

Features

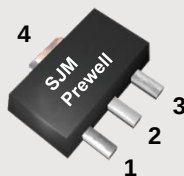
- 5 - 3000MHz
- Gain 13.7 @ 950MHz
- P1dB 15.5 @ 1250MHz
- OIP3 @ 31.0 @ 950MHz
- Lead-free / Green / RoHS compliant SOT-89 Package

Applications

- Set-top Box
- FTTH Receiver
- Drop Amplifier
- Satellite Amplifier
- Bluetooth / WiFi

Functional Diagram

RF IN 1 RF OUT / Bias 3
GND 2,4



ESD/MSL

- 1 ESD sensitive device. Observe handling precautions.
- 2 HBM: Class 2, JESD22-A114
- 3 CDM: Class C3 , JESD22-C101F
- 4 MSL 3, J-STD-020

Description

The PW290 is a high performance InGaP HBT MMIC Amplifier and consists of Darlington pair amplifiers. The features of PW290 are high linear performance, wideband operation and high reliability. The PW290 operates from a single voltage supply and requires only two DC-blocking capacitors, a bias resistor and an inductor for operation. The device is a general purpose buffer amplifier that offers high dynamic range in a low cost surface-mounted plastic SOT-89 package. All devices are 100% RF and DC tested.

Specifications

Parameters	Units	Typ.	Condition
S21	dB	13.1	950 ~ 2150 MHz
S11	dB	-12.0	950 ~ 2150 MHz
S22	dB	-12.7	950 ~ 2150 MHz
P1dB	dBm	15.4	
OIP3	dBm	29.6	Note 1 ²⁾
NF	dB	3.86	
V/I	V / mA	4.37 / 45	
Rth	°C/W	77	

1) Test Conditions : T=25°C, Supply Voltage=5V, Rbias=13ohm, 75ohm System
2) Note 1. OIP3 measured with two tones at an output power of 0dBm/tone separated by 1MHz.

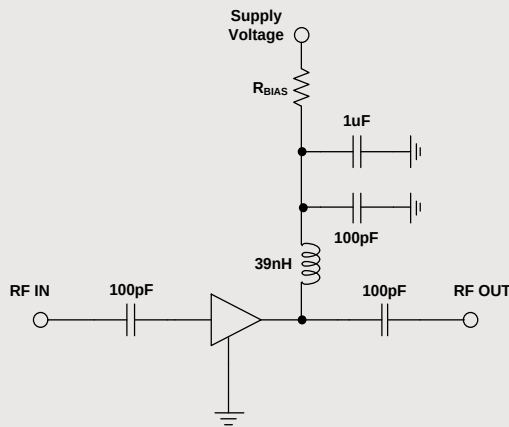
Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	8.5	V
Supply Current	180	mA
RF Power Input	20	dBm
Storage Temperature	-55 to 125	°C
Ambient Operating Temperature	-40 to 85	°C
Junction Temperature	187	°C

1) Stresses above the maximum values listed have may cause permanent damage to the device.
2) MTTF is more than 100 years.

Typical RF Performance for Application Circuit
Supply Bias Voltage = 5V, R(bias)= 13 ohm, Current= 45mA

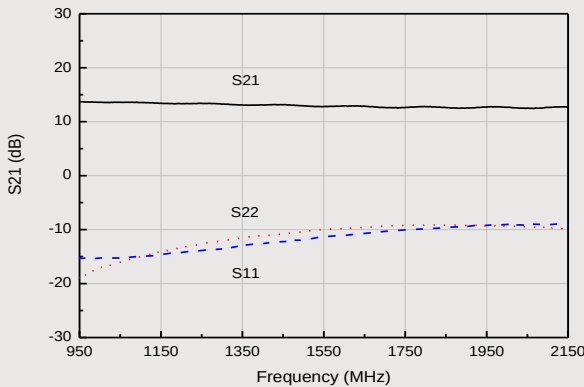
Parameters	Units	Frequency (MHz)				
		950	1250	1550	1850	2150
S21	dB	13.7	13.4	12.8	12.6	12.7
S11	dB	-15.3	-13.9	-11.5	-9.7	-9.0
S22	dB	-18.7	-12.7	-10.1	-9.2	-9.9
P1dB	dBm	15.3	15.5	14.6	15.4	15.4
OIP3 @ 0dBm	dBm	31.0	30.5	29.0	29.0	29.0
Noise Figure	dB	3.74	3.77	3.69	4.14	4.33



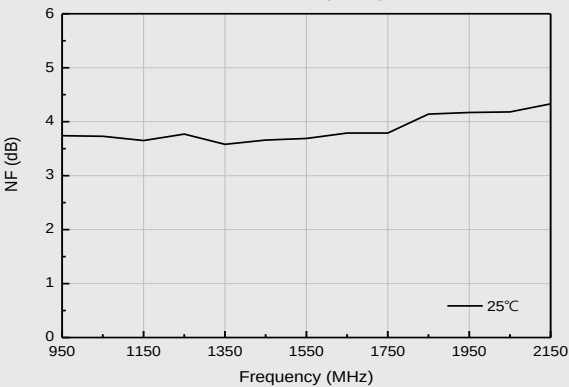
Recommended Bias Values

Supply Voltage (V)	R bias Value (ohm)	Size
5	13.0	0805
6	34.5	0805
7	56.5	1210
8	78.0	1210
9	100.0	2010
10	121.5	2010
12	143.5	2512

