WJ-LA45 / SMLA45

1000 to 4000 MHz
TO-8 CASCADABLE
LIMITING AMPLIFIER

- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ SYMMETRICAL CLIPPING: GOOD EVEN ORDER SUPPRESSION
- ◆ MEDIUM OUTPUT LEVEL: +14.0 dBm (TYP.)
- ◆ MEDIUM GAIN: 11.5 dB (TYP.)
- ◆ WIDE BANDWIDTH: 0.8-4.2 GHz (TYP.)

Specifications *

Characteristic	Typical	Guaranteed 0° to 50°C	Guaranteed -54° to +85°C
Frequency (Min.)	800-4200 MHz	1000-4000 MHz	1000-4000 MHz
Small Signal Gain (Min.)	11.5 dB	10.0 dB	9.0 dB
Gain Flatness (Max.)	±.6 dB	±.8 dB	±1.0 dB
Noise Figure (Max.)	8.0 dB	9.5 dB	10.0 dB
Power Output			
at 1 dB Compression (Min.)	+14.0 dBm	+12.5 dBm	+11.5 dBm
Output Limiting Level (Max.)			
Pin = +17 dBm	+15.5 dBm	+17.0 dBm	+17.5 dBm
VSWR (Max.)			
Input	1.7:1	2.1:1	2.2:1
Output	1.6:1	2.0:1	2.1:1
DC Current (Max.) at +15 Volts	110 mA	115 mA	120 mA

* Measured in a 50-ohm system at +15 Vdc Nominal.

Notes:

1. WJ-CLA45 is a standard WJ-LA45 installed in a miniature SMA connector housing and guaranteed over 0°C to 50°C temperature range.

Typical Intermodulation Performance at 25°C

Second Harmonic Intercept Point.....+50.0 dBm (Typ.)
Second Order Two Tone Intercept Point.....+46.0 dBm (Typ.)
Third Order Two Tone Intercept Point.....+24.0 dBm (Typ.)

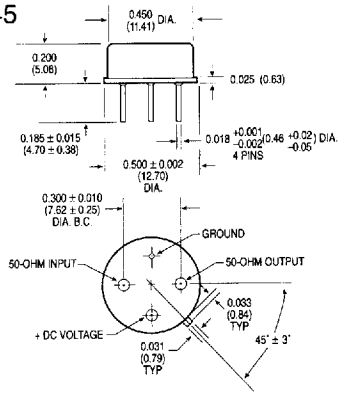
Absolute Maximum Ratings

Storage Temperature.....-65°C to +125°C
Maximum Case Temperature.....85°C
Maximum DC Voltage.....+16 Volts
Maximum Continuous RF Input Power.....+17 dBm
Maximum Short Term RF Input Power (1 Minute Max.).....100 Milliwatts
"S" Series Burn-in Temperature (Case).....85°C

Weight approximately 2.0 grams (0.07 oz.)

