E-pHEMT MMIC AE366

Product Features

• 30 ~ 2200MHz
• 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

Applications

• Receiver IF Amplifier
• Cellular, GSM, RFID
• Base station
• RF Sub-system
• CATV, Tetra, Satellite system

Package Type : 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 30~2200MHz Wireless technologies such as IF, Cellular, GSM System. The data in this spec sheet is valid only for 50ohm application.

Electrical Specifications

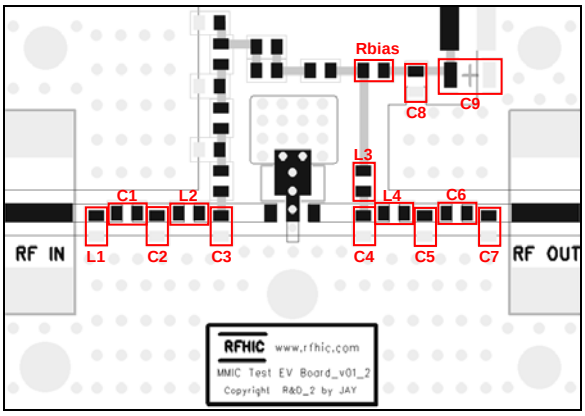
PARAMETER	UNIT	MIN	TYP	MAX	REMARK
Operating Frequency(fo)	MHz	30	-	1000	-
Small Signal Gain(S_{21})	dB	21.5	22.5	-	@ 100MHz
Input Return Loss(S_{11})	dB	-	-16	-	-
Output Return Loss(S_{22})	dB	-	-20	-	-
Output IP3(OIP3)	dBm	-	37.5	-	@ 100MHz
1dB Compression Point(P_1dB)	dBm	19	22	-	
Noise Figure(NF)	dB	-	1.6	2.2	-
DC Current	mA	-	90	-	-
Supply Voltage	V	-	5	-	-

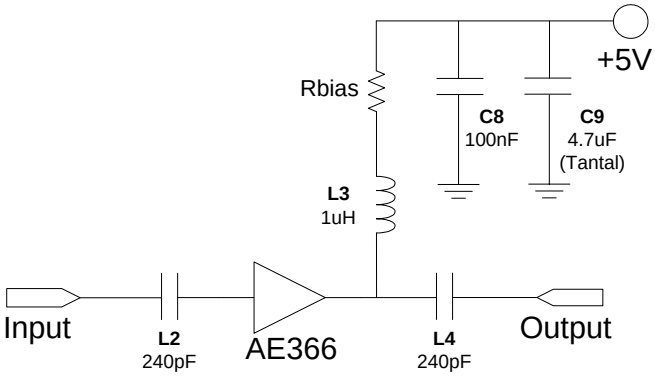
Note
1. Test conditions unless otherwise noted. Freq=30~1000MHz, Vdd=+5V, T=25℃, 50Ω system
2. OIP3 measured with 2 tones at an output power of +10dBm/tone separated by 1MHz

Absolute Maximum Ratings

PARAMETER	UNIT	MIN	TYP	MAX	CONDITION
Device Voltage	V	-	5	7	-
Operating Temperature	℃	-40	-	85	-
Storage Temperature	℃	-40	-	150	-
ESD Human Body Model	-	-	Class 1A	-	-
Moisture sensitivity Level	-	-	MSL1	-	-

Application Circuit @ 30 ~ 1000MHz, 50ohm System





EVB BOM			
Description	**Reference Designator**	**Manufacturer**	**Manufacturer's P/N**
CAP, 240pF, 1608	L2, L4	Murata	GRM1885C1H241JA01D
CAP, 100nF, 1608	C8	Murata	GRM188R71C104KA01D
CAP, 4.7uF, 3216-18	C9	AVX	TAJA475M016RNJ
IND, 1uH, ±10%, 2520, W/W	L3	Taiyo Yuden	LEM2520T1R0J
RES, 0Ohm, 1608	C1, C6, Rbias	ROHM	MCR03 EZPJ000
DNP	L1, C2, C3, C4, C5, C7	-	-

