

Surface Mount Monolithic Amplifiers

50Ω

DC to 2000 MHz

RAM+ SERIES
RAM SERIES



CASE STYLE: AF190

Features

- wideband, DC to 2000 MHz
- cascadable ceramic package
- low noise figure, 2.8 dB typ. RAM-6(+), 3.0 dB, RAM-8(+)
- excellent repeatability
- protected under US patent, 6,943,629 (except RAM-6 and RAM-8)

Applications

- cellular
- UHF/VHF
- communication system
- transmission receivers

+ RoHS compliant in accordance
with EU Directive (2002/95/EC)

The +Suffix identifies RoHS Compliance. See our web site
for RoHS Compliance methodologies and qualifications.

Electrical Specifications

MODEL NO.	FREQ. (MHz)		GAIN (dB) Typical at MHz			Note 1	MAXIMUM POWER (dBm)		DYNAMIC RANGE		VSWR (:1) Typ.		ABSOLUTE MAXIMUM RATING ⁵ (25°)		DC OPERATING POWER ⁷ at Pin 3		THERMAL RESISTANCE ⁵	PRICE \$
	f _L	f _U	100	1000	2000	Min.	Output (1 dB Compr.) Typ.	Input (no damage) Typ.	NF (dB) Typ.	IP3 (dBm) Typ.	In	Out	I (mA)	P (mW)	Current (mA)	Device Volt Typ.	°C/W	Qty. (1-9)
RAM-1(+)	DC	1000	19.0	15.5	—	13.0	+1.5	+13	5.5	+14.0	1.3	1.3	40	200	17	5.0	150	4.95
RAM-2(+)	DC	2000	12.5	11.8	11.0	8.5	+4.5	+13	6.5	+17.0	1.2	1.4	60	325	25	5.0	145	4.95
RAM-3(+)	DC	2000	12.5	12.0	10.5	8.0	+10.0	+13	6.0	+23.0	1.6	1.7	80	425	35	5.0	150	4.95
RAM-4(+)	DC	1000	8.5	8.0	—	7.0	+12.5	+13	6.5	+25.5	1.4	1.9	100	540	50	5.25	140	4.95
RAM-6(+)	DC	2000	20.0	16.0	11.0	9.0	+2.0	+13	2.8	+14.5	1.4	1.3	50	200	16	3.50	155	4.95
RAM-7(+)	DC	2000	13.5	12.5	11.0	8.5	+5.5	+13	4.5	+19.0	2.0	1.8	60	275	22	4.00	155	4.95
RAM-8(+)	DC	1000	32.5	23.5	—	19.0	+12.5	+13	3.0	+27.0	#	#	65	420	36	7.80	175	4.95

NOTES:

- # RAM-8(+) input and output impedances are not 50 ohms, see S-parameter data. Conditionally stable, source and load VSWR<3:1 required. RAM-6(+) conditionally stable, source and load VSWR<5:1 required.
1. Minimum gain at highest frequency. Full temperature range, except roomtemperature for RAM-4(+) models.
2. Low frequency cutoff determined by external coupling capacitors.
3. Frequency at which output power, NF and IP3 are specified: 500 MHz for RAM-4(+), 1000 MHz for all other models.
4. RAM-6(+) potentially unstable with very high VSWR terminations.
5. Thermal resistance θ_{JC} is from hottest junction in device to mounting surface of leads.
6. Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation.
7. Supply voltage must be connected to pin 3 through a bias resistor in order to prevent damage. See "Biasing MMIC Amplifiers" in minicircuits.com/application.html. Reliability predictions are applicable at specified current & normal operating conditions.

Maximum Ratings

Operating Temperature -54°C to 100°C

Storage Temperature -65°C to 150°C

Pin Connections

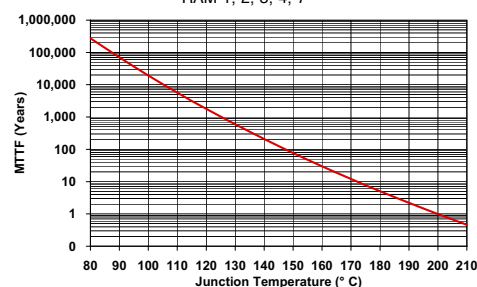
RF IN	1
RF OUT	3
DC	3
GROUND	2,4

Model Identification

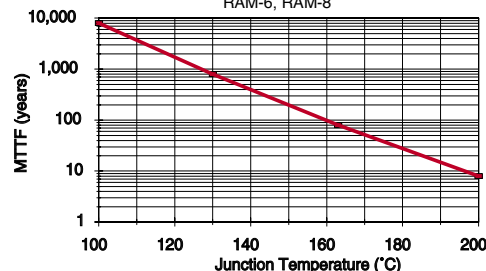
RAM-1(+)	1 or 01
RAM-2(+)	2 or 02
RAM-3(+)	3 or 03
RAM-4(+)	4 or 04
RAM-6(+)	6 or 06
RAM-7(+)	7 or 07
RAM-8(+)	8 or 08

Prefix letter (optional) designates assembly location.

MTTF vs. Junction Temp.
RAM-1,-2,-3,-4,-7



MTTF vs. Junction Temp.
RAM-6, RAM-8



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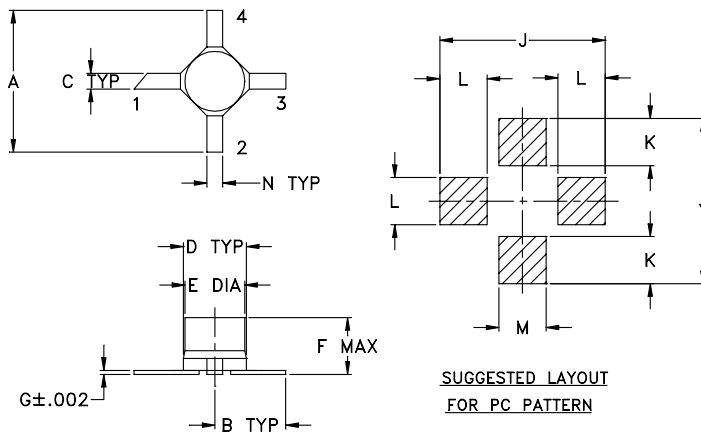
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REV. OR
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RAM SERIES
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RAM+ SERIES RAM SERIES

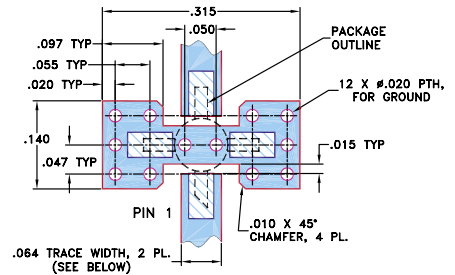
Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	wt.
.180	.090	.020	.100	.083	.072	.005	—	.210	.060	.060	.060	.020	grams
4.57	2.29	0.51	2.54	2.11	1.83	0.13	—	5.33	1.52	1.52	1.52	0.51	.04

Demo Board MCL P/N: MAR/IRAM-TB Suggested PCB Layout (PL-075)



NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. IF PCB DESIGN RULES ALLOW, PLACE GROUND VIAS UNDER THE LAND PATTERN FOR BETTER RF PERFORMANCE. OTHERWISE PLACE GROUND VIAS AS CLOSE TO LAND PATTERN AS POSSIBLE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Typical Biasing Configuration

