



CL1016

pHEMT Active Bias Gain Block
500MHz to 8000MHz

Criteria Labs CL1016 is a high-performance E-pHEMT MMIC amplifier configuration with an active bias network in a hermetic package for use in space, military and industrial applications. The active bias network provides stable current over temperature and beta process variations. The CL1016 is a wide band, low noise amplifier with low noise, high IP3 and flat gain over a wide frequency band making it ideal for sensitive, high dynamic range receiver applications. This amplifier will operate from a single +5V supply and is well matched to 50 ohms. Criteria Labs can provide various levels of device screening for military or high-reliability space applications.



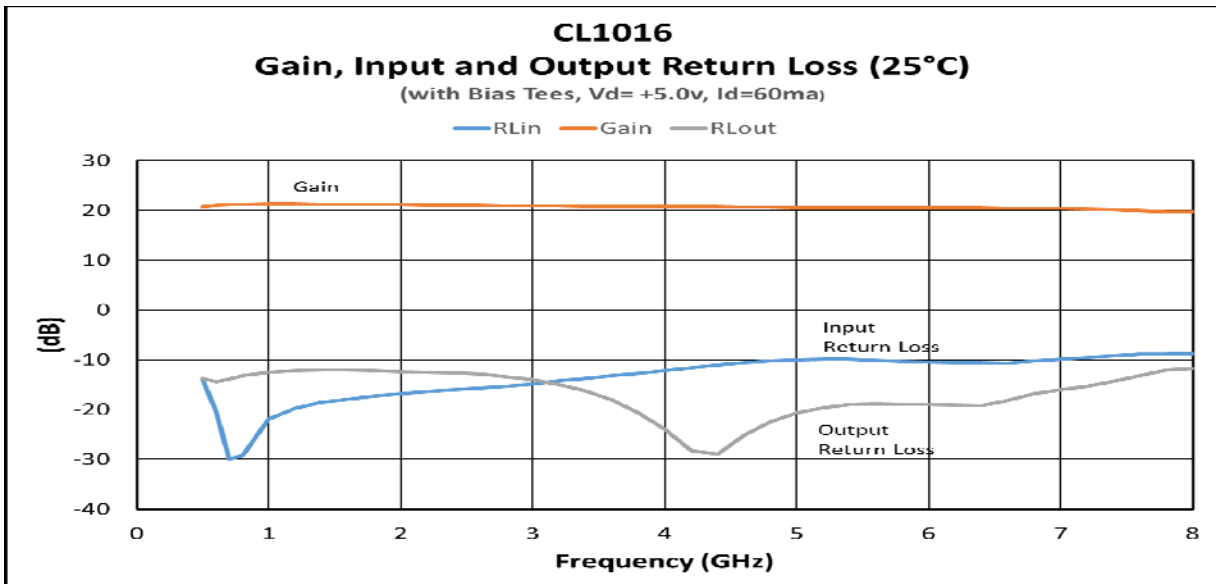
Package: Hermetic, 2-pin, 5.8mm x 2.8mm

Product Features

- Single Fixed Supply from +5V
- Hermetic Package for High Reliability Applications
- OIP3: 27.7dBm @ 4000MHz @ 5.0V
- P1db: 16.8dBm @ 4000MHz @ 5.0V
- Flat Gain +/- 1.4dB from 1 to 8 GHz
- Noise Figure: 1.2 dB @ 4000MHz

Applications:

- Military and Space Communications
- S-Band Radar
- C-Band Satcom
- WLAN



Criteria Labs 706 Brentwood St., Austin, TX 78752
www.criterialabs.com 512-637-4500

40-0016 Rev C

CL1016

Absolute Maximum Ratings		
Parameter	Rating	Units
Device Current (Id)	100	mA
Device Voltage	7	V
RF Input Power	16	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 1A	250 to 500V



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	CL1016 Specifications			Units	Conditions
	Min	typ	Max		
General Performance					Test conditions: Vd = 5.0Vdc, Id = 60mA, OIP3 tone spacing 1 MHz, Pout per tone = 5 dBm TL=25C, 50 ohm system. Bias Tee tested.
Small Signal Gain	19.5	21	22.5	dB	2.00 GHz
		19.2		dB	8.0 GHz
P1dB	18.5	19.5	21.2	dBm	2.00 GHz
OIP3		30.3		dBm	2.00 GHz, 2.001 GHz
Input Return Loss	12	15.2		dB	2.00 GHz
		8.8		dB	8.0 GHz
Output Return Loss	10.2	12.3		dB	2.00 GHz
		11.69		dB	8.0 GHz
Reverse Isolation	23.2	26		dB	2.00 GHz
Noise Figure		1.2	1.5	dB	2.00 GHz
Operating Voltage		5		V	
Operating Current	46	60	74	mA	
Thermal Resistance		85		°C/W	Junction to Case

