

Cascadable Amplifier 1000 to 4000 MHz

LA45 / SMLA45

V2

Features

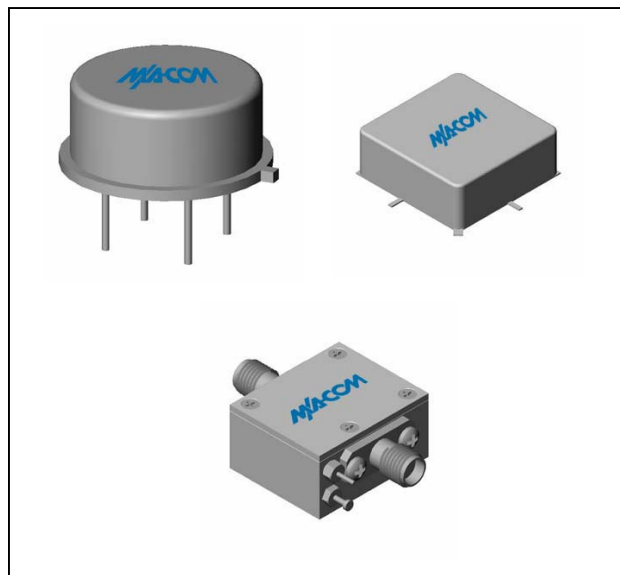
- SYMMETRICAL CLIPPING:
GOOD EVEN-ORDER SUPPRESSION
- MEDIUM OUTPUT LEVEL: +14.0 dBm (TYP.)
- MEDIUM GAIN: 11.5 dB (TYP.)
- WIDE BANDWIDTH: 0.8-4.2 GHz (TYP.)

Description

The LA45 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.

Product Image



Ordering Information

Part Number	Package
LA45	TO-8
SMLA45	Surface Mount
MALI-008742-0CLA45	SMA Connectorized **

** The connectorized version is not RoHs compliant.

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	11.5	10.0	9.0
Gain Flatness (max)	dB	±0.6	±0.8	±1.0
Noise Figure (max)	dB	8.0	9.5	10.0
Power Output @ 1 dB comp. (max)	dBm	+14.0	+12.5	+11.5
Output Limiting Level (max) Pin = +17 dBm	dBm	+15.5	+17.0	+17.5
IP3/IP2	dBm	+24.0/+46.0		
Second Order Harmonic IP	dBm	+50.0		
VSWR Input / Output (max)		1.7:1 / 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 θ_{jc}	108.9°C/W
Transistor Power Dissipation P_d	0.476 W
Junction Temperature Rise Above Case T_{jc}	52°C

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

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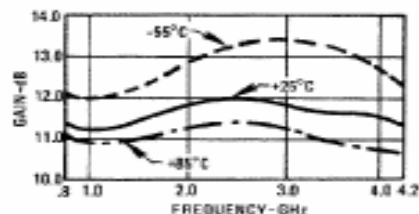
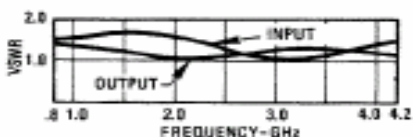
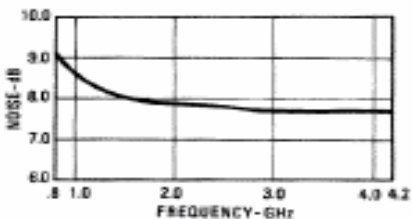
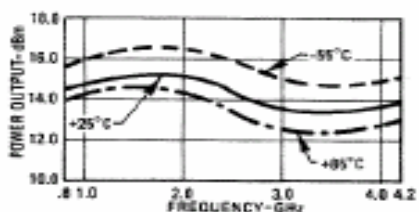
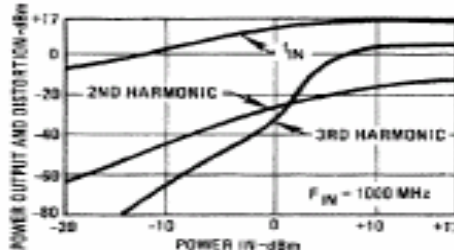
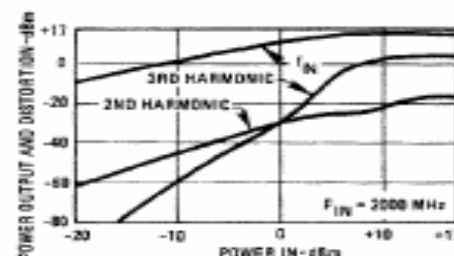
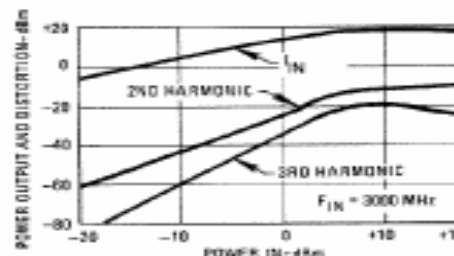
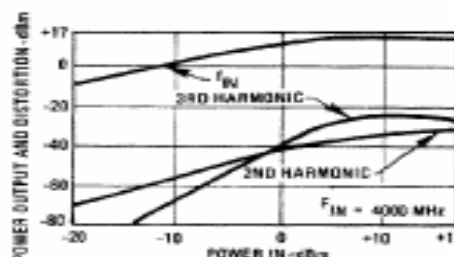
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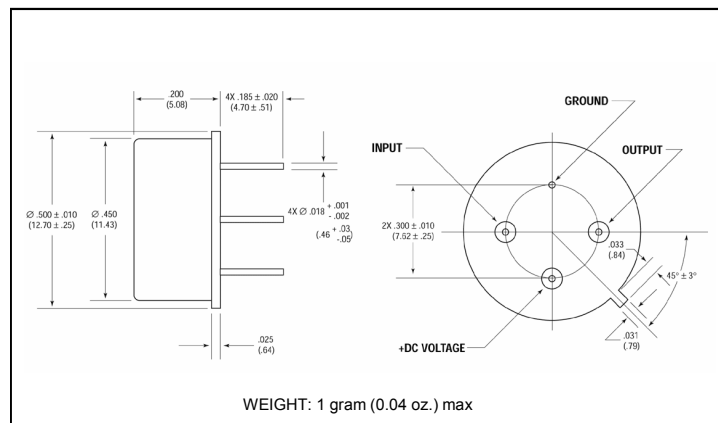
Typical Performance Curves at +25°C

