E-pHEMT MMIC

AE366 (Preliminary)

RFHIC

Product Features

- 50 ~ 1000MHz
- GaAs E-pHEMT MMIC
- Higher linearity, Higher Gain
- Low Noise Figure
- High Max input power
- SOT-89 SMD Type package
- Higher productivity
- Lower manufacturing cost
- Pb Free / RoHS Standard

Application

- Receiver IF Amplifier
- Cellular, GSM
- Base station
- RF Sub-system

Package : SOT-89

Description

AE366 is a drive or pre-drive amplifier designed in a low cost SOT-89 package.
This MMIC is based on Gallium Arsenide Enhancement Mode pHEMT which shows low current and high IP3.
It is designed as driver devices for infrastructure equipment in the 50~1000MHz Wireless technologies such as IF, Cellular, GSM System. The data in this spec sheet is valid only for 50 ohm application.

Specifications

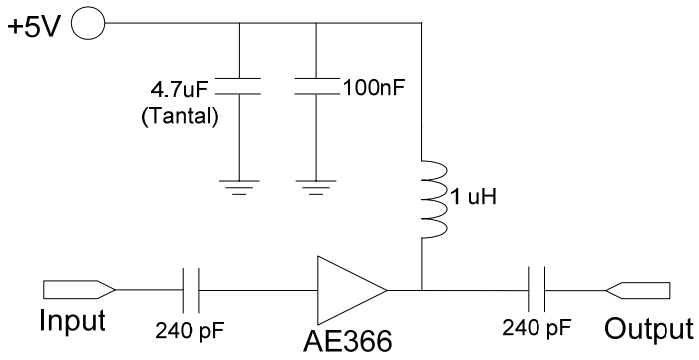
PARAMETER	UNIT	MIN	TYP	MAX	Remark
Frequency Range	MHz		50 ~ 1000		
Gain	dB		23		
Input Return Loss	dB		-20		
Output Return Loss	dB		-20		
Output IP3	dBm	36	39		
1dB Compression Point	dBm	19	22		
Noise Figure	dB		1.6	2.1	
DC Current	mA		95		
Supply Voltage	V		5		

NOTE
1. Test conditions unless otherwise noted. Freq=50~1000MHz, Vdd=+5V, Ta=25℃, 50Ω system
2. OIP3 measured with 2 tones at an output power of +10dBm/tone separated by 1MHz

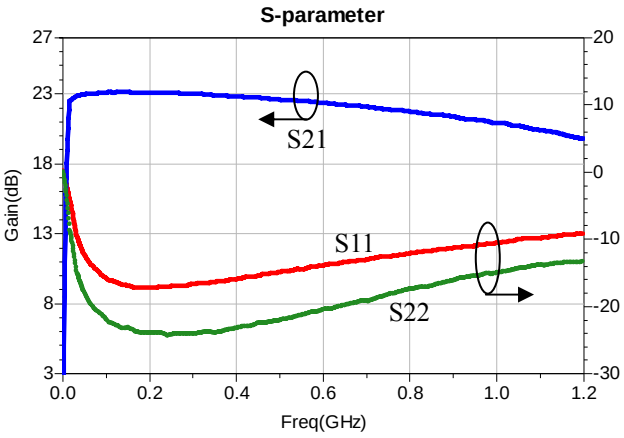
Absolute Minimum and Maximum Ratings

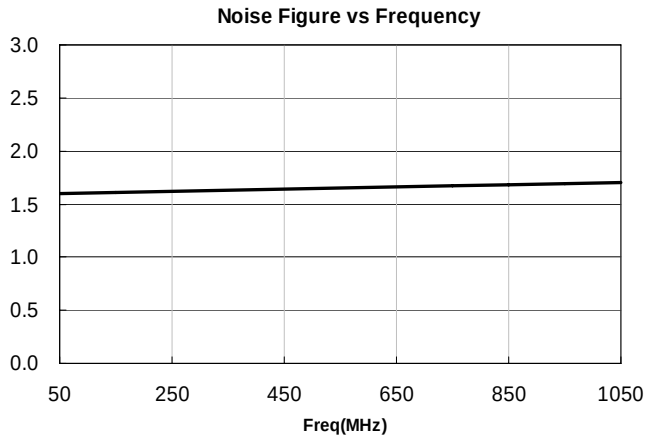
PARAMETER	UNIT	MIN	TYP	MAX
Device Voltage	V		+5	+7
Operating Temperature	℃	-40		+85
Storage Temperature	℃	-40		+150

