

Surface Mount

Monolithic Amplifier

MAR-2SM+

50Ω

DC to 2000 MHz



CASE STYLE: WW107
PRICE: \$1.17 ea. QTY. (30)

Features

- wideband, DC to 2000 MHz
- exact footprint substitute for Avago's MSA-0286
- unconditionally stable
- protected by US Patent, 6,943,629

+ 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.

Applications

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

Electrical Specifications at 25°C

MODEL NO.	FREQ. ¹ (MHz)		GAIN (dB) Typical at MHz				MAXIMUM POWER (dBm)		DYNAMIC RANGE ³		VSWR (:1) Typ.		ABSOLUTE MAXIMUM RATING ⁴ (25°C)		DC OPERATING POWER ⁵ at Pin 3		THERMAL RESISTANCE ⁶
	f _L	f _U	100	1000	2000	Min. ²	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.	
MAR-2SM+	DC	2000	12.5	12.0	11.0	8.5	+7	+13	3.7	+22	1.3	1.3	60	325	25	5.0	164

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 1000 MHz
4. Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation.
5. 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.
6. Thermal resistance θ_{JC} 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

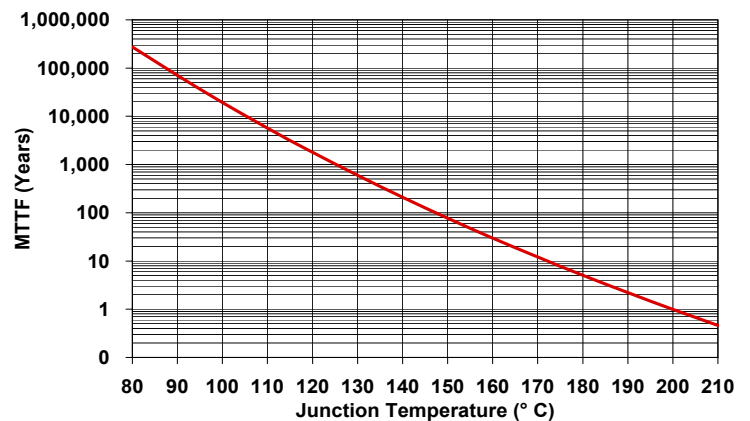
RF IN	1
RF OUT	3
DC	3
GROUND	2,4

Model Identification

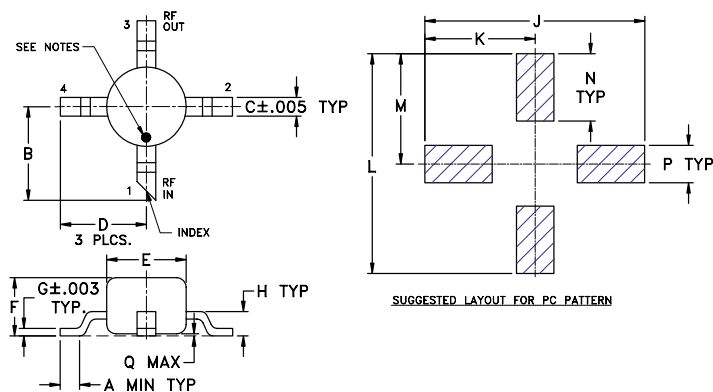
MAR-2SM+	02
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Prefix letter in marking (optional) designates assembly location

MTTF vs. Junction Temp.



Outline Drawing

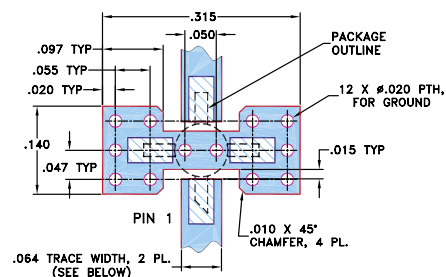


Outline Dimensions (inch/mm)

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)

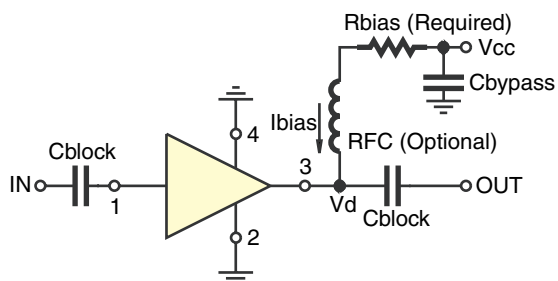


NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B 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



