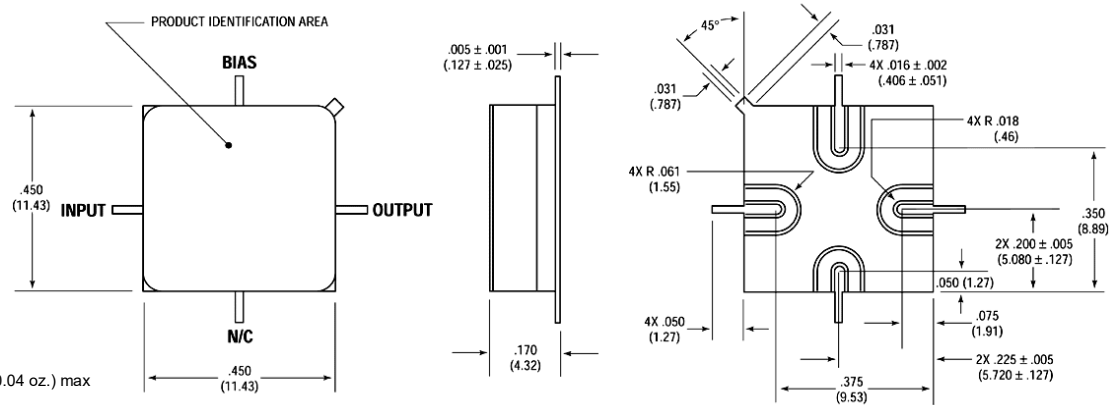
Outline Drawings[3]:

TO-8



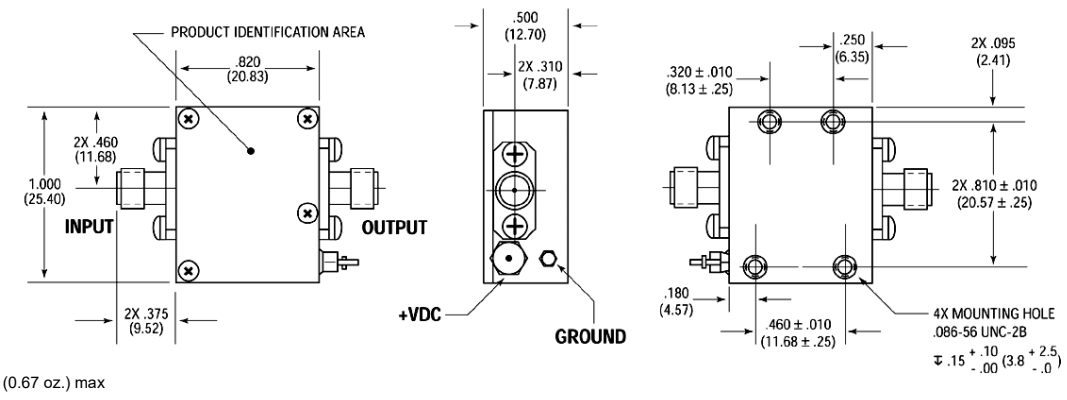
WEIGHT: 1 gram (0.04 oz.) max

Surface Mount



WEIGHT: 1 gram (0.04 oz.) max

SMA Connectorized



WEIGHT: 19 grams (0.67 oz.) max

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