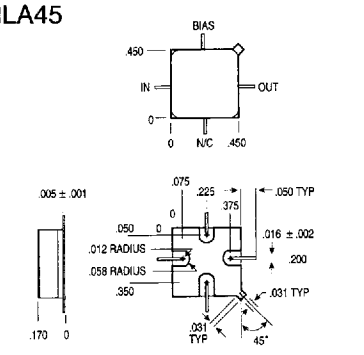
Outline Drawings

LA45



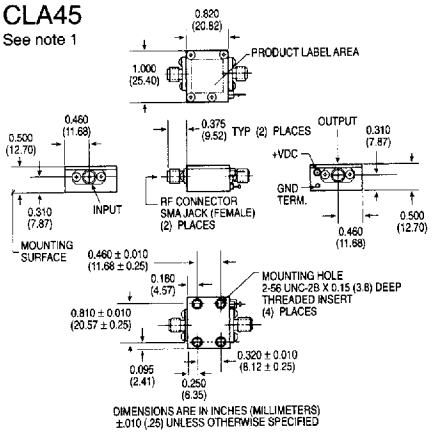
DIMENSIONS ARE IN INCHES (MILLIMETERS)
± .005 (.13) UNLESS OTHERWISE SPECIFIED

SMLA45



DIMENSIONS ARE IN INCHES (MILLIMETERS)
±.010 (.25) UNLESS OTHERWISE SPECIFIED

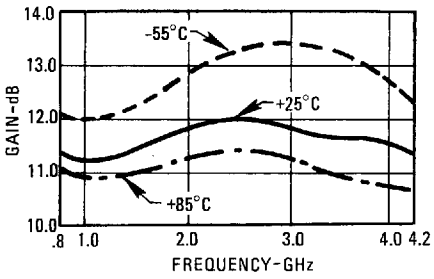
CLA45
See note 1



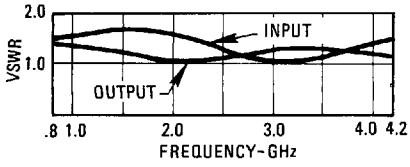
DIMENSIONS ARE IN INCHES (MILLIMETERS)
±.010 (.25) UNLESS OTHERWISE SPECIFIED

Typical Performance at 25°C

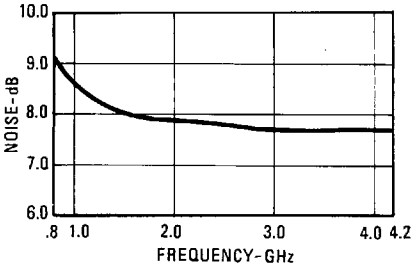
Gain



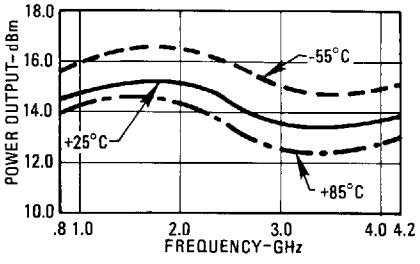
VSWR

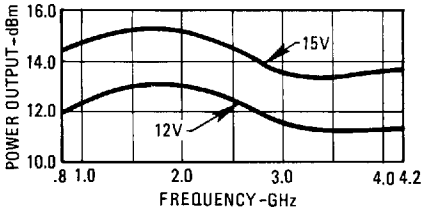


Noise Figure



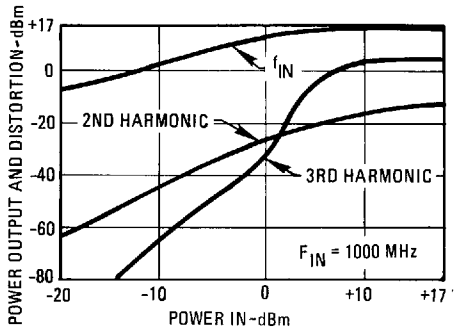
Power Output*

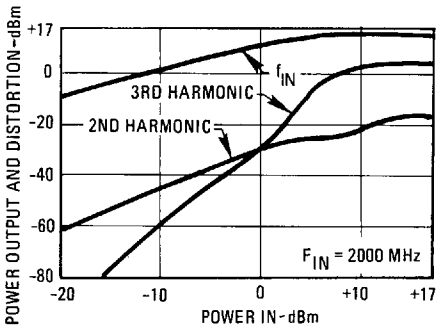


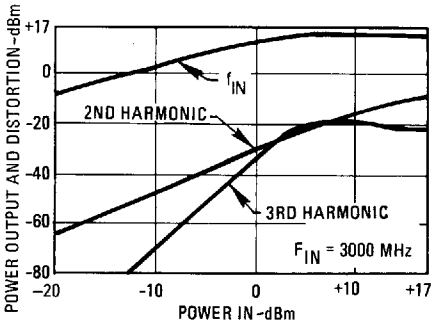


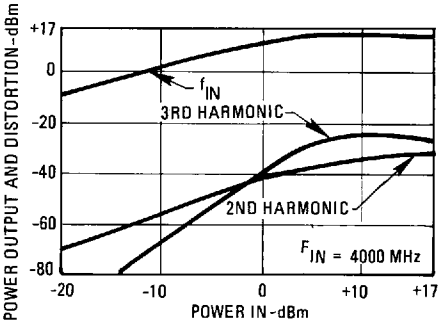
*at 1 dB Gain Compression

Power Output and Distortion

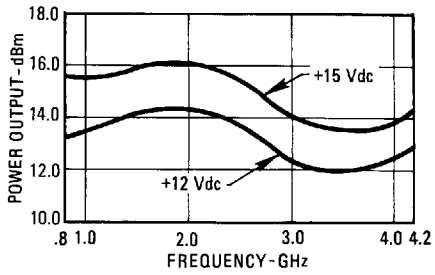


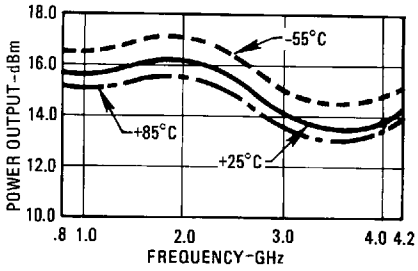




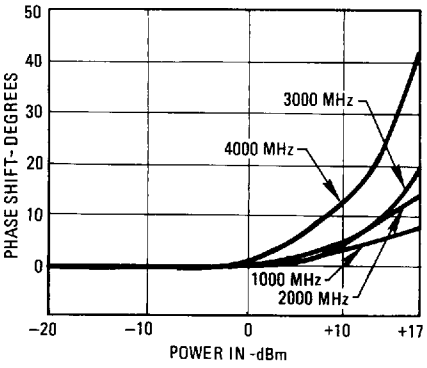


Maximum Limiting Level @ Pin = +17 dBm

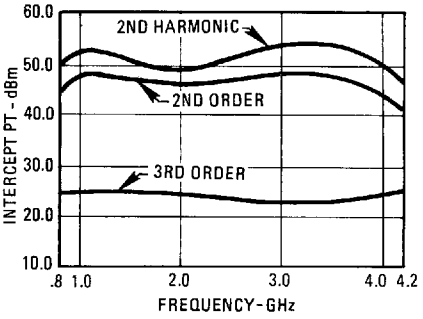




Phase Shift vs. Input Power



Intercept Point



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Typical Automatic Test Data

V_{CC} = 15.0 V

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
800.0	1.1	1.2	12.2
900.0	1.1	1.2	11.8
1000.0	1.2	1.2	11.6
1100.0	1.3	1.2	11.5
1200.0	1.4	1.2	11.4
1300.0	1.4	1.3	11.4
1400.0	1.4	1.3	11.3
1500.0	1.5	1.3	11.3
1600.0	1.5	1.3	11.3
1700.0	1.5	1.3	11.3
1800.0	1.5	1.3	11.3
1900.0	1.5	1.3	11.3
2000.0	1.4	1.3	11.4
2100.0	1.4	1.3	11.4
2200.0	1.4	1.3	11.5
2300.0	1.3	1.3	11.5
2400.0	1.3	1.3	11.5
2500.0	1.3	1.3	11.6
2600.0	1.2	1.3	11.6
2700.0	1.2	1.4	11.6
2800.0	1.1	1.4	11.6
2900.0	1.1	1.5	11.5
3000.0	1.1	1.6	11.6
3100.0	1.1	1.6	11.5
3200.0	1.1	1.6	11.5
3300.0	1.1	1.6	11.5