Gain

VSWR

Noise Figure

Power Output*

Power Output and Distortion


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Outline Drawing: TO-8 *



Phase Shift vs. Input Power

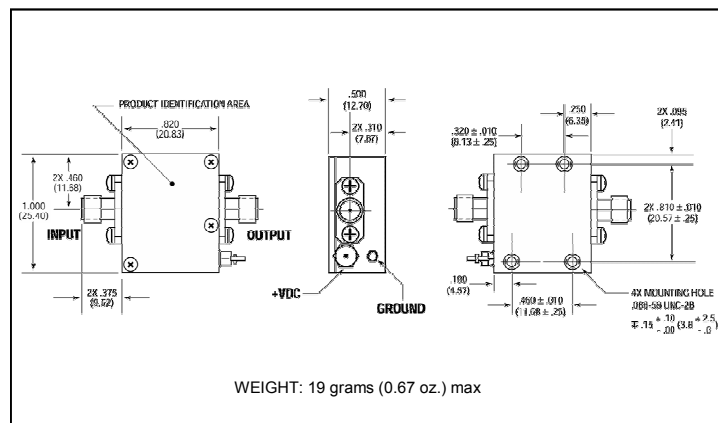
This graph shows the phase shift in degrees versus input power in dBm for the 3000-MHz device. The y-axis ranges from 0 to 50 degrees, and the x-axis ranges from -20 to +10 dBm. Four curves are plotted for different frequencies: 3000 MHz, 4000 MHz, 1000 MHz, and 2000 MHz. The 3000 MHz curve shows the highest phase shift, reaching approximately 45 degrees at +10 dBm. The 4000 MHz curve reaches about 20 degrees, the 1000 MHz curve reaches about 10 degrees, and the 2000 MHz curve reaches about 5 degrees at +10 dBm.

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	45	20	10	5

Intercept Point

This graph shows the Intercept Point (IP) in dBm versus Frequency in GHz for a 2nd-order nonlinear device. The y-axis ranges from 10.0 to 60.0 dBm, and the x-axis ranges from 0.8 to 4.2 GHz. Three curves are plotted: 2ND HARMONIC, 2ND ORDER, and 3RD ORDER. The 2ND ORDER curve is the highest, followed by the 2ND HARMONIC, and then the 3RD ORDER curve.

Frequency (GHz)	2ND ORDER (dBm)	2ND HARMONIC (dBm)	3RD ORDER (dBm)
0.8	48.0	45.0	25.0
1.0	50.0	47.0	26.0
2.0	48.0	45.0	24.0
3.0	50.0	47.0	25.0
4.0	48.0	45.0	24.0
4.2	45.0	42.0	23.0



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