High Directivity

Monolithic Amplifier 0.5-2.5 GHz

Product Features

- 3V & 5V operation
- no external biasing circuit required
- internal DC blocking at RF input and output
- high directivity, 18 dB typ.
- wide bandwidth, 0.5 to 2.5 GHz
- low noise figure, 3.7 dB typ.
- output power, up to +11 dBm typ.
- excellent repeatability
- low cost

VNA-28

CASE STYLE: XX211-1
PRICE: $1.95 ea. QTY. (25)

Typical Applications

- buffer amplifier
- cellular
- PCN

General Description

VNA-28 is a wideband amplifier offering high dynamic range. It has repeatable performance from lot to lot. It is enclosed in an 8-lead SOIC package. VNA-28 is fabricated using GaAs MESFET technology. Expected MTBF at 85°C case temperature is 70,000 years at 2.8V, 20,000 at 5V.

Pin description

Function	Pin Number	Description
RF IN	3	RF input pin.
RF OUT	6	RF output pin.
DC	1	Bias pin
GND	2,4,5,7,8	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

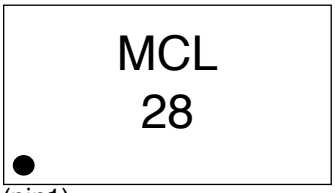
Parameter		Min.	Typ.		Max.	Units
Frequency Range		0.5			2.5	GHz
at DC Volts		5.0	5.0	2.8	5.0	V
Gain	f=0.5 GHz		18.1	17.5		dB
	f=1.0 GHz		22.4	21.1		
	f=1.5 GHz		22.8	21		
	f=2.0 GHz	19.7	21.6	20.1		
	f=2.5 GHz		18.3	17.5		
Input Return Loss	f=0.75 to 2.5 GHz		12.5	14		dB
Output Return Loss	f=0.75 to 2.5 GHz		12.5	12.5		dB
Output Power @ 1 dB compression	f=0.5 to 2.5 GHz		11	9.6		dBm
Output IP3	f=0.5 to 2.5 GHz		22	19.6		dBm
Noise Figure	f=0.5 to 2.5 GHz		3.7	3.7		dB
Directivity (Isolation-Gain)	f=0.5 to 2.5 GHz		16-20	15-21		dB
DC Current			33	30	45	mA
Thermal Resistance, junction-to-case[1]			125			°C/W

Absolute Maximum Ratings

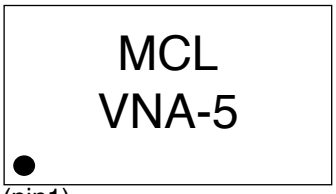
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 150°C
DC Voltage	8V
Power Dissipation	400mW
Input Power	10dBm

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.

Product Marking



or



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: XX211-1

Plastic model, 8 lead SOIC, lead finish: tin lead

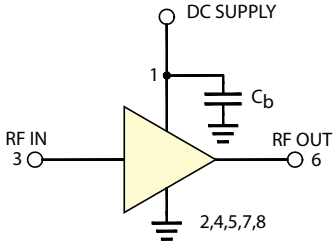
Tape & Reel: F16

Suggested Layout for PCB Design: PL-077

Evaluation Board: TB-01

Environmental Ratings: ENV08T1

Recommended Application Circuit



C_b= 100pF to 10 nF

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

ESD Rating

Human Body Model (HBM): Class 1A (250 v to < 500 v) in accordance with ANSI/ESD STM 5.1 - 2001

Charged Device Model (CDM): Class III (500 v to 1000 v) in accordance with JESD22-C101A

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)	10 units
2	Electrical Test	Room Temperature	SCD (MCL spec)	10 units
3	SAM Analysis	Less than 10% growth in term of delamination	J-Std-020C (Jedec Standard)	10 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)	10 units

MSL Test Flow Chart