Avantek Products

Surface Mount Limiting Amplifier 10 to 1000 MHz

Technical Data

PPL-504

Features

- **Frequency Range: 10 to 1000 MHz**
- **Up to 55 dB Compression Range**
- **Low Phase Shift**
- **Surface Mount Package**

Applications

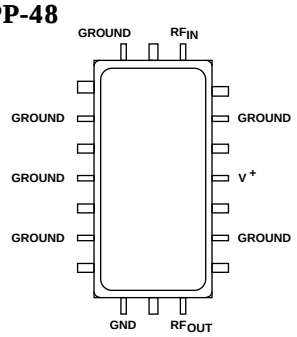
- **All FM Systems**
- **Communications**
- **Telemetry**
- **Radar Warning**
- **Measurement Systems**

Description

The PPL-504 is a four-stage bipolar RF limiting amplifier in a PlanarPak surface mount package using a single polarity supply with a compression range of up to 55dB. Emitter-coupled pair design provides even-harmonic suppression and low AM-to-PM conversion. The RF signal is coupled through the amplifier by means of internal blocking capacitors.

Pin Configuration

PP-48



Maximum Ratings

Parameter	Maximum
DC Voltage	±17 Volts
Continuous RF Input Power	+15 dBm
Operating Case Temperature	–55 to +125°C
Storage Temperature	–62 to +150°C
"R" Series Burn-In Temperature (T_C)	+125°C
Temperature Rise (Junction Above Case)	20°C
Thermal Resistance (Junction-Case)	225°C/W
Transistor Power Dissipation	90 mW

Weight: (typical) 0.15 grams

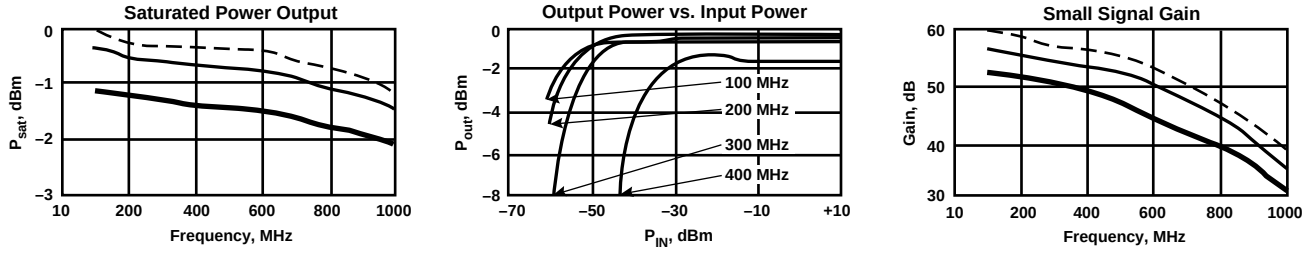
Electrical Specifications

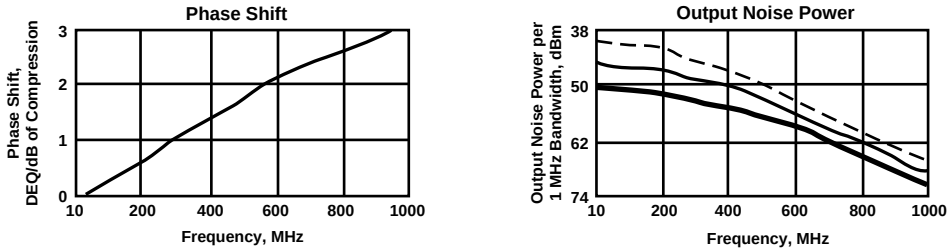
(Measured in 50 Ω system @ +15 VDC nominal unless otherwise noted)

