Preliminary Datasheet

PE4120

High Linearity MOSFET Quad Mixer

Features

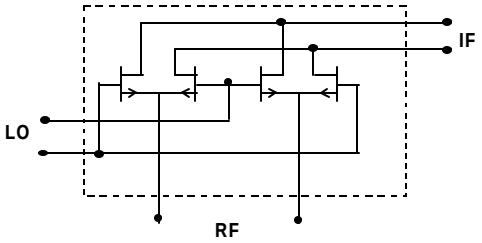
- High linearity:
  IIP3 +28 dBm through 2 GHz (+20 dBm LO)
- Low conversion loss:
  6 dB through 2 GHz (+20 dBm LO)
- Passive operation
- Broadband performance
- Low Cost

Product Description

The PE4120 is a high linearity, passive broadband MOSFET Quad Mixer with high dynamic range performance over an LO drive range of 14 dBm to 20 dBm. The mixer requires differential signals for all ports (RF, LO, IF). Typical applications range from frequency up/down conversion to phase detection for Cellular/PCS Basestations and STB/Cable modems.

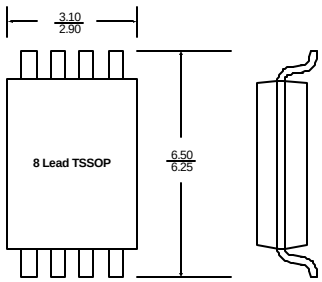
The PE4120 is manufactured in Peregrine's patented Ultra Thin Silicon (UTSi) CMOS process, offering the performance of GaAs with the economy and integration of conventional CMOS.

Functional Schematic Diagram

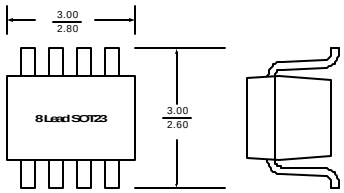


Package Drawings

8 lead TSSOP



8 lead SOT23



Electrical Specifications @ +25° C

Parameter	Minimum	Typical	Maximum	Units
Frequency Range:				
RF/LO	**500**		**2500**	**MHz**
IF	**1**	**200**	**1000**	**MHz**
Conversion Loss		**6**		**dB**
Isolation:				
LO-RF		**34**		**dB**
LO-IF		**36**		**dB**
RF-IF		**-**		**dB**
VSWR:				
LO		**-**		
RF		**-**		
IF		**-**		
Input IP3		**28**		**dBm**
Input 1 dB Compression		**18**		**dBm**

Test conditions unless otherwise noted: RF = 2000 MHz, LO = 2210 MHz (20 dBm)

Peregrine Semiconductor Corp.

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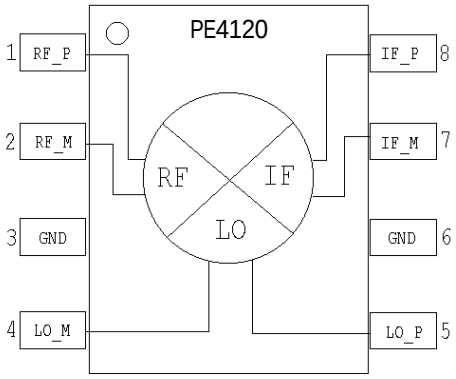
http://www.peregrine-semi.com

