Preliminary Specification

PE4123

High Linearity MOSFET Quad Mixer For PCS & 3G BTS

Features

- Integrated, Single Ended RF & LO Interfaces
- High linearity:
  IIP3 >+30 dBm, 1.8 – 2.0 GHz (+17 dBm LO)
- Low conversion loss: 8 dB (+17 dBm LO)
- High Isolation: Typical LO-IF at 38 dB
  Typical LO-RF at 38 dB
- Designed for High-Side LO Injection

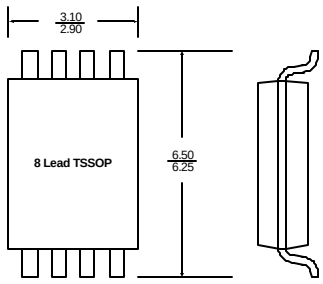
Product Description

The PE4123 is a high linearity, passive MOSFET Quad Mixer for PCS & 3G Base Station Receivers and exhibits high dynamic range performance over an LO drive range of 14 dBm to 20 dBm. This mixer integrates passive matching networks to provide single ended interfaces for the RF and LO ports, eliminating the need for external RF baluns or matching networks. The PE4123 is optimized for frequency down conversion using high-side LO injection for PCS & 3G Base Station applications.

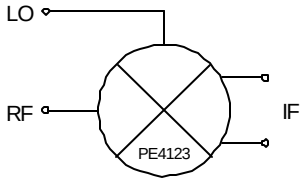
The PE4123 is manufactured in Peregrine's patented Ultra Thin Silicon (UTSi) CMOS process, offering the performance of GaAs with the economy and integration of conventional CMOS.

Package Drawings

8 lead TSSOP



Functional Schematic Diagram



Electrical Specifications @ +25° C

Parameter	Minimum	Typical	Maximum	Units
Frequency Range:				
LO	**2050**		**2250**	**MHz**
RF	**1800**		**2000**	**MHz**
IF	**230**	**250**	**270**	**MHz**
Conversion Loss		**8**		**dB**
Isolation:				
LO-RF		**38**		**dB**
LO-IF		**38**		**dB**
RF-IF		**-**		**dB**
VSWR:				
LO		**1.5:1**	**2:1**	
RF		**1.6:1**	**2:1**	
IF		**1.7:1**	**2:1**	
Input IP3		**30**		**dBm**
Input 1 dB Compression		**20**		**dBm**

Test conditions unless otherwise noted: LO input drive = 17 dBm

Peregrine Semiconductor Corp.

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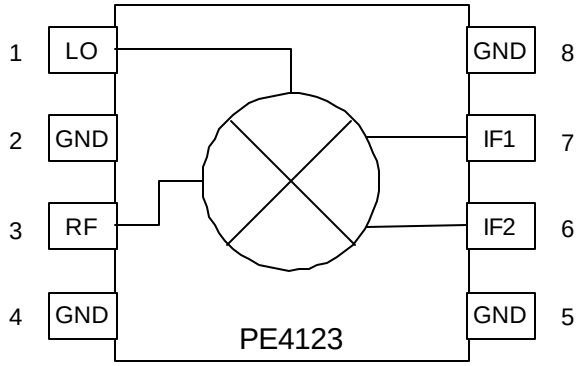
Pin Configuration



Pin Descriptions

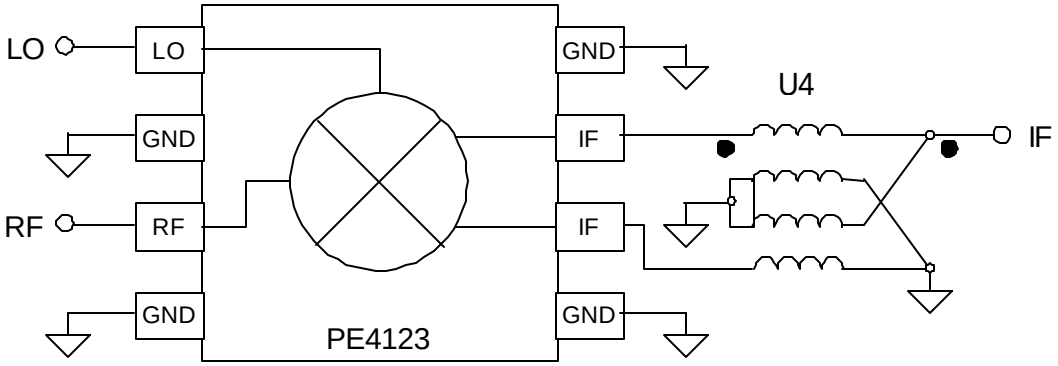
Pin #	Pin Name	Description
1	LO	LO input
2	GND	Ground connection for Mixer. Traces should be physically short and connect immediately to ground plane for best performance.
3	RF	RF Input
4	GND	Ground connection for Mixer. Traces should be physically short and connect immediately to ground plane for best performance.
5	GND	Ground connection for Mixer. Traces should be physically short and connect immediately to ground plane for best performance.
6	IF2	IF differential output
7	IF1	IF differential output
8	GND	Ground connection for Mixer. Traces should be physically short and connect immediately to ground plane for best performance.

