

## Cascadable Amplifier 1000 - 4000 MHz

Rev. V3

### Features

- SYMMETRICAL CLIPPING:  
GOOD EVEN-ORDER SUPPRESSION
- HIGH OUTPUT LEVEL: +17.0 dBm (TYP.)
- MEDIUM GAIN: 14.0 dB (TYP.)
- WIDE BANDWIDTH: 0.8-4.2 GHz (TYP.)

### Description

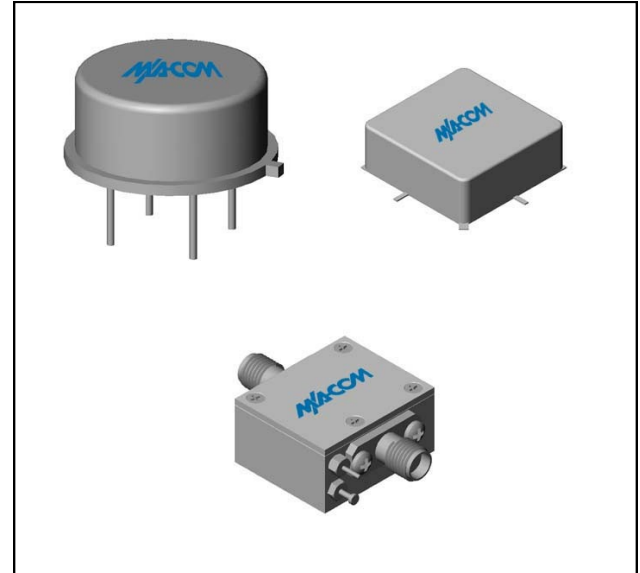
The LA45-1 limiting amplifier is a discrete hybrid design, which uses thin film manufacturing processes for accurate performance and high reliability. This design uses a Schottky diode limiter circuit at the input, and a two-stage GaAs FET feedback amplifier at the output. Both TO-8 and Surface Mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

### Ordering Information

Part Number	Package
LA45-1	TO-8
SMLA45-1	Surface Mount
CLA45-1 **	SMA Connectorized

\*\* The connectorized version is not RoHs compliant.

### Product Image



### 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	800-4200	1000-4000	1000-4000
Small Signal Gain (min)	dB	14.0	13.0	12.0
Gain Flatness (max)	dB	±0.5	±0.8	±1.0
Noise Figure (max)	dB	7.5	9.0	9.5
Power Output @ 1 dB comp. (max)	dBm	+17.0	+15.5	+14.5
Output Limiting Level (max) Pin = +17 dBm	dBm	+18.5	+20.5	+21.0
IP3/IP2	dBm	+27.0/+48.0		
Second Order Harmonic IP	dBm	+53.0		
VSWR Input / Output (max)		1.8:1 / 1.6:1	2.1:1 / 2.0:1	2.2:1 / 2.1:1
DC Current @ 15 Volts (max)	mA	110	115	120

