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CXE-2022Z

50MHz to 1000MHz MMIC 75Ω LOW NOISE AMPLIFIER

Package: 2x2 DFN

Product Description

RFMD's CXE-2022Z is a 75Ω high performance low noise pHEMT MMIC amplifier utilizing a self bias network. The CXE-2022Z is designed to run over a wide 2.7V to 3.3V single supply voltage and does not require a bias resistor as compared to typical Darlington amplifiers.

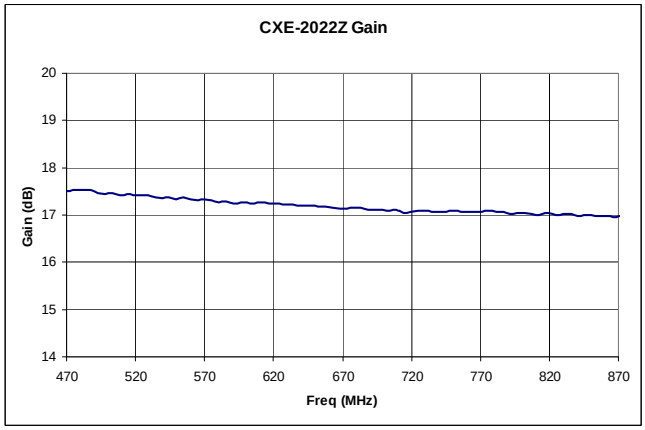
The CXE-2022Z was developed for low noise, portable, linear gain block consumer applications which require small size, low current, and a few external components. The part is internally matched to 75Ω and designed to operate over the 50MHz to 1000MHz bandwidth.

Features

- Low Noise Figure: 1.2dB
- Flat Gain Response: 17.5dB ± 0.15dB
- High Linearity IIP3: 0dBm
- Single Supply: 2.7V to 3.3V
- Low Current: 20mA

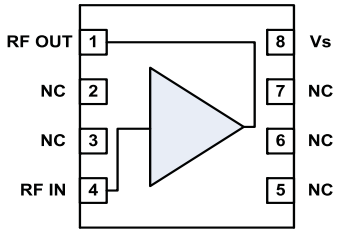
Optimum Technology Matching® Applied

- ☐ GaAs HBT
- ☐ GaAs MESFET
- ☐ InGaP HBT
- ☐ SiGe BiCMOS
- ☐ Si BiCMOS
- ☐ SiGe HBT
- ✓ GaAs pHEMT
- ☐ Si CMOS
- ☐ Si BJT
- ☐ GaN HEMT
- ☐ InP HBT
- ☐ RF MEMS
- ☐ LDMOS



Applications

- DVB/T Recievers/Antennas
- DMB-T Receivers/Antennas
- PCTV and Other Portable Devices



FUNCTIONAL BLOCK DIAGRAM

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Small Signal Gain	16.5	17.5		dB	500MHz
Gain Flatness		+/-.15		dB	470MHz to 860MHz
Output Power at 1dB Compression		1.3		dBm	500MHz
Input Third Order Intercept Point		0		dBm	500MHz
Input Second Order Intercept Point		10		dBm	500MHz
Input Return Loss		-13.5		dB	50MHz to 860MHz
Output Return Loss		-10		dB	50MHz to 860MHz
Noise Figure		1.2	1.5	dB	500MHz
Device Operating Voltage	2.7		3.6	V	
Device Operating Current	17	20		mA	

Test Conditions: V_P=3.3V, I_D=20mA Typ, IIP_3, IIP_2 Tone Spacing= 1MHz, P_{OUT} per tone=-10dBm, T_L=25°C, Z_S=Z_L=75Ω, Tested with App Circuit

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Absolute Maximum Ratings

Parameter	Rating	Unit
Device Current (I_D)	35	mA
Device Voltage (V_D)	3.6	V
Power Dissipation	125	mW
Junction Temperature (T_J)	+150	°C
Operating Temperature Range (T_L)	-40 to +85	°C
Storage Temperature Range	-65 to +150	°C
ESD Rating - Human Body Model	Class 0	
Moisture Sensitivity Level	MSL 1	

Operation of this device beyond any one of these limits may cause permanent damage. For reliable continuous operation, the device voltage and current must not exceed the maximum operating values specified in the table on page one.