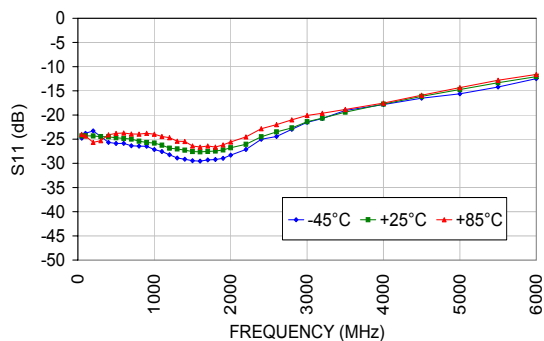
Resistor Values

Vcc	"1%" Res.
7	80.6
8	121
9	162
10	200
11	243
12	280
13	324
14	357
15	402

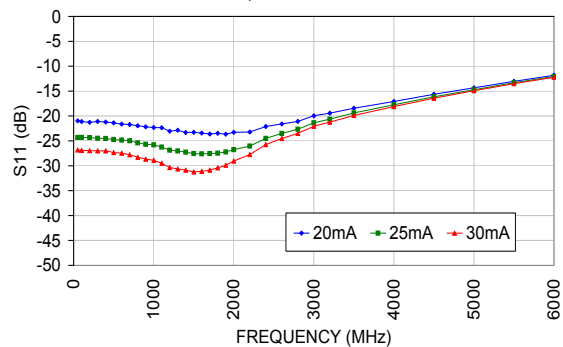
Typical Performance Curves

MAR-2SM+

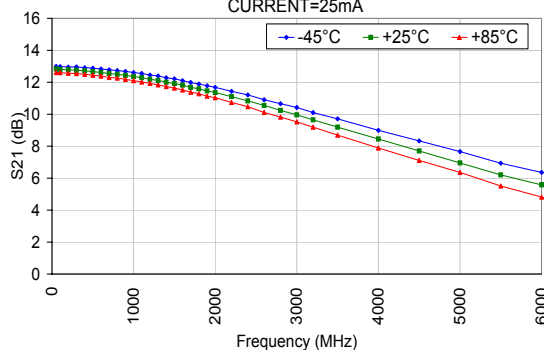
S11 vs. TEMPERATURE
CURRENT=25mA



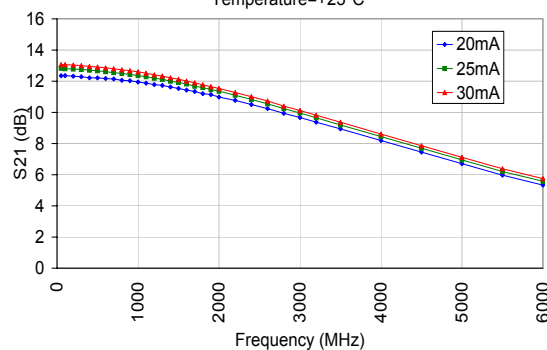
S11 vs. CURRENT
Temperature=+25°C



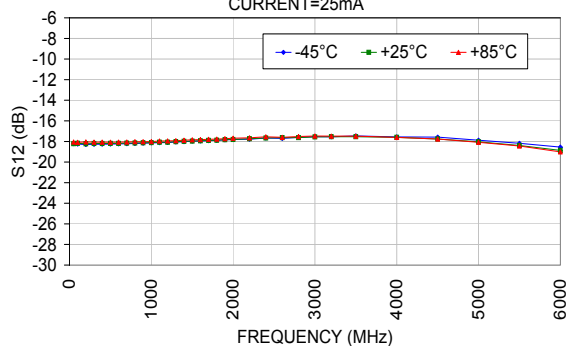
S21 vs. TEMPERATURE
CURRENT=25mA



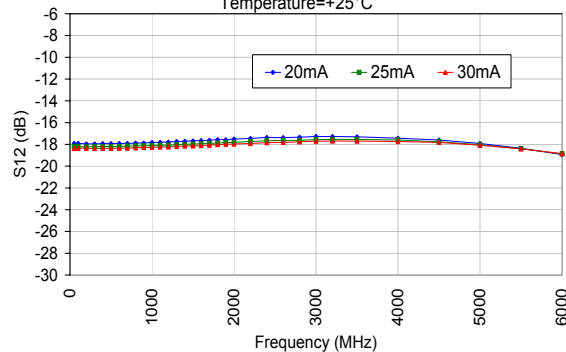
S21 vs. CURRENT
Temperature=+25°C



S12 vs. TEMPERATURE
CURRENT=25mA



S12 vs. CURRENT
Temperature=+25°C

