Drop-In

Monolithic Amplifier

DC-2 GHz

Product Features

- Wideband, DC to 2 GHz
- High gain, 22 dB typ. at 0.1 GHz
- Low noise figure, 3.0 dB typ.
- Cascadable
- Aqueous washable

MAR-6+

CASE STYLE: VV105
PRICE: $1.16 ea. QTY. (30)

+ 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.

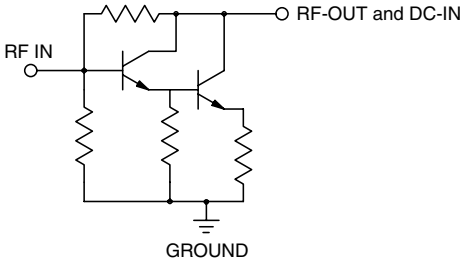
Typical Applications

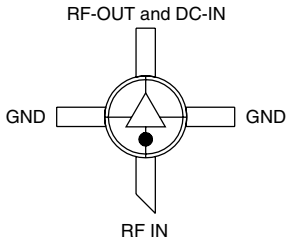
- Cellular
- PCN instrumentation

General Description

MAR-6+ (RoHS compliant) is a wideband amplifier offering high dynamic range. It has repeatable performance from lot to lot. It is enclosed in a Micro-X package. MAR-6+ uses Darlington configuration and is fabricated using silicon technology. Expected MTBF is 2,200 years at 85°C case temperature.

simplified schematic and pin description





Function	Pin Number	Description
RF IN	1	RF input pin. This pin requires the use of an external DC blocking capacitor chosen for the frequency of operation.
RF-OUT and DC-IN	3	RF output and bias pin. DC voltage is present on this pin; therefore a DC blocking capacitor is necessary for proper operation. An RF choke is needed to feed DC bias without loss of RF signal due to the bias connection, as shown in "Recommended Application Circuit".
GND	2,4	Connections to ground. Use via holes as shown in "Suggested Layout for PCB Design" to reduce ground path inductance for best performance.

Electrical Specifications at 25°C and 16mA, unless noted

Parameter		Min.	Typ.[3]	Max.	Units
Frequency Range*		DC		2	GHz
Gain	f=0.1 GHz f=1 GHz f=2 GHz	 15[2]	22 20 17		dB
Input Return Loss	f=DC to 2 GHz		21		dB
Output Return Loss	f=DC to 2 GHz		17.5		dB
Output Power @ 1 dB compression	f=0.5 GHz		+3.0		dBm
Output IP3	f=0.5 GHz		+14.5		dBm
Noise Figure	f=0.5 GHz		3.0		dB
Recommended Device Operating Current			16		mA
Device Operating Voltage			3.5		V
Thermal Resistance, junction-to-case[1]			241		°C/W

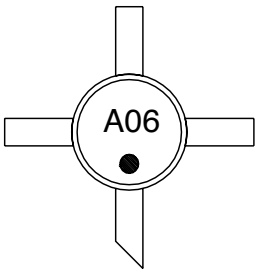
*Guaranteed specification DC-2 GHz. Low frequency cut off determined by external coupling capacitors.

Absolute Maximum Ratings

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Operating Current	50mA
Power Dissipation	200mW
Input Power	13dBm

Note: Permanent damage may occur if any of these limits are exceeded.
These ratings are not intended for continuous normal operation.
[1]Case is defined as ground leads.
[2]Full temperature range.
[3]Based on test data of Model MAR-6SM+ (Case Style WW107).

Product Marking



Additional Detailed Technical Information

Additional information is available on our web site. To access this information enter the model number on our web site home page.

Performance data, graphs, s-parameter data set (.zip file)

Case Style: VV105

Plastic micro-x, .085 body diameter, lead finish: tin/silver/nickel

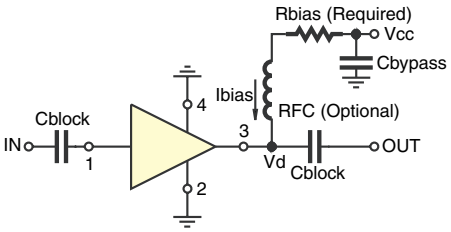
Tape & Reel: F20

Suggested Layout for PCB Design: PL-262

Evaluation Board: TB-432-6+

Environmental Ratings: ENV08T3

Recommended Application Circuit



Test Board includes case, connectors, and components (in bold) soldered to PCB

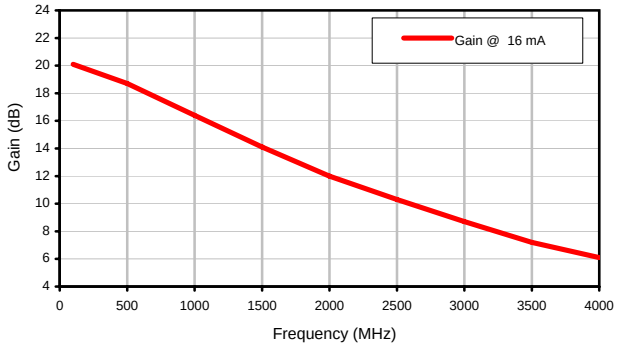
R BIAS	
Vcc	**"1%" Res. Values (ohms) for Optimum Biasing**
6	154
7	215
8	280
9	340
10	402
11	464
12	536
13	590
14	665

