

Cascadable Amplifier 50 to 500 MHz

AL7 / SMAL7

V3

Features

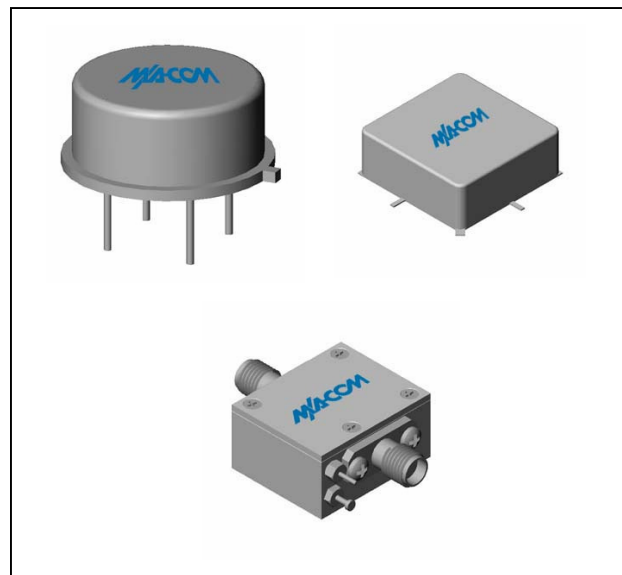
- SYMMETRICAL CLIPPING:
GOOD EVEN-ORDER SUPPRESSION
- HIGH GAIN: 13 dB (TYP.)
- LOW VSWR: < 1.5:1 (TYP.)
- FAST PULSE RECOVERY TIME: < 50 NSEC (TYP.)

Description

The AL7 limiting amplifier is a discrete hybrid design, which uses thin film manufacturing processes for accurate performance and high reliability.

This design uses a Schottky diode limiter circuit at the output, and a single stage bipolar transistor feedback amplifier at the output. An RF choke is used for DC 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
AL7	TO-8
SMAL7	Surface Mount
CAL7	SMA Connectorized

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	20-550	50-500	50-500
Small Signal Gain (min)	dB	13.0	12.0	11.0
Gain Flatness (max)	dB	±0.2	±0.5	±0.7
Noise Figure (max) 50-300 MHz 300-500 MHz	dB dB	5.0 5.5	6.0 6.5	6.5 7.0
Power Output @ 1 dB comp. (min)	dBm	-1.5	-5.0	-7.0
Output Limiting Level (max) Pin = +10 dBm	dBm	+0.5	+1.5	+2.5
VSWR Input / Output (max)		1.1:1 / <1.5:1	1.7:1 / 2.0:1	1.8:1 / 2.1:1
DC Current @ 15 Volts (max)	mA	54	57	59

Absolute Maximum Ratings

Parameter	Absolute Maximum
Storage Temperature	-62°C to +125°C
Case Temperature	+125°C
DC Voltage	+17 V
Continuous Input Power	+13 dBm
Short Term Input power (1 minute max.)	50 mW
Peak Power (3 µsec max.)	0.5 W
"S" Series Burn-In Temperature (case)	125°C

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

Parameter	Rating
Thermal Resistance θ_{jc}	45°C/W
Transistor Power Dissipation P_d	0.560 W
Junction Temperature Rise Above Case T_{jc}	25.2°C

* Over temperature performance limits for part number CAL7, guaranteed from 0°C to +50°C only.

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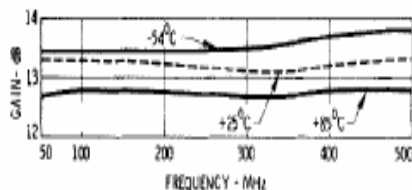
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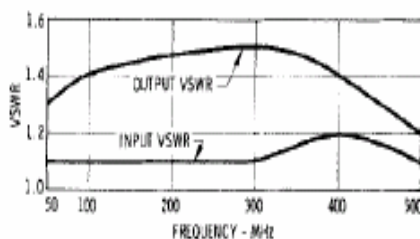
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Typical Performance Curves at +25°C

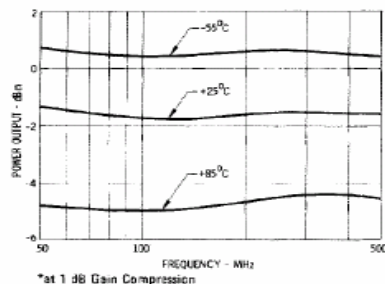
Gain (Linear)



VSWR

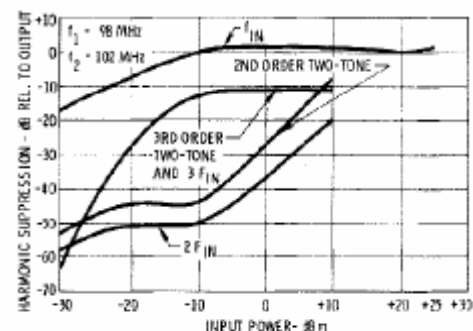


Power Output*

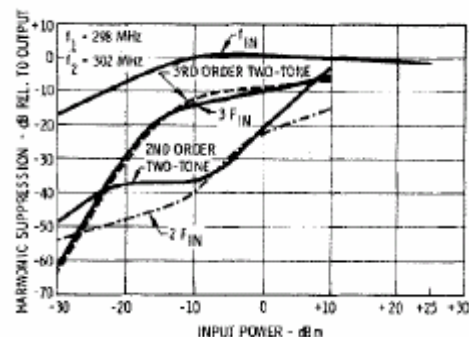


*at 1 dB Gain Compression

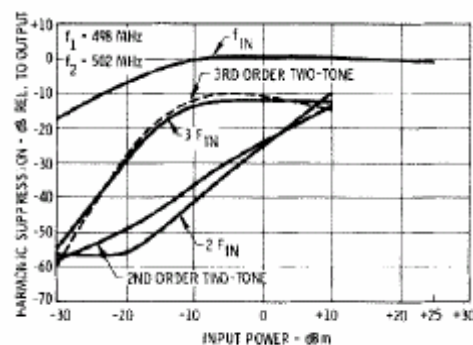
Harmonic Suppression (Curve A)