3400.0	1.1	1.6	11.6
3500.0	1.2	1.6	11.7
3600.0	1.2	1.6	11.7
3700.0	1.2	1.6	11.8
3800.0	1.2	1.5	11.9
3900.0	1.2	1.4	11.9
4000.0	1.3	1.3	12.1
4100.0	1.3	1.3	12.1
4200.0	1.3	1.2	12.2

Linear S-Parameters

Frequency	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
800.0	.041	−135	4.083	−114	.024	−47	.085	−124
900.0	.067	−123	3.910	−157	.021	−87	.093	−157
1000.0	.102	−138	3.799	165	.022	−126	.093	165
1100.0	.132	−156	3.746	129	.021	−158	.096	122
1200.0	.150	−177	3.714	95	.021	170	.102	83
1300.0	.163	163	3.705	62	.021	136	.114	48
1400.0	.183	144	3.680	30	.020	111	.125	17
1500.0	.193	122	3.671	−2	.019	79	.136	−12
1600.0	.194	100	3.662	−34	.019	52	.144	−40
1700.0	.198	80	3.663	−64	.018	23	.147	−68
1800.0	.191	59	3.675	−94	.019	−3	.147	−93
1900.0	.192	38	3.686	−125	.019	−29	.138	−120
2000.0	.170	16	3.698	−155	.017	−57	.127	−149
2100.0	.165	−10	3.712	175	.017	−79	.122	180
2200.0	.152	−31	3.741	145	.018	−108	.115	149
2300.0	.146	−53	3.749	115	.017	−135	.111	114
2400.0	.136	−76	3.766	86	.016	−160	.113	77
2500.0	.120	−101	3.797	56	.016	172	.121	42
2600.0	.106	−123	3.793	26	.015	149	.134	8
2700.0	.094	−145	3.800	−4	.014	123	.152	−19
2800.0	.068	−171	3.787	−33	.015	91	.170	−44
2900.0	.054	155	3.779	−63	.013	68	.194	−68
3000.0	.034	125	3.787	−92	.012	50	.216	−90
3100.0	.032	70	3.772	−121	.012	27	.230	−113
3200.0	.032	19	3.776	−151	.011	−5	.238	−136
3300.0	.044	−10	3.779	−180	.011	−34	.242	−156
3400.0	.055	−36	3.795	150	.011	−46	.242	−177
3500.0	.076	−69	3.832	121	.012	−85	.238	162
3600.0	.080	−91	3.839	91	.011	−110	.233	139
3700.0	.092	−107	3.882	62	.009	−129	.221	116
3800.0	.108	−134	3.917	32	.010	−159	.194	90
3900.0	.108	−155	3.940	2	.009	178	.167	63
4000.0	.118	−171	4.008	−28	.008	153	.142	35
4100.0	.116	166	4.006	−58	.009	125	.120	3
4200.0	.117	143	4.056	−89	.007	111	.108	−35

