The task

A general purpose gain block

Gali 59+

Surface Mount Monolithic Amplifier

DC-5 GHz

Features

- Miniature SOT-89 Package
- Frequency range, DC to 5 GHz
- Internally Matched to 50 Ohms
- Output power, 17.6 dBm typ.



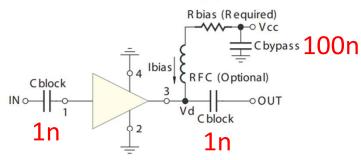
Generic photo used for illustration purposes only



CASE STYLE: DF782

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

Recommended Application Circuit



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

8V supply to limit dissipation in the bias resistor -> **51** Ω[°] Current 65mA -> power **220** mW RFC – **470**nH (SRF ~ 70cm) Plus connectors

		Ga
RE	BIAS	CAS
Vcc	"1%" Res. Values (ohms) for Optimum Biasing	+Re The +Suffix identifies for RoHS Compliance
7	36.5	
8	51.1	
9	64.9	
10	80.6	
11	97.6	
12	113	
13	127	
14	143	
15	158	
16	174	
17	191	
18	205	
19	221	
20	237	
	Vcc 7 8 9 10 11 12 13 14 15 16 17 18 19	for Optimum Biasing 7 36.5 8 51.1 9 64.9 10 80.6 11 97.6 12 113 13 127 14 143 15 158 16 174 17 191 18 205 19 221

Parts – found in catalogues

Parts	Package	QTY	Mouser Part Number
Gali 59+	DF782	1	139-GALI-59
100n Capacitor	SMD 0805	1	81-GCM21BL81H104KA7L
1n Capacitors	SMD 0805	2	81-GRM2195C2A102JA1J
470nH	SMD 1008	1	81-LQW2UASR47J00L
140 Ohm, 1 W	SMD 2512	1	603-RC2512FK-07140RL
Power (molex 2 pin)	KK-254	1	538-171856-3002
SMA	SMA	2	712-CONSMA001-G

Work out what parts and what package you need first Find from a supplier – ensure in stock...

