SJM PREWELL

PK857

CATV Amplifier

Features

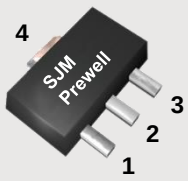
- 40 - 1500MHz
- Gain 20.5dB @ 900MHz
- CSO 64dBc @ 30dBmV
- CTB 74dBc @ 30dBmV
- NF 1.7dB @ 200MHz
- Lead-free / Green / RoHS compliant SOT-89 Package

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 HBM: Class 1C, JESD22-A114

3 CDM: Class C3 , JESD22-C101F

4 MSL 3, J-STD-020

Description

The PK857 is a high performance p-HEMT MMIC Amplifier that is internally matched to 75Ω input/output. The features of PK857 are excellent gain flatness, broadband, high CSO/CTB performance, high reliability and low noise as a CATV amplifier. The PK857 operates from a single supply voltage and requires minimal external components for operation. The purpose of using PK857 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	20.5	@ 900MHz
S11	dB	-15	@ 900MHz
S22	dB	-24	@ 900MHz
CSO	dBc	64	30dBmV/99ch Flat
CTB	dBc	74	30dBmV/99ch Flat
OIP3	dBm	40	Note 1 [2]
P1dB	dBm	20	@ 900MHz
NF	dB	1.7	@ 900MHz
V / I	V / mA	5 / 120	
Rth	°C/W		

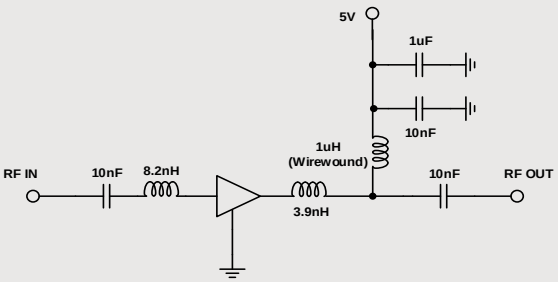
1) Test Conditions : T=25°C, Supply Voltage=5V, 75ohm System
2) Note 1. Two Tones, 1MHz Spacing, 5dBm per Tone at Output @200MHz

Absolute Maximum Ratings

Parameter	Rating	Unit
Device Voltage	6	V
Device Current	140	mA
RF Power Input		dBm
Storage Temperature	-55 to 150	°C
Ambient Operating Temperature	-40 to 85	°C
Junction Temperature		°C

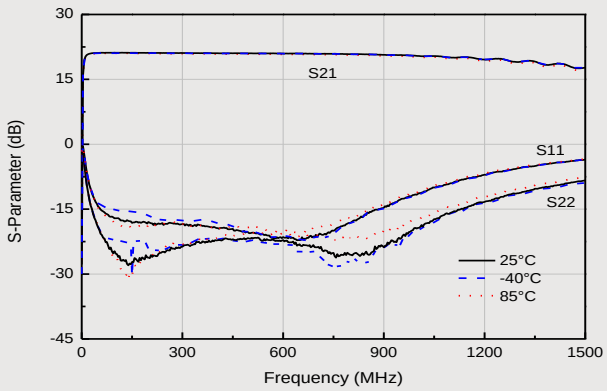
1) Stresses above the maximum values listed have may cause permanent damage to the device.
2) MTTF is more than 100 years.

40MHz - 1500MHz Application Circuit

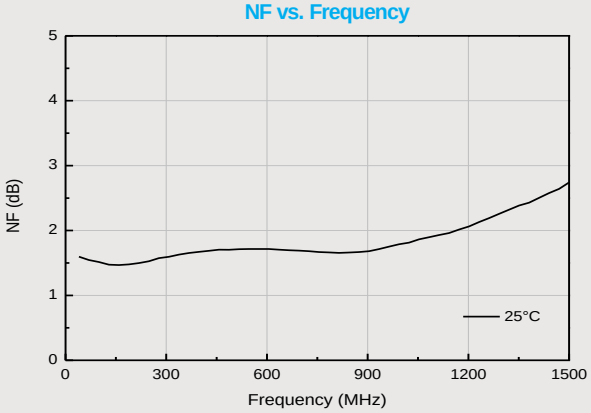


Note 1. Measurement for our datasheet was made on 1.6mm thick FR-4 Board and 75 ohm microstrip line
Note 2 : 5V/ 120mA, CSO/CTB Test Condition : 30dBmV/99ch, T=25°C

