AL7 / SMAL7

Cascadable Amplifier
50 to 500 MHz

Rev. V4

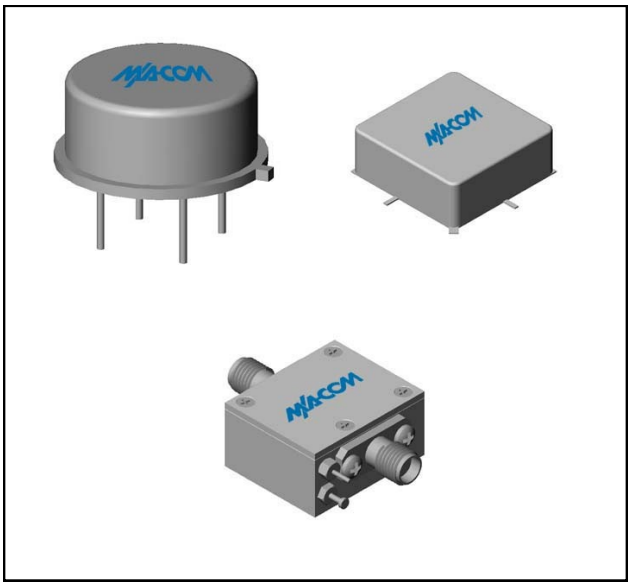
Features

- 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

** The connectorized version is not RoHs compliant.

Electrical Specifications: Z_0 = 50Ω, V_{CC} = +15 V_{DC}

Parameter	Units	Typical	Guaranteed	
		25ºC	0º to 50ºC	-54º to +85ºC*
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	60	62

Absolute Maximum Ratings

Parameter	Absolute Maximum
Storage Temperature	-62ºC to +125ºC
Case Temperature	+125ºC
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)	125ºC

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

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

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

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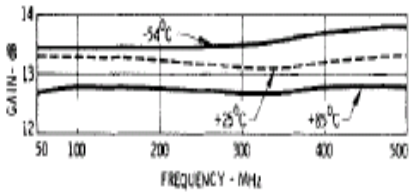
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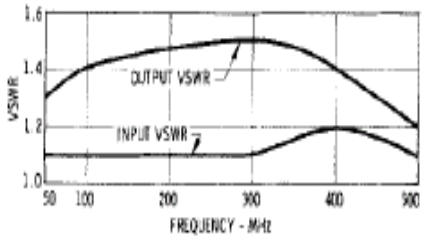
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Typical Performance Curves at +25°C

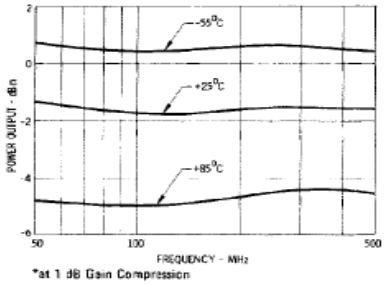
Gain (Linear)



VSWR

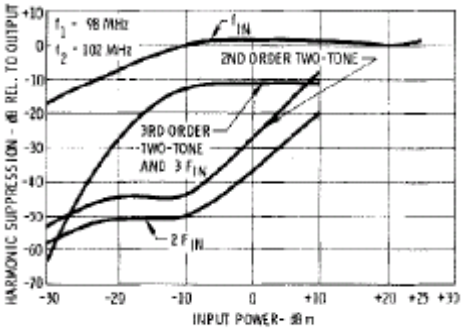


Power Output*

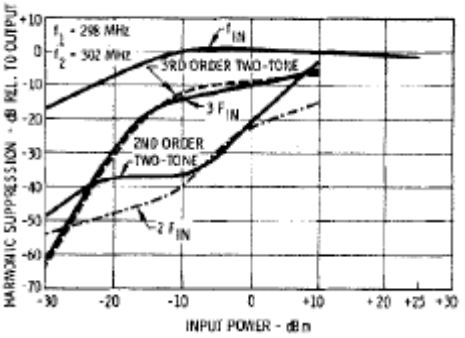


*at 1 dB Gain Compression

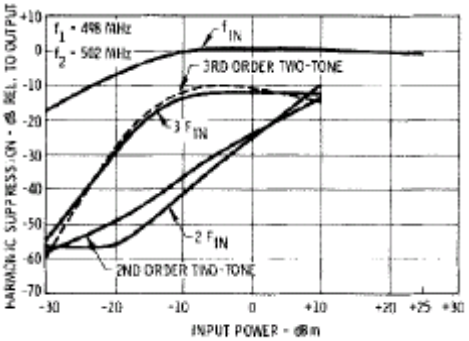
Harmonic Suppression (Curve A)



