

# Surface Mount Monolithic Amplifier

## MAR-6SM+

50Ω

DC to 2000 MHz



CASE STYLE: WW107  
PRICE: \$1.21 ea. QTY. (30)

### Features

- wideband, DC to 2000 MHz
- exact footprint substitute for Avago's MSA-0686
- noise figure, 3.0 dB typ.
- low current, 16 mA

### Applications

- cellular
- PCN instrumentation
- VHF/UHF receivers/transmitters

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

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

### Electrical Specifications at 25°C

MODEL NO.	FREQ. <sup>1</sup> (MHz)		GAIN (dB) Typical at MHz				MAXIMUM POWER (dBm)		DYNAMIC RANGE <sup>3</sup>		VSWR <sup>4</sup> (:1) Typ.		ABSOLUTE MAXIMUM RATING <sup>5</sup> (25°C)		DC OPERATING POWER <sup>6</sup> at Pin 3		THERMAL RESISTANCE <sup>7</sup>
	f <sub>L</sub>	f <sub>u</sub>	100	1000	2000	Min. <sup>2</sup>	Output (1 dB Compr.) Typ.	Input (no damage)	NF (dB) Typ.	IP3 (dBm) Typ.	In	Out	I (mA)	P (mW)	Current (mA)	Device Volt Typ.	°C/W
MAR-6SM+	DC	2000	22	20.0	17.0	15	+3.0	+13	3.0	+14.5	1.2	1.3	50	200	16	3.5	246

#### NOTES:

1. Low frequency cutoff determined by external coupling capacitors.
2. Minimum gain over the full frequency range and temperature range.
3. NF & IP3 specified at 500 MHz
4. Conditionally stable, source and load VSWR<5:1 required. Potentially unstable with very high VSWR terminations.
5. Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation.
6. 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](http://minicircuits.com/application.html). Reliability predictions are applicable at specified current & normal operating conditions.
7. Thermal resistance θ<sub>jc</sub> is from hottest junction in device to mounting surface of leads.

### Maximum Ratings

Operating Temperature	-20°C to 85°C
Storage Temperature	-55°C to 100°C

### Pin Connections

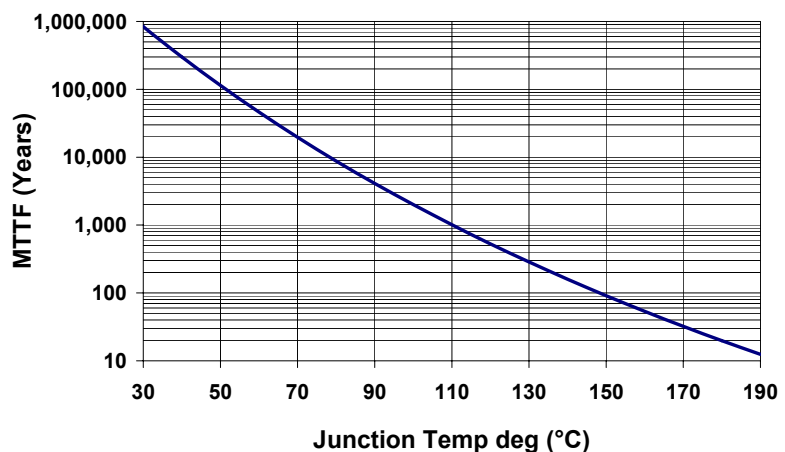
RF IN	1
RF OUT	3
DC	3
GROUND	2,4

### Model Identification

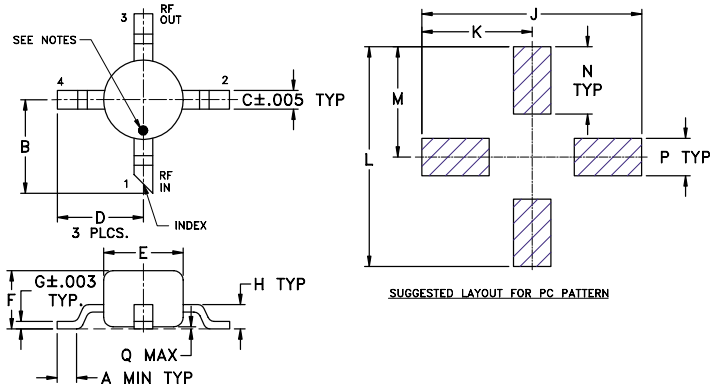
MAR-6SM+	06
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Prefix letter in marking (optional) designates assembly location

### MTTF vs. Junction Temp.



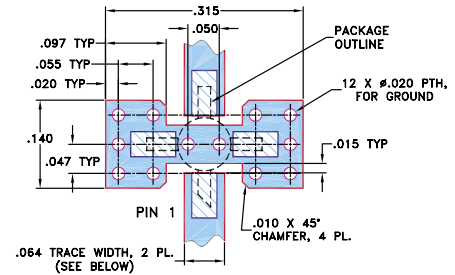
## Outline Drawing



## Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H
.012	.10	.020	.092	.085	.060	.007	.026
0.30	2.54	0.51	2.34	2.16	1.52	0.18	0.66
J	K	L	M	N	P	Q	wt
.235	.118	.235	.118	.072	.040	.020	grams
5.97	3.00	5.97	3.00	1.83	1.02	0.51	.015

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

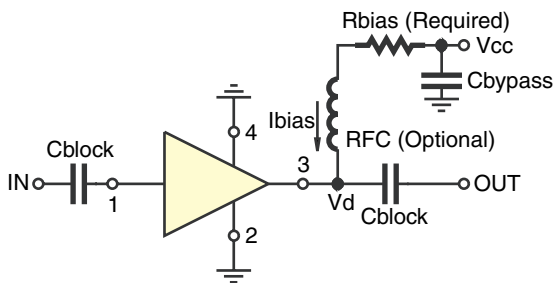


### NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS  $.030 \pm .002$ ; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- 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



## Resistor Values

Vcc	"1%" Res.
6	154
7	215
8	280
9	340
10	402
11	464
12	536
13	590
14	665