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
P_{LO}	LO input power		20	dBm
P_{RF}	RF input power		20	dBm
ESD	ESD Sensitive Device		100	V

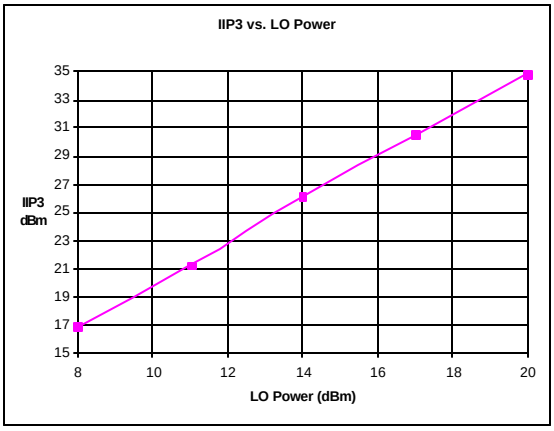
When handling this UTSi device, observe the same precautions that you would use with other ESD-sensitive devices.

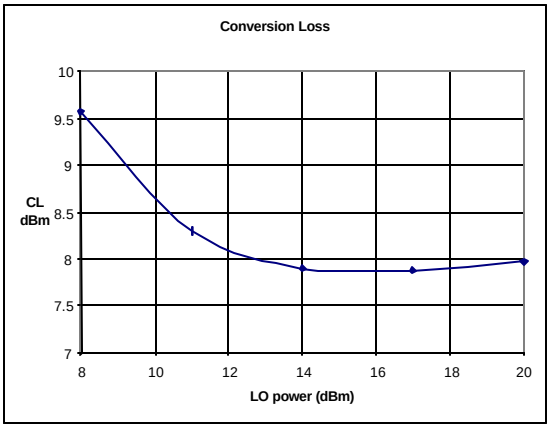
Typical Application Schematic

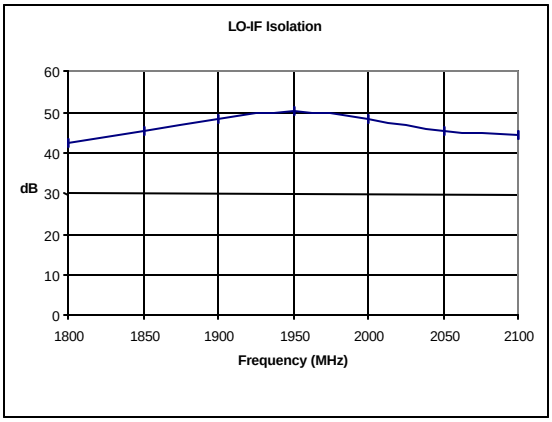


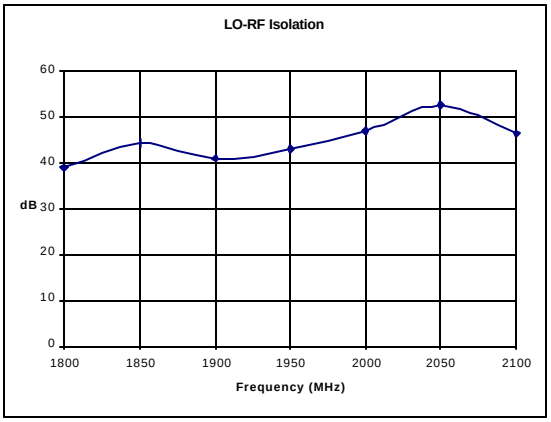
U4 M/A-Com E-Series RF 4:1 Transformer 2.0 – 1000 MHz ETK4-2T