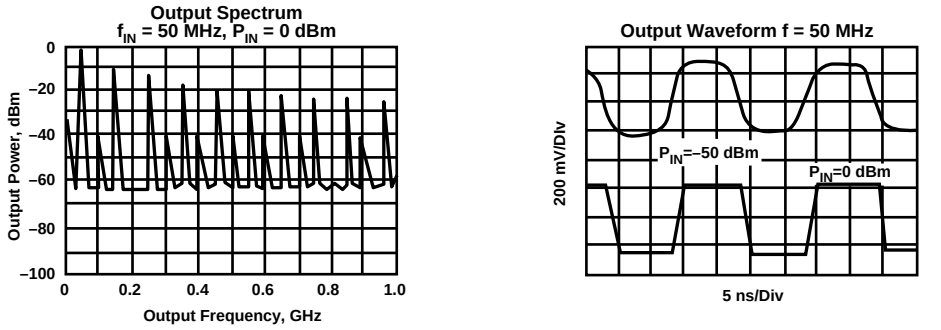
Symbol	Characteristic	Typical	Guaranteed Specifications		Unit
		T_C = 25°C	T_C = 0 to 50°C	T_C = –55 to +85°C	
BW	Frequency Range	10-1000	10-1000	10-1000	MHz
—	Compression Range @ P_{OUT} = ±0.5 dB				
	10-250 MHz	–52 to +10	–45 to +10	–45 to +10	dBm
	250-500 MHz	–48 to +10	–40 to +10	–40 to +10	
	500-1000 MHz	–32 to +10	–25 to +10	–25 to +10	
—	Saturated Power @ P_{IN} = 0 dBm				
	10-1000 MHz (Min.)	0	–4	–4	dBm
—	Saturated Flatness @ P_{IN} = 0 dBm:				
	10-500 MHz (Max.)	±0.2	±0.4	±0.5	dB
	10-1000 MHz (Max.)	±0.6	±0.8	±1.0	
—	VSWR Input/Output:				
	10-500 MHz (Max.)	1.3/1.3:1	1.5/1.5:1	2.0/2.0:1	—
	500-1000 MHz (Max.)	1.6/2.0:1	2.0/2.2:1	2.0/2.5:1	
—	Phase Shift per dB of Compression per MHz, deg.				
	10-1000 MHz	0.0035	—	—	
—	Even Harmonic Suppression @ P_{IN} = 0 dBm				
	250 MHz (Min.)	–26	–20	–20	dBc
	500 MHz (Min.)	–18	–13	–13	
	1000 MHz (Min.)	–10	–7	–6	
—	Odd Harmonic Suppression @ P_{IN} = 0 dBm				
	250 MHz (Min.)	–10	–8	–7	dBc
	500 MHz (Min.)	–12	–10	–8	
NF	Noise Figure: 250 MHz	9	11	12	dB
	500 MHz	9	11	12	
	1000 MHz	10	11	12	
I_D	DC Current (@ Rated Voltage)	+80	—	—	mA

Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

Key: +25°C
+85°C
-55°C







Product Options

PPA – 1021R

Model Number Prefix
PPA-
PPD-
PPF-
PPL-
PPM-
PPS-
PLP-
PSP-

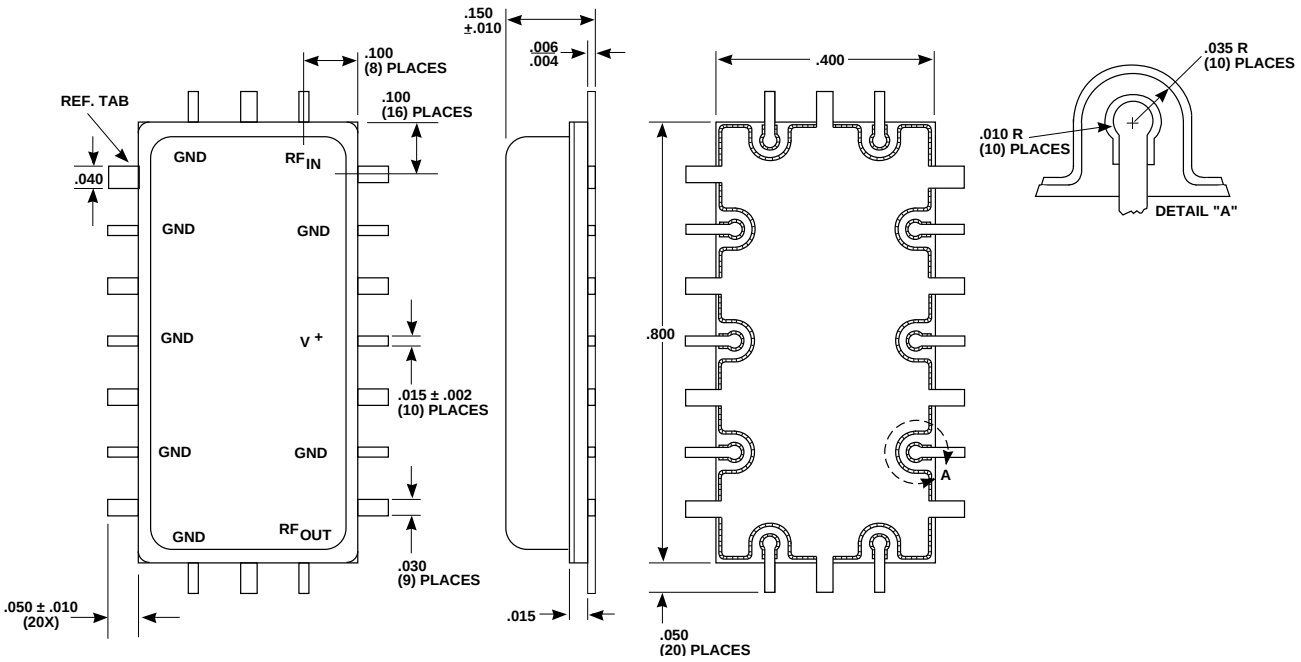
Model Number

Screening Option
Blank = No Screening
R = R-Series Screening

For more information on R-Series screening, see Reliability Screening, Pub. 5963-3240E.

Case Drawings
PP-48

.4 x .8 PLANARPAK SURFACE MOUNTED COMPONENTS



TYPICAL WEIGHT 1.1 GRAMS

NOTES (UNLESS OTHERWISE SPECIFIED):
1. DIMENSIONS ARE SPECIFIED IN INCHES
2. TOLERANCES: xxx ±.005

Recommended Assembly Procedure

1. Chemically clean the PC board and the unit to be mounted using a vapor degreaser or acetone followed by an isopropol alcohol wash. Do not use ultrasonic cleaning.
2. Mask the backside of the PC board to prevent solder from reflowing through the plated thru-holes causing a rough ground plane surface. A suggested masking material is 2 mil thick Kapton® film with silicone adhesive back (Permacel part #P-222).
3. Apply solder cream (suggest Multicore SN62PRMAB3 or equivalent) using screen printing techniques or careful hand application. A layer 4 to 6 mils thick is adequate.
4. Reflow of the unit to the board may be done in many ways. Using a hot plate is one of the most simple. During reflow, pressure (with a clamping arrangement) on the unit is recommended, but not absolutely necessary. Absolute maximum reflow temperature is 260°C for not more than 10 seconds.
5. Chemically reclean the unit using the procedures given in step one. Make sure that a flux remover is used which is appropriate for the type of solder cream used (Multicore PC81 is the recommended flux remover for the above mentioned cream).

It should be noted that there are many alternatives for component attachment. This procedure has been found to be simple and effective. For more detailed instructions on how to use PlanarPak Products, please see the application note "*PlanarPak* Users Information" Pub. 5963-3232E.

For more information:

United States*

Europe*

Far East/Australasia: (65) 290-6305

Canada: (416) 206-4725

Japan: (81 3) 3331-6111

*Call your local HP sales office listed in your telephone directory. Ask for a Components representative.

Printed in U.S.A. 5963-2585E (10/94)