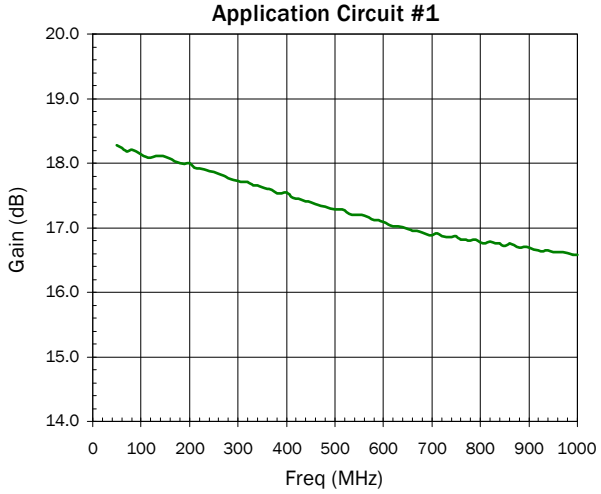
Caution! ESD sensitive device.

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.

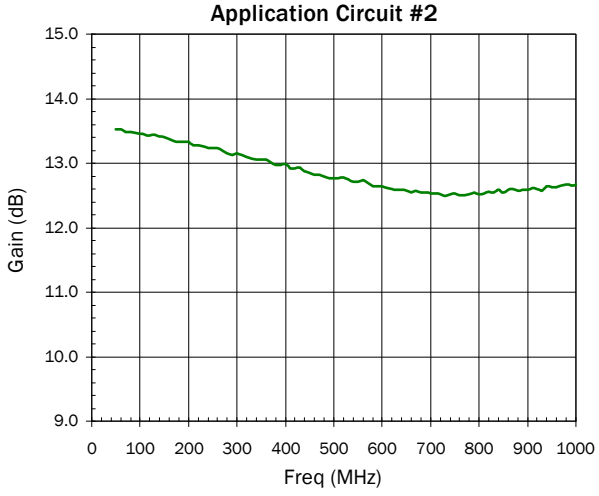
RoHS status based on EUDirective2002/95/EC (at time of this document revision).

Typical Application Circuit Performance

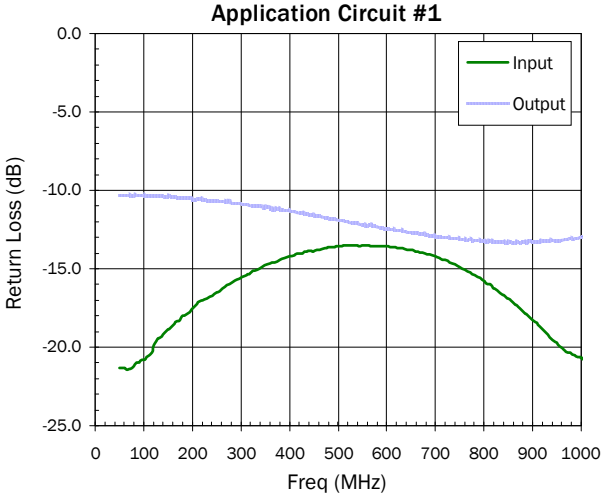
Frequency Response
Application Circuit #1



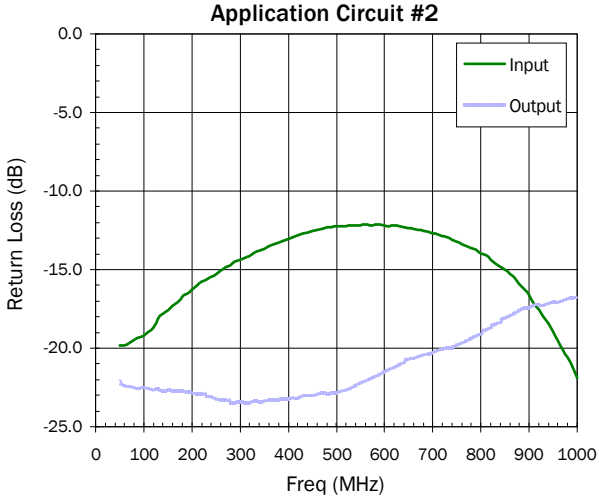
Frequency Response
Application Circuit #2



