PT152
p-Hemt CATV Amplifer

Features

- 45 - 1000MHz
- 13.5dB Gain at 45MHz
- CSO 68dBc @+37dBmV
- CTB 68dBc @+37dBmV
- NF 3.5dB
- Lead-free / Green / RoHS-compliant SOIC-8 Package

Applications

- Headend Driver Amplifier
- Predriver Amplifier
- Line Driver Amplifier
- Optic Transceiver Application
- MOCA
- FTTH Application

Functional Diagram

Function	Pin No.
AMP 1 RF IN	1
AMP 1 RF OUT	8
AMP 2 RF IN	4
AMP 2 RF OUT	5
Ground	2,3,6,7

Description

The PT152 is a high performance p-Hemt MMIC Amplifier and consists of Darlington pair amplifiers that is internally matched to 75Ω input/output. The PT152 contains two amplifiers for use in wideband push-pull CATV amplifiers requiring excellent second order performance. The amplifier features high linear performance, high reliability and low noise. The device offers high dynamic range in a low cost surface-mountable plastic SOIC-8 package. All devices are 100% RF and DC tested.

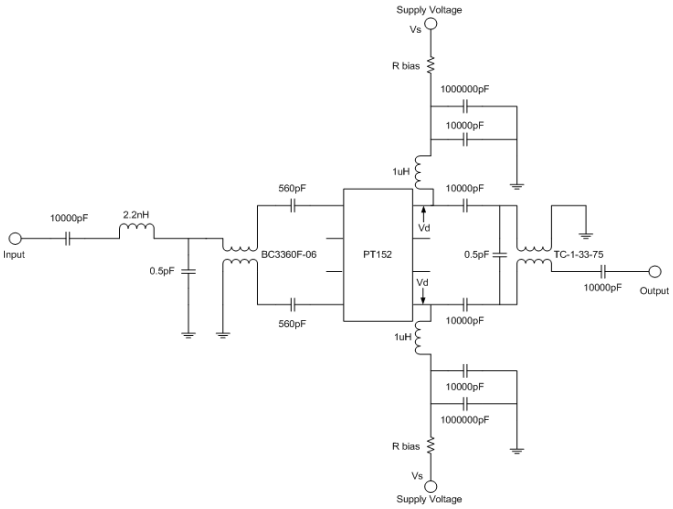
Specifications

* Test Conditions : T=25°C, Supply Voltage=+5V, 75ohm System

Symbol	Parameters	Units	Min.	Typ.	Max.	Condition
F	Frequency	MHz	45		1000	
S21	Gain	dB	12.5	13.5	15.0	45 ~ 1000MHz
S11	Input Return Loss	dB		-8		
S22	Output Return Loss	dB		-12		
CSO	Composite Second Order	dBc		68		+37dBmV/132ch Flat
CTB	Composite Triple Beat	dBc		68		+37dBmV/132ch Flat
OIP3	Output Third Order Intercept Point	dBm		43.0		Note 1
NF	Noise Figure	dB		3.5		
I	Current	mA	220	240	260	

Note 1. Two Tones, 6MHz Spacing, +9dBm per Tone at Output

45 -1000MHz CATV Application Circuit

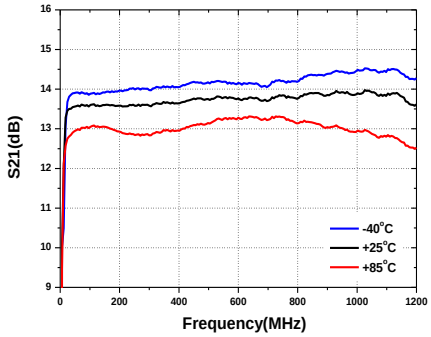


Recommended Bias Values

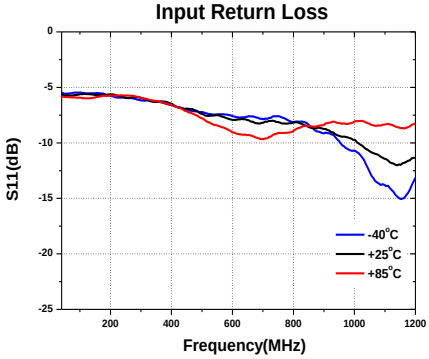
Supply Voltage	R bias Value	Size
5 V	4.3Ω	0805
6 V	13 Ω	0805
8 V	30 Ω	1210
10 V	47 Ω	2010
12 V	62 Ω	2512
Rbias = (V_S – V_d) / I_d		

