L1 / SML1

Thin Film Limiter Module
5 to 3000 MHz

Rev. V2

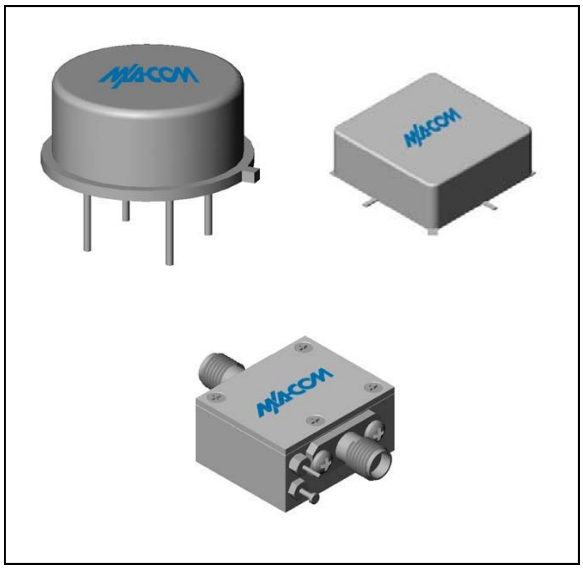
Features

- VOLTAGE VARIABLE LIMITING LEVEL: -10 TO 0 dBm
- LOW INSERTION LOSS AT LOW INPUT LEVELS: < 2.0 dB (TYP.)
- GOOD SUPPRESSION OF EVEN ORDER HARMONICS DUE TO BALANCED CIRCUIT DESIGN
- EXCELLENT PHASE RESPONSE 0.3 DEGREE / dB TO 160 MHz (TYP.)

Description

The L1 signal limiter is a discrete hybrid design, which uses thin film manufacturing processes for accurate performance and high reliability. This design uses Schottky bridge quad and anti-parallel diodes, which provide consistent limiting levels over a broadband frequency range. Both TO-8 and SMTO-8 packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

Product Image



Ordering Information

Part Number	Package
L1	TO-8
SML1	Surface Mount
CL1 **	SMA Connectorized

** The connectorized version is not RoHs compliant.

Electrical Specifications: $Z_0 = 50\Omega$, $V_{CC} = +15\ V_{DC}$

Parameter	Units	Typical	Guaranteed	
		25ºC	0º to 50ºC	-54º to +85ºC*
Frequency	MHz	5-3200	5-3000	5-3000
Insertion Loss @ $P_{IN} \leq$ -20 dBm (max.) 5-1000 MHz 1000-3000 MHz	 dB dB	 2.0 3.0	 3.0 4.5	 3.5 4.5
Input VSWR (max.) $P_{IN} \leq$ -10 dBm, +10 $\leq$ Bias $\leq$ +20 V_{dc}		1.7:1	1.9:1	2.1:1
Output VSWR (max.) $P_{IN} \leq$ -10 dBm, +10 $\leq$ Bias $\leq$ +20 V_{dc} 5-1000 MHz 1000-3000 MHz		 1.7:1 2.0:1	 2.0:1 2.3:1	 2.2:1 2.5:1
Output Limiting Level @ PIN = +20 dBm (max.) 5-2000 MHz 2000-3000 MHz	 dBm dBm	 2.5 6.5	 4.0 7.0	 4.5 7.0
Bias Current (max.) @ 15 Vdc @ 20 Vdc	 mA mA	 7.0 10.0	 9.0	 10.0

* Over temperature performance limits for part number CL1, guaranteed from 0°C to +50°C only.