### Absolute Maximum Ratings

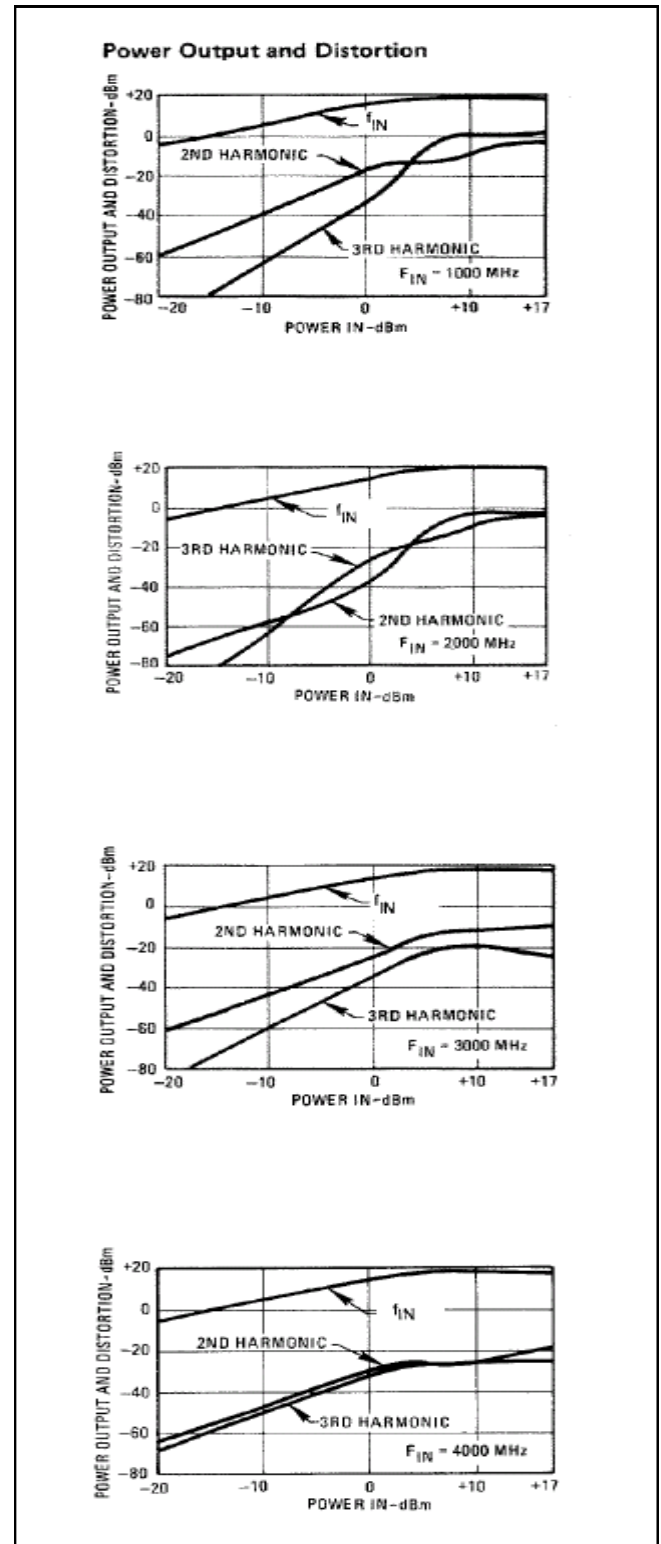
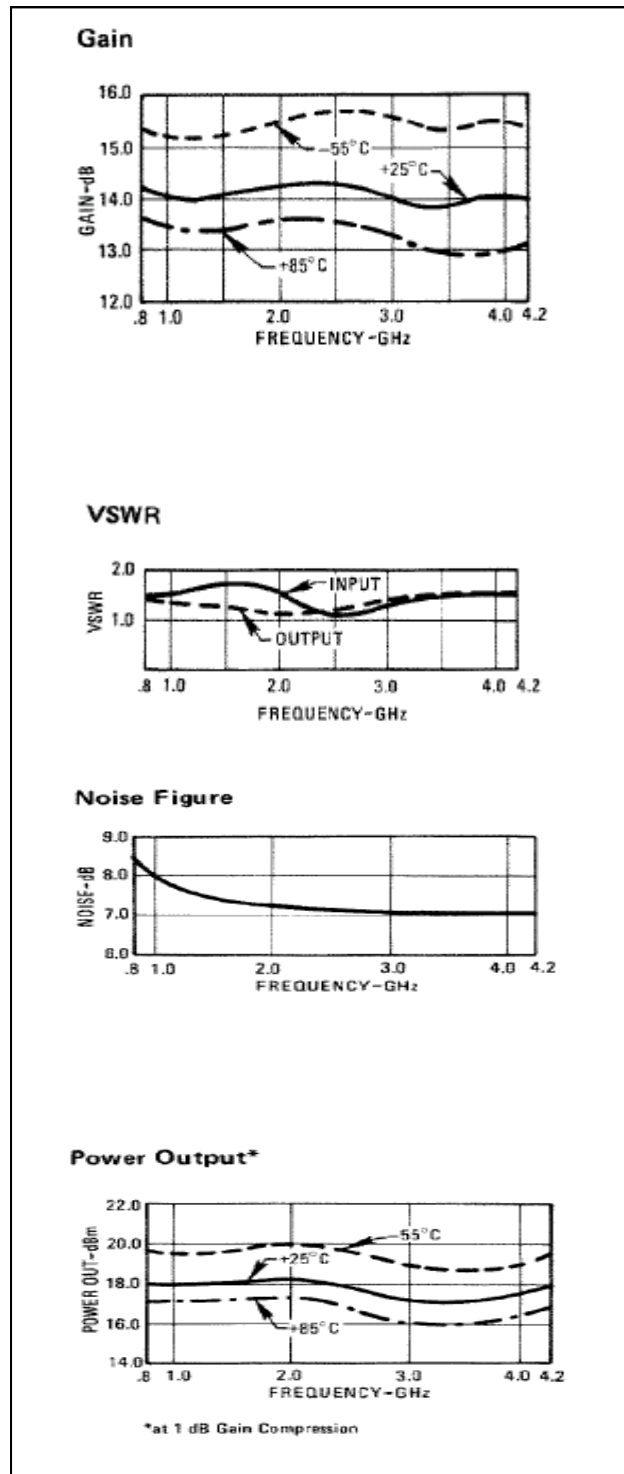
Parameter	Absolute Maximum
Storage Temperature	-62°C to +125°C
Case Temperature	85°C
DC Voltage	+16 V
Continuous Input Power	+17 dBm
Short Term Input power (1 minute max.)	100 mW
"S" Series Burn-In Temperature (case)	85°C