Harmonic Suppression (Curve B)



Harmonic Suppression (Curve C)



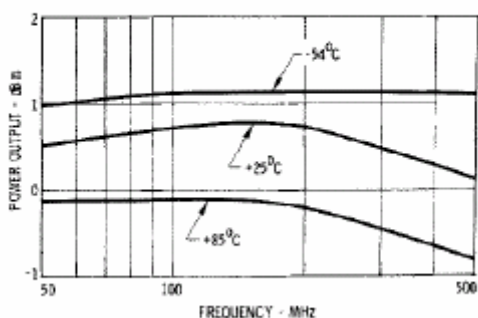
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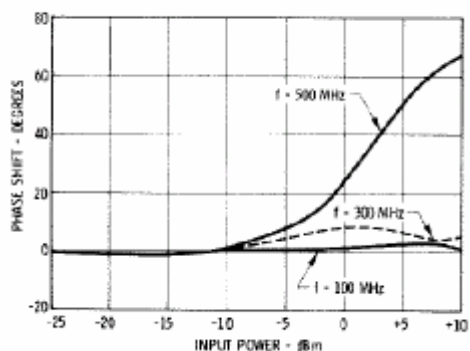
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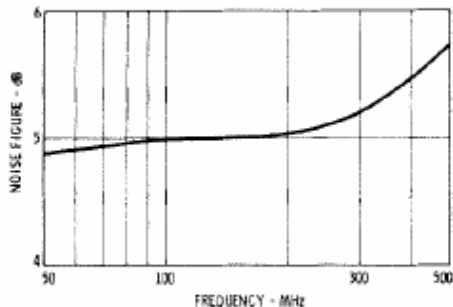
Power Output in Saturation



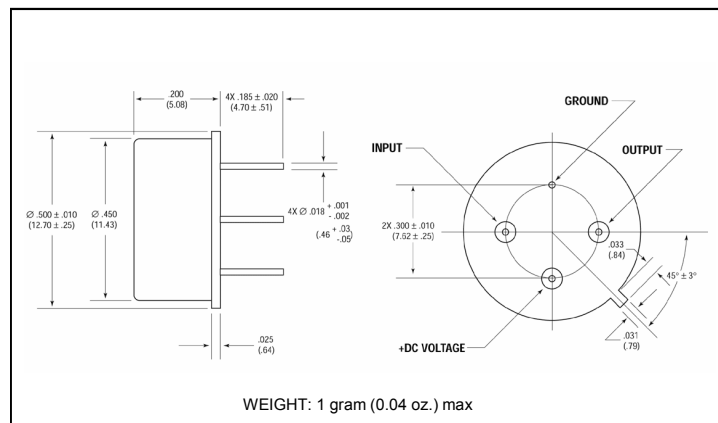
Phase Shift



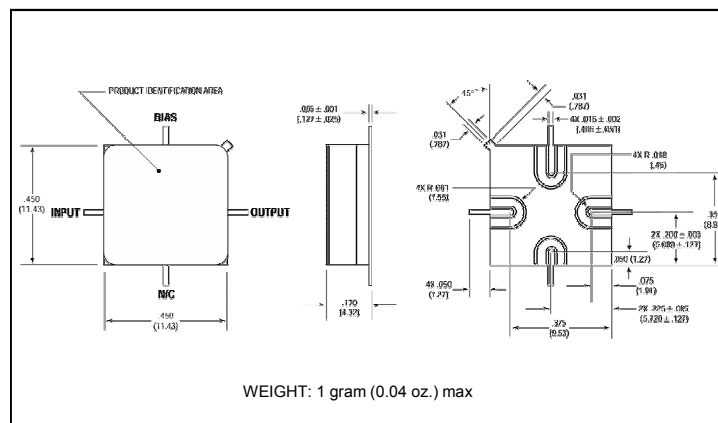
Noise Figure



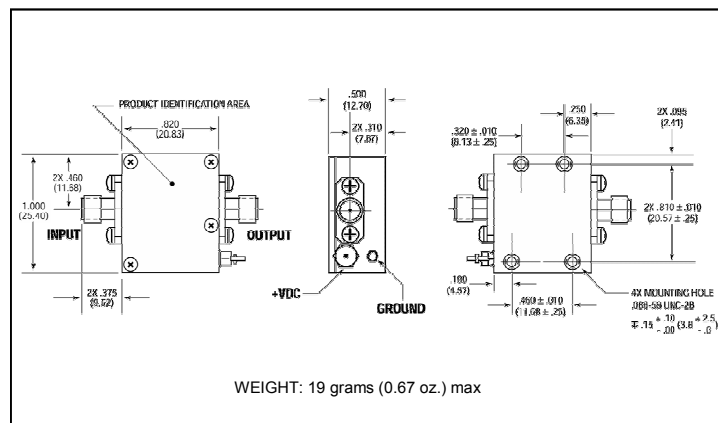
Outline Drawing: TO-8 *



Outline Drawing: Surface Mount *



Outline Drawing: SMA Connectorized *



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