Typical Performance

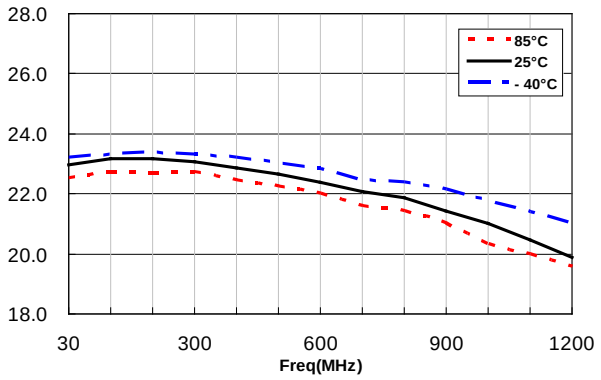
PARAMETER	UNIT	TYPICAL	REMARK
Operational Frequency Range	MHz	30 ~ 1000	-
Small Signal Gain(S21)	dB	22.5	@ 100MHz
Input Return Loss(S11)	dB	-16	-
Output Return Loss(S22)	dB	-20	-
Output IP3(OIP3)	dBm	37.5	@ 100MHz
1dB Compression Point(P_1dB)	dBm	22	
Noise Figure(NF)	dB	1.6	-
DC Current	mA	90	-
Supply Voltage	V	5	-

Note

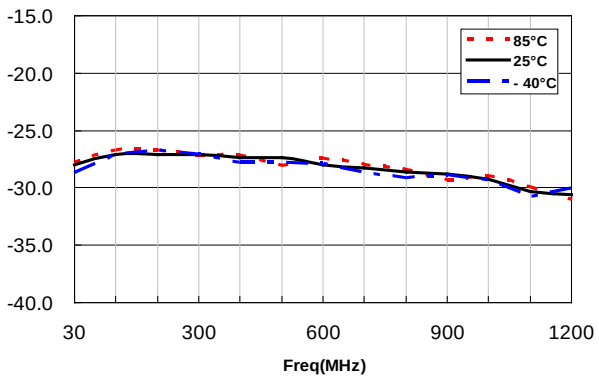
1. Test conditions unless otherwise noted. Freq=30~1000MHz, Vdd=+5V, T=25℃, 50Ω system
2. OIP3 measured with 2 tones at an output power of +10dBm/tone separated by 1MHz