Absolute Maximum Ratings

Parameter	Absolute Maximum
Storage Temperature	-62ºC to +125ºC
Case Temperature	+125ºC
DC Voltage	+25 V
Continuous Input Power	+20 dBm
Short Term Input power (1 minute max.)	400 mW
Peak Power (3 µsec max.)	1 W
"S" Series Burn-In Temperature (case)	+125ºC

Limiting and Insertion Loss Characteristics at +25°C

Bias Voltage	Output Level at Limiting Threshold (1 dB comp.) Typical		
	50 MHz	500 MHz	1000 MHz
+20 Volts	-0.8 dBm	-1.0 dBm	-1.0 dBm
+15 Volts	-2.0 dBm	-2.0 dBm	-2.2 dBm
+10 Volts	-4.5 dBm	-5.0 dBm	-5.5 dBm
+5 Volts	-11.5 dBm	-11.8 dBm	-12.0 dBm

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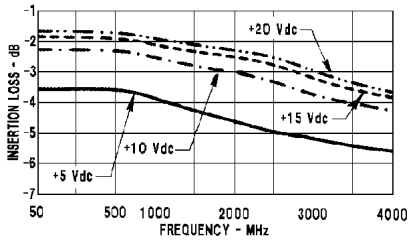
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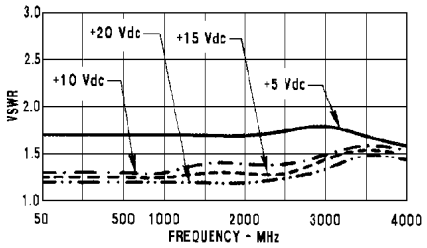
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Typical Performance Curves at +25°C

