TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 10/11

LA507

50 TO 500 MHz TO-8 LIMITING AMPLIFIER

Typical Values	LA507
High Output Level	+12.0 dBm
High Third Order I.P.	+29 dBm
Fast Pulse Recovery Time	< 50 ηsec
Low SWR	1.3:1

Symmetrical Clipping; High Even-Order Suppression
High Performance Thin Film

SPECIFICATIONS*

Parameter	Typical	Guaranteed 0 to 50 °C	Guaranteed -55 to +85 °C
Frequency (Min.)	40-600 MHz	50-500 MHz	50-500 MHz
Small Signal Gain (Min.)	13.0 dB	12.5 dB	11.5 dB
Gain Flatness (Max.)	< ±0.2 dB	±0.5 dB	±0.7 dB
Noise Figure (Max.)	5.5 dB	6.5 dB	7.0 dB
SWR (Max.) Input/Output	< 1.3:1	1.7:1	1.9:1
Output Limiting Level (Max.) P_{in} = +20 dBm	+16.2 dBm	+17.2 dBm	+18.0 dBm
Power Output (Min.) @ 1dB comp.	+12.0 dBm	+11.0 dBm	+9.0 dBm
DC Current (Max.)	51 mA	54 mA	56 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.

INTERMODULATION PERFORMANCE

(Typical @ 25 °C) Linear Region Only	LA507
Second Order Harmonic Intercept Point	+48 dBm
Second Order Two Tone Intercept Point	+42 dBm
Third Order Two Tone Intercept Point	+29 dBm

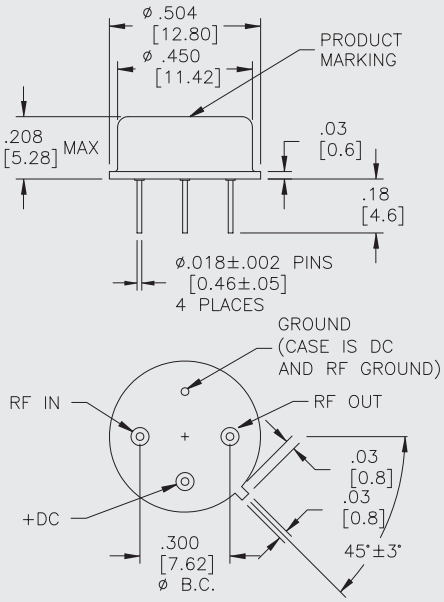
ABSOLUTE MAXIMUM RATINGS

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 Resistance[1] (θjc)	+47 °C/Watt
Junction Temperature Rise Above Case (Tjc)	+38.3 °C

[1] Thermal resistance is based on total power dissipation.

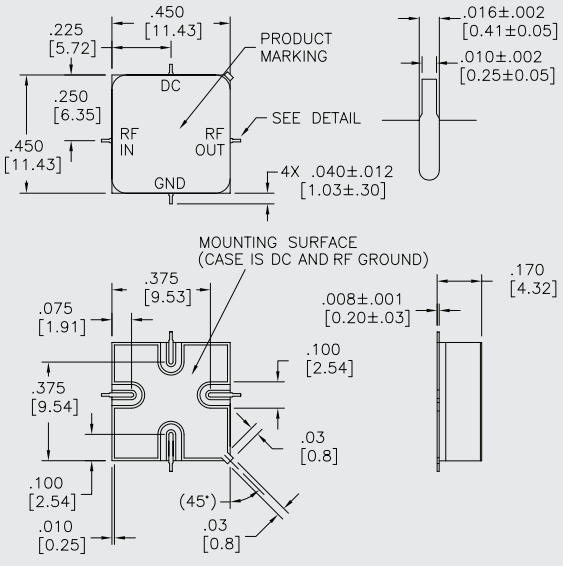
LA507

TO-8 Package for Limiting Amplifiers



LAS507

SMTO-8 Package for Limiting Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

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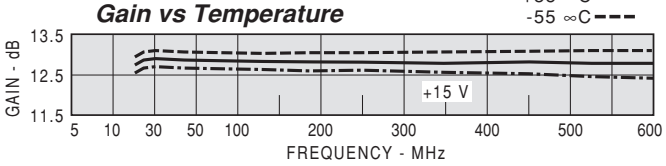
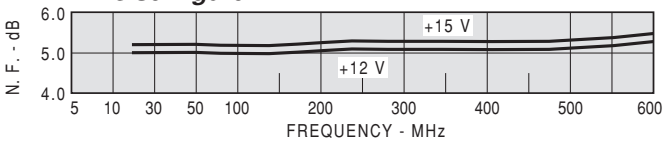
TYPICAL PERFORMANCE