V_{CC} = 12.0 V

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
800.0	1.1	1.1	11.7
900.0	1.2	1.1	11.4
1000.0	1.3	1.1	11.2
1100.0	1.3	1.1	11.1
1200.0	1.4	1.1	11.1
1300.0	1.4	1.2	11.1
1400.0	1.5	1.2	11.0
1500.0	1.5	1.2	11.0
1600.0	1.5	1.3	11.1
1700.0	1.5	1.3	11.1
1800.0	1.5	1.3	11.1
1900.0	1.5	1.2	11.1
2000.0	1.5	1.2	11.2
2100.0	1.4	1.2	11.2
2200.0	1.4	1.2	11.3
2300.0	1.4	1.2	11.3
2400.0	1.4	1.3	11.4
2500.0	1.3	1.3	11.4
2600.0	1.3	1.3	11.4
2700.0	1.2	1.4	11.5
2800.0	1.2	1.4	11.4
2900.0	1.1	1.5	11.4
3000.0	1.1	1.5	11.4
3100.0	1.1	1.6	11.4
3200.0	1.1	1.6	11.4
3300.0	1.1	1.6	11.4
3400.0	1.1	1.6	11.5
3500.0	1.1	1.5	11.5
3600.0	1.1	1.5	11.5
3700.0	1.2	1.5	11.6
3800.0	1.2	1.4	11.7
3900.0	1.2	1.3	11.7
4000.0	1.2	1.3	11.8
4100.0	1.2	1.2	11.8
4200.0	1.2	1.2	11.9

Linear S-Parameters

Frequency	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
800.0	.063	−128	3.868	−113	.021	−46	.059	−108
900.0	.093	−129	3.731	−156	.019	−87	.062	−144
1000.0	.119	−141	3.646	166	.020	−125	.055	171
1100.0	.146	−160	3.600	131	.021	−160	.057	116
1200.0	.170	−178	3.592	97	.019	172	.066	69
1300.0	.174	162	3.584	64	.018	139	.081	31
1400.0	.193	144	3.566	32	.018	109	.091	0
1500.0	.207	123	3.566	0	.017	86	.106	−28
1600.0	.206	102	3.579	−32	.018	55	.113	−55
1700.0	.213	83	3.581	−62	.017	32	.114	−83
1800.0	.199	61	3.581	−92	.019	4	.116	−109
1900.0	.205	41	3.609	−123	.016	−21	.109	−139
2000.0	.184	20	3.627	−152	.018	−54	.099	−170
2100.0	.176	−5	3.639	177	.016	−77	.097	156
2200.0	.167	−26	3.670	148	.017	−100	.095	123
2300.0	.162	−49	3.690	118	.017	−126	.101	87
2400.0	.151	−70	3.700	88	.016	−154	.113	50
2500.0	.138	−92	3.730	59	.015	−178	.126	17
2600.0	.126	−113	3.728	29	.015	156	.144	−14
2700.0	.109	−134	3.744	−1	.016	122	.162	−40
2800.0	.087	−157	3.718	−30	.016	106	.180	−62
2900.0	.068	177	3.722	−60	.015	83	.196	−84
3000.0	.050	146	3.726	−89	.013	59	.215	−105
3100.0	.040	119	3.714	−119	.014	33	.227	−128
3200.0	.029	70	3.724	−148	.013	1	.229	−149
3300.0	.027	6	3.715	−177	.013	−12	.225	−170
3400.0	.036	−25	3.740	153	.013	−34	.221	169
3500.0	.051	−52	3.772	124	.012	−64	.212	148
3600.0	.067	−79	3.777	94	.011	−90	.200	125
3700.0	.078	−100	3.810	65	.013	−113	.185	101
3800.0	.089	−126	3.844	35	.010	−133	.160	73
3900.0	.090	−150	3.853	5	.011	−159	.136	43
4000.0	.105	−165	3.907	−25	.010	174	.111	9
4100.0	.103	165	3.883	−55	.010	149	.101	−31
4200.0	.106	145	3.924	−86	.010	124	.102	−71

Thermal Data: V_{CC} = 15 Vdc

Thermal Resistance θ_{jc} ..... 108.9°C/W
Transistor Power Dissipation P_d ..... 0.476 W
Junction Temperature Rise Above Case T_{jc} ... 52°C