

WJ-L42/SML42

50 TO 4000 MHz THIN FILM LIMITER MODULE

- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ VERY WIDE BANDWIDTH
- ◆ GOOD SUPPRESSION OF EVEN ORDER HARMONICS
- ◆ LOW INSERTION LOSS: 3.5 DB (TYP.)



Specifications*

Characteristics	Typical	Guaranteed
Frequency (Min.)	5-4000 MHz	50 - 4000 MHz
Insertion Loss (Max.)		
$P_{IN} \leq -20$ dBm		
Bias $\leq +20$ Vdc		
50 - 3000 MHz	3.5 dB	4.5 dB
3000 - 4000 MHz		5.0 dB
Input VSWR (Max.)	1.6:1	1.9:1
$P_{IN} \leq -10$ dBm,		
$+10 \leq \text{Bias} \leq +20$ Vdc		
Output VSWR (Max.)	2:0:1	2:3:1
$P_{in} \leq -10$ dBm		
$+10 \leq \text{Bias} \leq +20$ Vdc		
Output Limiting Level (Max.)		
$P_{in} = +20$ dBm		
$+15 \leq \text{Bias} \leq +20$ Vdc		
50 - 2000 MHz	2.5 dBm	4.0 dBm
2000 - 4000 MHz	6.5 dBm	7.0 dBm
Bias		
At +20 Vdc	8.5 mA	
At +15 Vdc	6.5 mA	
At +10 Vdc	4.0 mA	

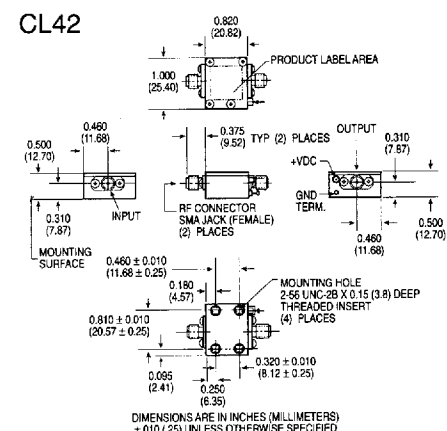
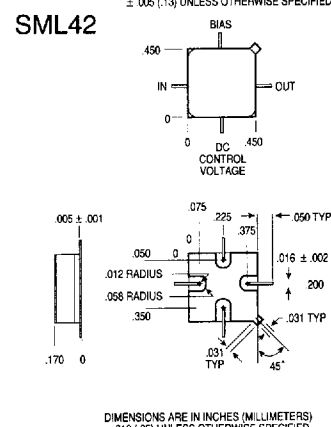
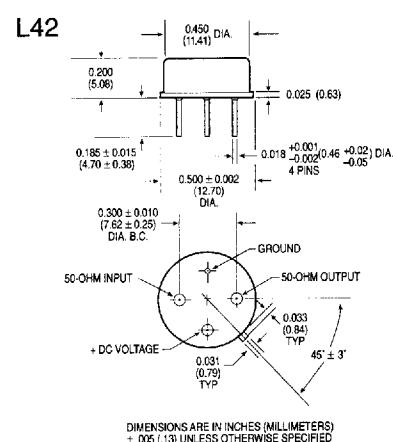
*Measured in a 50-ohm system, guaranteed at 25°C at +15.0 Vdc nominal.

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 Milliwatts
Maximum Peak Power	1 Watt (3 µsec Max.)
"S" Series Burn-In Temperature (case)	125°C

Weight approximately 2.0 grams (0.07 oz.)

Outline Drawing

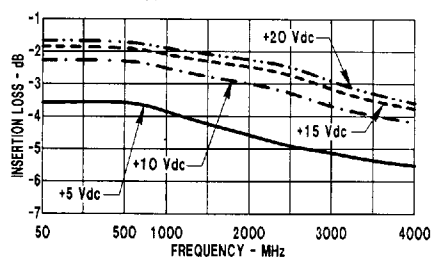


Limiting and Insertion Loss Characteristics (25°)

