

## 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

## Application

- 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.

## Specifications

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

Parameter	Units	Min	Typ	Max	Condition
Frequency Range	MHz	50MHz		1GHz	
Supply Voltage	V		5		$V_{dc}=5V$
Current	mA	40	55	70	
S21-Gain	dB		22		50MHz~1GHz
S11-Input Return Loss	dB		-15		
S22-Output Return Loss	dB		-15		
OIP3	dBm	27	29		
P1dB	dBm	17	19		50MHz~500MHz
	dBm	15	17		500MHz~1GHz
OIP2	dBc	37	45	54	50MHz~1GHz
Noise Figure	dB		1.5		50MHz~800MHz
	dB		2		800MHz~1GHz
CSO	dBc		-58		135 channels,+16dBmV/ch,Single
CTB	dBc		-64		135 channels,+16dBmV/ch,Single
XMD	dBc		-67		135 channels,+16dBmV/ch,Single

## Typical Performance

Frequency	MHz	50MHz	1GHz
S21-Gain	dB	22	22
S11-Input Return Loss	dB	-15	-15
S22-Output Return Loss	dB	-15	-15
OIP3	dBm	29	28
P1dB	dBm	19	17
OIP2	dBc	45	54
Noise Figure	dB	1.3	2
CSO	dBc		-58
CTB	dBc		-64
XMD	dBc		-67
Supply Voltage	V		5
Current	mA		40~70

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

## NOTE

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

## Absolute Maximum Ratings

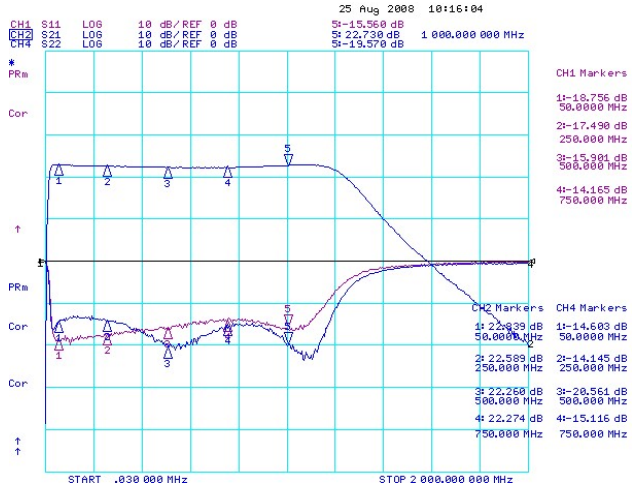
PARAMETER	Minimum Rating	Maximum Rating
Operating Case Temperature ( $^{\circ}C$ )	-40	85
Storage Temperature ( $^{\circ}C$ )	-50	125
Drain-Source Voltage (V)		+7

Single – Ended CATV 75Ω Evaluation Circuit : (50MHz ~1GHz)

