Surface Mount

Monolithic Amplifier DC-2 GHz

Product Features

- Wideband, DC to 2 GHz
- Cascadable
- Aqueous washable
- Protected under US Patent 6,943,629

VAM-3+
VAM-3

CASE STYLE: MMM168
PRICE: $1.19 ea. QTY. (30)

+ 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.

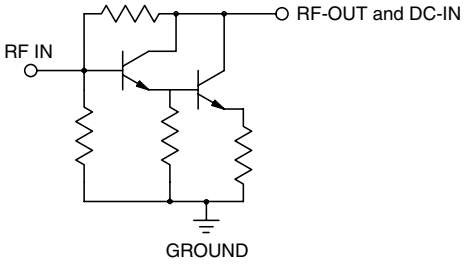
Typical Applications

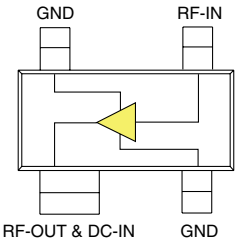
- Cellular
- PCN
- Instrumentation
- UHF/VHF

General Description

VAM-3+ (RoHS compliant) and VAM-3 (non-RoHS compliant) are wideband amplifiers offering high dynamic range. They have repeatable performance from lot to lot. They are enclosed in an SOT143 style package. They use Darlington configuration and are fabricated using InGaP HBT technology. Expected MTBF is 15 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.

Monolithic InGaP HBT MMIC Amplifier

Electrical Specifications at 25°C and 35mA, unless noted

Parameter		Min.	Typ.	Max.	Units
Frequency Range*		DC		2	GHz
Gain	f=0.1 GHz f=1 GHz f=2 GHz	 7.5	11.5 11.0 9.5		dB
Input Return Loss	f=DC to 2 GHz		14		dB
Output Return Loss	f=DC to 2 GHz		11.5		dB
Output Power @ 1 dB compression	f=1 GHz		+9.0		dBm
Output IP3	f=1 GHz		+22		dBm
Noise Figure	f=1 GHz		6.0		dB
Recommended Device Operating Current			35		mA
Device Operating Voltage			4.70		V
Thermal Resistance, junction-to-case[1]			500		°C/W

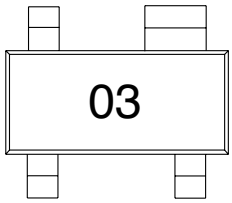
*Guaranteed specification DC-2 GHz. Low frequency cut off determined by external coupling capacitors.

Absolute Maximum Ratings

Parameter	Ratings
Operating Temperature*	-20°C to 85°C
Storage Temperature	-55°C to 100°C
Operating Current	60mA
Power Dissipation	240mW
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.
*Based on typical case temperature rise 5°C above ambient.

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: MMM168

VAM-3+: Plastic molded SOT143 style package, lead finish: tin/silver/nickel
VAM-3: Plastic molded SOT143 style package, lead finish: tin-lead

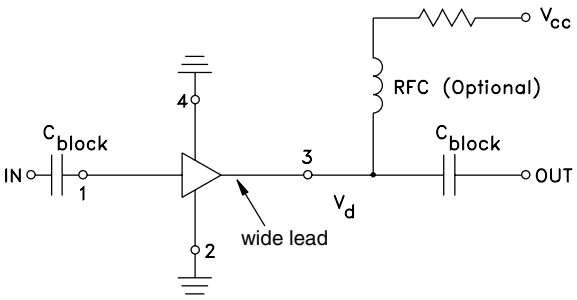
Tape & Reel: F59

Suggested Layout for PCB Design: PL-251

Evaluation Board: TB-415-3+

Environmental Ratings: ENV08

Recommended Application Circuit



R BIAS	
Vcc	**"1%" Res. Values (ohms) for Optimum Biasing**
7	57.6
8	86.6
9	115
10	143
11	169
12	200
13	226
14	255
15	287

ESD Rating

Human Body Model (HBM): Class 1B (500 v to < 1000 v) in accordance with ANSI/ESD STM 5.1 - 2001

Machine Model (MM): Class M1 (< 100 v) in accordance with ANSI/ESD STM 5.2 - 1999

MSL Rating

Moisture Sensitivity: MSL1 in accordance with IPC/JEDECJ-STD-020C

No.	Test Required	Condition	Standard	Quantity
1	Visual Inspection	Low Power Microscope Magnification 40x	MIP-IN-0003 (MCT spec)	45 units
2	Electrical Test	Room Temperature	SCD (MCL spec)	45 units
3	SAM Analysis	Less than 10% growth in term of delamination	J-Std-020C (Jedec Standard)	45 units
4	Moisture Sensitivity Level 1	Bake at 125°C for 24 hours Soak at 85°C/85%RH for 168 hours Reflow 3 cycles at 260°C peak	J-Std-020C (Jedec Standard)	45 units

MSL Test Flow Chart