



CL1014

E-pHEMT Active Bias Gain Block
30MHz to 1500MHz



Criteria Labs CL1014 is a high-performance E-pHEMT MMIC amplifier offering extremely high dynamic range over a broad frequency range with low noise figure. In addition, the CL1014 has good P1dB and OIP3. Criteria Labs can provide various levels of device screening for military or high-reliability space applications.

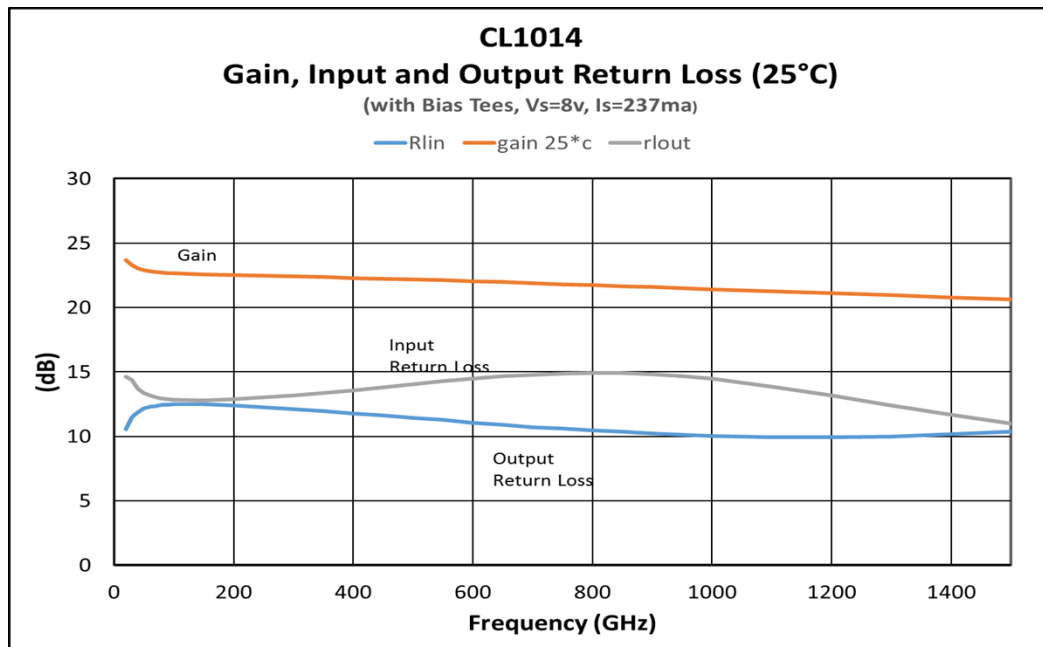
Package: Hermetic, 2-pin, 6.6mm x 3.6mm

Product Features

- Single Fixed 8v Supply
- Hermetic Package for High Reliability Applications
- Ultra High IP3, +44.4 dBm Typ.
- Medium Power, +28.4 dBm typ.
- Excellent Noise Figure, 1.4 dB typ.

Applications:

- Military and Space Communications
- Base station infrastructure
- Aerospace and Defense



Criteria Labs 706 Brentwood St., Austin, TX 78752
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Absolute Maximum Ratings				
Parameter	at 8V	at 5V	at 3V	Units
Power Dissipation /1	3.3	3.3	3.3	W
Input Power (5 minutes max) /2	+22	+22	+22	dBm
Input Power (continuous) 0.03 to 1.0 GHz	+11	+8	+4	dBm
Input Power (continuous) 1.0 to 2.0 GHz	+18	+15	+12	dBm
Operating Temperature Range	-40 to +95	-40 to +105	-40 to +105	°C
Storage Temperature Range	-65 to +150	-65 to +150	-65 to +150	°C
Maximum voltage Output Pin 2	10	10	10	V
ESD Rating - Human body Model (HBM)	Class 1C	Class 1C	Class 1C	
/1 Up to 85°C, derate linearly to 3W at 95°C				
/2 Up to 85°C, derate linearly to +19 dBm at 95°C				

