

Features

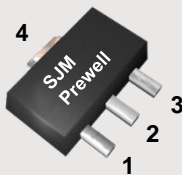
- 40 - 1500MHz
- Gain 17.2dB @ 900MHz
- CSO 66dBc @ 30dBmV
- CTB 76dBc @ 30dBmV
- NF dB @ 200MHz
- Lead-free / Green / RoHS  compliant SOT-89 Package

Applications

- Headend
- Indoor Amplifier
- Drop Amplifier
- Cable Modem
- Laser Diode Driver
- FTTH Receiver
- Optical Transmitter
- RFoG / MOCA

Functional Diagram

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



ESD/MSL

- 1 ESD sensitive device. Observe handling precautions.
- 2 MSL 3, J-STD-020

Description

The PK831 is a high performance p-HEMT MMIC Amplifier that is internally matched to 75Ω input/output. The features of PK831 are excellent gain flatness, broadband, high CSO/CTB performance, high reliability and low noise as a CATV amplifier. The PK831 operates from a single supply voltage and requires minimal external components for operation. The purpose of using PK831 is that offers high dynamic range in a low cost surface - mounted plastic SOT-89 package. All devices are 100% RF and DC tested.

Specifications

Parameter	Units	Typ.	Condition
S21	dB	17.3	40 ~ 1500MHz
S11	dB	-22	@ 900MHz
S22	dB	-18	@ 900MHz
CSO	dBc	66	30dBmV/132ch Flat
CTB	dBc	76	30dBmV/132ch Flat
OIP3	dBm	40	Note 1 2)
P1dB	dBm	21.5	@ 900MHz
NF	dB	2.0	@ 900MHz
V/I	V / mA	5 / 125	
Rth	°CW	27	

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

2) Note 1. Two Tones, 1MHz Spacing, 5dBm per Tone at Output

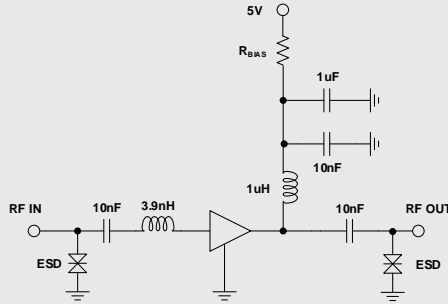
Absolute Maximum Ratings

Parameter	Rating	Unit
Device Voltage	9	V
Device Current	180	mA
RF Power Input	3	dBm
Storage Temperature	-55 to 150	°C
Ambient Operating Temperature	-40 to 85	°C
Junction Temperature	185	°C

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

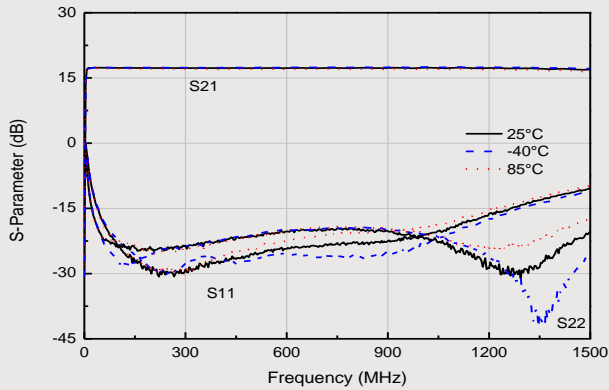
2) MTTF is more than 100 years.

40MHz - 1500MHz Application Circuit

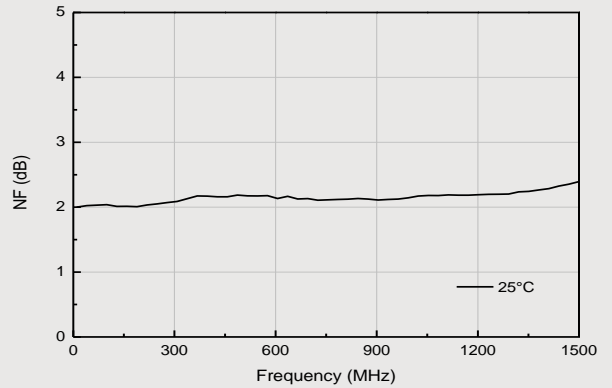


Note 1. ESD Sensitive Device and Proper ESD control techniques are strongly recommended when handling these kinds of devices.
 Note 2. Measurement for our datasheet was made on 1.6mm thick FR-4 Board, and 75 ohm micro-stripline.
 Note 3. The default value is 0 ohm. If you want the low current, use 4.7 ohm.

