

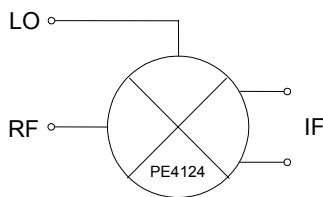
PE4124

Product Description

The PE4124 is a high linearity, passive MOSFET Quad Mixer for GSM800 & Cellular 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 PE4124 is optimized for frequency down conversion using low-side LO injection for GSM800 & Cellular Base Station applications.

The PE4124 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.

Figure 1. Functional Schematic Diagram



High Linearity MOSFET Quad Mixer For GSM800 & Cellular BTS

Features

- Integrated, Single Ended RF & LO Interfaces
- High linearity: IIP3 > +30 dBm, 820 – 920 MHz (+17 dBm LO)
- Low conversion loss: 6.4 dB (+17 dBm LO)
- High Isolation: Typical LO-IF at 43 dB, LO-RF at 33 dB
- Designed for Low-Side LO Injection

Figure 2. Package Drawing

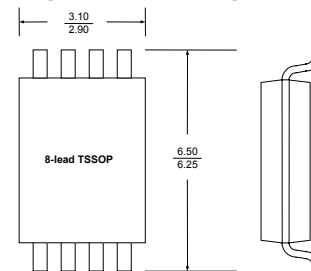
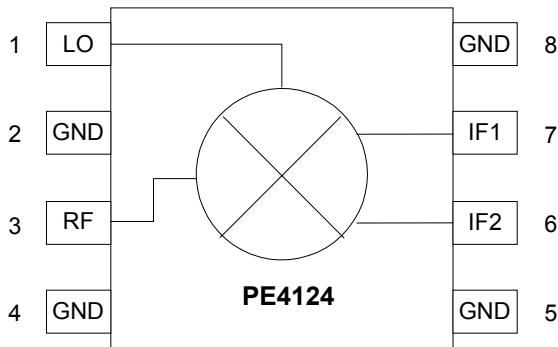


Table 1. Electrical Specifications @ +25 °C (Z_S = Z_L = 50 Ω)

Parameter	Minimum	Typical	Maximum	Units
Frequency Range:				
LO	750	--	850	MHz
RF	820	--	920	MHz
IF	--	70*	--	MHz
Conversion Loss		6.4		dB
Isolation:				
LO-RF		33		dB
LO-IF		43		dB
Input IP3		30		dBm
Input 1 dB Compression		20		dBm

*An IF frequency of 70 MHz is a nominal frequency. The IF frequency can be specified by the user as long as the RF and LO frequencies are within the specified maximum and minimum.

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

Figure 3. Pin Configuration

Electrostatic Discharge (ESD) Precautions

When handling this UTSi device, observe the same precautions that you would use with other ESD-sensitive devices. Although this device contains circuitry to protect it from damage due to ESD, precautions should be taken to avoid exceeding the rating specified in Table 3.

Latch-Up Avoidance

Unlike conventional CMOS devices, UTSi CMOS devices are immune to latch-up.

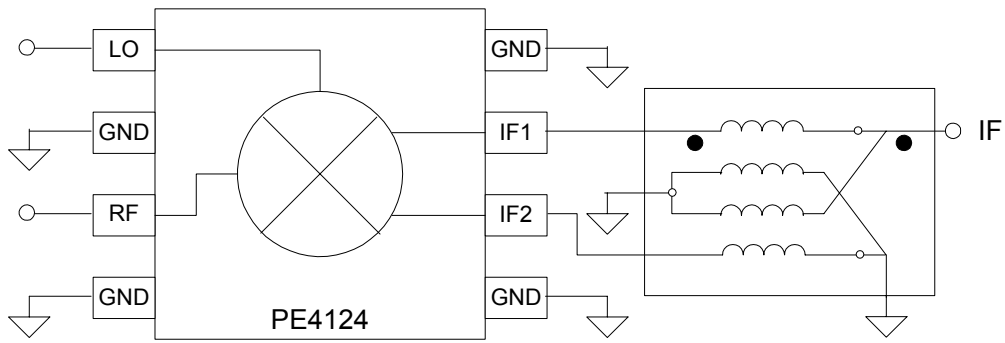
Table 2. Pin Descriptions

Pin No.	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.
5	GND	Ground.
6	IF1	IF differential output
7	IF2	IF differential output
8	GND	Ground.