Nominal Operating Parameters						
	Units	CL1014 Specifications			Units	Conditions
		Min	typ	Max		
General Performance						
Small Signal Gain	dB		21.1		dB	500 MHz
	dB	18.5	20.6	22.6	dB	1500 MHz
P1dB	dBm		28.1		dBm	500 MHz
OIP3	dB		43.6		dBm	500 MHz
Input Return Loss	dB		11.7		dB	500 MHz
	dB		10.3		dB	1500 MHz
Output Return Loss	dB		14.5		dB	500 MHz
	dB		10.6		dB	1500 MHz
Reverse Isolation	dB		26.18		dB	500 MHz
Noise Figure	dB		1.29		dB	500 MHz
Operating Current	mA		235	273	mA	
Thermal Resistance	C/W		23.3		°C/W	Junction to Case



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.



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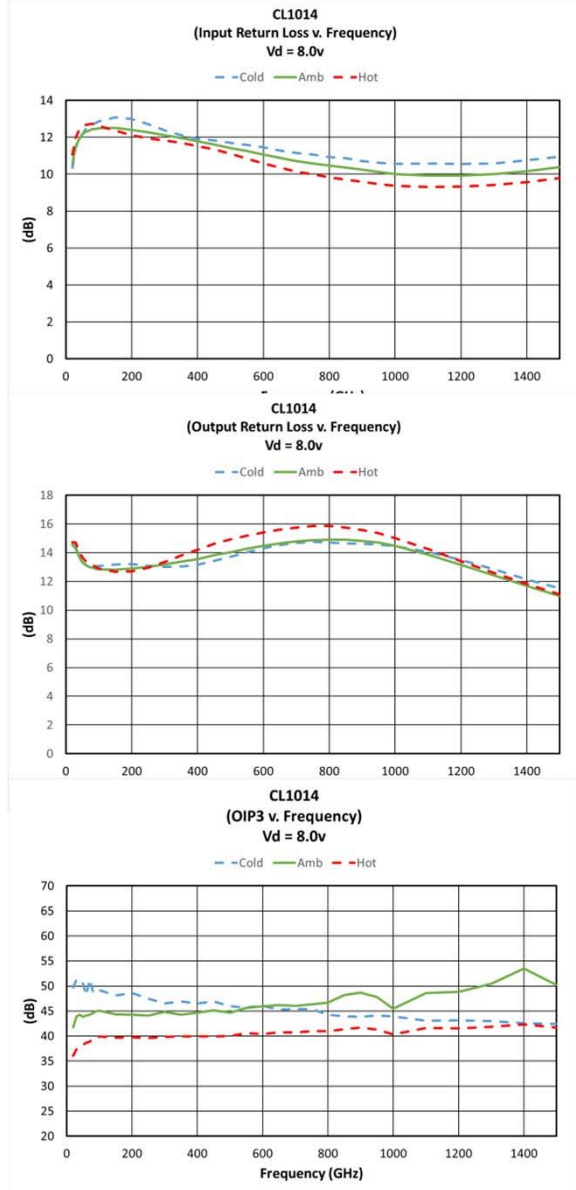
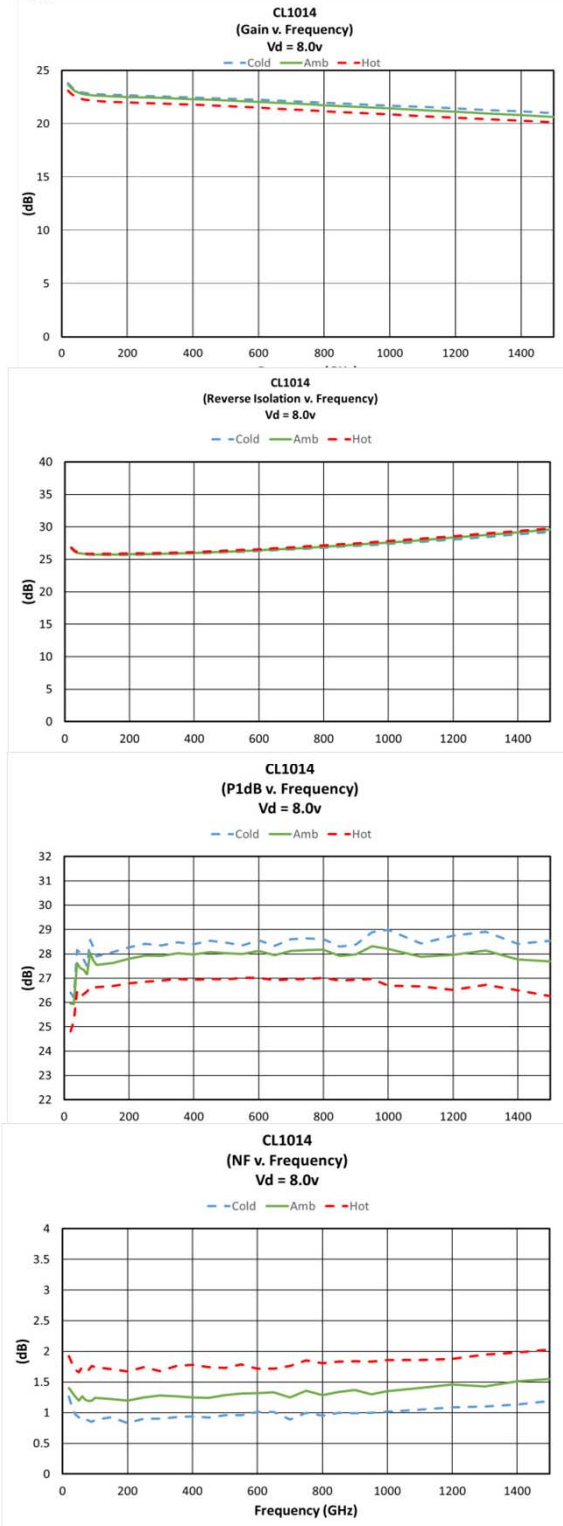
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Typical Performance



