



## CL1058

E-pHEMT Active Bias Gain Block  
50MHz to 4000MHz

Criteria Labs CL1058 is a high-performance E-pHEMT MMIC amplifier configuration with an active bias network in a hermetic package for use in military and industrial applications. The active bias network provides stable current over temperature and beta process variations. The CL1058 has a unique combination of low noise and high IP3 making this amplifier ideal for sensitive high dynamic range receiver applications. This amplifier will operate from +3V to +5V and is internally matched to 50 ohms. Criteria Labs can provide various levels of device screening for military or high-reliability space applications.



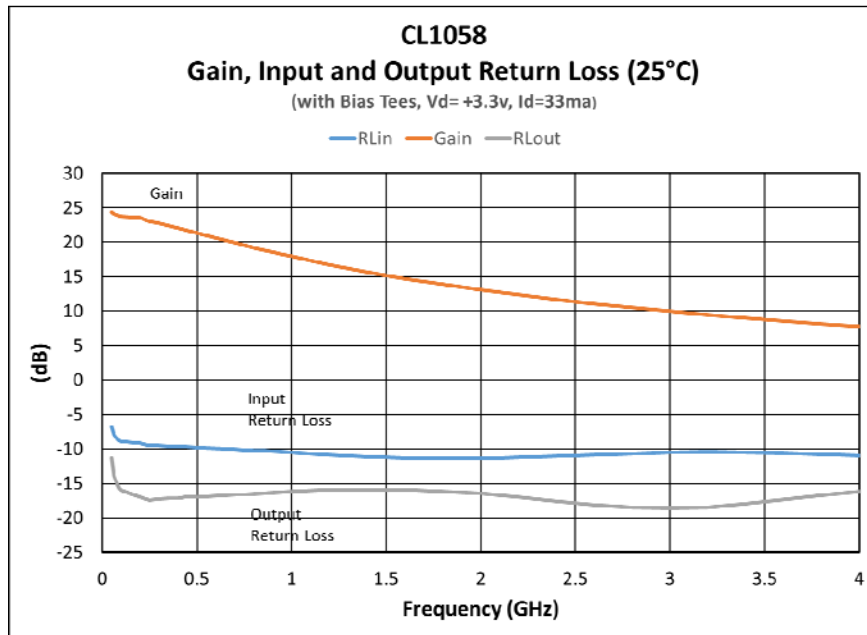
Package: Hermetic, 2-pin, 5.8mm x 2.8mm

### Product Features

- Single Fixed Supply from +3V to +5V
- Hermetic Package for High Reliability Applications
- OIP3= 34dBm @ 1000MHz @ 5.0V
- P1db=19dBm @ 1000MHz @ 5.0V
- OIP3= 28dBm @ 1000MHz @ 3.3V
- P1db=16.4dBm @ 1000MHz @ 3.3V

### Applications:

- Military and Space Communications
- Industrial Applications
- Aerospace and Defense



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Absolute Maximum Ratings		
Parameter	Rating	Units
Device Current (Id)	76	mA
Device Voltage	6	V
RF Input Power	23	dBm
Junction Temperature (Tj)	+150	°C
Operating Temperature Range	-40 to +85	°C
Storage Temperature Range	-65 to +150	°C
Moisture Sensitivity Level	Hermetic	
ESD Rating - Human body Model (HBM)	Class 1C	



Caution! ESD sensitive device.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

Nominal Operating Parameters					
	CL1058 Specifications			Units	Conditions
	Min	typ	Max		
General Performance					Test conditions: Vd = 3.3Vdc, Id = 33mA, OIP3 tone spacing 1 MHz, Pout per tone = 5 dBm TL=25C, 50 ohm system. Bias Tee tested.
Small Signal Gain	16	17.6	19.6	dB	1.00 GHz
		12.7		dB	2 GHz
P1dB	15.8	16.4	17.5	dBm	1.00 GHz
OIP3		28.5		dBm	1.00 GHz, 1.001 GHz
Input Return Loss	7	10.2		dB	1.00 GHz
		11		dB	2 GHz
Output Return Loss	13.5	16.5		dB	1.00 GHz
		17.3		dB	2 GHz
Reverse Isolation	20.2	23		dB	1.00 GHz
Noise Figure		0.9	1.3	dB	1.00 GHz
Operating Voltage		3.3		V	
Operating Current	25	33	41	mA	
Thermal Resistance		87		°C/W	Junction to Case