Typical Performance Data @ +25C









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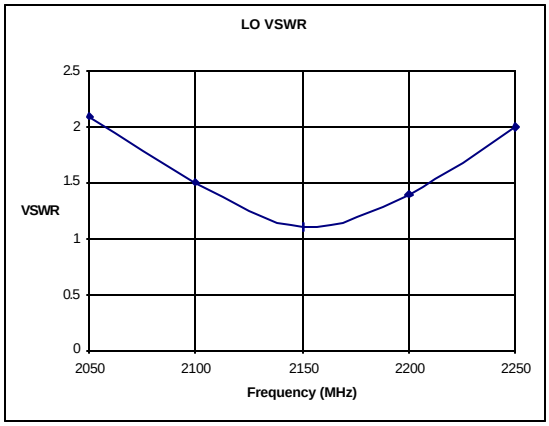

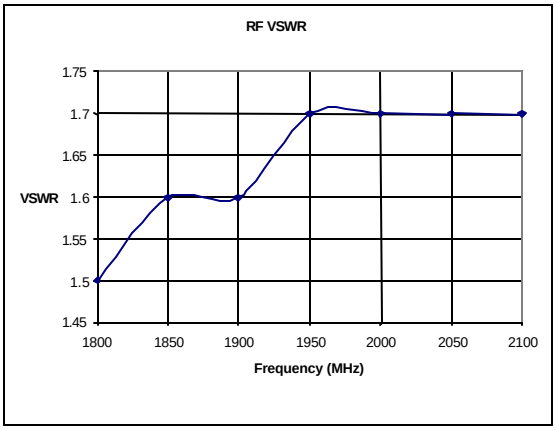

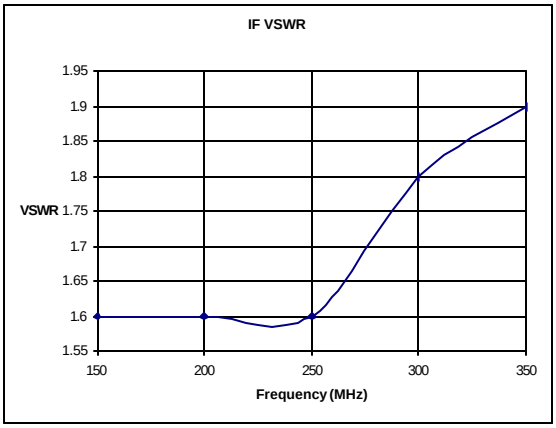

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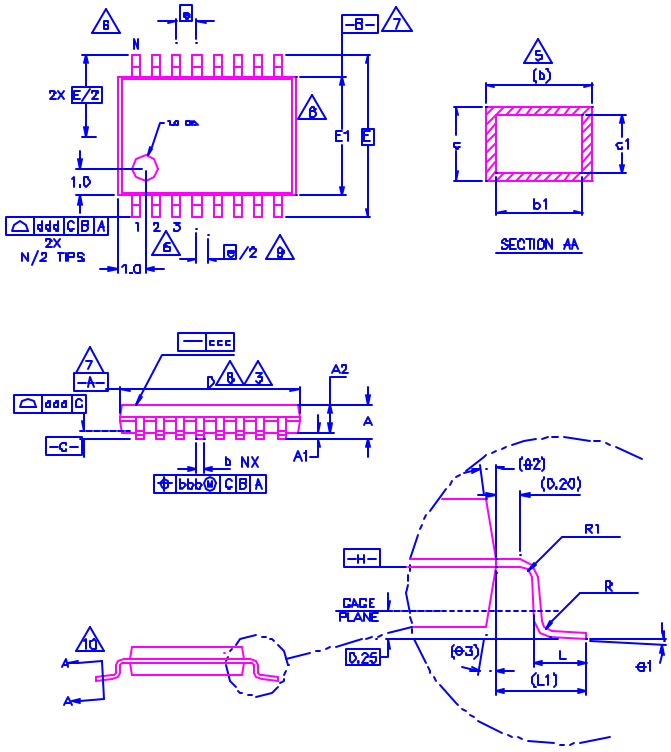
Package Drawing

Symbol	8-pin Variation		
	MIN	NOM	MAX
D	2.9	3	3.1
E1	4.3	4.4	4.5
E	6.4 BSC		
e	0.65 BSC		
N	8		
Note	1,2		
Issue	A		



Ordering information

Order Code	Part Marking	Description	Package	Shipping Method
4123-21	4123	Screened to Commercial Flow	8 pin TSSOP	100pcs./Tube
4123-22	4123	Screened to Commercial Flow	8 pin TSSOP	2000pcs./T&R
4123-00	PE4123-EK		Evaluation Board	1/Box

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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

The data sheet contains final data. In the event Peregrine decides to change the specifications, Peregrine will notify customers of the intended changes by issuing a PCN (Product Change Notice).