1. Measurement for our datasheet was made on 1.6mm thick FR-4 Board. And 75 ohm microstrip line

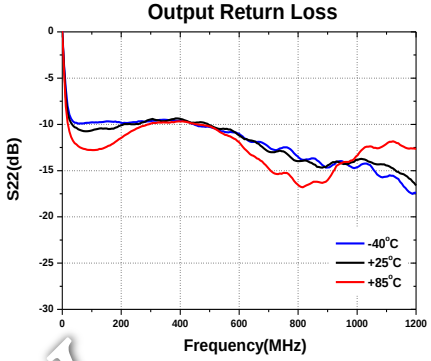
Gain



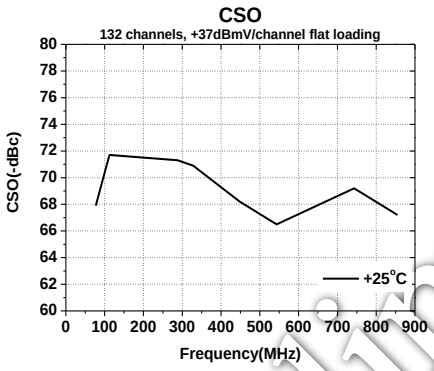
Input Return Loss



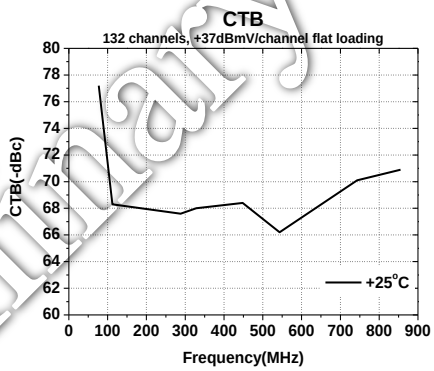
Output Return Loss



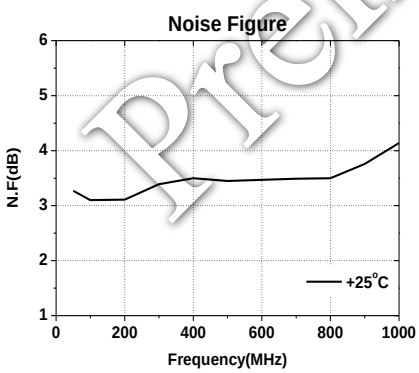
CSO



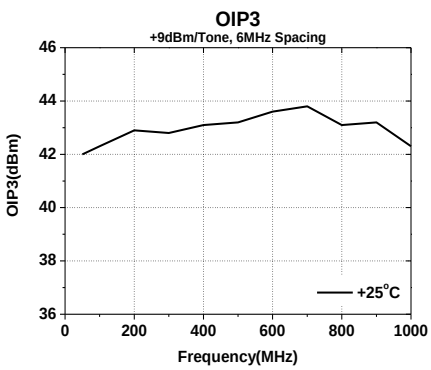
CTB



Noise Figure



OIP3

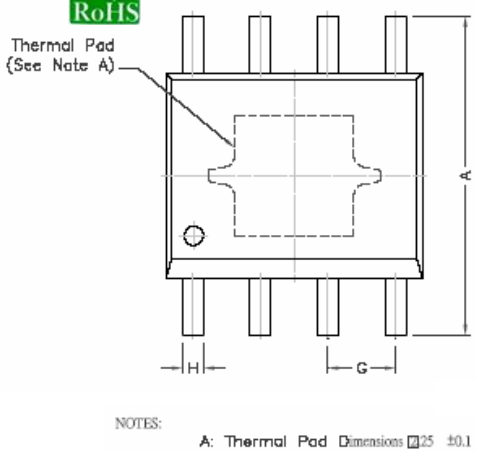


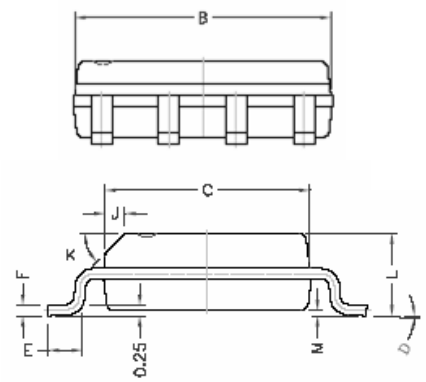
Absolute Maximum Ratings

Parameter	Rating	Unit
Device Voltage	6	V
Device Current	400	mA
RF Power Input	15	dBm
Storage Temperature	-55 to +125	°C
Ambient Operating Temperature	-40 to +85	°C
Junction Temperature	175	°C

Operation of this device above any of these parameters may cause permanent damage.

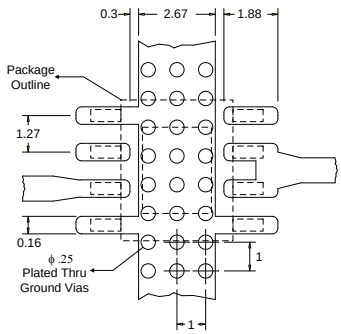
Lead-free /RoHS Compliant / Green SOIC-8 Package Outline





REF.	DIMENSIONS Millimeters	
	Min.	Max.
A	5.80	6.20
B	4.80	5.00
C	3.80	4.00
D	0°	8°
E	0.40	0.90
F	0.19	0.25
M	0	0.15
H	0.35	0.49
L	1.35	1.75
J	0.375 REF.	
K	45°	
G	1.27 TYP.	

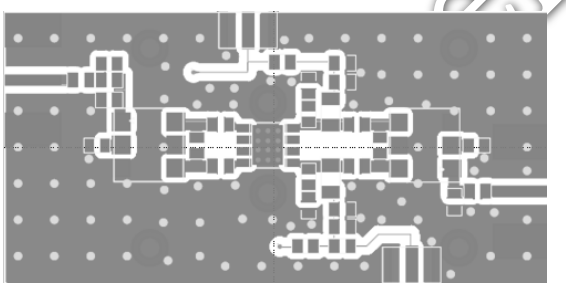
Land Pattern



ESD / MSL Ratings

1. **ESD sensitive device. Observe Handling Precautions.**
2. **ESD Rating : Class 1C(Passes at 1000V min.) Human Body Model (HBM), JESD22-A114**
3. **ESD Rating : Class Ⅲ (Passes at 1000V min.) Charged Device Model (CDM), JESD22-C101**
4. **MSL (Moisture Sensitive Level) Rating : Level 3 at +260˚C Convection reflow, J-STD-020**

Evaluation Board Layout (4x4)



Mounting Instructions

1. Use a large ground pad area with many plated through-holes as shown.
2. We recommend 1 oz copper minimum.
3. Measurement for our data sheet was made on 1.6mm thick FR-4 Board.
4. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
5. RF trace width depends on the board material and construction.
6. Add mounting screws near the part to fasten the board to a heatsink.