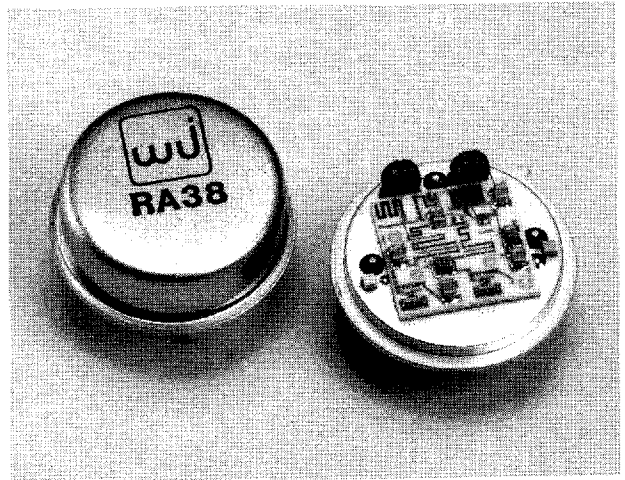


WJ-RA38/SMRA38

200 to 2000 MHz
TO-8B¹ CASCADABLE AMPLIFIER



- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ HIGH GAIN TWO STAGES: 16.0 dB (TYP.)
- ◆ LOW VSWR: < 1.8 (TYP.)
- ◆ HIGH OUTPUT LEVEL: +17.0 dBm (TYP.)

Specifications*

Characteristics	Typical	Guaranteed	
		0° to 50°C	-54° C to +85°C
Frequency (Min.)	200-2000 MHz	200-2000 MHz	200-2000 MHz
Small Signal Gain (Min.)	16.0 dB	14.5 dB	13.5 dB
Gain Flatness (Max.)	±0.5 dB	±1.0 dB	±1.2 dB
Noise Figure (Max.)			
200-1750 MHz	6.0 dB	6.7 dB	7.0 dB
200-2000 MHz	6.8 dB	7.5 dB	8.0 dB
Power Output			
at 1 dB Compression (Min.)			
200-1800 MHz	+18.5 dBm	+17.5 dBm	+16.5 dBm
1800-2000 MHz	+17.0 dBm	+16.0 dBm	+15.5 dBm
VSWR (Max.) Input/Output	<1.8:1	2.3:1	2.3:1
DC Current at +15 Volts (Max.)	127 mA	132 mA	133 mA

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

Notes:

1. WJ-RA38 amplifier is in a TO-8B package which is slightly larger than the standard TO-8 package.
2. WJ-CRA38 is a standard WJ-RA38 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.....	+39 dBm (Typ.)
Second Order Two Tone Intercept Point.....	+35 dBm (Typ.)
Third Order Two Tone Intercept Point.....	+25 dBm (Typ.)

Absolute Maximum Ratings

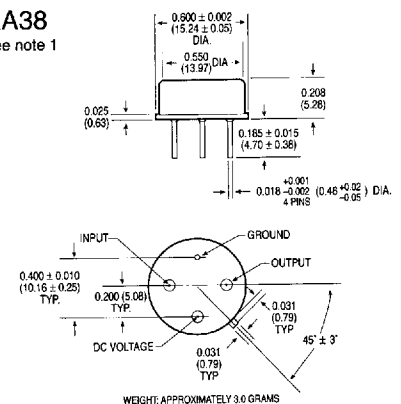
Storage Temperature	-62°C to +125°C
Maximum Case Temperature	125°C
Maximum DC Voltage.....	+17 Volts
Maximum Continuous RF Input Power.....	+13 dBm
Maximum Short Term RF Input Power (1 Minute Max.).....	100 Milliwatts
Maximum Peak Power	0.5 Watt (3 µsec Max.)
"S" Series Burn-In Temperature (Case)	125°C

Weight approximately 3.0 grams (0.11 oz.)

