

WJ-RA46/SMRA46

1000 to 4000 MHz TO-8B¹ CASCADABLE AMPLIFIER

- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ ULTRA-WIDE BANDWIDTH: 0.8-4.2 GHZ (TYP.)
- ◆ HIGH GAIN: 25.5 dB (TYP.)
- ◆ HIGH OUTPUT POWER: +19.0 dBm (TYP.)
- ◆ LOW NOISE: 4.5 dB (TYP.)



Specifications*

Characteristics	Typical	Guaranteed	
		0° to 50°C	-54°C to +85°C
Frequency (Min.)	.8-4.2 GHz	1-4 GHz	1-4 GHz
Small Signal Gain (Min.)	25.5 dB	24.0 dB	23.5 dB
Gain Flatness (Max.)	±0.5 dB	±0.8 dB	±1.0 dB
Noise Figure (Max.)	4.5 dB	5.2 dB	5.7 dB
Power Output at 1 dB Compression (Min.)	+19.0 dBm	+17.0 dBm	+16.5 dBm
VSWR (Max.)			
Input	1.6:1	2.0:1	2.1:1
Output	1.5:1	2.0:1	2.1:1
DC Current (Max.) at +12 Volts	175 mA	185 mA	190 mA

* Measured in a 50-ohm system at +12 Vdc Nominal.

Notes:

1. WJ-RA46 amplifier is in a TO-8B package which is slightly larger than the standard TO-8 package.
2. WJ-CRA46 is a standard WJ-RA46 installed in a miniature SMA connector housing and guaranteed over 0°C to 50°C temperature range.

Typical Intermodulation Performance at 25°C

Second Order Harmonic Intercept Point.....	+55 dBm (Typ.)
Second Order Two Tone Intercept Point.....	+50 dBm (Typ.)
Third Order Two Tone Intercept Point.....	+30 dBm (Typ.)

Absolute Maximum Ratings

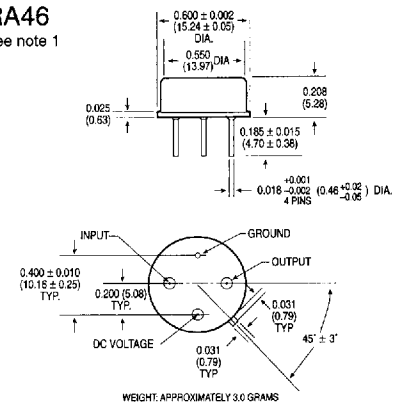
Storage Temperature	-62°C to +125°C
Maximum Case Temperature	85°C
Maximum DC Voltage.....	+13 Volts
Maximum Continuous RF Input Power	+7 dBm
Maximum Short Term RF Input Power (1 Minute Max.).....	100 Milliwatts
Maximum Peak Power	0.25 Watt 3 μsec Max.)
"S" Series Burn-in Temperature (Case).....	85°C

Weight approximately 3.0 grams (0.11 oz.)