Return Loss
Application Circuit #1



Return Loss
Application Circuit #2



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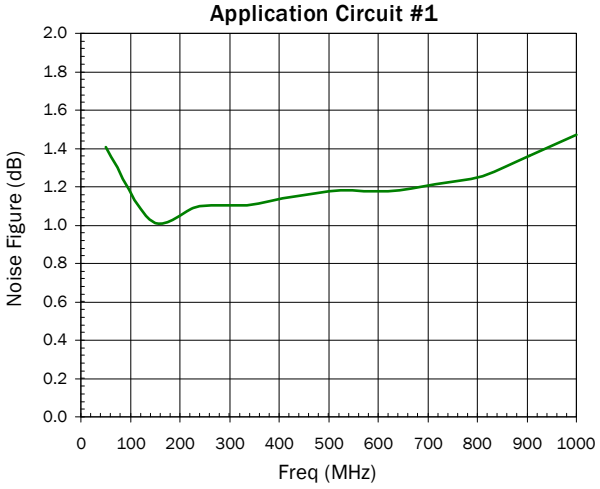
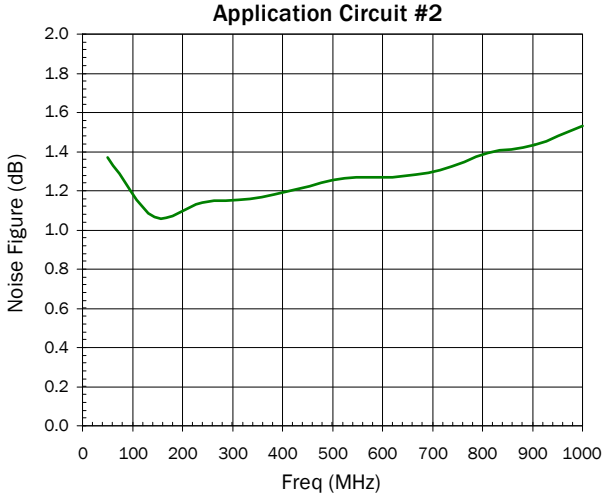
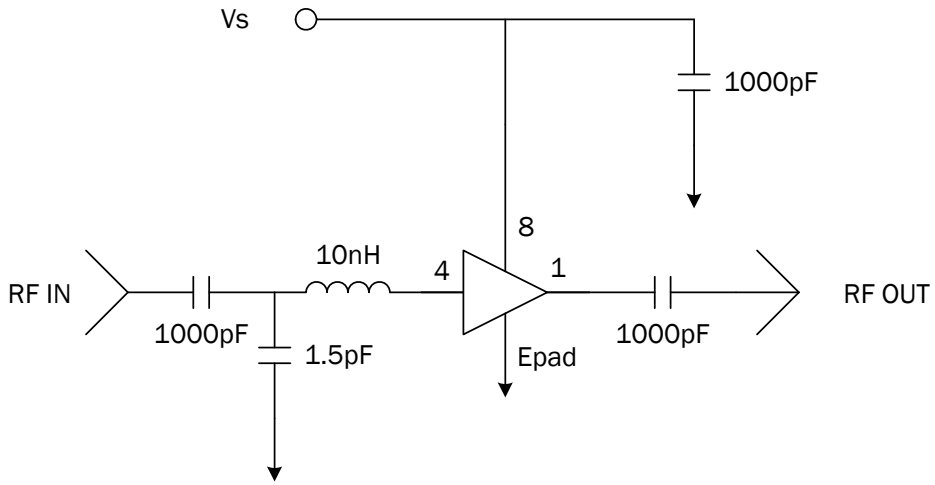
Noise Figure
Application Circuit #1