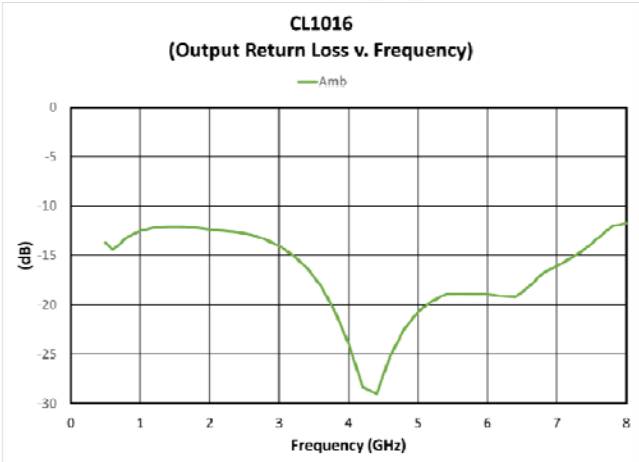
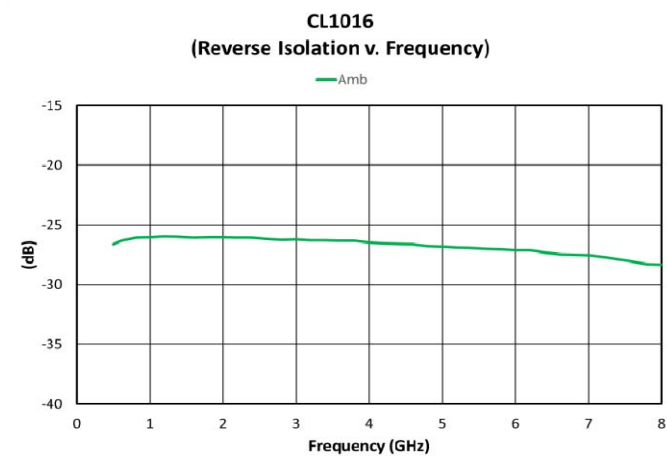
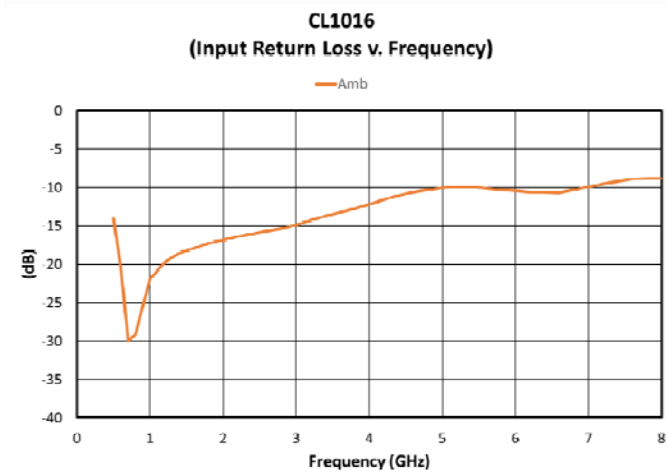


Criteria Labs 706 Brentwood St., Austin, TX 78752
www.criterialabs.com 512-637-4500

