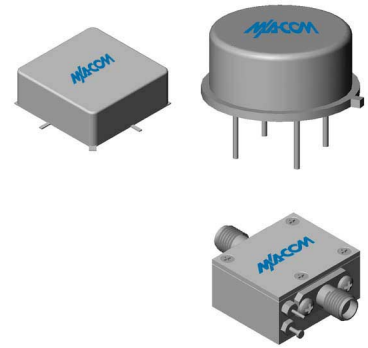




# L1 / SML1



## 5 TO 3000 TO-8 THIN-FILM LIMITER MODULE

- 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.)

### Specifications (Rev. Date: 3/02)\*

Characteristics	Typical	Guaranteed	
		0° to 50°C	-54° to +85°C
Frequency (min.)	5-3200 MHz	5-3000 MHz	5-3000 MHz
Insertion Loss @ $P_{IN} \leq -20$ dBm (max.)			
5-1000 MHz	2.0 dB	3.0 dB	3.5 dB
1000-3000 MHz	3.0 dB	4.5 dB	5.5 dB
Input VSWR (max.)			
$P_{IN} \leq -10$ dBm, $+10 \leq \text{Bias} \leq +20$ V <sub>dc</sub>	1.7:1	1.9:1	2.1:1
Output VSWR (max.)			
$P_{IN} \leq -10$ dBm, $+10 \leq \text{Bias} \leq +20$ V <sub>dc</sub>			
5-1000 MHz	1.7:1	2.0:1	2.2:1
1000-3000 MHz	2.0:1	2.3:1	2.5:1
Output Limiting Level @ (max.)			
$P_{IN} = +20$ dBm			
5-2000 MHz	2.5 dBm	4.0 dBm	4.5 dBm
2000-3000 MHz	6.5 dBm	7.0 dBm	7.0 dBm
Bias Current (max.)			
@ 15 V <sub>dc</sub>	7.0 mA	9.0 mA	10.0 mA
@ 20 V <sub>dc</sub>	10.0 mA		

\*Measured in a 50-ohm system, guaranteed at 25°C at +15Vdc nominal.

### Limiting and Insertion Loss Characteristics (25°C)

Bias Voltage	Output Level at Limiting Threshold (1 dB comp.)		
	50 MHz	Typical 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 dBm

### Absolute Maximum Ratings

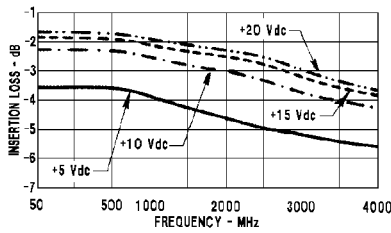
Storage Temperature	-62°C to +125°C
Maximum Case Temperature	125°C
Maximum DC Voltage	+25 Volts
Maximum Continuous RF Input Power	+20 dBm
Maximum Short Term RF Input Power (1 minute max.)	400 mW
Maximum Peak Power (3 μsec max.)	1 W
“S” Series Burn-In Temperature (case)	125°C

### Outline Drawings

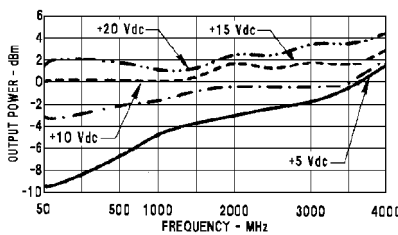
Package	Figure	Model
TO-8	BG	L1
Surface Mount	AA	SML1
SMA Connectorized	CE	CL1

Typical Performance at 25°C

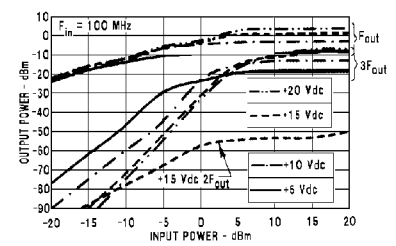
Insertion Loss



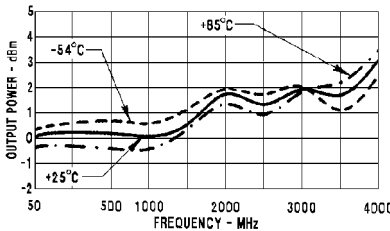
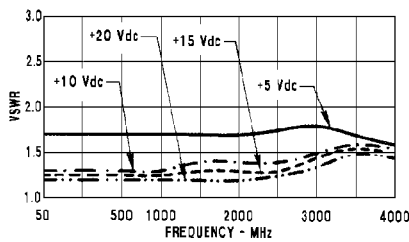
Maximum Limiting Level



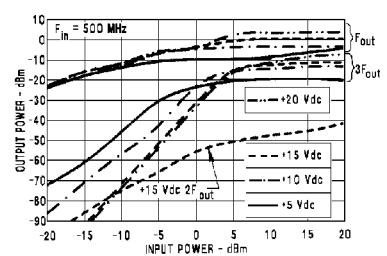
Limiting Characteristics



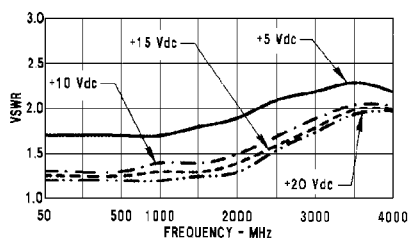
Input VSWR vs. Frequency



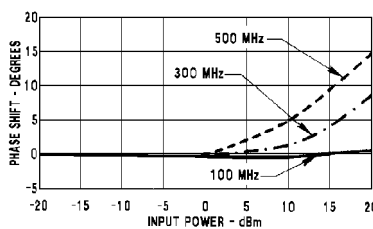
Limiting Characteristics



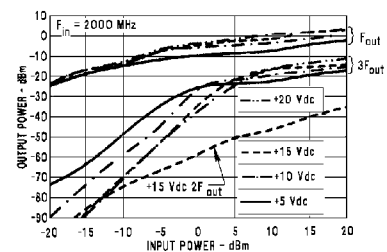
Output VSWR vs. Frequency



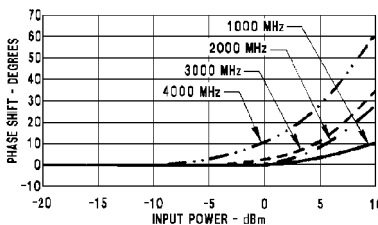
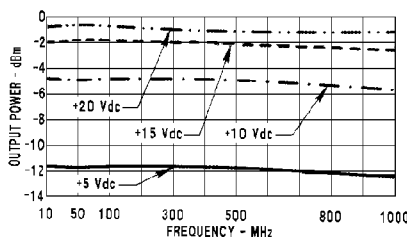
Phase Shift vs. Input Power



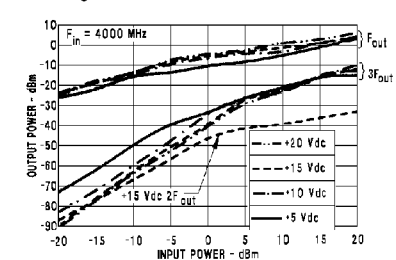
Limiting Characteristics



Output Power\*



Limiting Characteristics



\*at 1 dB Compression

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