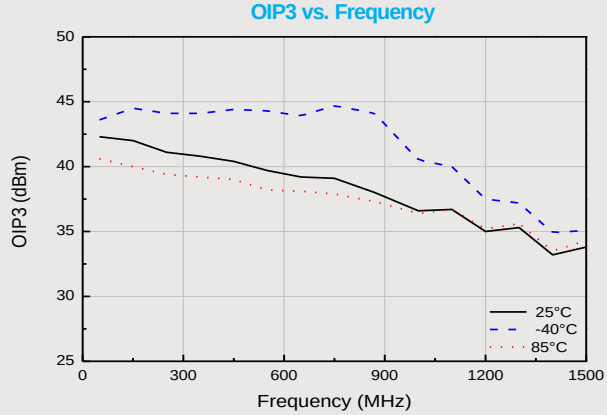
S-Parameter



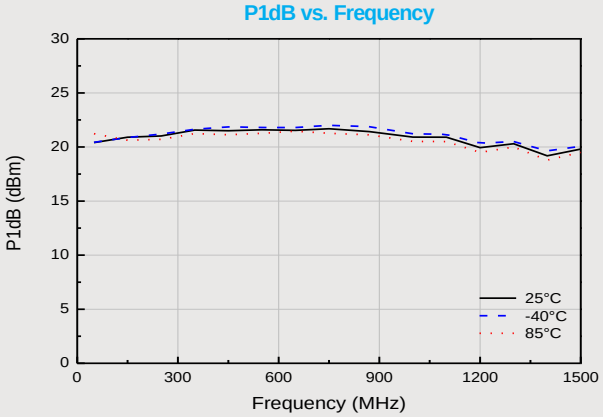
NF vs. Frequency



OIP3 vs. Frequency

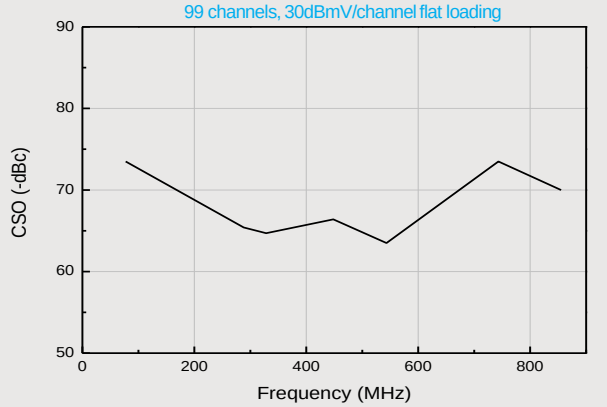


P1dB vs. Frequency



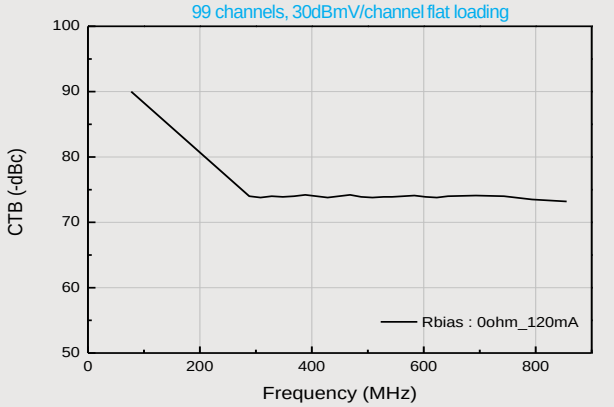
CSO vs. Frequency

99 channels, 30dBmV/channel flat loading

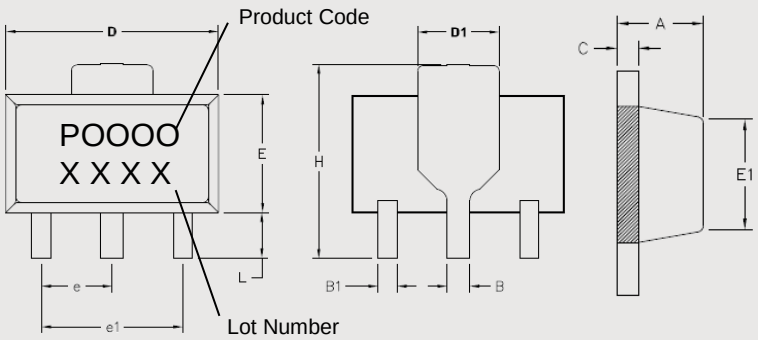


CTB vs. Frequency

99 channels, 30dBmV/channel flat loading

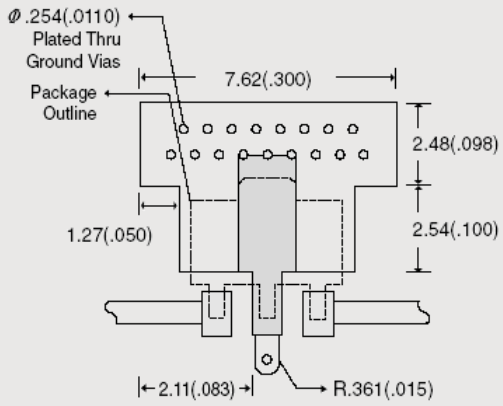


Lead-free /RoHS Compliant / Green SOT-89 Package Outline

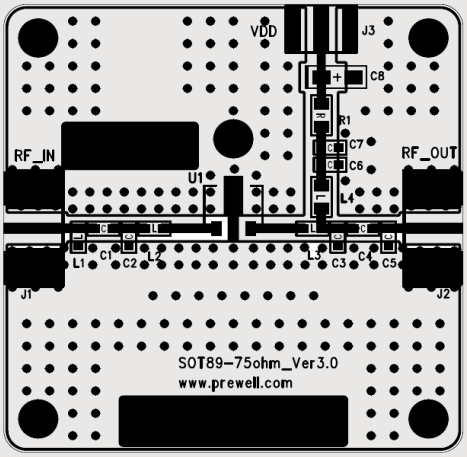


REF.	DIMENSIONS (mm)	
	Min.	Max.
A	1.40	1.60
B	0.43	0.58
B1	0.36	0.54
C	0.35	0.46
D	4.30	4.70
D1	1.50	1.87
E	2.29	2.70
E1	2.13	2.18
e	1.5	
e1	3.0	
H	3.43	5.10
L	0.74	1.20

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.