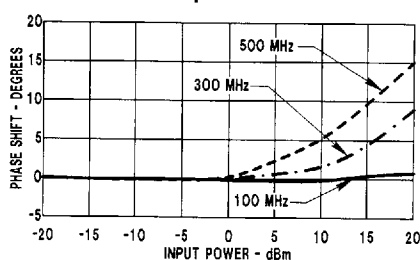
Bias Voltage	Output Level at Limiting Threshold (1 dB Compression) Typ.			Output Limiting Level (+20 dBm Input) Typ.			Insertion Loss Typ.		
	1000 MHz	2500 MHz	4000 MHz	1000 MHz	2500 MHz	4000 MHz	1000 MHz	2500 MHz	4000 MHz
+20 Volts	-1.0 dBm	-2.5 dBm	-6.0 dBm	+1.5 dBm	+2.5 dBm	+7.5 dBm	1.9 dB	2.5 dB	3.7 dB
+15 Volts	-2.0 dBm	-4.0 dBm	-6.2 dBm	0 dBm	+1.8 dBm	+6.5 dBm	2.1 dB	2.8 dB	3.8 dB
+10 Volts	-5.5 dBm	-7.0 dBm	-7.8 dBm	-1.8 dBm	0 dBm	+2.5 dBm	2.5 dB	3.3 dB	4.2 dB
+5 Volts	-12.0 dBm	-13.8 dBm	-12.0 dBm	-4.5 dBm	-2.0 dBm	+2.0 dBm	3.9 dB	5.0 dB	5.5 dB

Typical Performance at 25°C

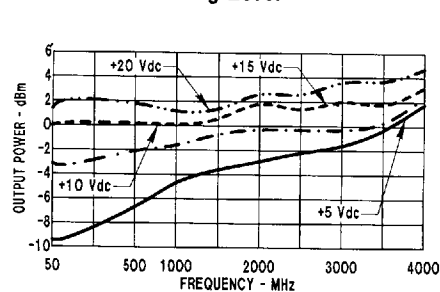
Insertion Loss



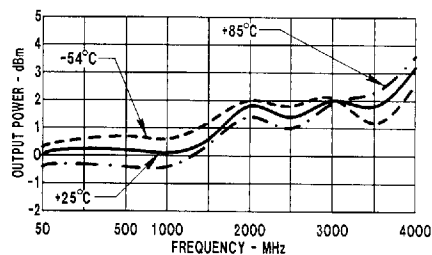
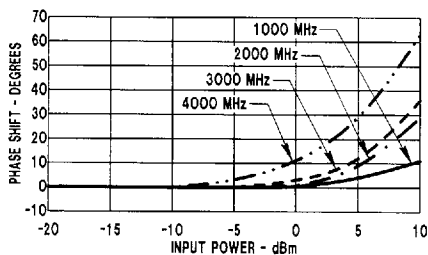
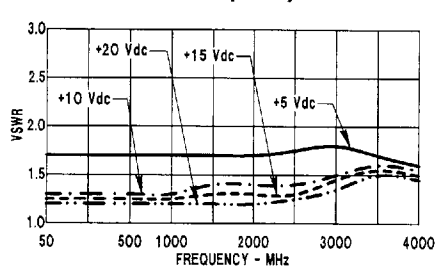
Phase Shift vs. Input Power



