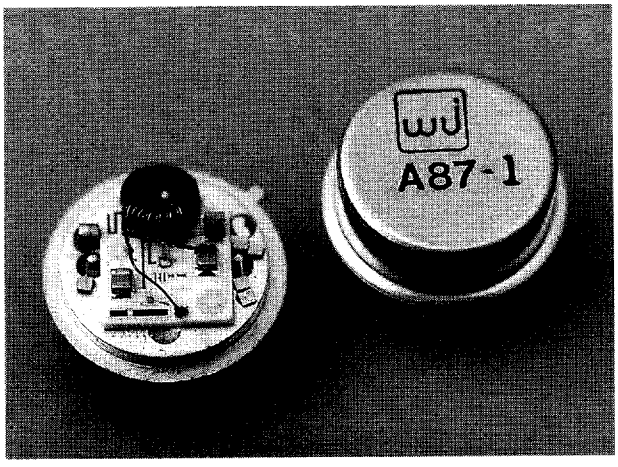
WJ-A87-1 / SMA87-1



10 to 400 MHz
TO-8 CASCADABLE AMPLIFIER

- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ HIGH OUTPUT LEVEL: +17 dBm (TYP.)
- ◆ HIGH EFFICIENCY: 33 mA @ +15 VDC (TYP.)
- ◆ HIGH THIRD ORDER I.P.: +31 dBm (TYP.)
- ◆ WIDE POWER SUPPLY RANGE: +5 TO +15 VOLTS

Specifications*

Characteristic	Typical	Guaranteed 0° to 50°C	Guaranteed -54° to +85°C
Frequency (Min.)	5-450 MHz	10-400 MHz	10-400 MHz
Small Signal Gain (Min.)	15.5 dB	14.5 dB	14.0 dB
Gain Flatness (Max.)	±.5 dB	±.7 dB	±1.0 dB
Noise Figure (Max.)	3.6 dB	4.5 dB	5.0 dB
Power Output at 1 dB Compression (Min.)			
Vcc = +15 Volts	+17.0 dBm	+15.5 dBm	+15.0 dBm
Vcc = +12 Volts	+15.0 dBm	+13.7 dBm	+13.0 dBm
VSWR (Max.) Input/Output	1.5:1	2.0:1	2.0:1
DC Current at (Max.) 15 Volts	33 mA	35 mA	37 mA

*Measured in a 50 ohm system at +15 Vdc.
Notes:
1. WJ-CA87-1 is a standard WJ-A87-1 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 .....>+47 dBm (Typ.)
Second Order Two Tone Intercept Point .....>+42 dBm (Typ.)
Third-Order Two Tone Intercept Point .....>+31 dBm (Typ.)

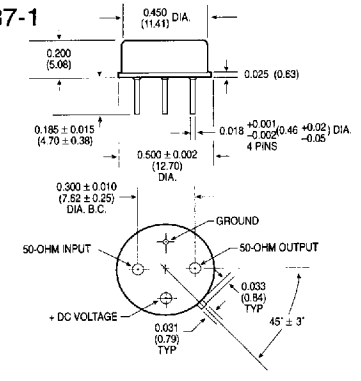
Absolute Maximum Ratings

Storage Temperature .....-62°C to +125°C
Maximum Case Temperature .....125°C
Maximum DC Voltage .....+ 17 Vdc
Maximum Continuous RF Input Power .....+13 dBm
Maximum Short Term RF Input Power (1 Minute Max.).....50 milliwatts
Maximum Peak Power ..... 0.5 Watts (3 µsec Max.)
"S"Series Burn-in Temperature (Case).....125°C

Weight approximately 2.0 grams (0.07oz.)