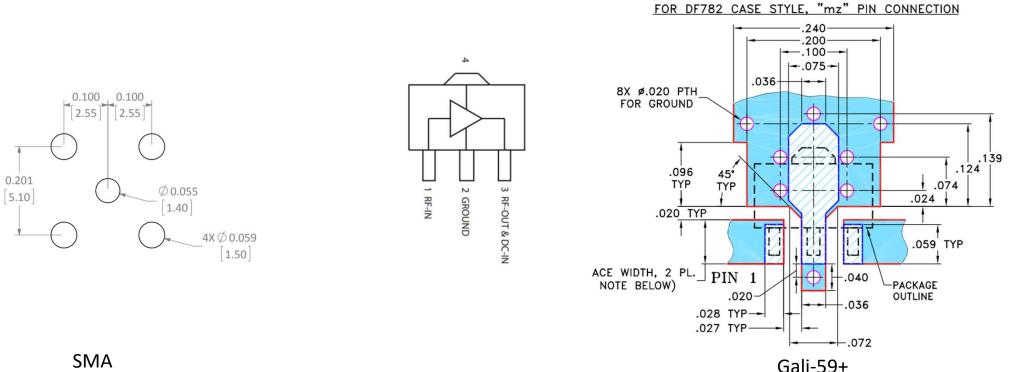








Footprints – many included as standard, if not they can be created in the editor



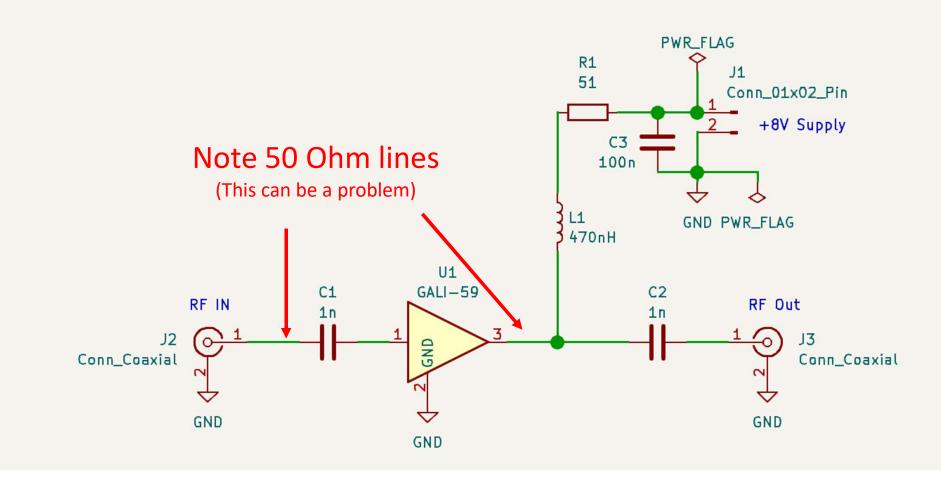
SUGGESTED MOUNTING CONFIGURATION

There is a tool for calculating track sizes

						—		×
Transmission Line Type	Substrate Para	ameters			Physical	Parameters		
General system design Transmission Line Type Regulators Microstrip Line Power, current and isolation Coplanar wave guide Electrical Spacing Coplanar wave guide w/ ground plane Via Size Coplanar wave guide w/ ground plane Track Width Rectangular Waveguide Fusing Current Coaxial Line Cable Size Coupled Microstrip Line Wavelength Stripline Transmission Lines Twisted Pair	εr: tan δ: ρ: Η: Η(top): Τ:	4.3 0.02 1.72e-08 1.57 10 0.035 0.05	 mm ~ mm ~		W: 3. L: 95 Analyze ↓ Synt Electrical Parameters Z0: 50.5397		mr	m ~ m ~ e ↑
	μ(substrate): 1 μ(conductor): 1 Component Parameters Frequency: 432 MHz ×				Ang_l: 87.9854 deg ~ Results			
				Conductor losses: 0.037883 dB Dielectric losses: 0.119116 dB Skin depth: 3.17572 µm				
	 Microstrip Line Coplanar wave guide Coplanar wave guide w/ ground plane Rectangular Waveguide Coaxial Line Coupled Microstrip Line Stripline 	 Microstrip Line Coplanar wave guide Coplanar wave guide w/ ground plane Rectangular Waveguide Coaxial Line Coupled Microstrip Line Stripline Twisted Pair 	Microstrip Lineεr:4.3Coplanar wave guide1.72e-08Coplanar wave guide w/ ground planeμ:Rectangular WaveguideH:Coaxial Line1.57Coupled Microstrip Line0.035Stripline0.05Twisted Pair1	Microstrip Line εr: 4.3 Coplanar wave guide tan δ: 0.02 Coplanar wave guide w/ ground plane p: 1.72e-08 Rectangular Waveguide H: 1.57 Coaxial Line T: 0.035 Coupled Microstrip Line Roughness: 0.05 Stripline μ(substrate): 1 Twisted Pair Component Parmeters	Microstrip Lineεr:4.3Coplanar wave guidetan δ:0.02Coplanar wave guide w/ ground planep:1.72e-08Rectangular WaveguideH:1.57mm ~Coaxial LineT:0.035mm ~Coupled Microstrip LineRoughness:0.05mm ~Striplineμ(substrate):1Twisted PairComponent ParametersComponent Parameters	• Microstrip Lineεr:4.3W: 3.• Coplanar wave guidetan δ:0.02L:95• Coplanar wave guide w/ ground planep:1.72e-08L:95• Rectangular WaveguideH:1.57mm ~Analy• Coaxial Line10mm ~T:0.035mm ~• Coupled Microstrip Line0.05mm ~Analy• Stripline1Analy• Twisted Pair1AnalyComponent Parameters Frequency: 432MHz ~MHz ~MHz ~	 Microstrip Line Coplanar wave guide Coplanar wave guide w/ ground plane Rectangular Waveguide Coaxial Line Coupled Microstrip Line Stripline Twisted Pair Component Parameters Frequency: 432 MHz → M	Transmission Line Type Substrate Pair Microstrip Line c:

For 50 ohms on 1.6mm FR4 it is about 3mm, for 0.8mm PCB it is about 1.5mm

This is the schematic we are aiming for



The PCB might look like this:

