

Surface Mount

Monolithic Amplifier

DC-5 GHz

Product Features

- DC-5 GHz
- Output power, 15.8 dBm typ.
- Excellent package for heat dissipation, exposed metal bottom
- Flat output power to 10 GHz
- Aqueous washable
- Protected by US Patent 6,943,629



LEE-49+

CASE STYLE: FG873
PRICE: \$1.79 ea. QTY. (25)

**+ 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.

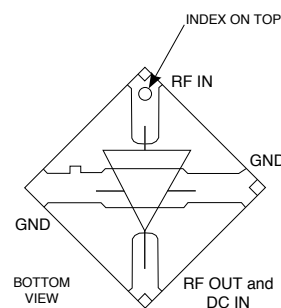
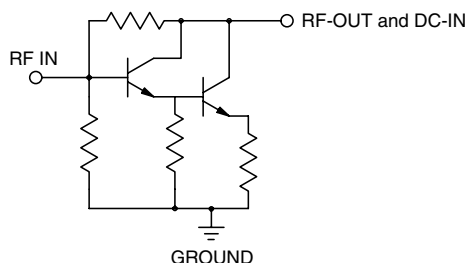
Typical Applications

- Cellular
- PCS
- Communication receivers & transmitters
- Satellite communication, military

General Description

LEE-49+ (RoHS compliant) is a wideband amplifier offering high dynamic range. It has repeatable performance from lot to lot. It is enclosed in a 3X3mm MCLP molded plastic package. Expected MTBF is 200 years at 85°C case temperature.

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.

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RF/IF MICROWAVE COMPONENTS

REV. H
M108520
ED-10757/4
LEE-49+
RS/YB/FL
070125
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Electrical Specifications at 25°C and 65mA, unless noted

Parameter		Min.	Typ.	Max.	Units
Frequency Range*		DC		5	GHz
Gain	f=0.1 GHz	12.0	14.0		dB
	f=1 GHz		13.9		
	f=2 GHz		14.3		
	f=4 GHz		14.0		
	f=5 GHz		13.1		
	f=8 GHz		7.8		
Input Return Loss	f= DC to 3 GHz		12.5		dB
	f= 3 to 5 GHz		21		
Output Return Loss	f= DC to 3 GHz		15.5		dB
	f= 3 to 5 GHz		15.5		
Output Power @ 1 dB compression	f= 2 GHz	15.8	16.7		dBm
	f= 5 GHz	9.7	10.7		
Output IP3			33		dBm
Noise Figure			5.5		dB
Recommended Device Operating Current			65		mA
Device Operating Voltage		4.2	4.9	5.3	V
Thermal Resistance, junction-to-case ¹			229		°C/W

*Guaranteed specification DC-5 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	85mA
Input Power	15dBm

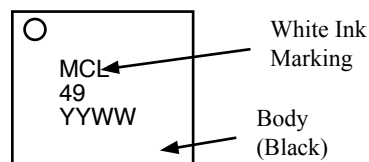
Note: Permanent damage may occur if any of these limits are exceeded.

These ratings are not intended for continuous normal operation.

¹Case is defined as ground leads.

*Based on typical case temperature rise 5°C above ambient.

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: FG873

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

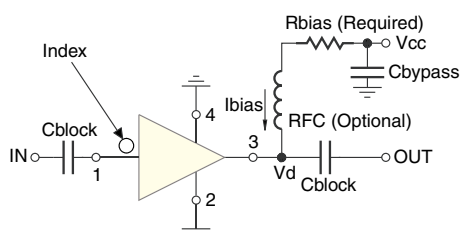
Tape & Reel: F68

Suggested Layout for PCB Design: PL-252

Evaluation Board: TB-413-49+

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	34.8
8	48.7
9	63.4
10	78.7
11	95.3
12	110
13	127
14	140
15	158
16	174
17	191
18	205
19	221
20	232

