

Product Features

- 50MHz ~ 1GHz
- GaAs E-pHEMT
- 22dB Gain
- 2.0 dB Noise Figure
- +18.0 dBm P1dB
- SOT-89 SMT Package
- Single +5V Supply
- Pb Free / RoHS Standard

Applications

- CATV Amplifier



Package Type : SOT-89

Description

AE308 is used from 50MHz to 1GHz frequencies and GaAs E-pHEMT in a low cost SOT-89 package. The package is SOT-89, which is pin-to-pin compatible with industry standard.

Electrical Specifications @ $V_{dc} = 5V$; $T_{case} = 25^{\circ}C$; $Z_S = Z_L = 75\Omega$

PARAMETER		UNIT	MIN	TYP	MAX	CONDITION
Operating Frequency(f_o)		MHz	50MHz	-	1GHz	-
Gain (S_{21})		dB	-	22	-	50MHz ~1GHz
Input Return Loss(S_{11})		dB	-	-15	-	-
Output Return Loss(S_{22})		dB	-	-15	-	-
Output IP3(OIP3)		dBm	27	29	-	-
1dB Compression Point(P _{1dB})		dBm	17	19	-	50 ~ 500MHz
		dBm	15	17	-	500MHz ~1GHz
Output IP2(OIP2)		dBc	37	45	54	50MHz ~1GHz
Noise Figure(NF)		dB	-	1.5	-	50 ~ 800MHZ
		dB	-	2	-	800MHz ~ 1GHz
CSO	50 ~ 870MHz	dBc	-	-58	-	135 channels,+16dBmV/ch,Single
CTB		dBc	-	-64	-	135 channels,+16dBmV/ch,Single
XMD		dBc	-	-67	-	135 channels,+16dBmV/ch,Single
Current		mA	40	55	70	-

Note

1. Test conditions unless otherwise noted. $T=25^{\circ}C$, $V_{dc}=5.0V$, 75Ω system
2. OIP3 measured with 2 tones at an output power of 5dBm/tone separated by 1MHz

Absolute Maximum Ratings

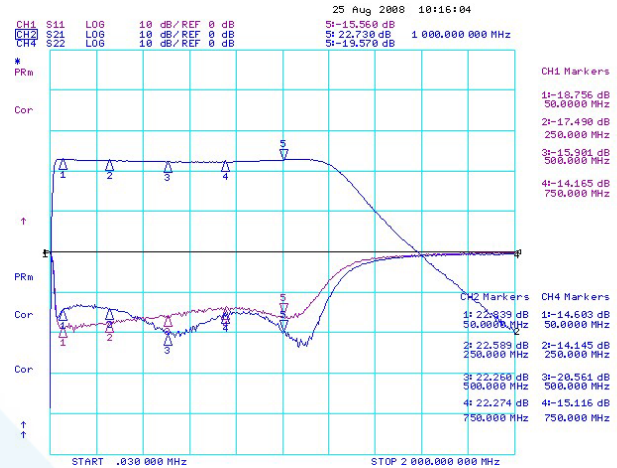
PARAMETER	Minimum Rating	Maximum Rating
Operating Case Temperature ($^{\circ}C$)	-40	85
Storage Temperature ($^{\circ}C$)	-50	125
Drain-Source Voltage (V)	-	7

Single-Ended CATV 75ohm Evaluation Circuit : (50MHz ~1GHz)