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

Parameter	Rating
Thermal Resistance $\theta_{jc}$	108.9°C/W
Transistor Power Dissipation $P_d$	0.476 W
Junction Temperature Rise Above Case $T_{jc}$	52°C

1 \* Over temperature performance limits for part number CLA45-1, guaranteed from 0°C to +50°C only.

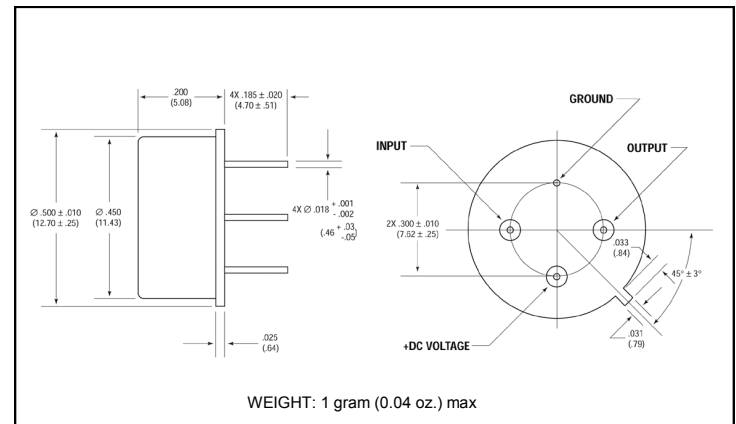
## Typical Performance Curves at +25°C





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## Outline Drawing: TO-8 \*



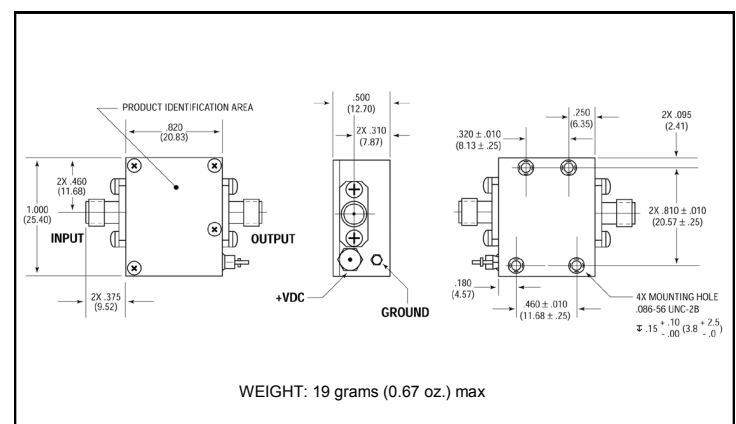
The graph shows the Intercept Point (dBm) on the y-axis (ranging from 10.0 to 60.0) versus Frequency (GHz) on the x-axis (ranging from 0.8 to 4.2). Two curves are plotted: the 2nd order curve, which peaks at approximately 58 dBm at 2.0 GHz, and the 3rd order curve, which is relatively flat at approximately 28 dBm. The 2nd harmonic curve is also shown, peaking at approximately 50 dBm at 2.0 GHz.

[illegible]

This graph shows the phase shift in degrees as a function of input power in dBm for the 1000-MHz and 2000-MHz modes. The y-axis ranges from -20 to 50 degrees, and the x-axis ranges from -20 to +17 dBm. Four curves are plotted: 3000 MHz, 4000 MHz, 1000 MHz, and 2000 MHz. The 3000 MHz and 4000 MHz curves show a sharp increase in phase shift at higher power levels, while the 1000 MHz and 2000 MHz curves show a more gradual increase.

Power (dBm)	3000 MHz (°)	4000 MHz (°)	1000 MHz (°)	2000 MHz (°)
-20	0	0	0	0
-10	0	0	0	0
0	0	0	0	0
+10	10	15	2	5
+17	45	50	10	15

### Outline Drawing: SMA Connectorized \*



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