Typical Performance Data

**NOTE: Use PDF Bookmarks to view DATA at required conditions
or to view GRAPHS.**

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: INPUT POWER = -15dBm, Icc = 65mA, Vd = 4.96V @Temperature = +25degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)	(dB)
50	14.01	18.42	11.07	14.85	1.09	0.65	33.51	16.96	4.73
100	13.98	18.43	11.02	14.87	1.09	0.65	33.47	17.24	4.92
200	13.96	18.45	11.06	14.87	1.10	0.65	33.52	16.92	4.48
300	13.95	18.47	11.11	14.91	1.10	0.64	33.59	16.90	4.89
400	13.95	18.49	11.15	14.88	1.10	0.64	33.06	17.20	4.67
500	13.94	18.49	11.19	14.85	1.10	0.64	32.93	17.09	4.97
600	13.94	18.49	11.22	14.81	1.10	0.64	32.83	17.00	4.58
700	13.95	18.49	11.26	14.80	1.10	0.64	33.00	17.15	4.95
800	13.97	18.50	11.35	14.75	1.10	0.64	33.19	17.24	4.69
900	13.98	18.50	11.42	14.72	1.10	0.64	33.12	17.16	4.87
1000	14.00	18.50	11.50	14.69	1.10	0.64	32.84	17.28	4.72
1100	14.01	18.50	11.55	14.64	1.10	0.65	32.59	16.94	4.81
1200	14.04	18.50	11.71	14.58	1.10	0.65	32.41	16.67	4.80
1300	14.06	18.50	11.80	14.49	1.10	0.65	32.13	16.75	4.79
1400	14.09	18.50	11.93	14.42	1.10	0.65	31.72	16.72	4.89
1500	14.11	18.50	12.03	14.33	1.10	0.65	31.49	16.73	4.99
1600	14.15	18.49	12.20	14.24	1.10	0.65	31.82	16.68	4.96
1700	14.17	18.50	12.34	14.14	1.10	0.66	32.22	16.76	4.73
1800	14.20	18.50	12.49	14.06	1.10	0.66	31.79	16.58	4.85
1900	14.23	18.49	12.70	13.99	1.09	0.66	31.23	16.64	4.67
2000	14.26	18.48	12.88	13.90	1.09	0.66	30.88	16.70	4.93
2100	14.28	18.48	13.14	13.84	1.09	0.66	30.44	16.61	4.76
2200	14.31	18.47	13.42	13.76	1.09	0.66	30.07	16.55	4.93
2300	14.33	18.46	13.71	13.70	1.09	0.66	29.75	16.57	4.77
2400	14.35	18.46	14.02	13.63	1.09	0.66	29.31	16.32	5.07
2500	14.36	18.43	14.41	13.58	1.09	0.66	28.83	16.18	4.80
2600	14.37	18.43	14.75	13.51	1.09	0.66	28.58	15.99	5.10
2700	14.40	18.40	15.19	13.43	1.08	0.67	28.33	15.81	4.90
2800	14.39	18.40	15.65	13.39	1.08	0.66	28.13	15.55	5.09
3000	14.39	18.37	16.62	13.23	1.08	0.66	27.54	15.09	5.08
3200	14.35	18.34	17.65	13.15	1.08	0.65	26.73	14.60	5.09
3400	14.30	18.30	18.67	13.02	1.08	0.65	26.12	14.17	5.13
3600	14.21	18.25	19.37	12.91	1.07	0.64	25.36	13.67	5.14
3800	14.09	18.20	19.83	12.86	1.07	0.63	24.75	13.13	5.24
4000	13.92	18.16	19.76	12.77	1.07	0.62	24.18	12.60	5.28
4200	13.72	18.12	19.26	12.70	1.08	0.60	23.53	12.16	5.34
4400	13.52	18.06	18.33	12.56	1.08	0.59	22.99	11.69	5.31
4600	13.25	18.00	17.52	12.43	1.08	0.57	22.49	11.43	5.55
4800	12.97	17.95	16.75	12.32	1.09	0.55	22.11	10.96	5.63
5000	12.69	17.90	15.79	12.10	1.09	0.54	21.76	10.49	5.77