◎ Application Circuit: 50MHz ~ 1000MHz, 50ohm System



◎ Typical RF Performance: V_{DD}=5V, I_{DS}=95mA, T_A=25℃, 50ohm System





◎ Output data

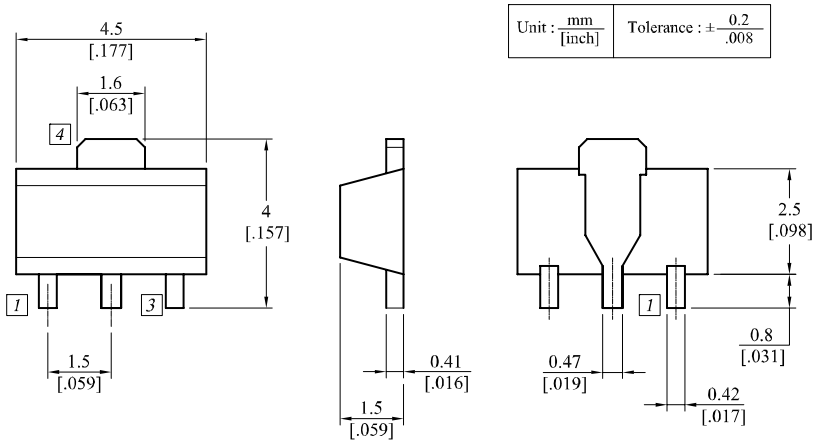
5V, 95mA			6V, 155mA		
Frequency	**OIP3 (dBm)**	**P1dB (dBm)**	**Frequency**	**OIP3 (dBm)**	**P1dB (dBm)**
50 MHz	37.3	22	50 MHz	39	24.2
100 MHz	38.4	22	100 MHz	39.2	24.3
250 MHz	37.9	22	250 MHz	40	24
500 MHz	37	21.7	500 MHz	39.7	23.6
850 MHz	35.6	21.1	850 MHz	38.8	23

ESD Protection

For a safe use in all situations, it is recommended to have proper ESD control techniques while the device is being handled. Here are some recommended precautions;

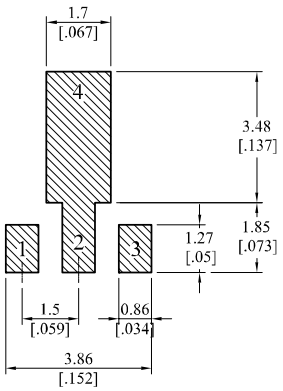
- Person at a workbench should be earthed via a wrist strap and a resistor.
- All mains-powered equipment should be connected to the mains via an earth-leakage switch.
- Equipment cases should be grounded.
- Relative humidity should be maintained between 40% and 50%.
- An ionizer is recommended.
- Keep static materials, such as plastic envelopes and plastic trays etc. away from the workbench

Dimensions

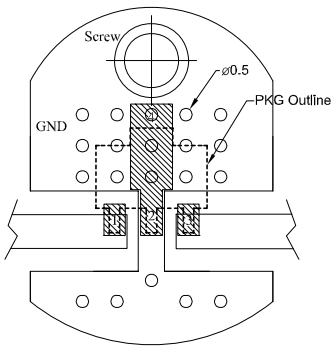


Pin No	Function
1	Input
2	Ground
3	Output/Bias
4	Ground

PCB Pad Layout



Recommended Mounting Configuration



Mounting Configuration Notes

1.Ground / thermal via holes are critical for the proper performance of this device.
2. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
3. Mounting screws can be added near the part to fasten the board to a heatsink. Ensure that the ground / thermal via hole region contacts the heatsink.
4. Do not put solder mask on the backside of the PCB in the region where the board contacts the heatsink.
5. RF trace width depends upon the PCB material and construction.
6. Use 1 oz. Copper minimum.
7. All dimensions are in millimeters.