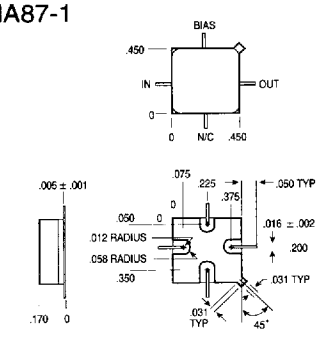
Outline Drawings

A87-1



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

SMA87-1



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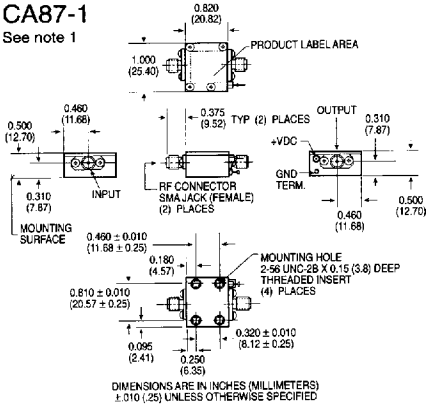
±.010 (.25) UNLESS OTHERWISE SPECIFIED

CA87-1
See note 1



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

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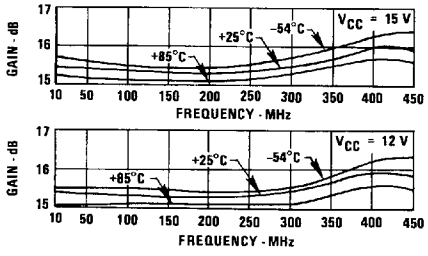
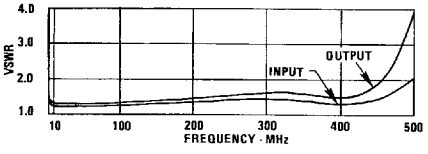
Typical Performance at 25°C