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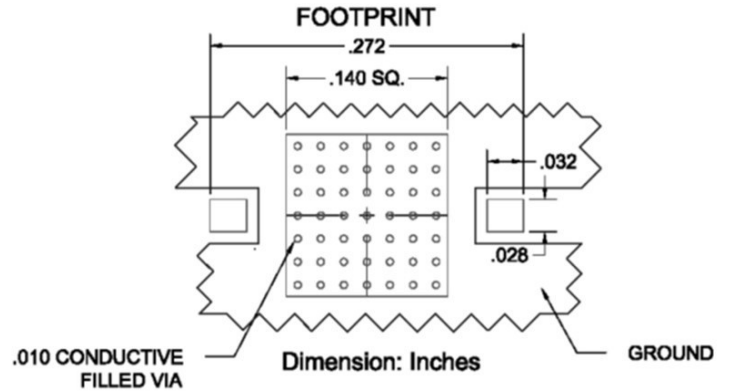
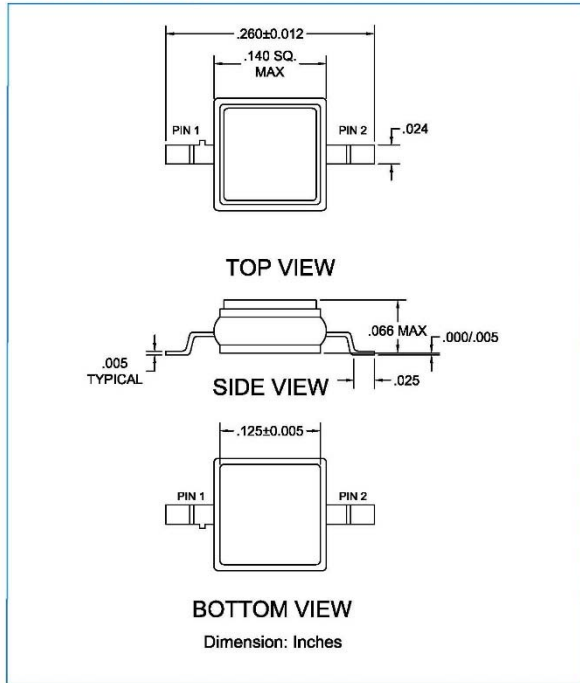
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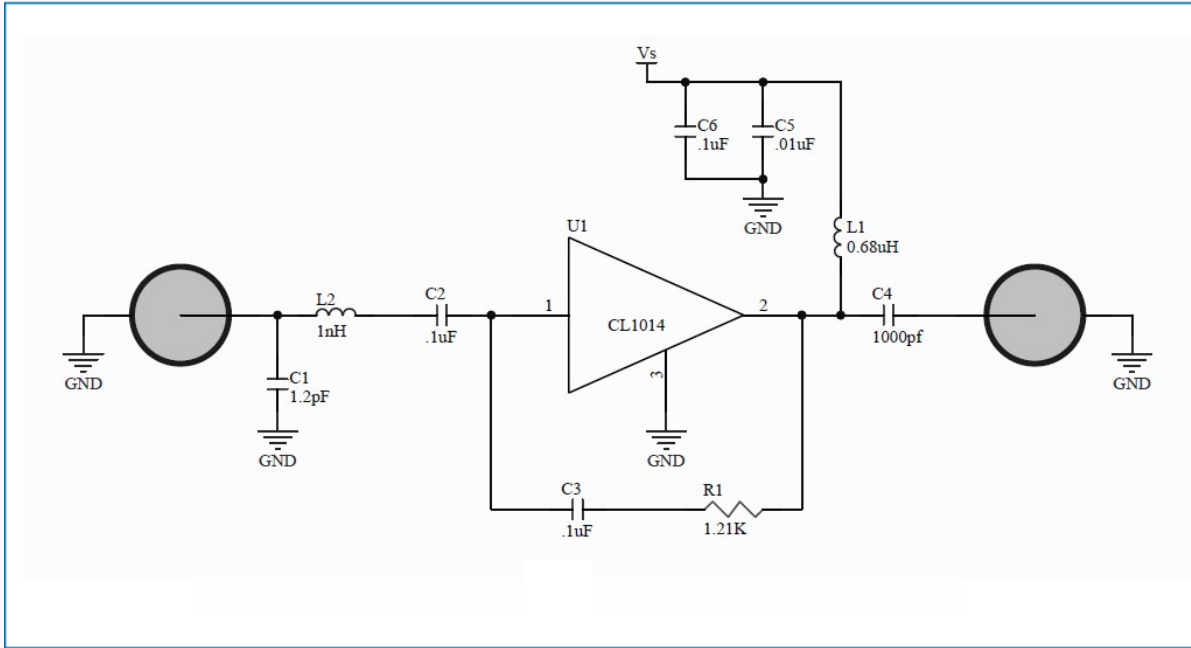
Package Drawing