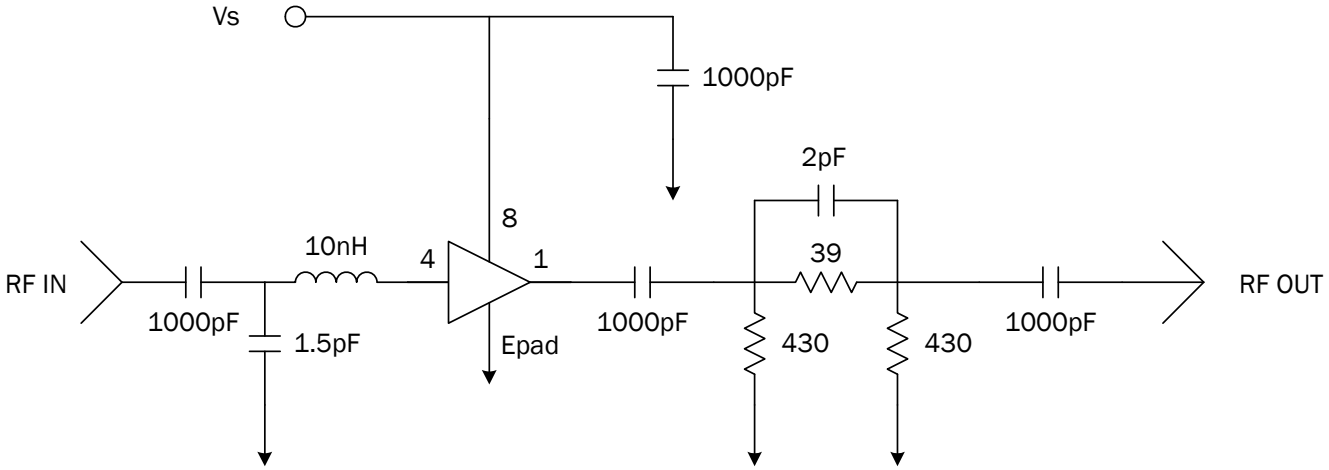
Noise Figure
Application Circuit #2



Application Circuit #1



Application Circuit #2



Pin Description Table

Pin Number	Description
1	RF Output
2	Not connected (NC)
3	Not connected (NC)
4	RF input
5	Not connected (NC)
6	Not connected (NC)
7	Not connected (NC)
8	Voltage Supply Input
Exposed Pad (EP)	Package EP is used to provide IC ground (GND). Follow recommended CXE-2022Z application circuit evaluation board assembly (PCBA) layout.