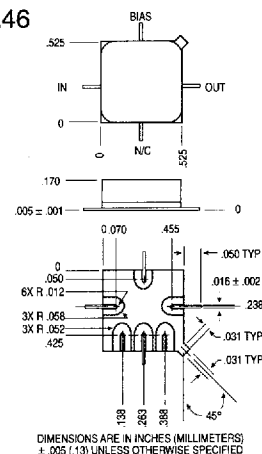
Outline Drawings

RA46

See note 1

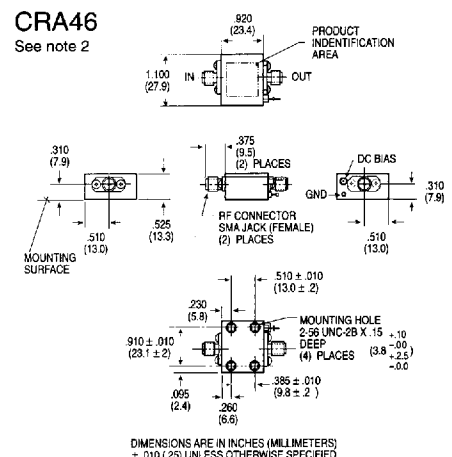


SMRA46



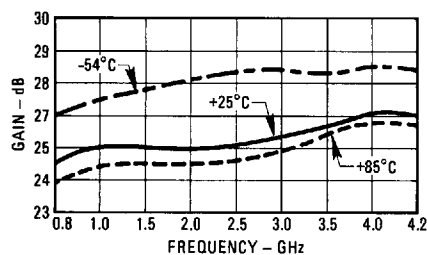
CRA46

See note 2

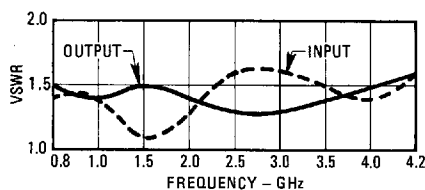


Typical Performance at 25°C

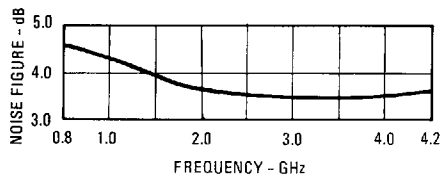
Gain



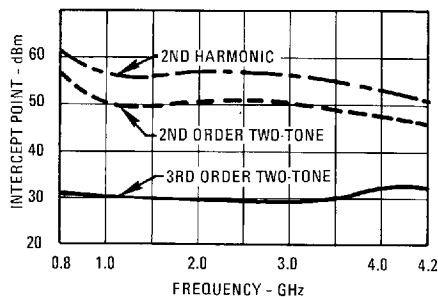
VSWR



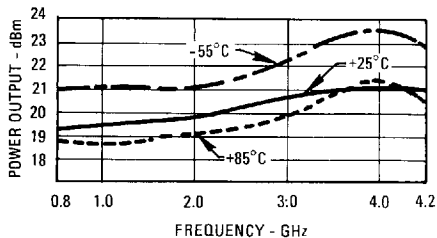
Noise Figure



Intercept Point



Power Output*



*at 1 dB Gain Compression

Thermal Data: $V_{CC} = 12 \text{ Vdc}$

Thermal Resistance θ_{jc} 108.9°C/W
 Transistor Power Dissipation P_d 0.490 W
 Junction Temperature Rise Above Case T_{jc} ... 53°C

Typical Automatic Test Data

$V_{CC} = 12.0 \text{ V}$

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
800.0	1.5	1.3	25.5
900.0	1.4	1.2	25.9
1000.0	1.3	1.2	25.9
1100.0	1.2	1.2	26.0
1200.0	1.2	1.2	26.1
1300.0	1.2	1.2	26.1
1400.0	1.2	1.2	26.0
1500.0	1.2	1.2	26.0
1600.0	1.2	1.2	26.0
1700.0	1.2	1.2	26.1
1800.0	1.3	1.2	26.1
1900.0	1.3	1.2	26.2
2000.0	1.3	1.2	26.2
2100.0	1.3	1.2	26.2
2200.0	1.4	1.1	26.3
2300.0	1.4	1.1	26.4
2400.0	1.5	1.1	26.5
2500.0	1.5	1.0	26.5
2600.0	1.6	1.0	26.5
2700.0	1.6	1.0	26.5
2800.0	1.6	1.1	26.5
2900.0	1.7	1.1	26.4
3000.0	1.7	1.1	26.4
3100.0	1.7	1.1	26.3
3200.0	1.6	1.2	26.3
3300.0	1.6	1.2	26.2
3400.0	1.6	1.2	26.2
3500.0	1.5	1.2	26.2
3600.0	1.4	1.2	26.2
3700.0	1.4	1.2	26.2
3800.0	1.3	1.2	26.2
3900.0	1.2	1.2	26.1
4000.0	1.2	1.2	26.1
4100.0	1.3	1.2	25.9
4200.0	1.4	1.2	25.8

Linear S-Parameters

Frequency MHz	S11			S21			S12			S22		
	MAG	ANG		MAG	ANG		MAG	ANG		MAG	ANG	
800.0	.215	-43		18.887	59		.003	-93		.146	-133	
900.0	.156	-62		19.655	11		.003	-142		.111	-157	
1000.0	.115	-72		19.828	-33		.004	-146		.096	-174	
1100.0	.096	-85		19.995	-74		.002	177		.090	164	
1200.0	.088	-99		20.086	-113		.003	162		.089	142	
1300.0	.087	-107		20.116	-150		.003	124		.092	118	
1400.0	.090	-131		20.066	173		.003	82		.100	93	
1500.0	.094	-161		20.064	138		.003	77		.105	65	
1600.0	.094	175		20.062	103		.004	18		.104	36	
1700.0	.105	143		20.117	68		.003	11		.101	12	
1800.0	.112	113		20.186	34		.001	-1		.101	-14	
1900.0	.125	85		20.339	0		.002	-30		.094	-36	
2000.0	.130	59		20.424	-33		.002	-22		.083	-58	
2100.0	.143	28		20.528	-67		.002	-56		.075	-87	
2200.0	.154	2		20.769	-101		.003	-76		.065	-110	
2300.0	.176	-28		20.855	-134		.003	-109		.049	-134	
2400.0	.192	-53		21.014	-167		.003	-112		.030	-150	
2500.0	.203	-82		21.220	159		.002	175		.011	-162	
2600.0	.219	-106		21.197	125		.003	-152		.013	-96	
2700.0	.236	-132		21.235	92		.003	-139		.022	-73	
2800.0	.243	-155		21.113	58		.001	158		.031	-73	
2900.0	.245	178		20.973	25		.001	175		.043	-89	
3000.0	.246	158		20.889	-9		.002	117		.062	-103	
3100.0	.250	133		20.692	-42		.002	82		.069	-121	
3200.0	.240	114		20.664	-75		.001	89		.071	-138	
3300.0	.238	93		20.469	-108		.001	145		.070	-152	
3400.0	.229	72		20.429	-142		.002	41		.078	-164	
3500.0	.207	54		20.444	-175		.000	-87		.082	-179	
3600.0	.181	37		20.318	151		.002	-67		.091	164	
3700.0	.156	21		20.335	118		.001	-42		.092	146	
3800.0	.121	10		20.339	84		.001	135		.086	125	
3900.0	.087	12		20.161	50		.002	-64		.084	107	
4000.0	.080	30		20.151	15		.001	-141		.080	87	
4100.0	.115	45		19.755	-20		.002	162		.075	65	
4200.0	.176	43		19.522	-55		.001	-94		.071	40	