Typical Performance Data

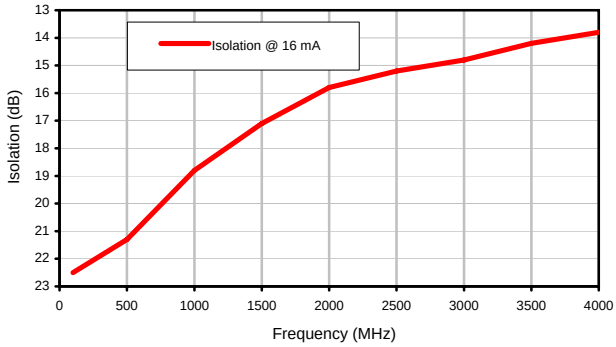
FREQUENCY (MHz)	GAIN (dB) 16 mA	ISOLATION (dB) 16 mA	RETURN LOSS IN (dB) 16 mA	RETURN LOSS OUT (dB) 16 mA
100	20.10	22.50	27.96	27.96
500	18.70	21.30	26.02	20.00
1000	16.40	18.80	17.72	17.08
1500	14.10	17.10	13.56	16.48
2000	12.00	15.80	10.75	15.92
2500	10.30	15.20	9.37	15.92
3000	8.70	14.80	7.74	16.48
3500	7.20	14.20	6.74	17.72
4000	6.10	13.80	6.20	20.00

Typical Performance Curves

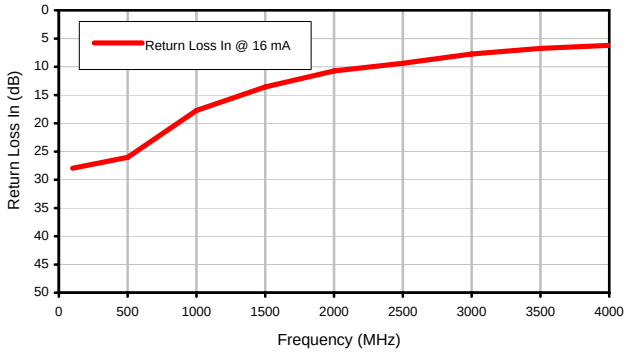
Gain



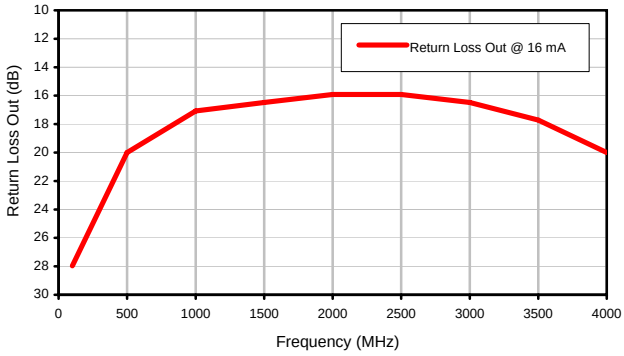
ISOLATION



Return Loss In



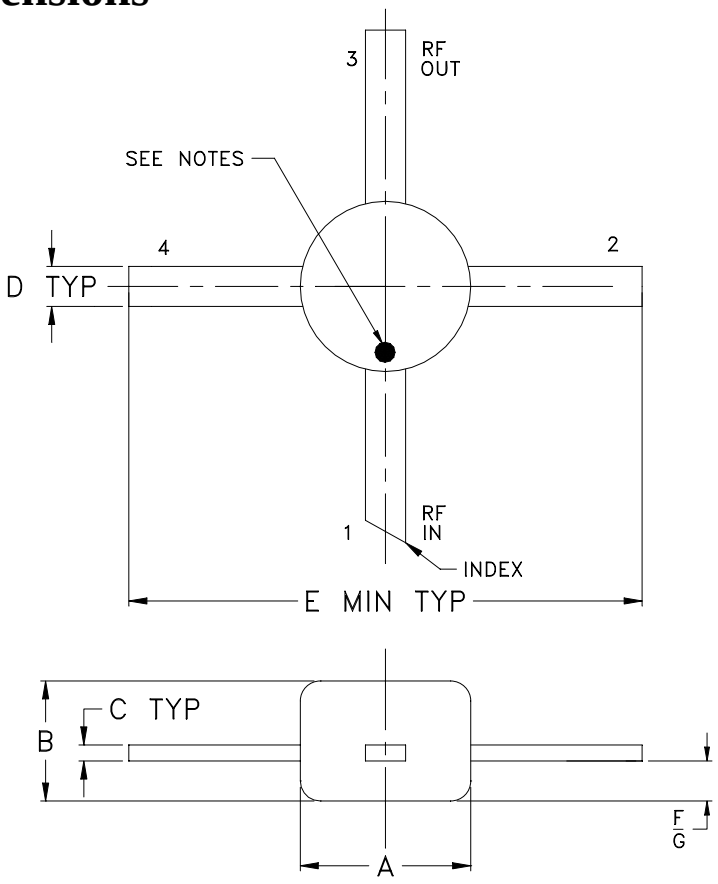
Return Loss Out



Case Style V V

VV105

Outline Dimensions



CASE#	A	B	C	D	E	F	G	WT.GRAMS
VV105	.085 (2.16)	.060 (1.52)	.008 (0.20)	.020 (0.51)	.250 (6.35)	.012 (0.30)	.025 (0.64)	.015

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015

Notes:

1. Case material: Plastic.
2. Termination finish:
   For RoHS Case Styles: Tin-Silver-Nickel plate.
   For RoHS-5 Case Styles: Tin-Lead plate.
3. RF input termination (1) identified by one or both of the following at factory option:
   (a) diagonally cut termination, which be 45° (ref) in either direction;
   (b) orientation mark on the case. Model dash number is identified by color dot or alphanumeric code on case. See specification data sheet.
4. Special Tolerances: Termination width ± .005 inch, termination thickness ± .003 inch.

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