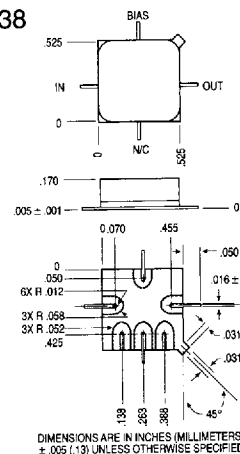
Outline Drawings

RA38

See note 1

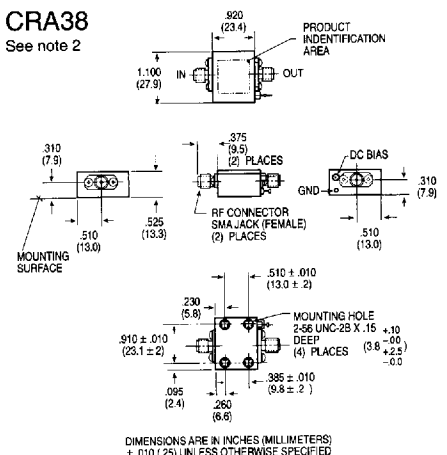


SMRA38



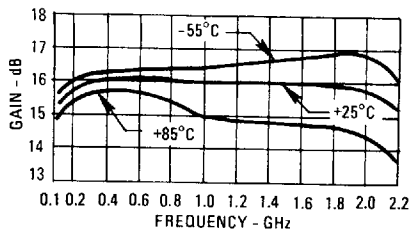
CRA38

See note 2

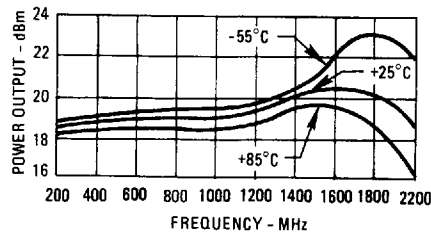


Typical Performance at 25°C

Gain

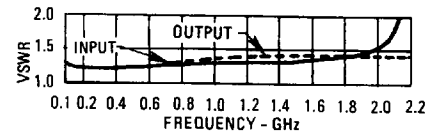


Power Output*

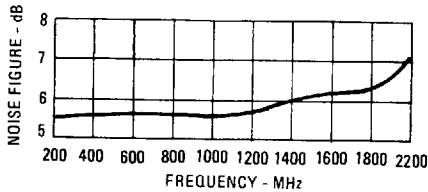


*at 1 dB Gain Compression

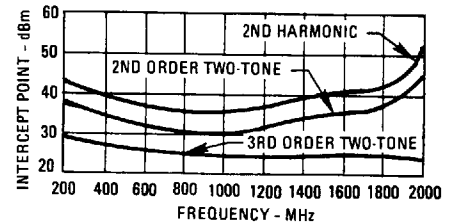
VSWR



Noise Figure



Intercept Point



Typical Automatic Test Data

V_{CC} = 15.0 V

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
10.0	2.9	2.5	11.6
50.0	1.2	1.3	15.1
100.0	1.1	1.2	15.3
200.0	1.1	1.2	15.7
300.0	1.1	1.3	15.8
400.0	1.2	1.3	15.9
500.0	1.2	1.3	16.0
600.0	1.2	1.4	16.0
700.0	1.2	1.4	16.0
800.0	1.2	1.4	16.0
900.0	1.2	1.5	16.0
1000.0	1.2	1.4	15.9
1100.0	1.3	1.4	16.1
1200.0	1.3	1.4	16.1
1300.0	1.4	1.4	16.2
1400.0	1.4	1.3	16.2
1500.0	1.4	1.3	16.0
1600.0	1.5	1.3	15.7
1700.0	1.5	1.3	15.9
1800.0	1.5	1.4	15.9
1900.0	1.4	1.4	16.1
2000.0	1.5	1.5	16.1
2100.0	1.7	1.5	16.1
2200.0	2.3	1.4	15.7

Linear S-Parameters

Frequency MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
10.0	.484	-80	3.819	80	.019	115	.432	-102
50.0	.084	-107	5.675	9	.034	23	.127	-165
100.0	.050	-117	5.832	-9	.035	9	.108	170
200.0	.059	-122	6.068	-33	.037	-3	.104	143
300.0	.066	-141	6.169	-54	.038	-12	.113	124
400.0	.074	-149	6.265	-75	.038	-20	.125	106
500.0	.089	-162	6.293	-95	.039	-28	.139	87
600.0	.094	-170	6.276	-116	.039	-36	.154	67
700.0	.086	-177	6.304	-136	.040	-43	.165	45
800.0	.094	179	6.316	-157	.041	-51	.181	22
900.0	.100	169	6.316	-177	.040	-60	.194	-1
1000.0	.111	172	6.239	163	.040	-68	.182	-24
1100.0	.132	160	6.366	144	.041	-77	.182	-47
1200.0	.141	151	6.390	123	.041	-85	.175	-71
1300.0	.161	139	6.461	102	.042	-96	.156	-96
1400.0	.164	128	6.445	80	.042	-104	.133	-125
1500.0	.161	116	6.306	59	.041	-116	.119	-157
1600.0	.194	103	6.082	39	.040	-123	.118	161
1700.0	.210	76	6.233	20	.041	-131	.137	115
1800.0	.194	49	6.253	-2	.043	-140	.160	77
1900.0	.175	8	6.369	-25	.046	-151	.183	48
2000.0	.186	-42	6.382	-48	.049	-162	.191	23
2100.0	.262	-97	6.382	-73	.052	-174	.184	-0
2200.0	.388	-140	6.084	-101	.053	171	.176	-20

Thermal Data: V_{CC} = 15 Vdc

Thermal Resistance θ_{jc} 45°C/W
 Transistor Power Dissipation P_d 0.708W
 Junction Temperature Rise Above Case T_{jc} ... 32°C

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