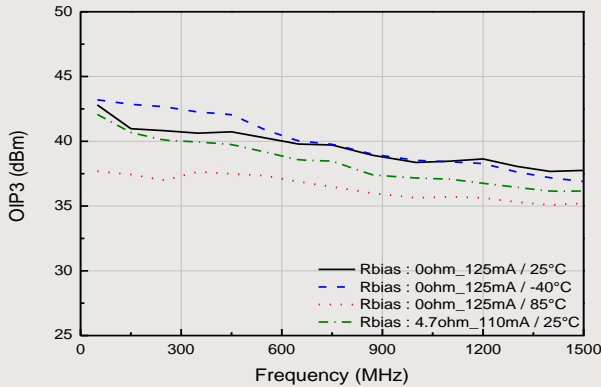
S-Parameter



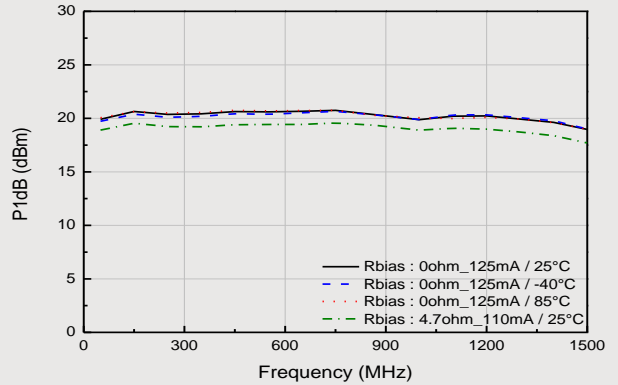
NF vs. Frequency



OIP3 vs. Frequency

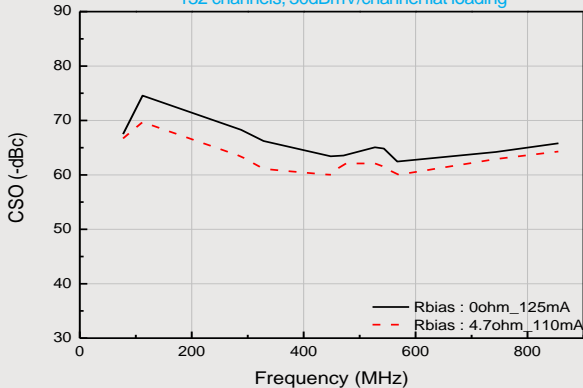


P1dB vs. Frequency



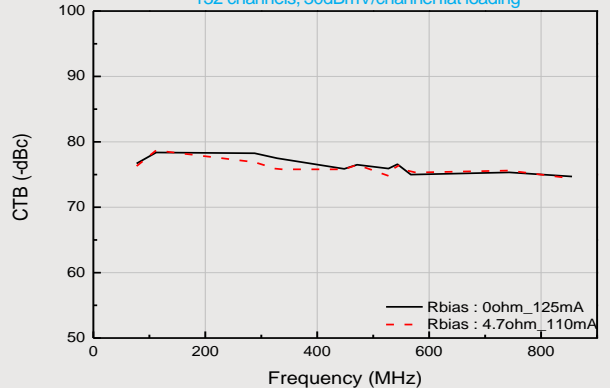
CSO vs. Frequency

132 channels, 30dBmV/channel flat loading

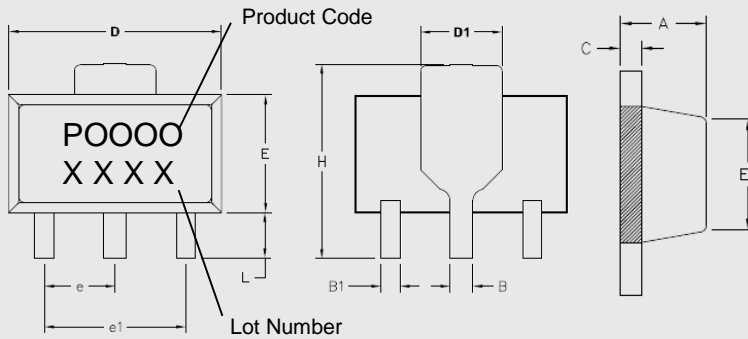


CTB vs. Frequency

132 channels, 30dBmV/channel flat loading

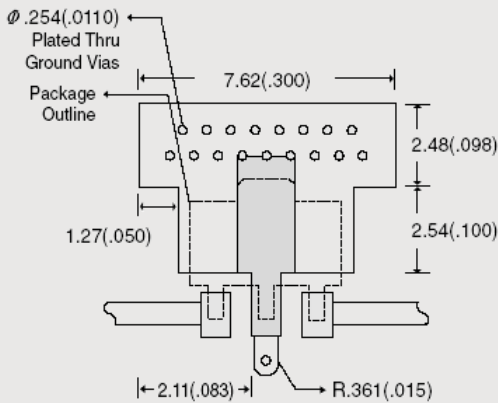


Lead-free /RoHS Compliant / Green SOT-89 Package Outline

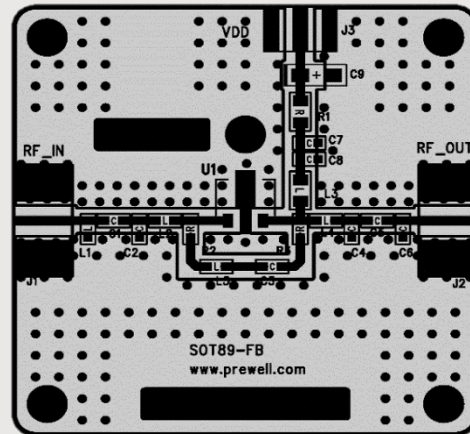


REF.	DIMENSIONS (mm)	
	Min.	Max.
A	1.40	1.60
B	0.43	0.58
B1	0.36	0.54
C	0.35	0.46
D	4.30	4.70
D1	1.50	1.87
E	2.29	2.70
E1	2.13	2.18
e	1.5	
e1	3.0	
H	3.43	5.10
L	0.74	1.20

Land Pattern



Evaluation Board Layout (40x40)



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.