MONOLITHIC AMPLIFIERS 50 Ω

BROADBAND DC to 3 GHz

MAR-SM MAV-SM

up to +17.5 dBm output

MODEL◆ NO.	FREQ.✪ (MHz)	GAIN (dB) Typical at MHz 100	1000	2000	Note 1 Min.	MAXIMUM POWER (dBm) Output (1 dB Comp.) Typ.	Input (no damage)	DYNAMIC RANGE NF (dB) Typ.	IP3 (dBm) Typ.	VSWR (:1) Typ. In	Out	ABSOLUTE MAXIMUM RATING[7] (25°C) I (mA)	P (mW)	DC OPERATING POWER[8] at Pin 3 Current (mA)	Volt Typ.	THERMAL RESISTANCE[5] θjc °C/W	CASE STYLE Note B1	CONNECTION
MAR-1SM	DC-1000	18.5	15.5	—	13.0	+1.5	+13	5.5	+14.0	1.3	1.2	40	200	17	5.00	115	WW107	cb
MAR-2SM	DC-2000	12.5	12.0	11.0	8.5	+4.5	+13	6.5	+17.0	1.5	1.4	60	325	25	5.00	105	WW107	cb
MAR-3SM	DC-2000	12.5	12.0	10.5	8.0	+10.0	+13	6.0	+23.0	1.5	1.7	70	400	35	5.00	115	WW107	cb
MAR-4SM	DC-1000	8.3	8.0	—	7.0	+12.5	+13	7.0	+25.5	1.5	1.9	85	500	50	5.25	100	WW107	cb
MAR-6SM	DC-2000	20.0	16.0	11.0	9.0	+2.0	+13	3.0	+14.5	1.7	1.7	50	200	16	3.50	120	WW107	cb
MAR-7SM	DC-2000	13.5	12.5	11.0	8.5	+5.5	+13	5.0	+19.0	1.7	1.7	60	275	22	4.00	120	WW107	cb
MAR-8SM	DC-1000	32.5	22.5	—	19.0	+12.5	+13	3.3	+27.0	#	#	65	500	36	7.80	140	WW107	cb
MAV-11SM	50-1000	12.7	10.5	—	9.0	+17.5	+13	3.6	+30.0	1.5	1.7	80	550	60	5.50	125	RRR137	cb

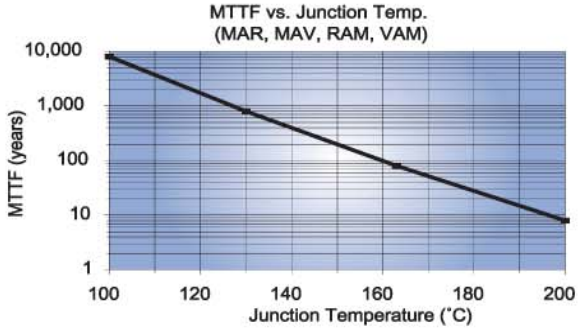
NOTES:

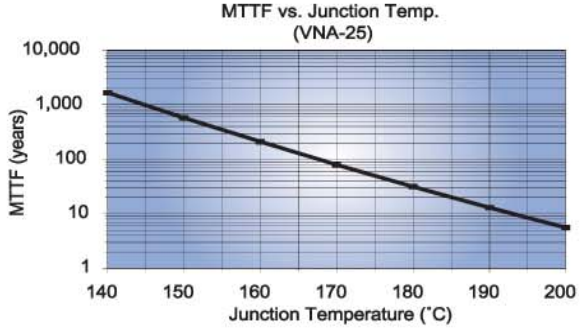
◆ Aqueous washable
☆ Increases below 1500 MHz.
* RAM models are hermetically sealed.
★ Max. Voltage 7V at pin 1 (DC power). Max. voltage 10V at pins 3,6, DC or transient.
❖ Price of RAM models is for 1-9 quantity.
\# Dash-8 models input and output impedances are not 50 ohms, see S-parameter data. Conditionally stable, source and load VSWR<3:1 required. Dash-6 models conditionally stable, source and load VSWR<5:1 required.
✪ Low frequency cutoff determined by external coupling capacitors.
† Specification at 500 MHz.
†† Specification at 2500 MHz.
A. Environmental specifications and re-flow soldering information available in General Information Section.
B1. Units are non-hermetic unless otherwise noted. Details on case dimensions & finishes in "Case Styles & Outline Drawings". Case styles VV105 or BBB123 available, consult factory.
C. Prices and Specifications subject to change without notice.
1. Minimum gain at highest frequency, except VAM-93 at 2 GHz. Full temperature range, except room temperature for Dash-4 models.
2. Model number designated by color dot or alphanumeric code marking.
3. Frequency at which output power, NF and IP3 are specified: 500 MHz for MAR-1SM, MAR-6SM, RAM-1, RAM-6, MAV-11SM, VAM-6, 2 GHz for VAM-93, 1000 MHz for all other models.
4. Dash-6 models potentially unstable with very high VSWR terminations.
5. Thermal resistance θjc 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.

model identification

Model	marking (see note below)
MAR-1SM (see note below)	01
MAR-2SM	02
MAR-3SM	03
MAR-4SM	04
MAR-6SM	06
MAR-7SM	07
MAR-8SM	08
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
MAV-11SM	A
VAM-3	03
VAM-6	06
VAM-7	07
VAM-93	93
VNA-25	-25

Notes:
- Prefix letter (optional) designates assembly location.
- MAR-1SM: limited availability; consult factory.





