

SJM PREWELL PW290-63

CATV Amplifier

Features

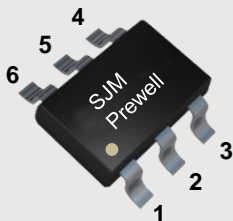
- 5 to 3000MHz
- Gain 13.5dB @ 1500MHz
- P1dB 15.1dBm @ 950MHz
- OIP3 31.0dBm @ 950MHz
- Lead-free / Green / RoHS  compliant SOT-363 Package

Applications

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

Functional Diagram

RF IN 3 RF OUT / 6
GND 1,2,4,5 Bias



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 PW290-63 is a high performance InGaP HBT MMIC Amplifier and consists of Darlington pair amplifiers. The features of PW290-63 are high linear performance, wideband operation and high reliability. The PW290-63 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-363 package. All devices are 100% RF and DC tested.

Specifications

Parameters	Units	Typ.	Condition
S21	dB	13.5	950 ~ 2150 MHz
S11	dB	-17	950 ~ 2150 MHz
S22	dB	-10	950 ~ 2150 MHz
P1dB	dBm	15.1	
OIP3	dBm	31.0	Note 1 ²⁾
NF	dB	3.6	
V/I	V/mA	4.3 / 45	
Rth	°C/W	77	

1) Test Conditions : T=25°C, Supply Voltage=5V, Rbias=15ohm, 75ohm System

2) Note 1. OIP3 measured with two tones at an output power of -3dBm/tone separated by 1MHz.

Absolute Maximum Ratings

Parameter	Rating	Unit
Device Voltage	8.5	V
Device Current	170	mA
RF Power Input	20	dBm
Storage Temperature	-55 to 150	°C
Ambient Operating Temperature	-40 to 85	°C
Junction Temperature	187	°C

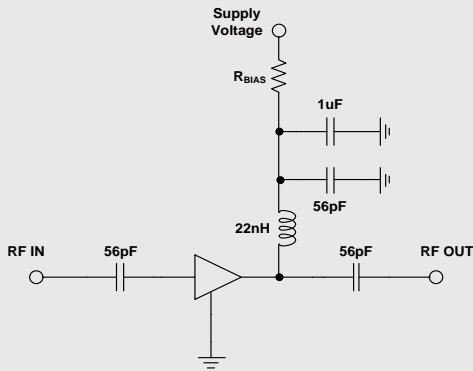
1) Stresses above the maximum values listed have may cause permanent damage to the device.

2) MTTF is more than 100 years.

Typical RF Performance for Application Circuit

Supply Bias Voltage = 5V, R(bias)= 15 ohm, Current=45mA

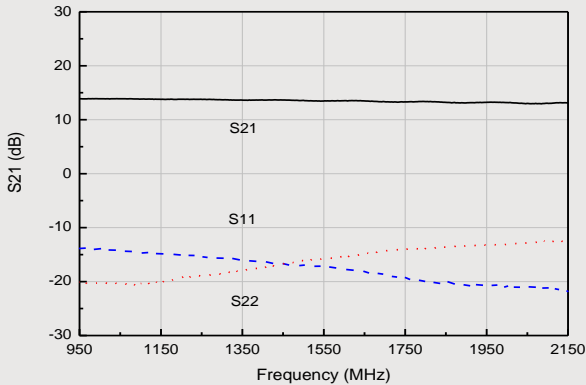
Parameters	Units	Frequency (MHz)				
		950	1250	1550	1850	2150
S21	dB	13.8	13.7	13.4	13.2	13.1
S11	dB	-13.8	-15.4	-17.3	-20.3	-21.5
S22	dB	-20.3	-18.9	-15.7	-13.6	-12.5
P1dB	dBm	15.2	15.4	15.0	15.2	15.3
OIP3 @ -3dBm	dBm	30.5	30.5	29	29	28
NF	dB	3.55	3.62	3.83	3.97	4.13



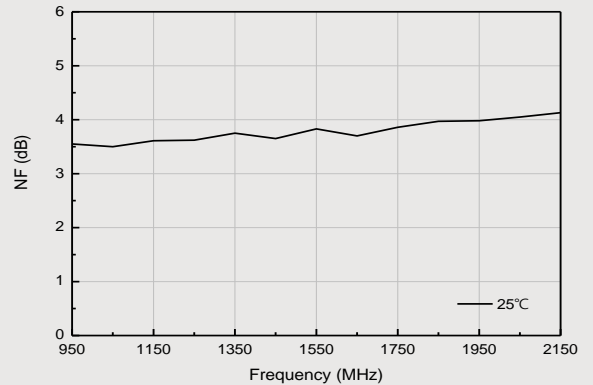
Recommended Bias Values

Supply Voltage (V)	R bias Value (ohm)	Size
5	15.0	0805
6	37.0	0805
7	59.4	1210
8	81.5	1210
9	103.5	2010
10	126.0	2010
12	170.0	2512

