5 VOLT-SURFACE MOUNT

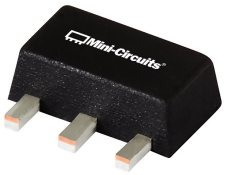
Monolithic Amplifier

GVA-81+

50Ω DC to 6 GHz

THE BIG DEAL

- Gain, 10 dB typ.
- High Pout, P1dB 19.5 dBm typ.
- High IP3, 41 dBm typ. at 1 GHz
- Ruggedized design
- Fixed 5V operation
- Unconditionally stable
- Excellent ESD Protection
- Transient protected, US patent 6,943,629
- Low additive phase noise, typically -171 dBc/Hz @10 KHz



Generic photo used for illustration purposes only

CASE STYLE: DF782

+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

LTE Performance

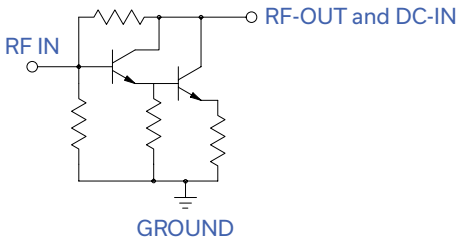
APPLICATIONS

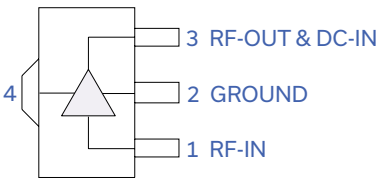
- Base station infrastructure
- Portable Wireless
- CATV & DBS
- MMDS & Wireless LAN
- LTE
- Suitable for low phase noise applications

PRODUCT OVERVIEW

GVA-81+ (RoHS compliant) is a wideband amplifier offering high dynamic range. It has repeatable performance from lot to lot and is enclosed in a SOT-89 package. It uses patented Transient Protected Darlington configuration and is fabricated using InGaP HBT technology.

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", Fig. 2
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.

A. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions and stresses.
B. The RFMD SBB4089Z part number is used for identification and comparison purposes only.

REV. C
ECO-010563
GVA-81+
211108

Monolithic Amplifier GVA-81+

ELECTRICAL SPECIFICATIONS[1] AT 25°C AND 5V, UNLESS NOTED

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range[2]		DC		6	GHz
Gain	0.1	9.5	10.5	11.5	dB
	1.0	—	10.5	—	
	2.0	9.0	10.0	11.0	
	3.0	—	9.3	—	
	4.0	8.0	8.7	10.0	
	6.0	—	8.1	—	
InpMagnitude of Gain Variation versus Temperature[3] (values are negative)	0.1	—	0.0005	—	dB/°C
	1.0	—	0.0010	—	
	2.0	—	0.0016	0.005	
	3.0	—	0.0020	—	
	4.0	—	0.0025	—	
	6.0	—	0.0036	—	
Input Return Loss	0.1	—	38.0	—	dB
	1.0	—	27.0	—	
	2.0	17	20.1	—	
	3.0	—	17.4	—	
	4.0	—	16.9	—	
	6.0	—	18.5	—	
Reverse Isolation	2.0		20.8		dB
Output Power at 1dB Compression	0.1	18.0	19.1	—	dBm
	1.0	18.0	19.1	—	
	2.0	18.0	19.7	—	
	3.0	—	20.0	—	
	4.0	—	19.4	—	
	6.0	—	17.7	—	
Output IP3	0.1	—	42.0	—	dBm
	1.0	—	41.3	—	
	2.0	34	36.6	—	
	3.0	—	35.0	—	
	4.0	—	33.2	—	
	6.0	—	31.1	—	
Noise Figure	0.1	—	7.3	7.9	dB
	1.0	—	7.3	—	
	2.0	—	7.4	7.9	
	3.0	—	7.6	—	
	4.0	—	7.7	8.2	
	6.0	—	8.3	—	
Additive Phase Noise 2 GHz, 10 KHz offset			-171		dBc/Hz
Group Delay		4.8	98		psec
Device Operating Voltage		94	5.0	5.2	V
Device Operating Current			103	112	mA
Device Current Variation vs. Temperature			62		µA/°C
Device Current Variation vs Voltage			0.036		mA/mV
Thermal Resistance, junction-to-ground lead			68		°C/W

(1) Measured on Mini-Circuits test board TB-313. See Characterization Test Circuit (Fig. 1)
(2) Guaranteed specification DC*-7 GHz. *Low frequency cut off determined by external coupling capacitors and RF Choke (RFC).
(3) (Gain at 85°C, Gain at -45°C)/130

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MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature (ground lead)	-40°C to 85°C
Storage Temperature	-65°C to 150°C
Operating Current at 5V	160mA
Power Dissipation	0.855W
Input Power	13dBm
DC Voltage on Pin 3	5.9V

Permanent damage may occur if any of these limits are exceeded.
Electrical maximum ratings are not intended for continuous normal operation.

CHARACTERIZATION TEST CIRCUIT

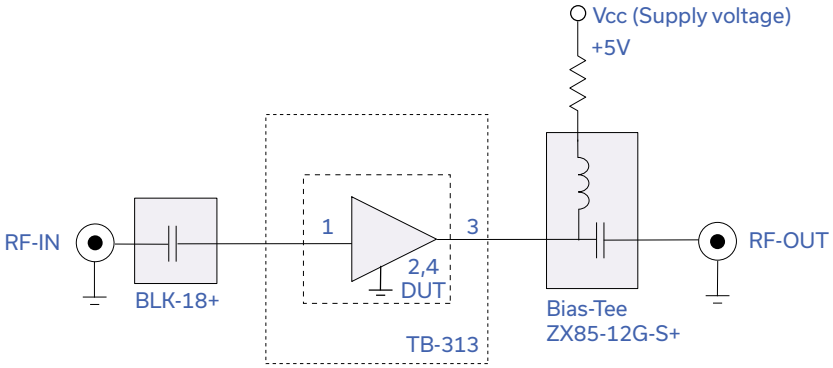


Fig 1. Block Diagram of Test Circuit used for characterization. (DUT soldered on Mini-Circuits Test Board TB-313)
Gain, Output power at 1dB compression (P1 dB) and output IP3 (OIP3) are measured using R&S Network Analyzer ZVA-24. Noise Figure measured using Agilent's N5242A PNA-X microwave network analyzer.

Conditions:
1. Gain and Return loss: Pin= -25dBm
2. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, 0 dBm/tone at output.

RECOMMENDED APPLICATION CIRCUIT

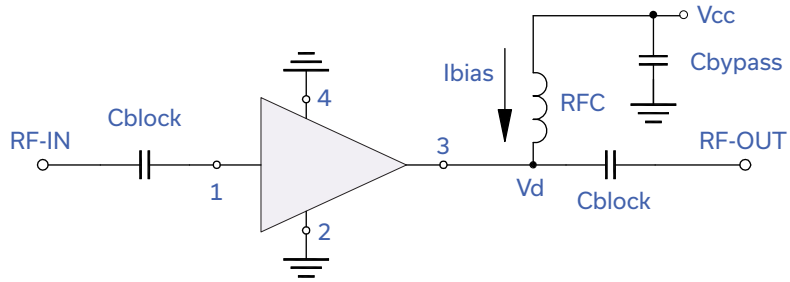
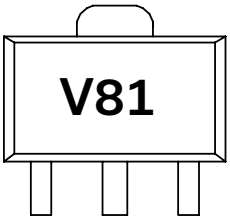


Fig 2. Test Board includes case, connectors, and components soldered to PCB

PRODUCT MARKING



Marking may contain other features or characters for internal lot control