

LA1017

10 TO 1000 MHz TO-8 LIMITING AMPLIFIER

Typical Values

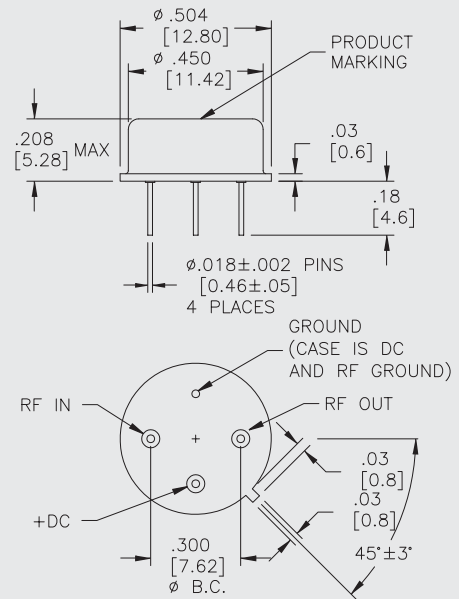
High Output Level	+13.5 dBm
High Third Order I.P.	+28 dBm
Fast Pulse Recovery Time	< 50 nsec
Symmetrical Clipping; High Even-Order Suppression	
High Performance Thin Film	
Standard Size TO-8 Package	

LA1017

+13.5 dBm
+28 dBm
< 50 nsec

LA1017

TO-8 Package for Limiting Amplifiers



DIMENSIONS ARE IN INCHES (MILLIMETERS)

SPECIFICATIONS*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-55 to +85 °C
Frequency (Min.)	10-1000 MHz	10-1000 MHz	10-1000 MHz
Small Signal Gain (Min.)	12.5 dB	11.5 dB	11.0 dB
Gain Flatness (Max.)	< ±0.3 dB	±0.5 dB	±0.7 dB
Noise Figure (Max.)	5.5 dB	6.7 dB	7.2 dB
SWR (Max.) Input/Output	1.5:1	1.7:1	1.8:1
Output Limiting Level (Max.) P _{in} = +20 dBm	+15.5 [^] dBm	+16.5 [^] dBm	+17.0 [^] dBm
Power Output (Min.) @ 1dB comp.	+13.5 dBm	+12.5 dBm	+12.0 dBm
DC Current (Max.)	45 mA	48 mA	52 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.
^ 2.0 dBm higher above 800 MHz.

INTERMODULATION PERFORMANCE

Typical @ 25 °C Linear Region Only

Second Order Harmonic Intercept Point	+48 dBm
Second Order Two Tone Intercept Point	+42 dBm
Third Order Two Tone Intercept Point	+28 dBm

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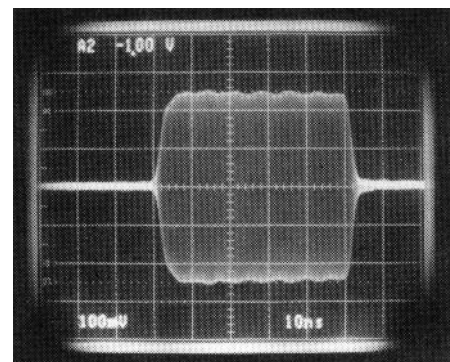
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+125 °C
Maximum DC Voltage	+17 Volts
Maximum Continuous RF Input Power	+23 dBm
Maximum Short Term Input Power (1 Minute Max.)	400 Milliwatts
Maximum Peak Power (3 μsec Max.)	1 Watt
Burn-in Temperature	+100 °C
Thermal Resistance¹ (θ_{jc})	+46 °C/Watt
Junction Temperature Rise Above Case (T_{jc})	+32.3 °C

¹ Thermal resistance is based on total power dissipation.