Typical Performance @ VDD=5V, IDS=90mA, T=25℃, 50ohm System

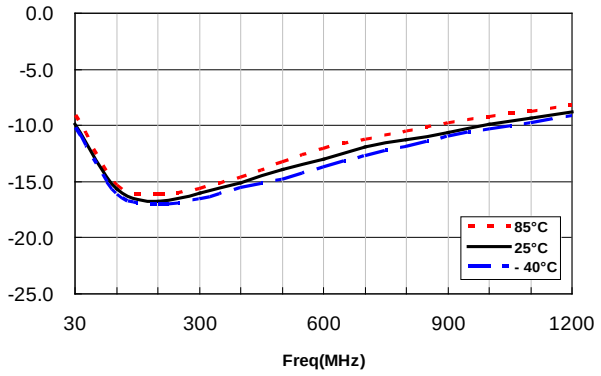
Gain vs Frequency



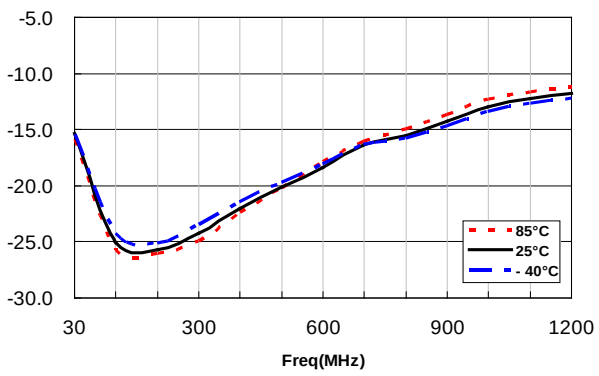
Isolation vs Frequency



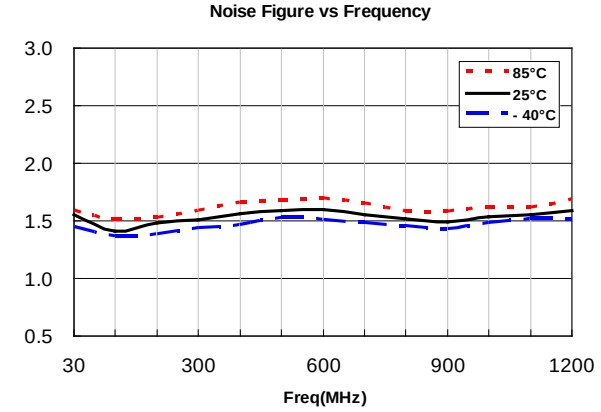
Input R/L vs Frequency



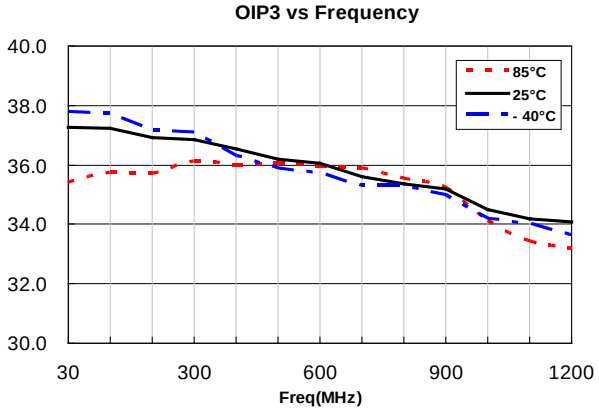
Output R/L vs Frequency



Noise Figure vs Frequency

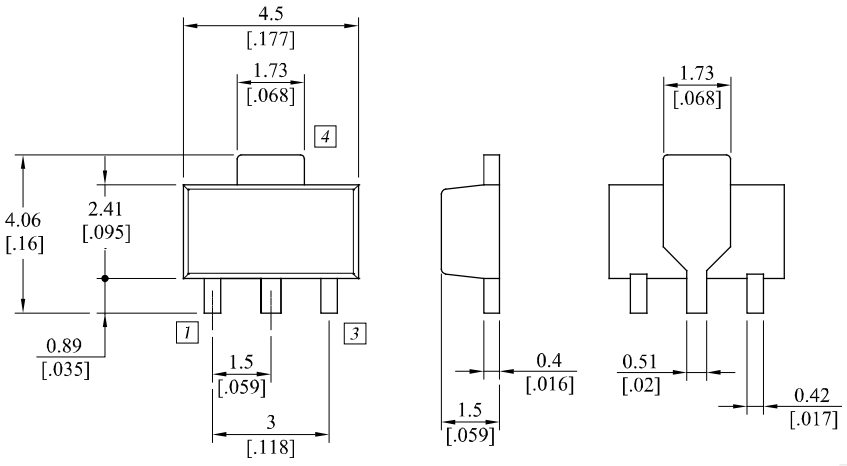


OIP3 vs Frequency



Package Dimensions (Type: SOT-89)

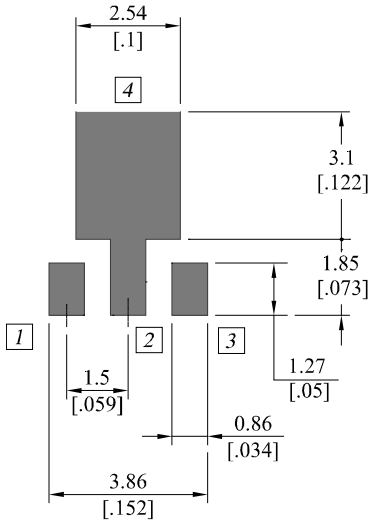
* Unit: mm[inch] | Tolerance ±0.2[.008]



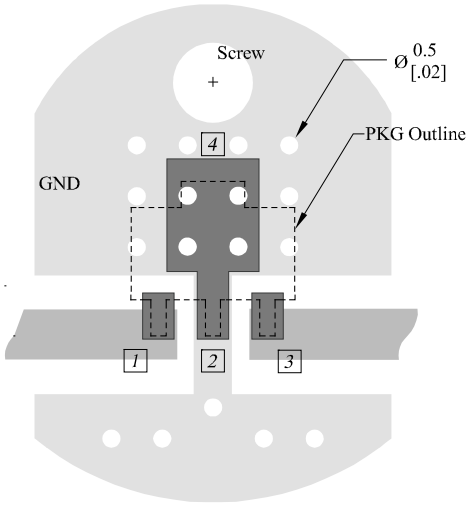
▲ Top View ▲ Side View ▲ Bottom View

Pin Description			
Pin No	**Function**	**Pin No**	**Function**
1	Input	4	GND
2	GND		-
3	Output / Bias		-

Recommended Pattern



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.

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
AE366	2012.10.15	1.2	New datasheet format	-
AE366	2010.12.27	1.1	FIXED : Operating Frequency Range	-
AE366	2010.2.18	1.0	Initial Release.	-