5 VOLT-SURFACE MOUNT

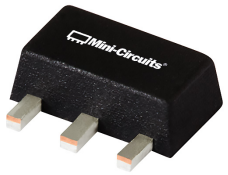
Monolithic Amplifier

GVA-83+

50Ω DC-7 GHz

THE BIG DEAL

- High Gain, 20 dB typ. at 100 MHz
- High Pout, P1dB 18 dBm typ.
- High IP3, 33 dBm typ. at 100 MHz
- Ruggedized Design
- 5V operation
- Unconditionally stable
- Excellent ESD Protection
- Transient protected, US patent 6,943,629



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

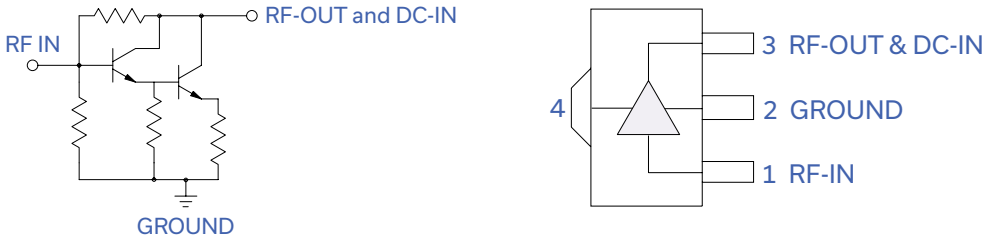
APPLICATIONS

- Base station infrastructure
- Portable Wireless
- CATV & DBS
- MMDS & Wireless LAN
- LTE

PRODUCT OVERVIEW

GVA-83+ (RoHS compliant) is a wideband amplifier offering high dynamic range. Lead finish is SnAgNi. 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.

REV. B
ECO-010563
GVA-83+
211108

Monolithic Amplifier GVA-83+

ELECTRICAL SPECIFICATIONS[1] AT 25°C, 5V, R=7.5Ω, UNLESS NOTED

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range[2]		DC		7	GHz
Gain	0.1	18.4	20.5	22.6	dB
	1.0	—	19.3	—	
	2.0	15.4	17.1	18.8	
	3.0	—	15.2	—	
	4.0	12.0	13.8	15.2	
	6.0	—	12.3	—	
	7.0	—	11.2	—	
Magnitude of Gain Variation versus Temperature[3] (values are negative)	0.1	—	0.008	—	dB/°C
	1.0	—	0.0034	—	
	2.0	—	0.0045	0.0090	
	3.0	—	0.0061	—	
	4.0	—	0.0009	—	
	6.0	—	0.0123	—	
	7.0	—	0.0120	—	
Input Return Loss	0.1	—	41.0	—	dB
	1.0	—	26.0	—	
	2.0	13.0	19.5	—	
	3.0	—	17.7	—	
	4.0	—	17.6	—	
	6.0	—	19.1	—	
	7.0	—	14.1	—	
Output Return Loss	0.1	—	14.2	—	dB
	1.0	—	13.1	—	
	2.0	8.0	11.2	—	
	3.0	—	10.2	—	
	4.0	—	10.8	—	
	6.0	—	11.6	—	
	7.0	—	9.7	—	
Reverse Isolation	2.0		26.5		dB
Output Power @1 dB compression	0.1	16.5	18.1	—	dBm
	1.0	16.5	18.5	—	
	2.0	16.5	18.6	—	
	3.0	—	18.4	—	
	4.0	—	18.1	—	
	6.0	—	18.1	—	
	7.0	—	17.3	—	
Output IP3	0.1	—	33.0	—	dBm
	1.0	—	32.5	—	
	2.0	29.0	31.5	—	
	3.0	—	31.3	—	
	4.0	—	31.2	—	
	6.0	—	29.3	—	
	7.0	—	28.5	—	
Noise Figure	0.1	—	5.9	7.0	dB
	1.0	—	6.0	—	
	2.0	—	6.2	7.3	
	3.0	—	6.2	—	
	4.0	—	6.5	—	
	6.0	—	7.2	—	
	7.0	—	7.5	—	
Group Delay			100		psec
Supply Operating Voltage		4.8	5.0	5.2	V
Device Operating Current		61	72	82	mA
Device Current Variation vs. Temperature			28		µA/°C
Device Current Variation vs Voltage			0.030		mA/mV
Thermal Resistance, junction-to-ground lead			88		°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 w/7.5 Ω Rbias	120mA
Power Dissipation	0.74W
Input Power	20dBm
DC Voltage on Pin 3	5.8V

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

CHARACTERIZATION TEST CIRCUIT

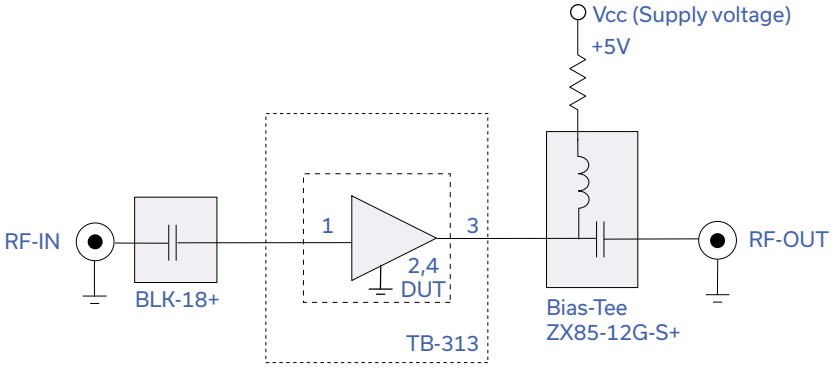


Fig 1. Block Diagram of Test Circuit used for characterization. (DUT soldered on Mini-Circuits Test Board TB-313)
Gain, Output power at 1dB compression (P1 dB) and output IP3 (OIP3) are measured using R&S Network Analyzer ZVA-24. Noise Figure measured using Agilent's N5242A PNA-X microwave network analyzer.

Conditions:
1. Total resistance (Rb) of DC bias path equal 7.5Ω
2. Gain and Return Loss: Pin= -25dBm
3. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, 0 dBm/tone at output.

RECOMMENDED APPLICATION CIRCUIT

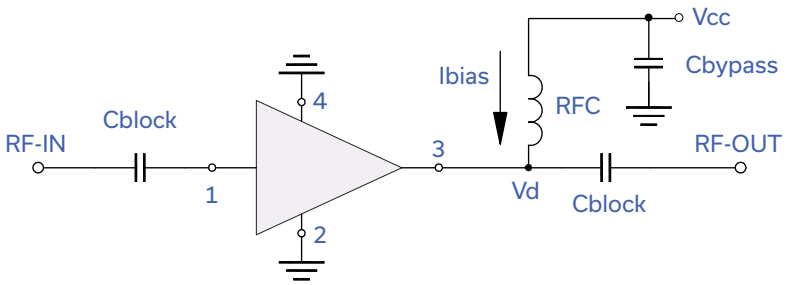
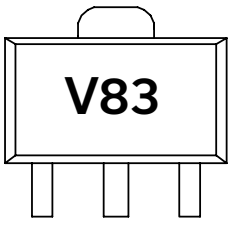


Fig 2. Test Board includes case, connectors, and components soldered to PCB.

Note 1. If DC resistance of RF Choke is > 0.5Ω, reduce 7.5Ω Rbias accordingly.

PRODUCT MARKING



Marking may contain other features or characters for internal lot control