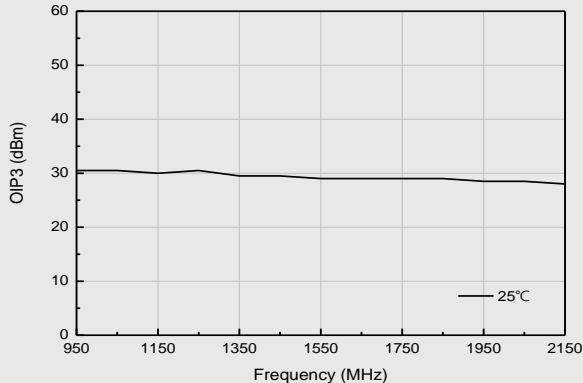
Gain vs. Frequency



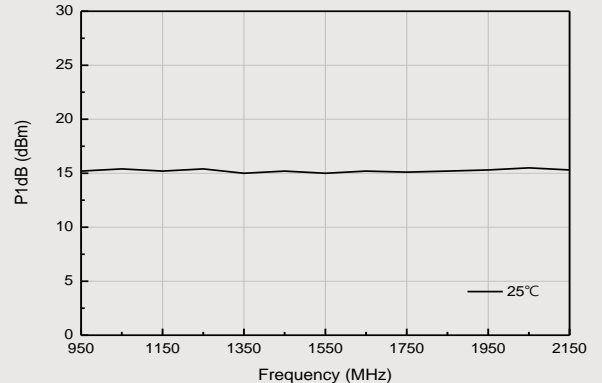
NF vs. Frequency



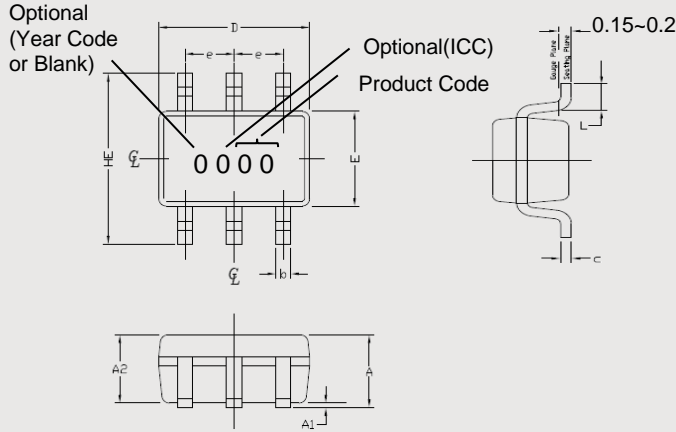
OIP3 vs. Frequency



P1dB vs. Frequency

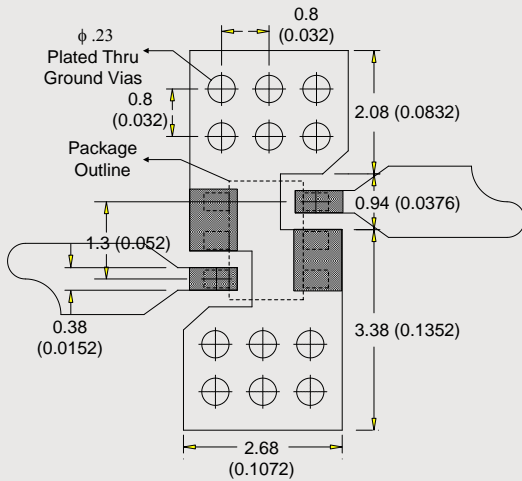


Lead-free /RoHS Compliant / Green SOT-363 Package Outline

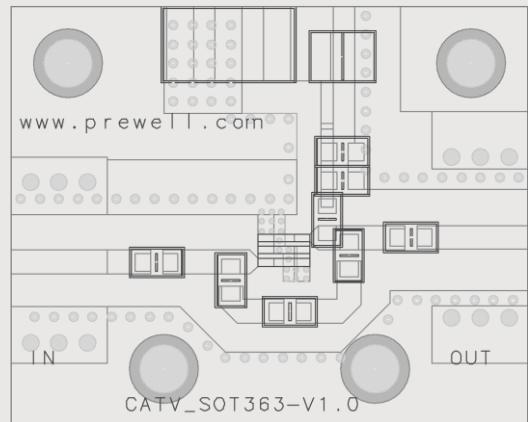


SYMBOL	MIN.	MAX.
E	1.15	1.35
D	1.85	2.25
HE	1.95	2.30
A	0.80	1.10
A2	0.70	1.00
A1	0.00	0.10
e	0.65 BSC	
b	0.15	0.40
c	0.08	0.25
L	0.21	0.26

Land Pattern



Evaluation Board Layout (27 x 22)



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.