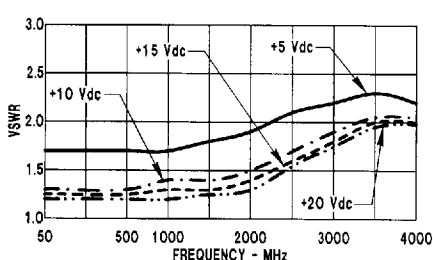
Maximum Limiting Level



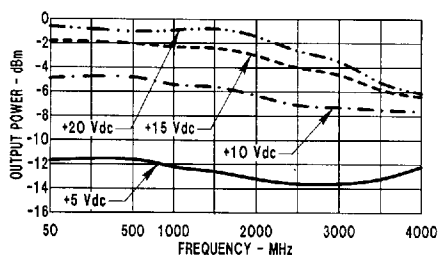
Input VSWR vs. Frequency



Output VSWR vs. Frequency

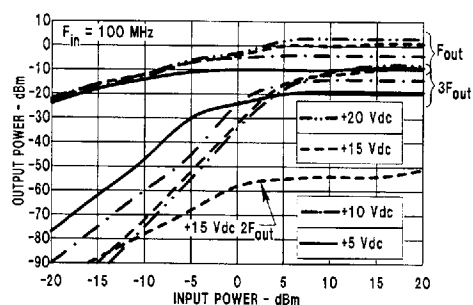


Output Power*



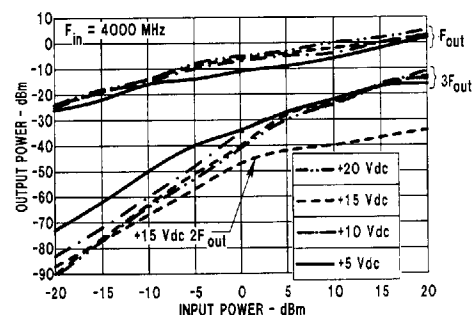
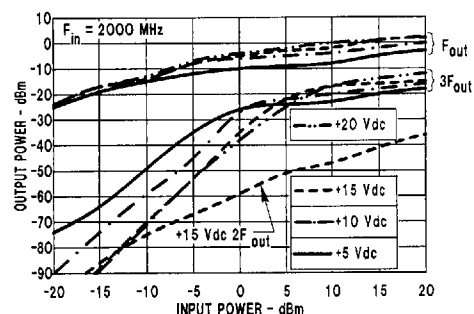
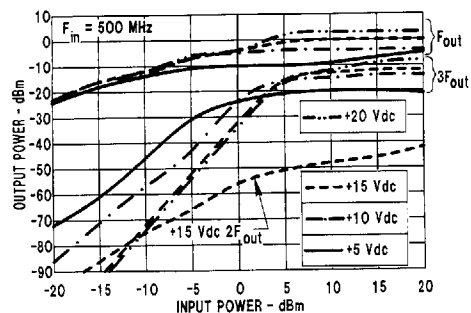
*at 1 dB Gain Compression

Limiting Characteristics



Typical Performance at 25°C

Limiting Characteristics



Typical Automatic Test Data

$V_{cc} = 15.0$ V

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
50.0	1.2	1.2	-1.8
100.0	1.3	1.2	-1.8
200.0	1.2	1.2	-1.9
400.0	1.2	1.2	-1.9
600.0	1.2	1.2	-1.9
800.0	1.2	1.3	-2.0
1000.0	1.2	1.3	-2.0
1200.0	1.2	1.3	-2.1
1400.0	1.2	1.3	-2.2
1600.0	1.2	1.3	-2.2
1800.0	1.2	1.4	-2.3
2000.0	1.2	1.4	-2.3
2200.0	1.2	1.5	-2.5
2400.0	1.2	1.5	-2.5
2600.0	1.3	1.6	-2.7
2800.0	1.4	1.7	-2.7
3000.0	1.4	1.9	-3.1
3200.0	1.5	1.9	-3.3
3400.0	1.5	2.0	-3.6
3600.0	1.5	2.0	-3.8
3800.0	1.5	2.0	-3.8
4000.0	1.4	1.9	-3.8

Linear S-Parameters

Frequency MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
50.0	.107	-13	.816	-2	.811	-2	.106	-11
100.0	.112	-18	.910	-5	.810	-5	.107	-18
200.0	.107	-29	.908	-9	.808	-9	.106	-31
400.0	.104	-59	.805	-19	.803	-18	.109	-62
600.0	.107	-87	.903	-27	.800	-26	.110	-89
800.0	.107	-114	.798	-36	.796	-35	.114	-115
1000.0	.108	-144	.791	-45	.795	-45	.118	-141
1200.0	.108	-161	.784	-53	.784	-53	.124	-150
1400.0	.104	173	.779	-62	.777	-61	.131	179
1600.0	.099	150	.773	-71	.768	-71	.140	154
1800.0	.100	141	.767	-79	.761	-79	.149	151
2000.0	.095	130	.765	-89	.753	-98	.164	137
2200.0	.093	126	.751	-98	.743	-97	.186	128
2400.0	.105	125	.753	-107	.742	-106	.212	115
2600.0	.126	110	.736	-115	.730	-114	.241	101
2800.0	.152	96	.736	-126	.721	-124	.271	84
3000.0	.174	82	.703	-134	.710	-133	.294	69
3200.0	.189	65	.681	-144	.689	-143	.313	53
3400.0	.199	49	.663	-153	.682	-151	.327	35
3600.0	.201	26	.648	-160	.660	-160	.329	18
3800.0	.190	6	.649	-168	.656	-169	.325	1
4000.0	.168	-19	.645	-178	.639	-179	.311	-17