

Surface Mount

# Monolithic Amplifier

DC-3 GHz

## Features

- Miniature SOT-89 package
- Low noise figure, 2.7 dB typ.
- Wide bandwidth, DC to 3 GHz
- Excellent package for heat dissipation, exposed metal bottom
- Advanced silicon technology
- Low thermal resistance for high reliability
- Aqueous washable

## Applications

- Cellular
- PCS
- Communication receivers & transmitters



## Gali S66+

CASE STYLE: DF782  
PRICE: \$0.99 ea. QTY. (30)

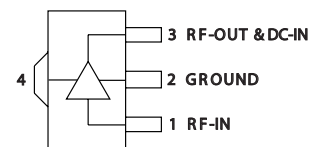
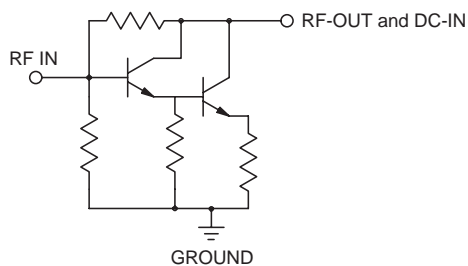
+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

## General Description

Gali S66+ (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 Darlington configuration and is fabricated using silicon technology. Expected MTBF is 4,000 years at 85°C case temperature. Gali S66+ is designed to be rugged for ESD.

## 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.

**Mini-Circuits**  
ISO 9001 ISO 14001 AS 9100 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp).

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Page 1 of 4

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

Parameter	Min.	Typ.	Max.	Units
Frequency Range	DC		3	GHz
Gain				dB
	f=0.1 GHz	22		
	f=1 GHz	20.3		
	f=2 GHz	15	17.3	
	f=3 GHz		15.5	
Input Return Loss	f= DC to 3 GHz	19		dB
Output Return Loss	f= DC to 3 GHz	11.5		dB
Output Power @ 1 dB compression	f=2 GHz	1.0	2.8	dBm
Output IP3	f=2 GHz		18	dBm
Noise Figure	f=2 GHz		2.7	dB
Recommended Device Operating Current		16		mA
Device Operating Voltage	3.0	3.5	4.0	V
Device Voltage Variation vs. Temperature at 16 mA		-4.7		mV/°C
Device Voltage Variation vs. Current at 25°C		6.7		mV/mA
Thermal Resistance, junction-to-case <sup>1</sup>		136		°C/W

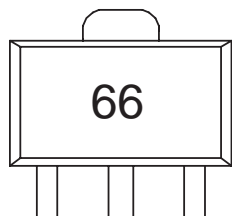
\*Guaranteed specification DC-3 GHz. Low frequency cut off determined by external coupling capacitors.

**Absolute Maximum Ratings**

Parameter	Ratings
Operating Temperature	-45°C to 85°C
Storage Temperature	-65°C to 150°C
Operating Current	50mA
Input Power	13dBm

Note: Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation.  
<sup>1</sup>Case is defined as ground leads.

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: DF782

Plastic package, exposed paddle, lead finish: tin/silver/nickel

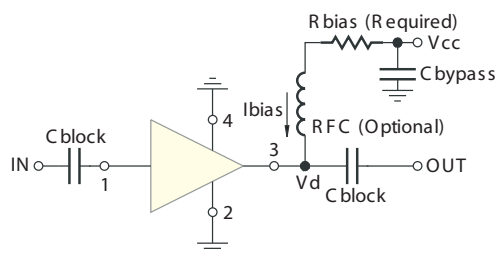
Tape & Reel: F55

Suggested Layout for PCB Design: PL-019

Evaluation Board: TB-409-S66+

Environmental Ratings: ENV08T2

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
7	187
8	243
9	301
10	374
11	432
12	499
13	562
14	619
15	681
16	750
17	806
18	866
19	931
20	976

**ESD Rating**

Human Body Model (HBM): Class 1C (1000v to < 2000v) in accordance with ANSI/ESD STM 5.1 - 2001

Machine Model (MM): Class M3 (200v to < 400v) 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**