* RAM

VAM

VNA

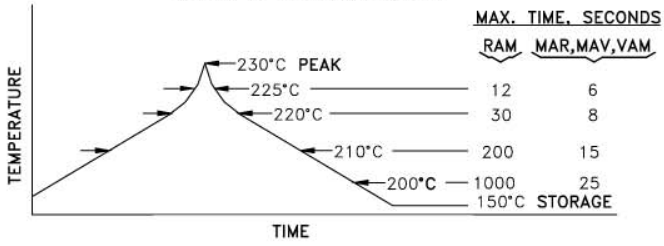
up to +18.2 dBm output

MODEL◆ NO.	FREQ.✪ (MHz)	GAIN (dB) Typical at MHz 100	1000	2000	3000	Note 1 Min.	MAXIMUM POWER (dBm) Output (1 dB Comp.) Typ.	Input (no damage)	DYNAMIC RANGE NF (dB) Typ.	IP3 (dBm) Typ.	VSWR (:1) Typ. In	Out	ABSOLUTE MAXIMUM RATING[7] (25°C) I (mA)	P (mW)	DC OPERATING POWER[8] at Pin 3 Current (mA)	Volt Typ.	THERMAL RESIS-TANCE[5] θjc °C/W	CASE STYLE Note B	CONNECTION
* RAM-1	DC-1000	19.0	15.5	—	—	13.0	+1.5	+13	5.5	+14.0	1.3	1.3	40	200	17	5.00	150	AF190	cb
* 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	5.00	145	AF190	cb
* 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	5.00	150	AF190	cb
* 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	AF190	cb
* 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	AF190	cb
* 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	AF190	cb
* RAM-8	DC-1000	32.5	23.0	—	—	19.0	+12.5	+13	3.0	+27.0	#	#	65	420	36	7.80	175	AF190	cb
VAM-3	DC-2000	11.5	11.0	9.5	—	7.5	+9.0	+13	6.0	+22.0	1.5	1.7	60	240	35	4.70	500	MMM168	cb
VAM-6	DC-2000	19.5	15.0	10.0	—	8.0	+2.0	+13	3.0	+14.0	1.6	1.5	40	125	16	3.30	505	MMM168	cb
VAM-7	DC-2000	13.0	12.0	9.8	—	7.8	+5.5	+13	5.0	+18.0	1.5	1.5	50	175	22	3.80	505	MMM168	cb
NEWVAM-93	DC-3000	22.3	21.2	19.1	17.1	17.0	+12.7	+13	3.7	+27.0	1.5	1.1	75	330	35	3.2	159	MMM168	cb
VNA-25	500-2500	14.0†	18.0	16.0††	—	11.5	+18.2	+10	5.5	+27.0	1.5☆	1.6	105	1000	85	5.0★	125	XX211	hj

features

- cascadable
- excellent repeatability
- wide bandwidth, DC to 2500 MHz
- unconditionally stable, most models
- low cost
- hermetically sealed, RAM models
- low noise figure, 2.8 dB typ
- high output power, up to +18 dBm typ

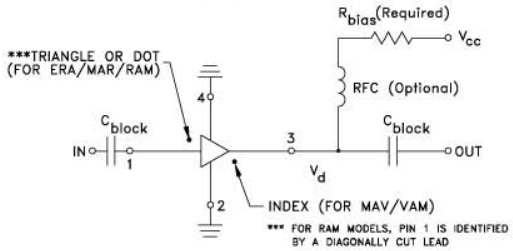
REFLOW – SOLDERING PROFILE



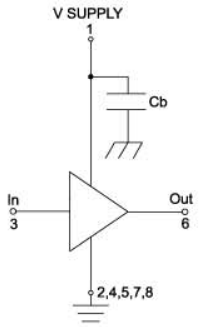
pin connections

PORT	cb	hj
RF IN	1	3
RF OUT	3	6
DC	3	1
GND EXT	2,4	2,4,5,7,8
NOT USED	—	—

typical biasing configuration
ERA/MAR/MAV/RAM/VAM



biasing configuration
VNA



NSN GUIDE

MCL NO.	NSN
MAR-1SM	5962-01-414-8635
MAR-3SM	5962-01-423-1569
MAR-6SM	5962-01-460-6063
RAM-6	5996-01-450-5504