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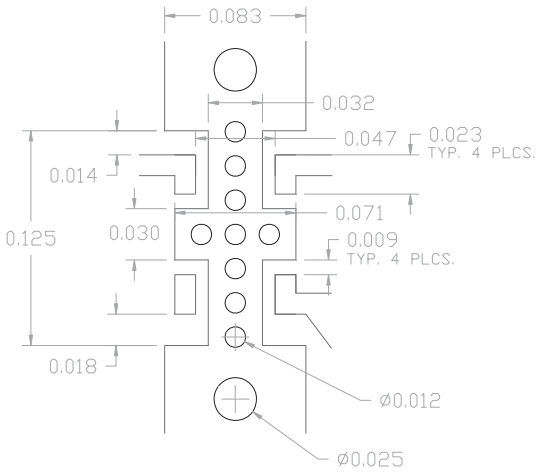
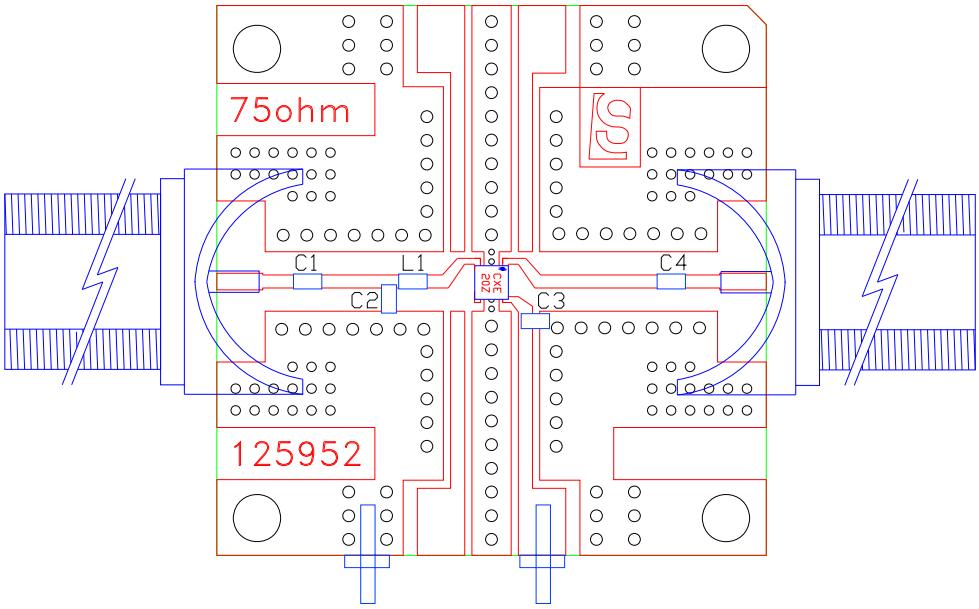
Suggested Pad Layout



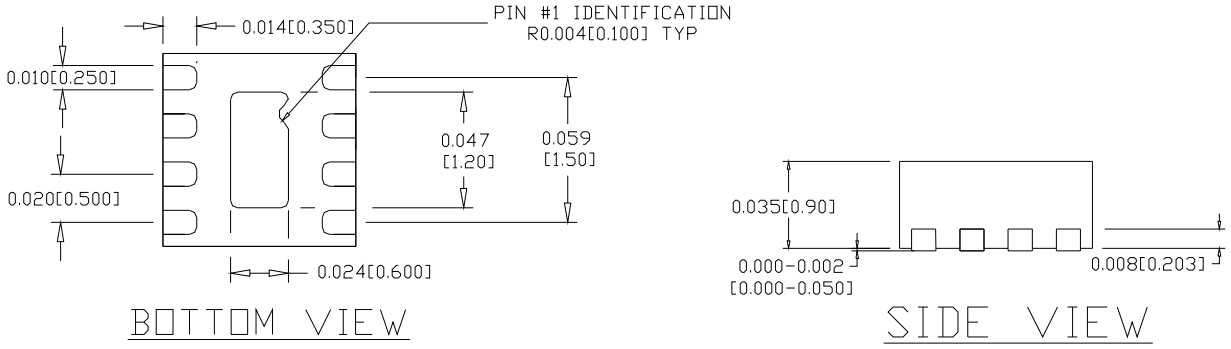
Standard PCB Assembly



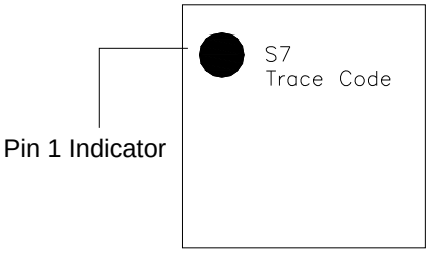
Reference Designator	Component Value 0603
C1, C3, C4	1000pF
C2	1.5pF
L1	10nH

Package Outline

Dimensions shown in inches [mm]



Package Marking



Ordering Information

Part Number	Description
CXE2022SB	5pcs Sample Bag
CXE2022SQ	25pcs Sample Bag
CXE2022SR	100pcs Tape and Reel
CXE2022TR7	2500pcs Tape and Reel
CXE2022PCK-410	CXE2022Z 75Ω Evaluation Board and 5pc Sample Bag

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