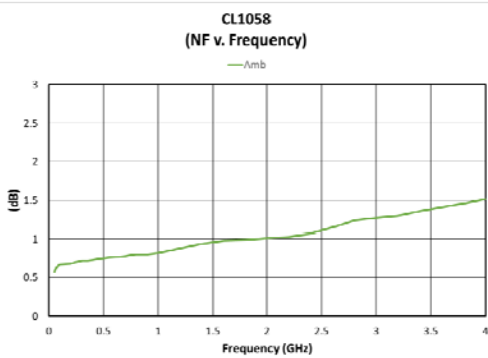
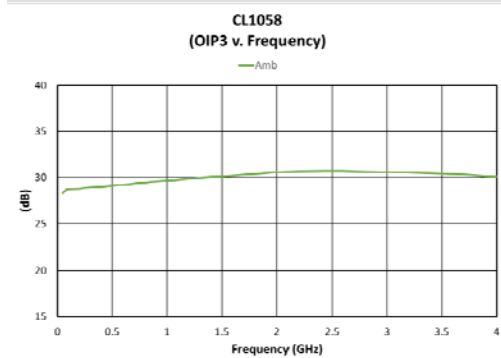
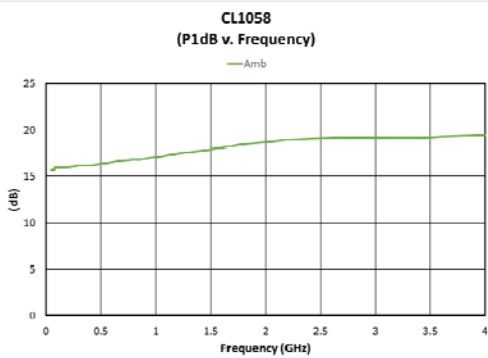
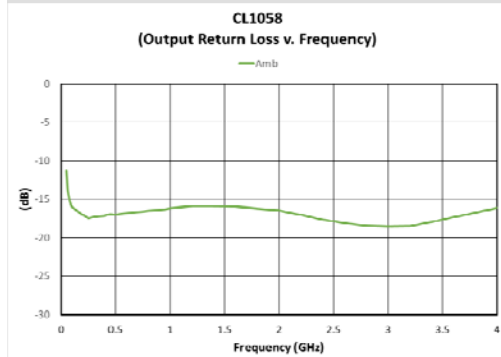
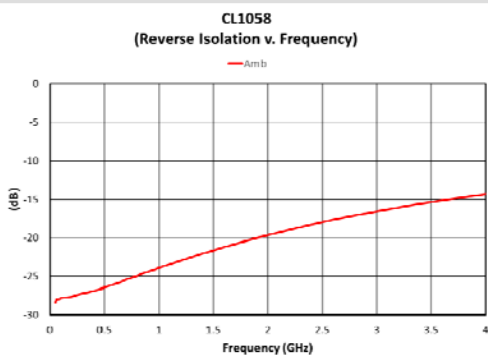
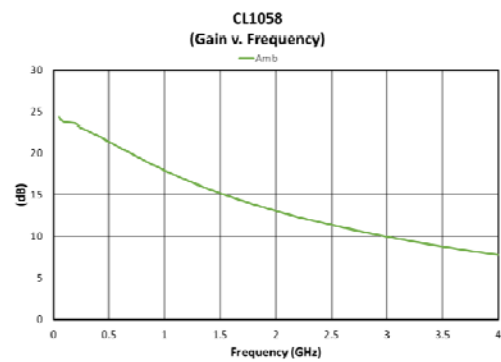
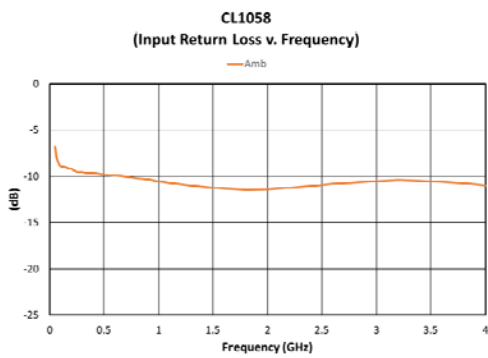


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## Typical Performance (Vd= +3.3V)