RESPONSE TIME

Typical Response Time at 25 °C



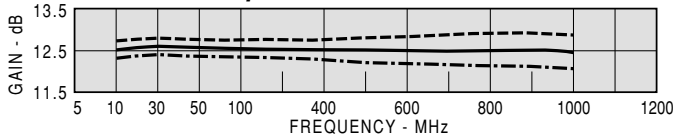
Frequency = 140 MHz

TYPICAL PERFORMANCE

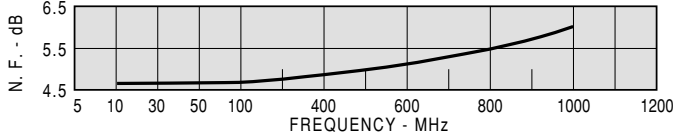
Typical Performance

KEY: +25 °C —
+85 °C - -
-55 °C - - -

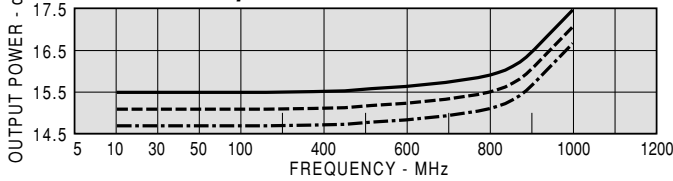
Gain vs Temperature



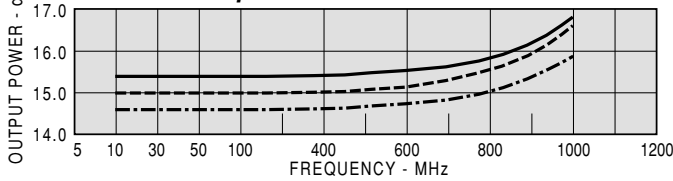
Noise Figure Vcc = 15 & 12



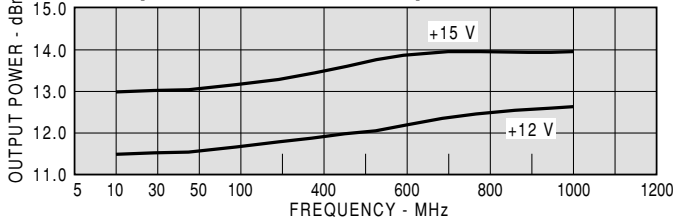
Limited Output Vcc = 15 Power In = +20 dBm



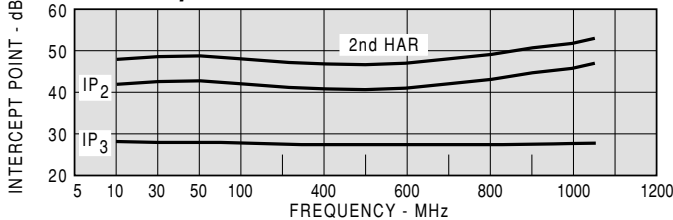
Limited Output Vcc = 12 Power In = +20 dBm



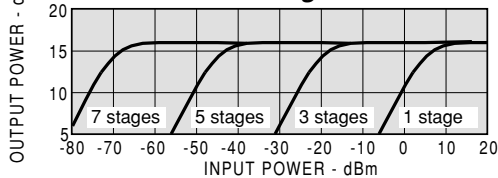
Output Power @ 1 dB Compression



Intercept Point Vcc = 15



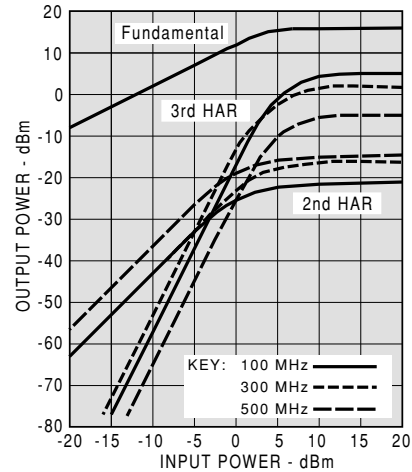
Cascaded Limiting



TYPICAL AUTOMATIC TEST DATA

MODEL: LA1017		Vcc = +15V		Icc = 44.73 mA	
FREQ	VSWR	VSWR	GAIN	GROUP DELAY	REV/ISO
MHZ	IN	OUT	DB	NSEC	DB
10	1.48	1.48	12.5		-19.8
20	1.22	1.31	12.5		-19.5
50	1.10	1.24	12.6	0.971	-19.4
100	1.10	1.23	12.6	0.625	-19.4
200	1.14	1.24	12.5	0.532	-19.5
300	1.20	1.27	12.5	0.538	-19.5
400	1.25	1.29	12.5	0.526	-19.6
500	1.27	1.29	12.5	0.526	-19.6
600	1.28	1.27	12.5	0.545	-19.5
700	1.31	1.23	12.6	0.547	-19.5
800	1.34	1.20	12.6	0.578	-19.4
900	1.39	1.22	12.7	0.599	-19.5
1000	1.47	1.33	12.5	0.626	-19.5
1100	1.61	1.52	12.2	0.654	-19.5

Distortion Products



Phase Shift vs. Input Power