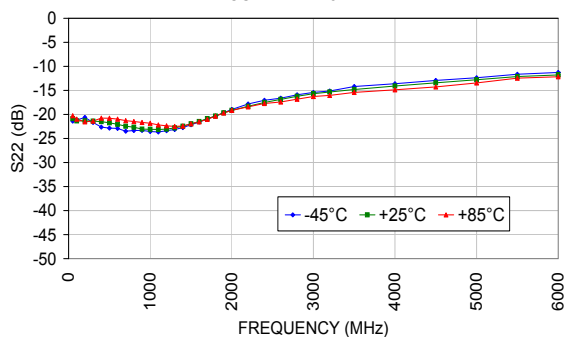


Typical Performance Curves

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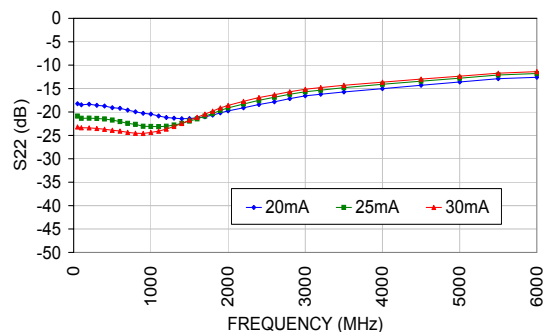
S22 vs. TEMPERATURE

CURRENT=25mA



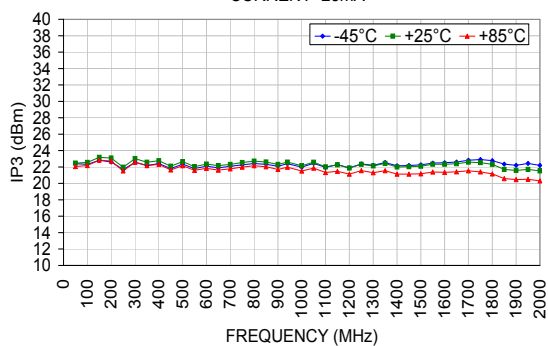
S22 vs. CURRENT

Temperature=+25°C



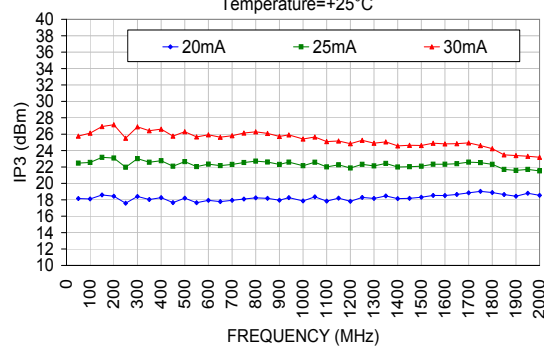
IP3 vs. TEMPERATURE

CURRENT=25mA



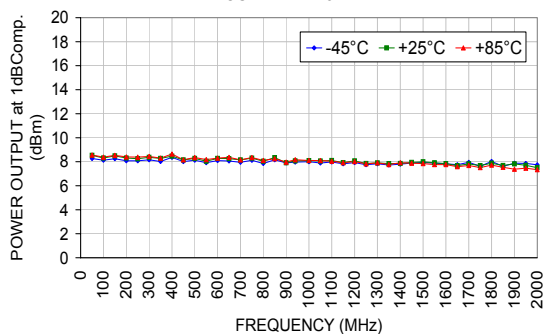
IP3 vs. CURRENT

Temperature=+25°C



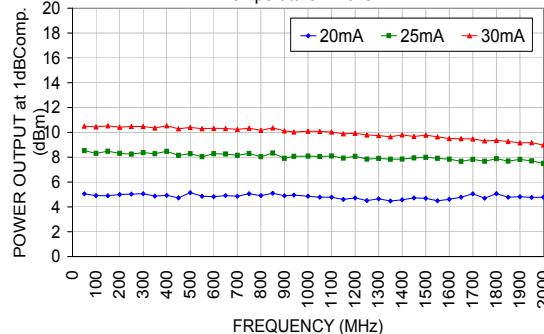
1dB Compression vs. TEMPERATURE

CURRENT=25mA



1dB Compression vs. CURRENT

Temperature=+25°C



Typical Performance Curves

MAR-2SM+