40-0016 Rev C

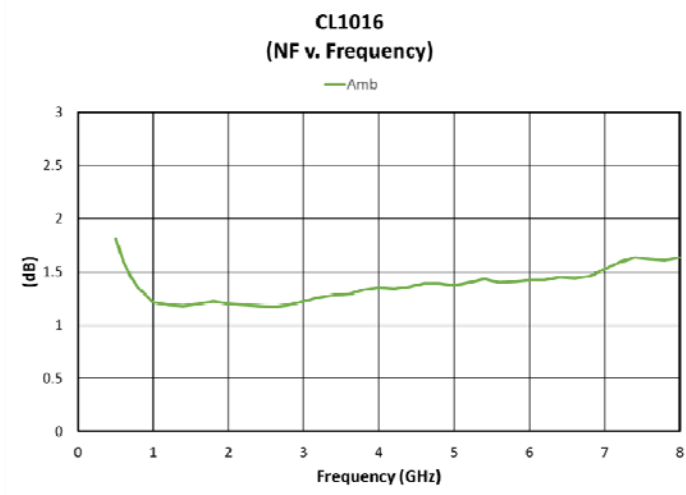
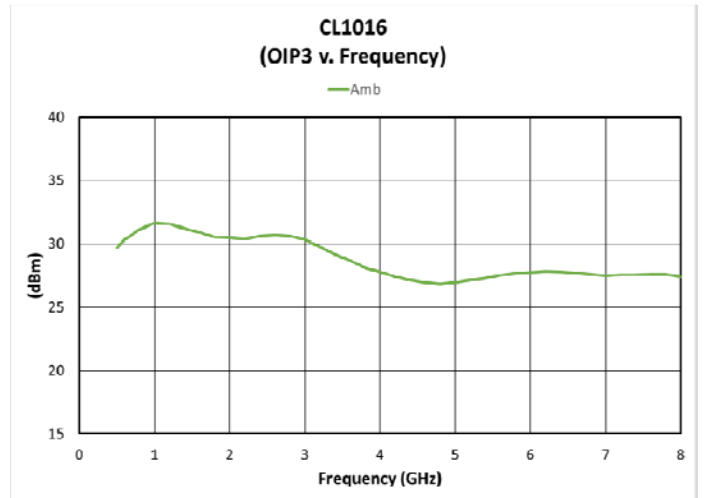
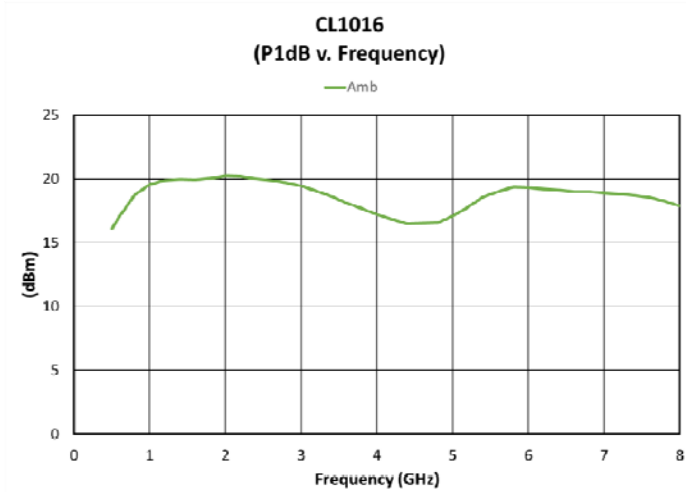
CL1016

Typical Performance (Vd= +5 V)

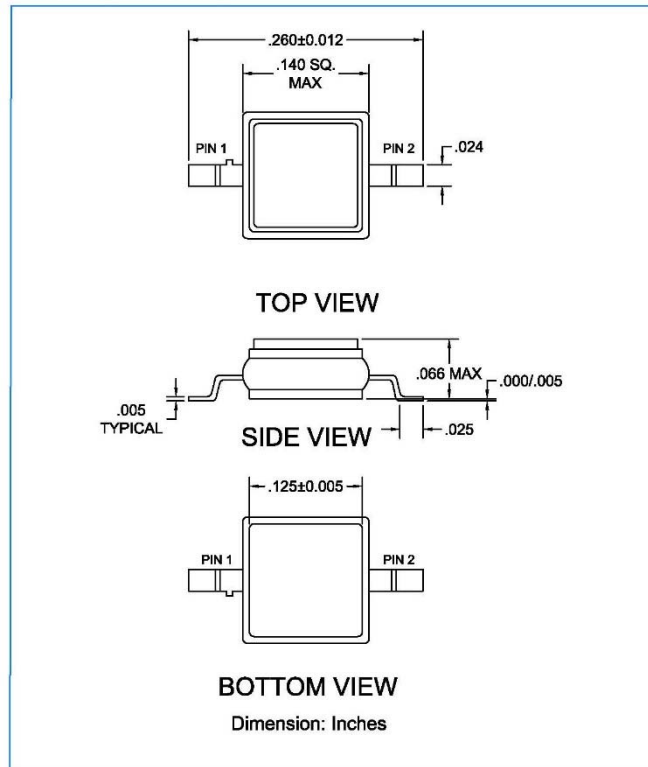


CL1016

Typical Performance (Vd= +5 V)