Harmonic Suppression (Curve B)



Harmonic Suppression (Curve C)



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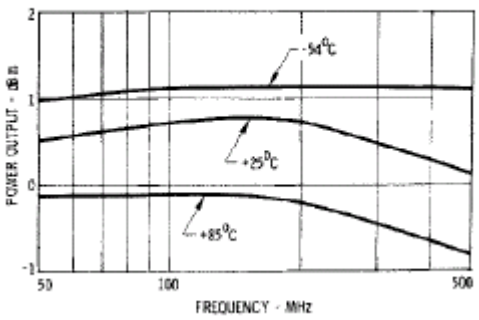
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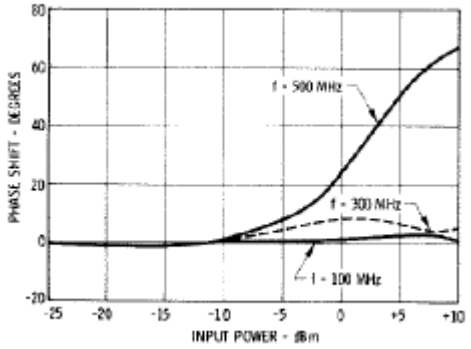
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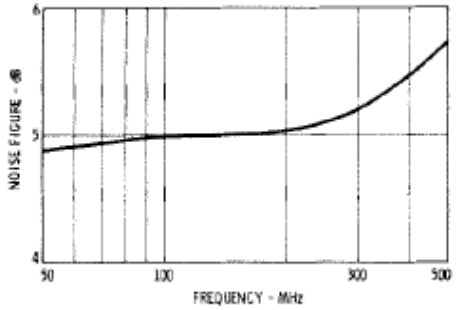
Power Output in Saturation



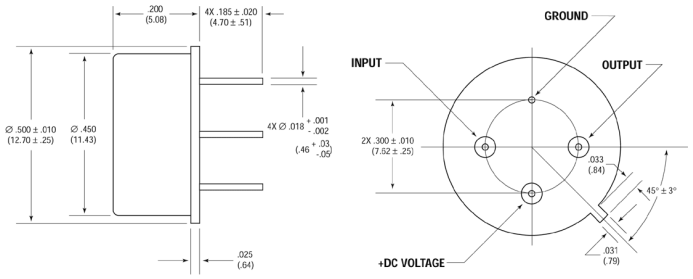
Phase Shift



Noise Figure

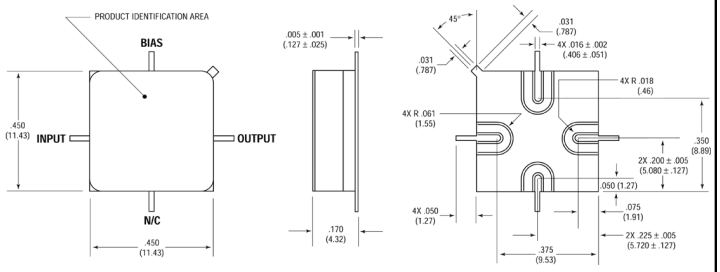


Outline Drawing: TO-8 *



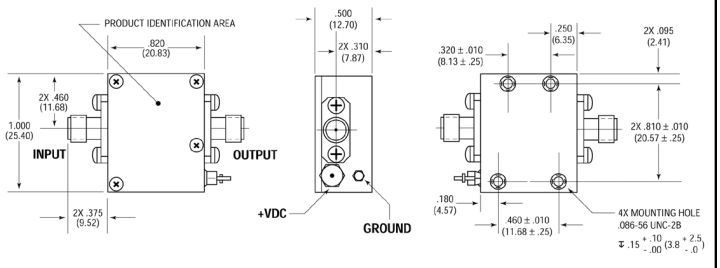
WEIGHT: 1 gram (0.04 oz.) max

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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