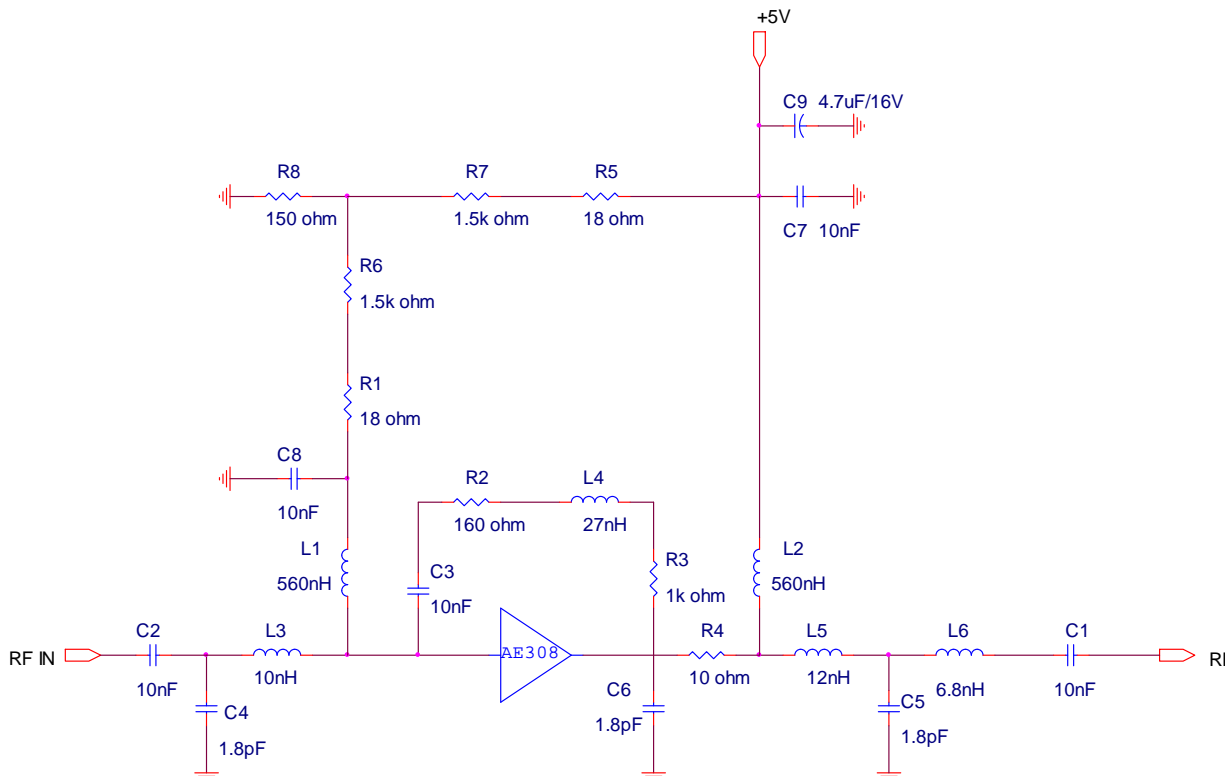
Typical RF Performance at 25°C

Parameter	Units	Typical		
Frequency	MHz	50	450	1000
S21-Gain	dB	22	22	22
S11-Input Return Loss	dB	-15	-15	-15
S22-Output Return Loss	dB	-15	-15	-15
OIP3	dBm	29	30	28
P1dB	dBm	19	19	17
OIP2	dBc	45	42	54
Noise Figure	dB	1.3	1.5	2
CSO	dBc	-58		
CTB	dBc	-64		
XMD	dBc	-67		
Supply Voltage	V	5		
Current	mA	40~70		

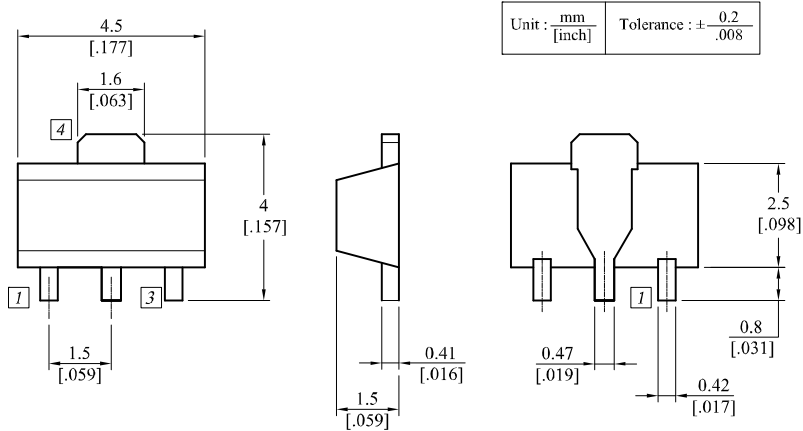
(1) 135channels,+16dBmV/ch,Single



APPLICATION (50MHz~1GHz)



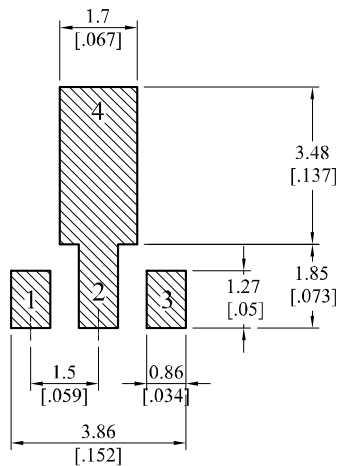
**Dimensions**



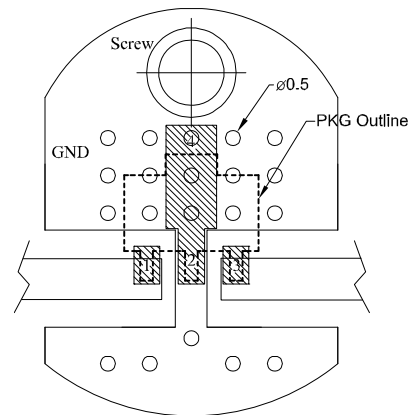
Pin No	Function
1	Input
2	Ground
3	Output
4	Ground

**! ESD sensitive**  
Observe precautions for handling, testing and packaging.

**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.

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