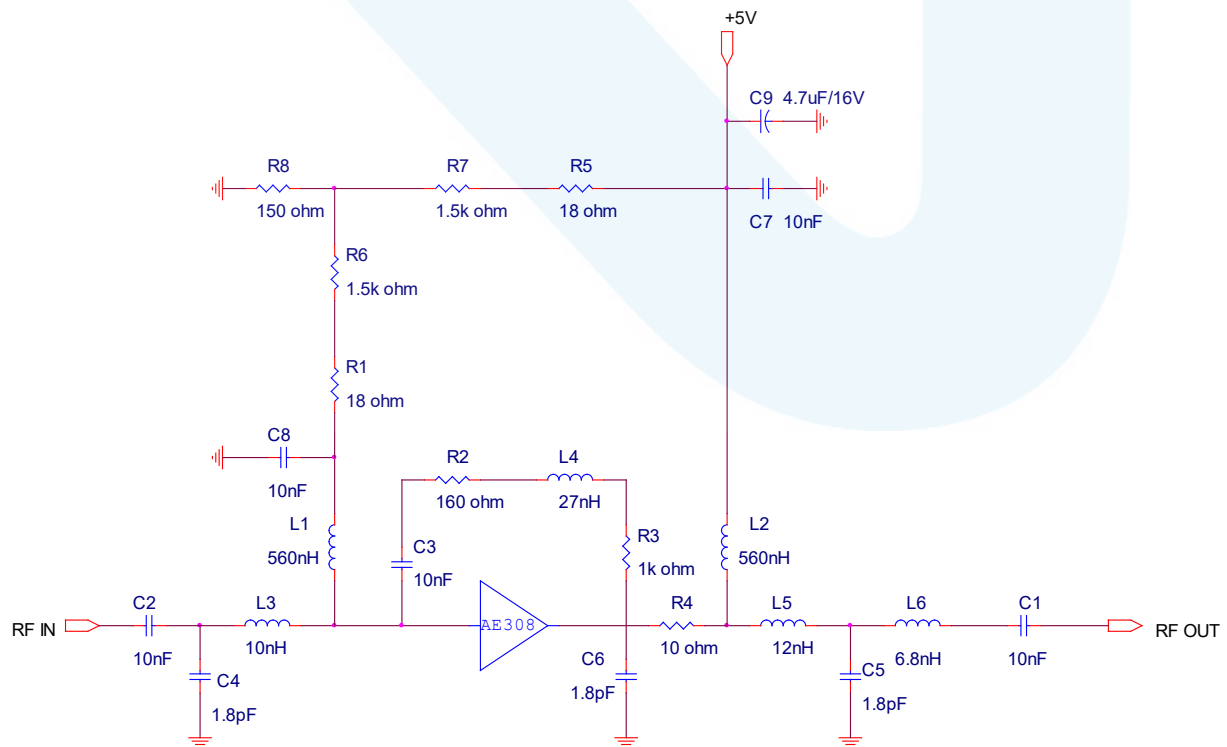
Typical RF Performance @ 25 °C

PARAMETER	UNIT	TYPICAL		
Operating Frequency(f_o)	MHz	50	450	1000
Gain (S_{21})	dB	22	22	22
Input Return Loss(S_{11})	dB	-15	-15	-15
Output Return Loss(S_{22})	dB	-15	-15	-15
Output IP3(OIP3)	dBm	29	30	28
1dB Compression Point(P_{1dB})	dBm	19	19	17
Output IP2(OIP2)	dBc	45	42	54
Noise Figure(NF)	dB	1.3	1.5	2
CSO ⁽¹⁾	dBc	-58		
CTB ⁽¹⁾	dBc	-64		
XMD ⁽¹⁾	dBc	-67		
Supply Voltage	V	5		
Current	mA	40~70		

(1) 135channels, 16dBmV/ch, Single

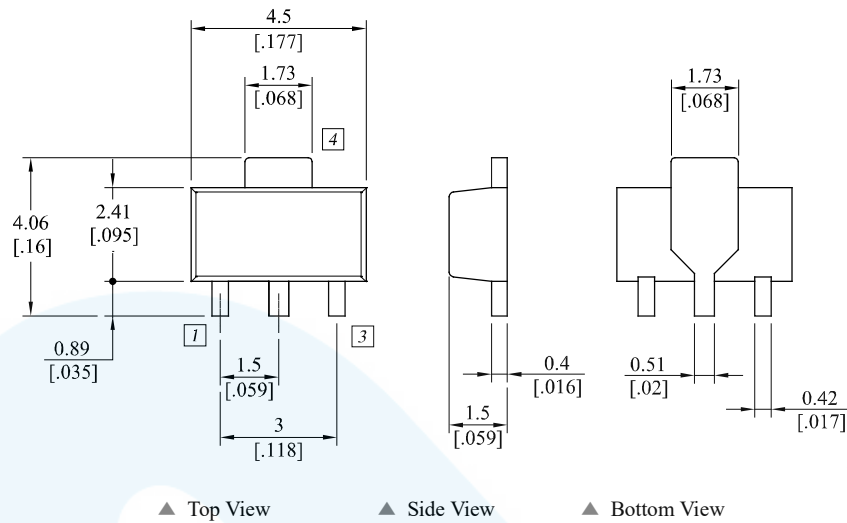


Application Circuit @ 50MHz~1GHz



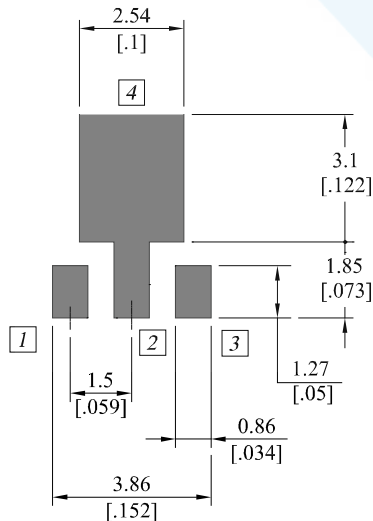
Package Dimensions (Type: SOT-89)

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

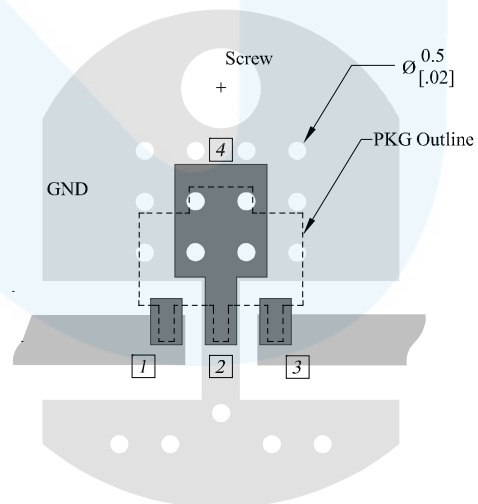


Pin Description			
Pin No	Function	Pin No	Function
1	Input	4	GND
2	GND		-
3	Output / Bias		-

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
AE308	2012.10.17	1.4	New datasheet format	-
AE308	2012.2.18	1.3	-	-

**Certification**

This product is manufactured by a company that is certified for the AS9100D quality management system.

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