

WJ-RA63/SMRA63

2000 to 6000 MHz
TO-8B¹ CASCADABLE AMPLIFIER

- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ ULTRAWIDE BANDWIDTH: 1.8-6.2 GHz (TYP.)
- ◆ HIGH GAIN: 18.5 dB (TYP.)
- ◆ MEDIUM OUTPUT POWER: +13.0 dBm (TYP.)
- ◆ LOW POWER SUPPLY VOLTAGE: +5 VDC

Specifications*

Characteristics	Typical	Guaranteed	
		0° to 50°C	-54°C to +85°C
Frequency (Min.)	1.8-6.2 GHz	2-6 GHz	2-6 GHz
Small Signal Gain (Min.)	18.5 dB	16.5 dB	15.5 dB
Gain Flatness (Min.)	±0.5 dB	±1.0 dB	±1.2 dB
Noise Figure (Max.)	5.5 dB	7.0 dB	7.5 dB
Power Output at 1 dB Compression (Min.)	+13.0 dBm	+10.0 dBm	+9.5 dBm
VSWR (Max.)			
Input	1.7:1	2.2:1	2.3:1
Output	1.7:1	2.2:1	2.3:1
DC Current (Max.) at +5 Volts	120 mA	135 mA	140 mA

* Measured in a 50-ohm system at +5 Vdc Nominal.

Notes:

1. WJ-RA63 amplifier is in a TO-8B package which is slightly larger than the standard TO-8 package.
2. WJ-CRA63 is a standard WJ-RA63 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.....+38 dBm (Typ.)
Second Order Two Tone Intercept Point.....+30 dBm (Typ.)
Third Order Two Tone Intercept Point.....+25 dBm (Typ.)

Absolute Maximum Ratings

Storage Temperature-64°C to +125°C
Maximum Case Temperature125°C
Maximum DC Voltage.....+6 Volts
Maximum Continuous RF Input Power.....+7 dBm
Maximum Short Term RF Input Power (1 Minute Max.).....100 Milliwatts
Maximum Peak Power0.25 Watt (3 µsec Max.)
"S" Series Burn-in Temperature (Case).....125°C

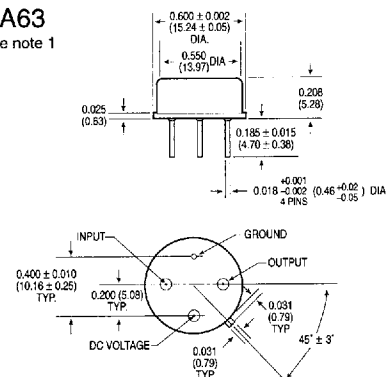
Weight approximately 3.0 grams (0.11 oz.)