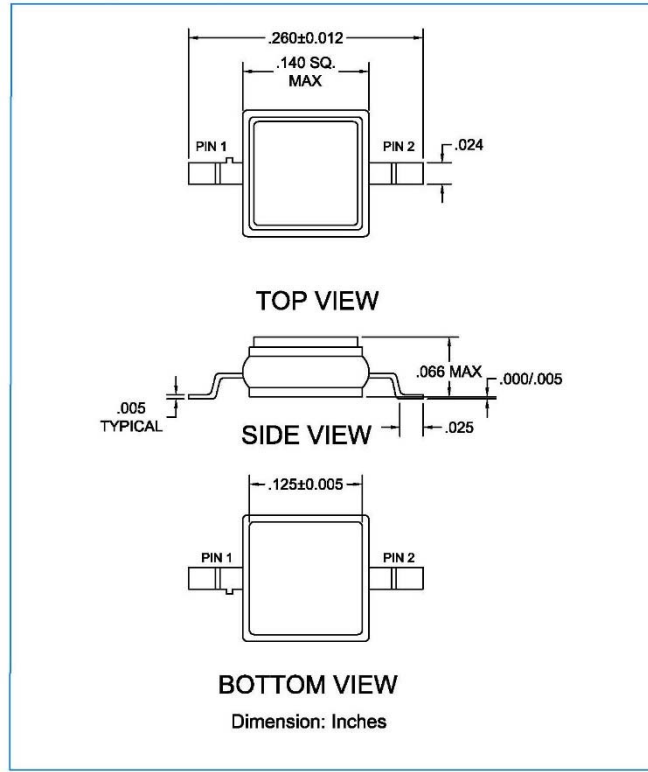


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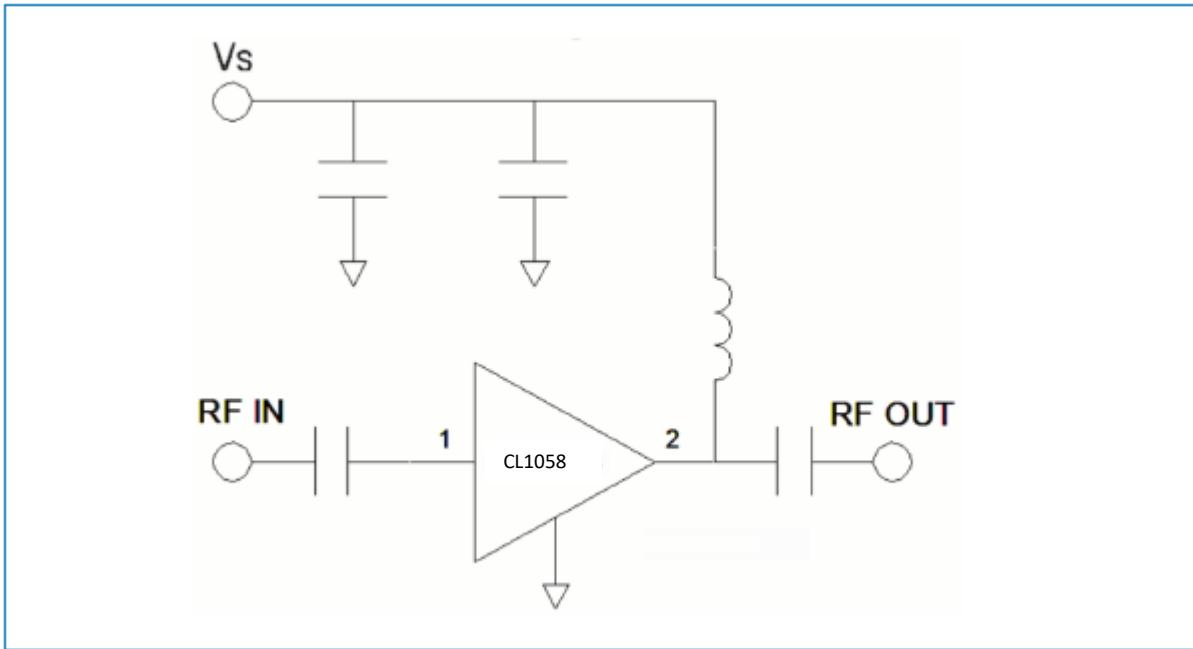
## Package Drawing



Pin Names and Descriptions		
Pin	Name	Description
1	RFIN	RF input pin. This pin requires the use of an external blocking capacitor chosen for the frequency of operation
2	RFOUT/DC Bias	RF output and bias pin. This pin requires the use of an external blocking capacitor and inductor chosen for the frequency of operation.
Package Paddle	GND	Package backside must be connect to RF/DC ground

# CL1058

## Typical Application Schematic



## Order Information:

**CL1058-X-Y-Z**

- Screening Level
  - Blank Mil-STD-883 screen flow
  - 3 temperature electrical
  - S Space Flow
- Lead Finish
  - Blank (Au finish)
  - D (63/37 solder dip leads only)
- Packaging
  - Blank (Foam ESD shipping box)
  - T (tape and reel)



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