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 chosen for the frequency of operation.
Package Paddle	GND	Package backside must be connect to RF/DC ground

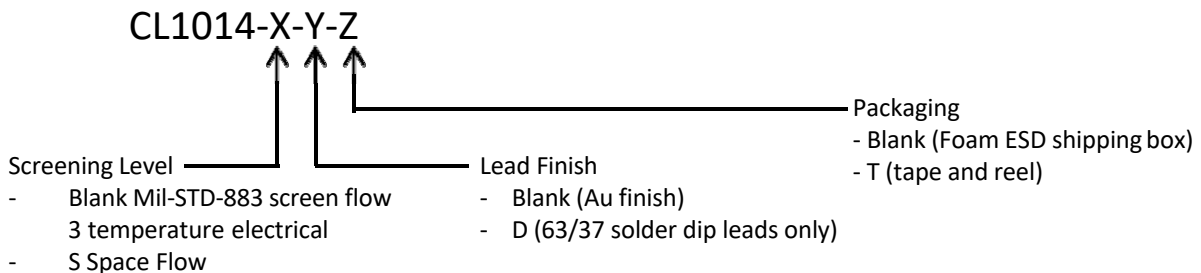
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Typical Application Schematic



Component	Size	Value	Manufacturer	Part Number
C1	0402	1.2pF	Murata	GRM1555C1H1R2WA01D
C2, C3, C6	0402	0.1uF	Murata	GRM155R71C104KA88D
C4	0402	0.001uF	Murata	GRM1555C1H102JA01D
C5	0402	0.01uF	Murata	GRM155R71E103KA01D
R1	0402	1.21kΩ	KOA	RK73H1ETTP1211F
L1	0805	0.68uH	Coilcraft	0805LS-681XJLB
L2	0402	1nH	Coilcraft	0402CS-1N0XJLW

Order Information:



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