Outline Drawings

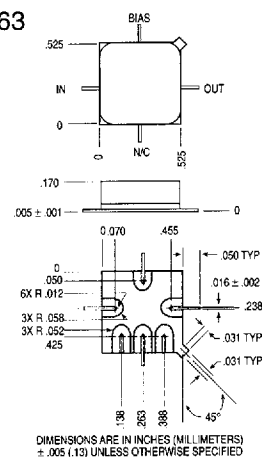
RA63

See note 1



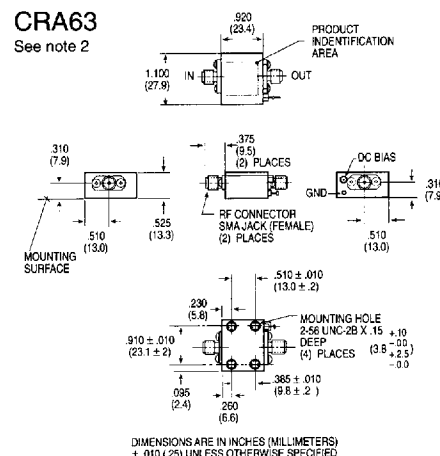
SMRA63

WEIGHT: APPROXIMATELY 3.0 GRAMS



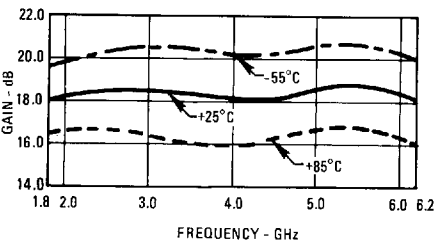
CRA63

See note 2

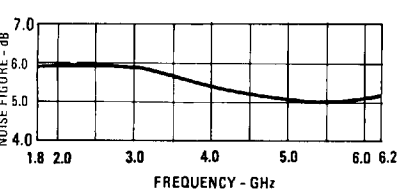


Typical Automatic Test Data

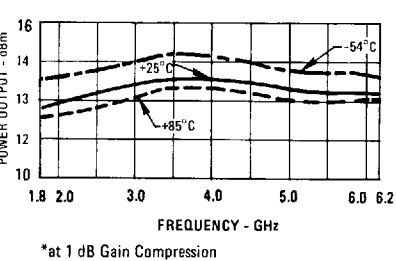
Gain



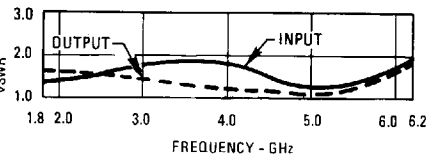
Noise Figure



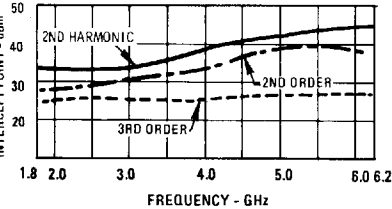
Power Output*



VSWR



Intercept Point



Typical Performance at 25°C

V_{CC} = 5.0 V

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
1000.0	2.1	1.7	18.8
1200.0	1.9	1.7	19.6
1400.0	1.7	1.7	20.1
1600.0	1.6	1.7	20.4
1800.0	1.4	1.6	20.7
2000.0	1.4	1.6	20.9
2200.0	1.4	1.6	21.1
2400.0	1.4	1.5	21.2
2600.0	1.4	1.4	21.2
2800.0	1.5	1.3	21.2
3000.0	1.5	1.3	21.1
3200.0	1.6	1.2	21.0
3400.0	1.6	1.2	20.9
3600.0	1.6	1.3	20.7
3800.0	1.5	1.3	20.7
4000.0	1.4	1.3	20.7
4200.0	1.4	1.3	20.7
4400.0	1.3	1.2	20.7
4600.0	1.4	1.1	20.7
4800.0	1.5	1.1	20.7
5000.0	1.7	1.1	20.7
5200.0	1.8	1.1	20.6
5400.0	1.9	1.1	20.4
5600.0	2.0	1.2	20.2
5800.0	2.1	1.3	19.9
6000.0	2.2	1.4	19.4
6200.0	2.3	1.5	18.9
6400.0	2.5	1.5	18.3

Linear S-Parameters

Frequency MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1000.0	.360	127	8.677	-2	.005	-178	.265	-153
1200.0	.315	88	9.516	-78	.004	126	.258	151
1400.0	.262	50	10.068	-149	.004	46	.256	97
1600.0	.220	12	10.496	142	.002	9	.250	44
1800.0	.182	-21	10.804	76	.004	-49	.244	-4
2000.0	.155	-54	11.087	11	.004	-90	.235	-50
2200.0	.153	-88	11.306	-53	.002	-115	.221	-97
2400.0	.164	-120	11.444	-116	.002	150	.196	-142
2600.0	.179	-160	11.488	-179	.001	126	.173	176
2800.0	.193	156	11.436	118	.001	-8	.145	126
3000.0	.209	112	11.312	56	.001	-21	.114	70
3200.0	.219	67	11.194	-6	.000	-114	.097	12
3400.0	.232	26	11.030	-68	.001	-75	.106	-51
3600.0	.221	-17	10.882	-128	.002	-169	.113	-110
3800.0	.209	-61	10.832	171	.002	-180	.115	-158
4000.0	.181	-111	10.841	111	.003	101	.121	158
4200.0	.150	-168	10.818	50	.002	-42	.113	106
4400.0	.139	130	10.798	-11	.002	-26	.086	62
4600.0	.159	68	10.801	-72	.001	-159	.066	15
4800.0	.211	15	10.817	-134	.000	155	.046	-46
5000.0	.247	-27	10.809	164	.001	117	.026	-161
5200.0	.279	-68	10.675	101	.002	105	.034	97
5400.0	.307	-105	10.502	37	.002	74	.059	35
5600.0	.324	-145	10.227	-26	.002	-8	.094	-27
5800.0	.348	175	9.872	-91	.001	-36	.127	-91
6000.0	.377	133	9.362	-156	.003	-135	.149	-147
6200.0	.390	90	8.768	140	.003	-167	.184	163
6400.0	.424	44	8.193	75	.005	123	.209	107

Thermal Data: V_{CC} = 5 V_{dc}

Thermal Resistance θ_{jc} 97.8°C/W
Transistor Power Dissipation P_d 0.207 W
Junction Temperature Rise Above Case T_{jc} ... 20°C