Pin Configuration



Pin Descriptions

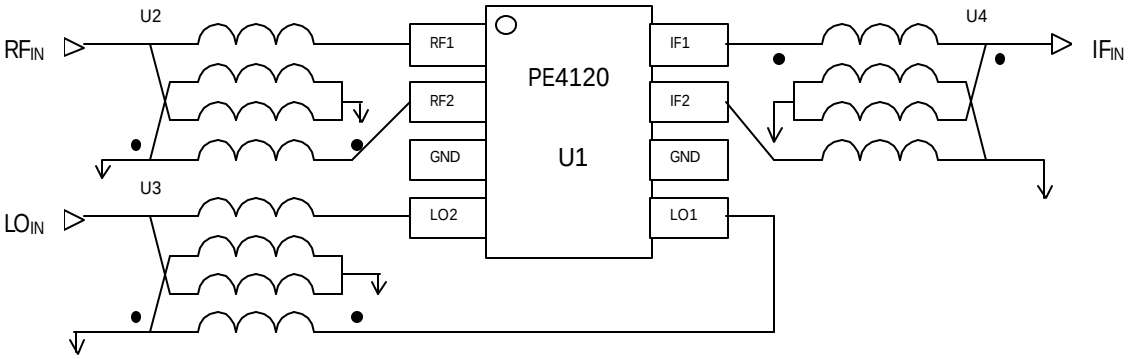
Pin #	Pin Name	Description
1	RF_P	Positive RF differential input
2	RF_M	Negative RF differential input
3	GND	Ground connection for Mixer. Traces should be physically short and connect immediately to ground plane for best performance.
4	LO_M	Negative LO differential input
5	LO_P	Positive LO differential input
6	GND	Ground connection for Mixer. Traces should be physically short and connect immediately to ground plane for best performance.
7	IF_M	Negative IF differential output
8	IF_P	Positive IF differential output

Absolute Maximum Ratings

Symbol	Parameter/Conditions	Min	Max	Units
T_{ST}	Storage temperature range	-65	150	°C
T_{OP}	Operating temperature range	-40	85	°C

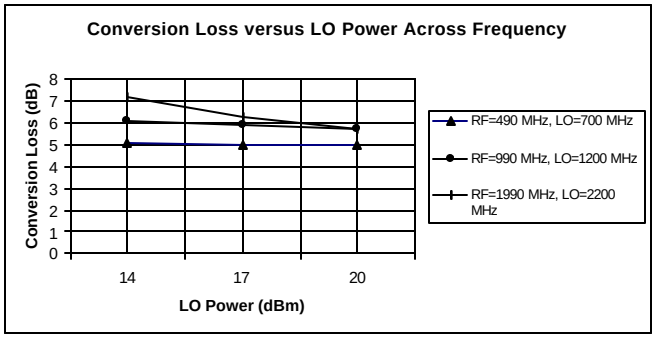
When handling this UTSi device, observe the same precautions that you would use with other ESD-sensitive devices.

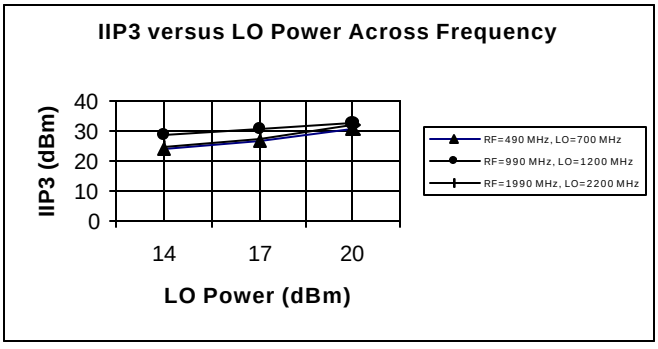
Typical Application Schematic



U2, U3 M/A-Com E-Series RF 4:1 Transformer 500 – 2500 MHz ETC 1.6-4-2-3
U4 M/A-Com E-Series RF 4:1 Transformer 2.0 – 1000 MHz ETK4-2T

Typical Performance Data @ +25C





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Ordering information

Order Code	Part Marking	Description	Package	Shipping Method
4120-11 4120-21	4120 PE4120		8 pin SOT23 8 pin TSSOP	3000pcs./T&R 100pcs./Tube
4120-00	PE4120-EK		Evaluation Board	1/Box

Sales Offices

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For a list of representatives in your area, please refer to our website at www.peregrine-semi.com

Data Sheet Identification

Advance Information

The product is in a formative or design stage. The data sheet contains design target specifications for product development. Specifications and features may change in any manner without notice.

Preliminary Specification

The data sheet contains preliminary data. Additional data may be added at a later date. Peregrine reserves the right to change specifications at any time without notice in order to supply the best possible product.

Product Specification

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