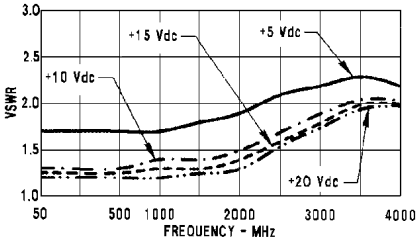
Insertion Loss



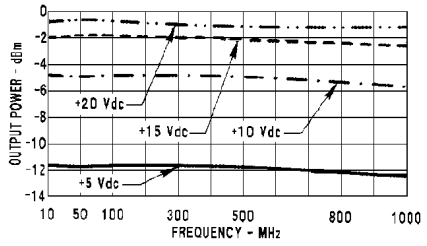
Input VSWR vs. Frequency



Output VSWR vs. Frequency

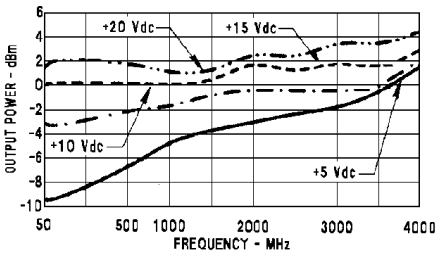


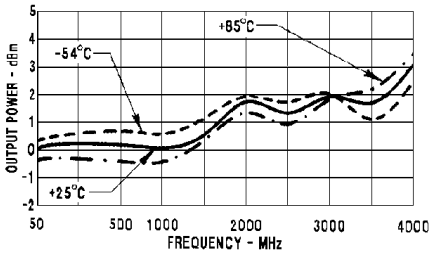
Output Power*



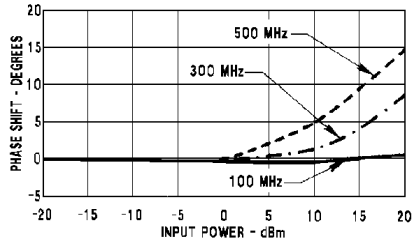
*at 1 dB Compression

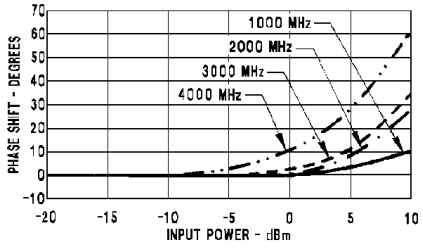
Maximum Limiting Level





Phase Shift vs. Input Power





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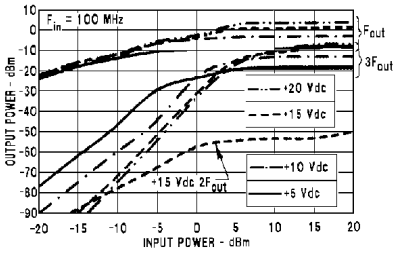
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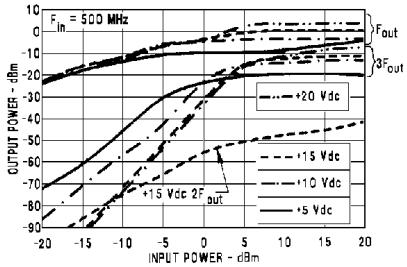
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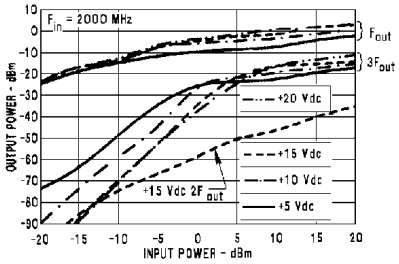
Limiting Characteristics



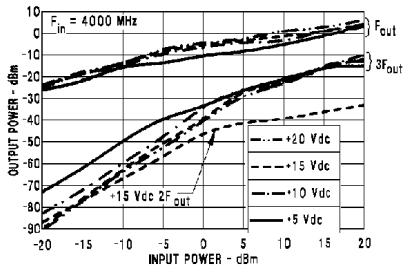
Limiting Characteristics



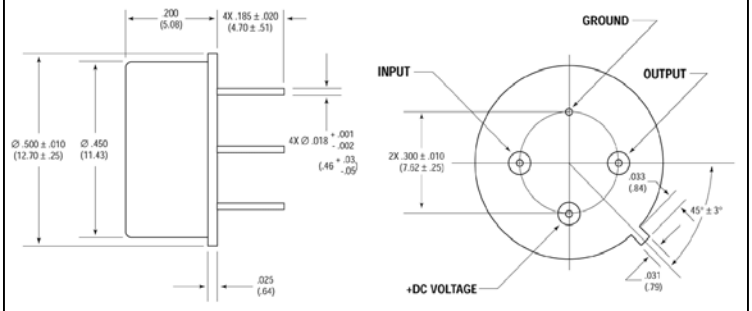
Limiting Characteristics



Limiting Characteristics

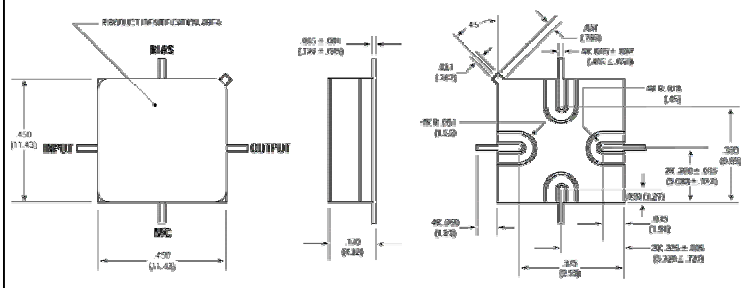


Outline Drawing: TO-8 *



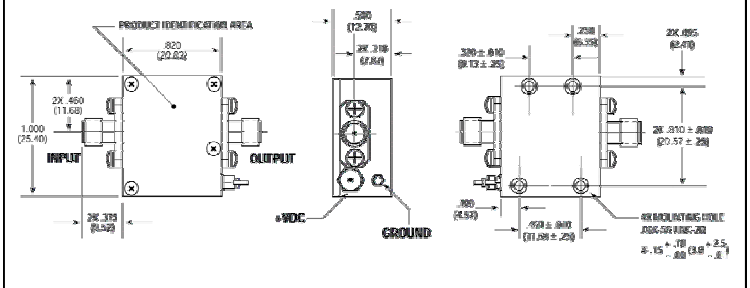
WEIGHT: 1 gram (0.04 oz.) max

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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