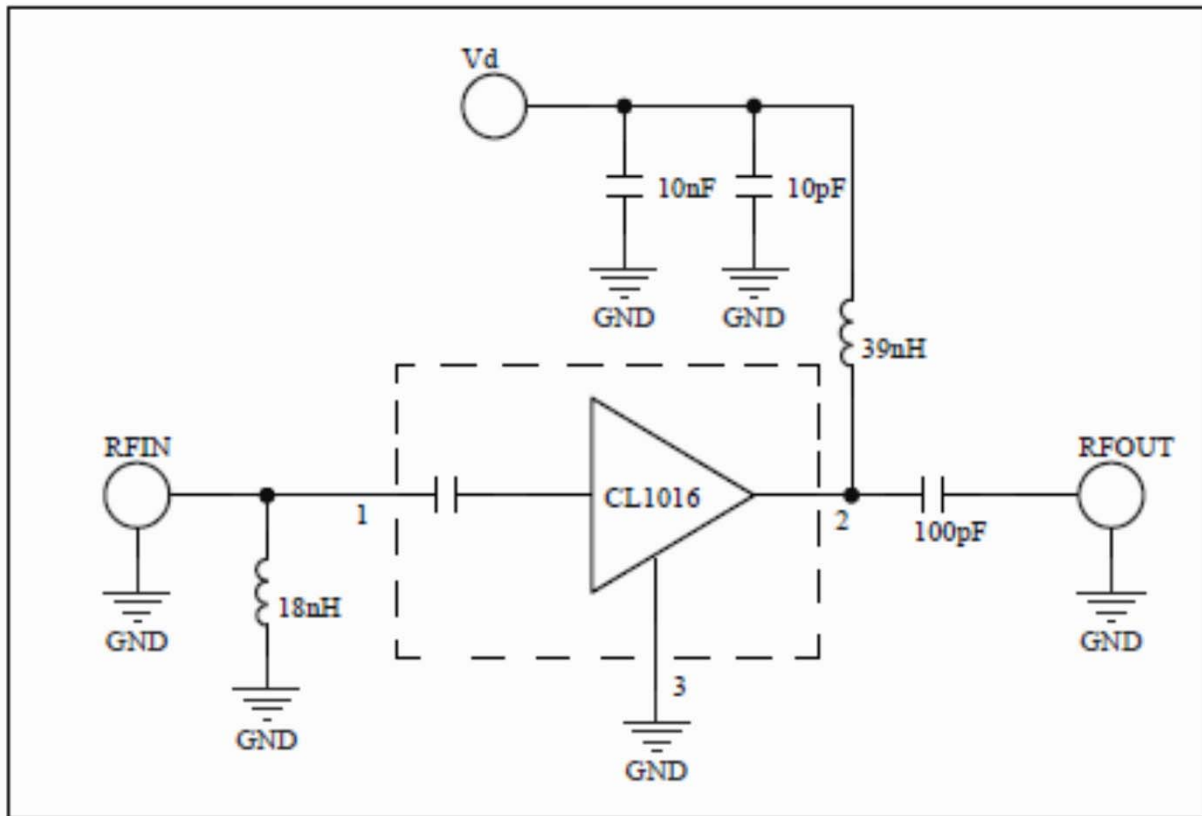
Package Drawing



Pin Names and Descriptions		
Pin	Name	Description
1	RFIN	RF Input (RFIN). This pin is AC-coupled and matched to 50 ohms with an external inductor connected from this pin to ground. See the typical application schematic.
2	RFOUT/DC Bias	RF Output (RFOUT). This pin is dc-coupled and matched to 50 ohms. See the typical application schematic for the Drain Bias interface to the Amplifier (Vd). This pin requires the use of an external inductor and blocking capacitor chosen for the frequency of operation.
Package Paddle	GND	Ground. The package bottom must be connected to RF/dc ground.

CL1016

Typical Application Schematic



Order Information:

CL1016-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)



Criteria Labs 706 Brentwood St., Austin, TX 78752
www.criterialabs.com 512-637-4500

40-0016 Rev C