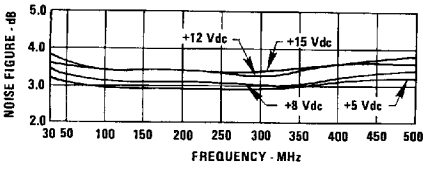
Gain



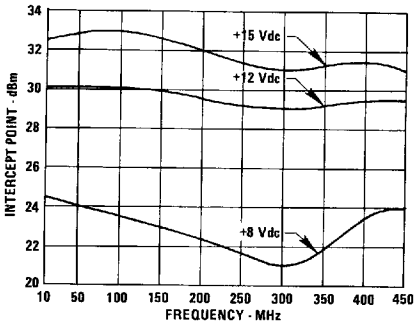
VSWR



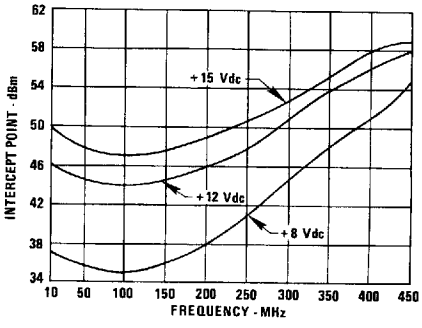
Noise Figure



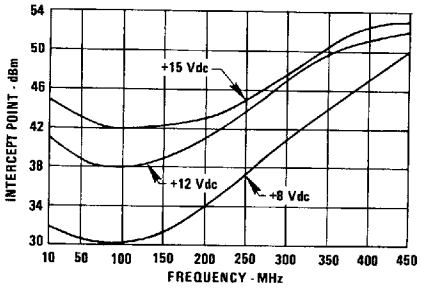
Third Order Two-Tone Intercept Point



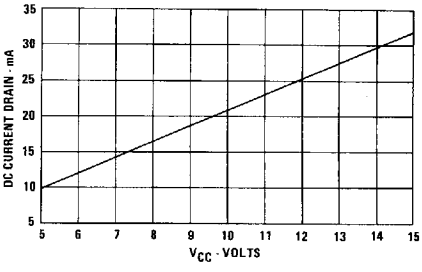
Second Order Harmonic Intercept Point



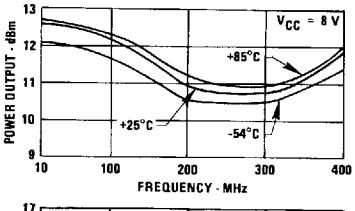
Second Order Two-Tone Intercept Point

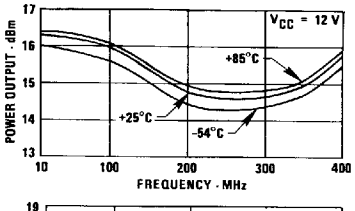


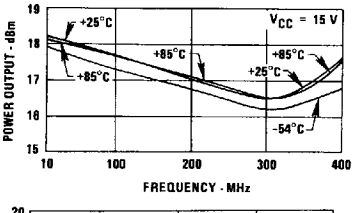
Current Drain

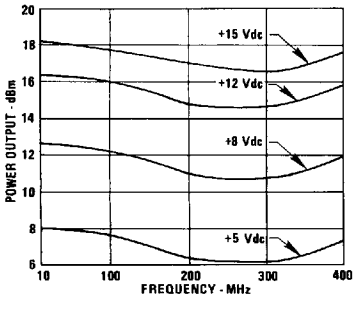


Power Output*









Typical Automatic Test Data

VCC = 15.0 V

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
2.0	1.7	2.0	16.5
5.0	1.2	1.4	16.2
10.0	1.1	1.2	16.2
50.0	1.1	1.2	16.3
100.0	1.1	1.3	16.2
150.0	1.1	1.4	16.2
200.0	1.1	1.5	16.2
250.0	1.2	1.6	16.1
300.0	1.2	1.7	16.3
350.0	1.3	1.7	16.4
400.0	1.3	1.7	16.7
450.0	1.3	1.6	16.7
500.0	1.4	1.7	16.8
550.0	1.3	2.0	16.5
600.0	1.2	2.9	15.9

Linear S-Parameters

Frequency	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2.0	.259	–98	6.708	–161	.086	18	.323	133
5.0	.105	–118	6.475	–174	.094	6	.151	139
10.0	.070	–137	6.459	–179	.096	3	.109	151
50.0	.060	158	6.529	168	.098	–6	.086	–164
100.0	.064	114	6.486	154	.097	–14	.128	–152
150.0	.063	72	6.421	140	.095	–21	.173	–156
200.0	.062	37	6.452	127	.094	–27	.210	–165
250.0	.074	4	6.413	113	.093	–34	.238	–177
300.0	.094	–28	6.545	100	.092	–40	.252	168
350.0	.116	–53	6.583	86	.092	–47	.259	151
400.0	.137	–76	6.826	70	.092	–54	.251	128
450.0	.148	–102	6.834	53	.093	–62	.239	95
500.0	.158	–129	6.947	35	.093	–71	.256	50
550.0	.139	–156	6.717	14	.092	–83	.342	1
600.0	.092	179	6.208	–9	.085	–95	.493	–38

VCC = 5.0 V

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
2.0	1.7	2.0	15.7
5.0	1.2	1.3	15.4
10.0	1.1	1.1	15.3
50.0	1.0	1.1	15.4
100.0	1.1	1.3	15.3
150.0	1.2	1.5	15.2
200.0	1.2	1.7	15.1
250.0	1.3	1.9	15.0
300.0	1.3	1.9	15.1
350.0	1.4	2.0	15.1
400.0	1.5	1.9	15.4
450.0	1.6	1.9	15.2
500.0	1.6	2.0	15.2
550.0	1.5	2.4	14.8
600.0	1.4	3.5	13.8

Linear S-Parameters

Frequency	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2.0	.259	–80	6.085	–159	.094	19	.325	121
5.0	.097	–74	5.859	–173	.102	7	.119	114
10.0	.055	–66	5.849	–178	.104	3	.060	118
50.0	.020	11	5.911	167	.106	–6	.062	–112
100.0	.046	25	5.820	152	.105	–14	.145	–124
150.0	.077	3	5.729	138	.103	–20	.212	–140
200.0	.092	–18	5.695	124	.102	–26	.264	–156
250.0	.120	–38	5.630	110	.101	–32	.301	–172
300.0	.145	–56	5.701	97	.101	–39	.320	170
350.0	.175	–76	5.667	81	.103	–45	.329	150
400.0	.203	–93	5.857	66	.104	–52	.321	125
450.0	.219	–116	5.765	49	.108	–60	.312	91
500.0	.227	–138	5.773	29	.108	–71	.331	47
550.0	.205	–161	5.465	8	.108	–84	.415	0
600.0	.155	177	4.906	–14	.101	–97	.552	–39

Thermal Data: V_{CC} =15 Vdc

Thermal Resistance θ_{jc} ..... 45°C/W
Transistor Power Dissipation P_d ..... 0.248 W
Junction Temperature Rise Above Case T_{jc} ... 11°C

*at 1 dB Gain Compression

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