KEY: +25 ∞C
+85 ∞C
-55 ∞C

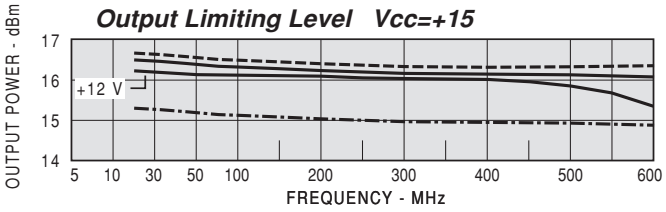
Gain vs Temperature



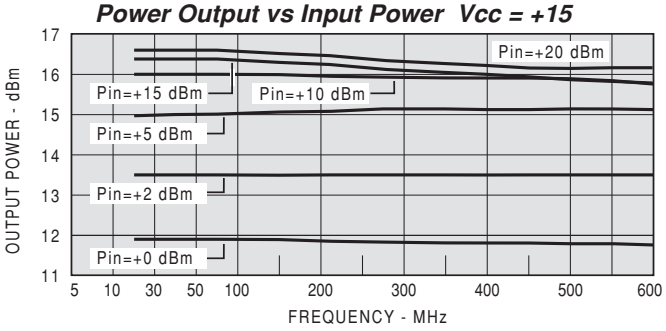
Noise Figure



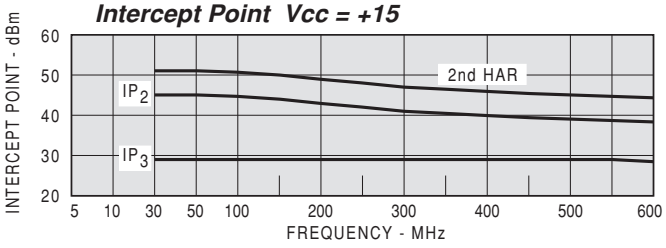
Output Limiting Level Vcc=+15



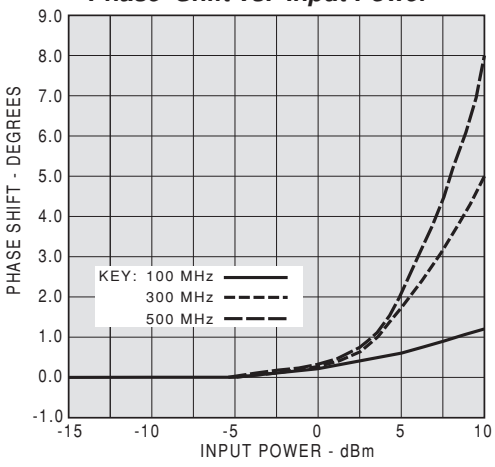
Power Output vs Input Power Vcc = +15



Intercept Point Vcc = +15



Phase Shift vs. Input Power



TYPICAL AUTOMATIC TEST DATA

MODEL: LA507 Vcc = +15V Icc = 52.81 mA

FREQ MHZ	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
20	2.11	1.45	12.3		-21.2
50	1.47	1.19	12.7		-20.4
100	1.36	1.15	12.7	0.882	-20.3
200	1.38	1.18	12.6	0.656	-20.3
300	1.43	1.21	12.6	0.602	-20.3
400	1.48	1.22	12.6	0.607	-20.2
500	1.47	1.22	12.7	0.603	-20.1
600	1.44	1.22	12.8	0.626	-19.9

LINEAR S-PARAMETERS

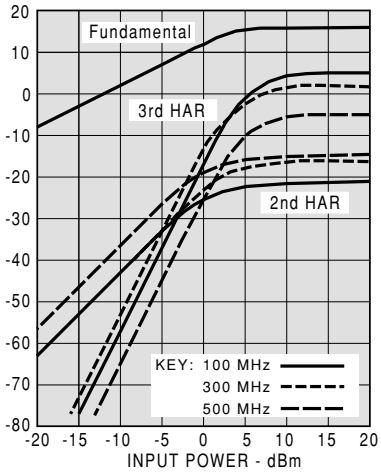
MODEL: LA507 Vcc = +15V Icc = 52.81 mA

FREQ.	S11		S21		S12		S22	
MHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
20	0.36	-57.3	4.13	-158.2	0.088	17	0.18	112.5
50	0.19	-60.7	4.31	-179.6	0.096	3	0.09	77.3
100	0.15	-64.1	4.31	165.1	0.096	-4	0.07	58.7
200	0.16	-83.8	4.29	142.8	0.096	-13	0.08	40.5
300	0.18	-103.8	4.26	122.6	0.097	-21	0.09	21.5
400	0.19	-121.0	4.28	102.4	0.097	-30	0.10	-3.1
500	0.19	-134.2	4.29	81.7	0.099	-38	0.10	-34.5
600	0.18	-145.8	4.35	60.6	0.101	-46	0.10	-78.6

MODEL: LA507/LA507/LA507 Vcc = +15V Icc = 157.28 mA

FREQ MHZ	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
20	1.70	1.64	38.7		-64.3
50	1.35	1.23	38.9		-62.4
100	1.27	1.16	38.8	2.918	-62.3
200	1.29	1.16	38.8	2.192	-59.8
300	1.45	1.23	38.5	2.045	-64.0
400	1.72	1.35	38.2	1.994	-60.9
500	1.91	1.44	38.1	1.939	-59.6
600	1.87	1.49	38.4	1.974	-60.5

Distortion Products



Cascaded Limiting