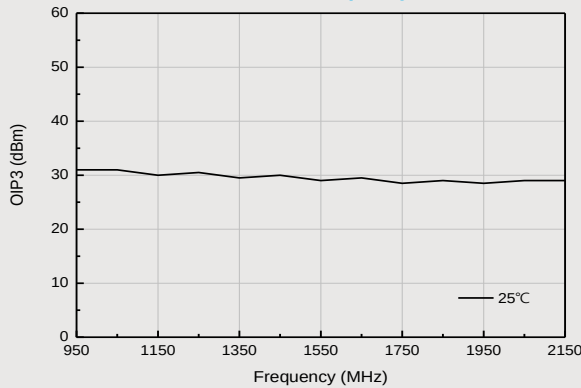
S-Parameter



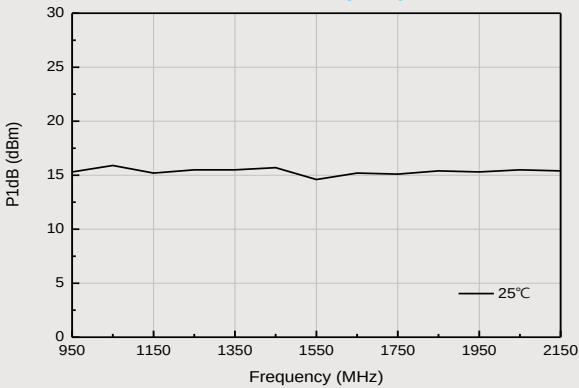
NF vs. Frequency



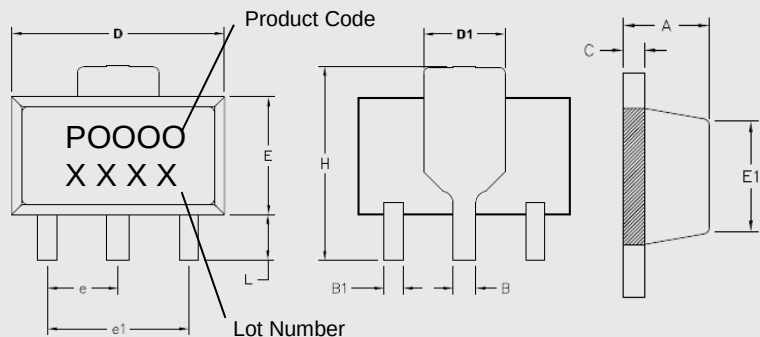
OIP3 vs. Frequency



P1dB vs. Frequency

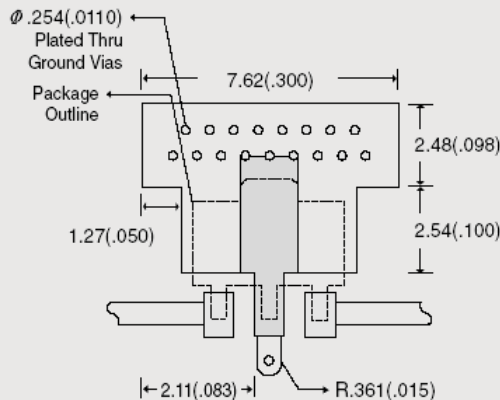


Lead-free /RoHS Compliant / Green SOT-89 Package Outline

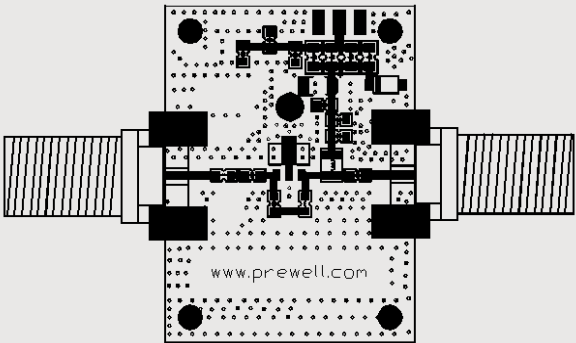


REF.	DIMENSIONS (mm)	
	Min.	Max.
A	1.40	1.60
B	0.43	0.58
B1	0.36	0.54
C	0.35	0.46
D	4.30	4.70
D1	1.50	1.87
E	2.29	2.70
E1	2.13	2.18
e	1.5	
e1	3.0	
H	3.43	5.10
L	0.74	1.20

Land Pattern



Evaluation Board Layout (30x40)



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 RF trace width depends on the board material and construction.
- 5 Add mounting screws near the part to fasten the board to a heatsink.
- 6 Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.