Table 3. 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
VESD	ESD Sensitive Device		200	V

Figure 4. Typical Application Schematic



U4 M/A-Com E-Series RF 1:1 Transformer ETC1-1-13

Figure 5. Package Drawing

8-lead TSSOP

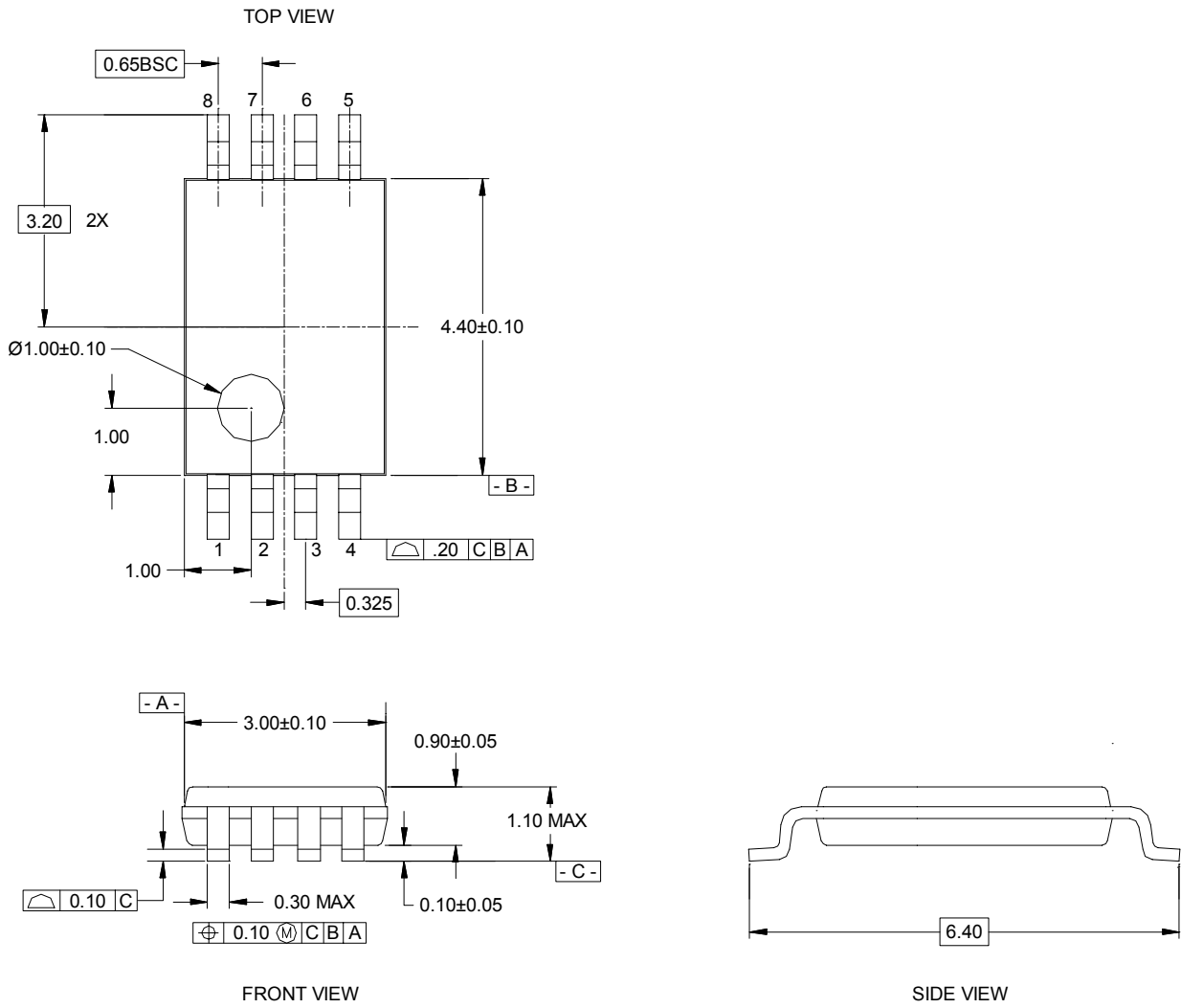


Table 4. Ordering Information

Order Code	Part Marking	Description	Package	Shipping Method
4124-21	4124		8-lead TSSOP	100 pcs. / Tube
4124-22	4124		8-lead TSSOP	2000 pcs. / T&R
4124-00	PE4124-EK		Evaluation Board	1 / Box

Sales Offices

United States

Peregrine Semiconductor Corp.

6175 Nancy Ridge Drive
San Diego, CA 92121
Tel 1-858-455-0660
Fax 1-858-455-0770

Europe

Peregrine Semiconductor Europe

Aix-En-Provence Office
Parc Club du Golf, bat 9
13856 Aix-En-Provence Cedex 3
France
Tel 33-0-4-4239-3360
Fax 33-0-4-4239-7227

Japan

Peregrine Semiconductor K.K.

The Imperial Tower, 15th floor
1-1-1 Uchisaiwaicho, Chiyoda-ku
Tokyo 100-0011 Japan
Tel: 03-3507-5755
Fax: 03-3507-5601

Australia

Peregrine Semiconductor Australia

8 Herb Elliot Ave.
Homebush, NSW 2140
Australia
Tel: 011-61-2-9763-4111
Fax: 011-61-2-9746-1501

For a list of representatives in your area, please refer to our Web site at: <http://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).

The information in this data sheet is believed to be reliable. However, Peregrine assumes no liability for the use of this information. Use shall be entirely at the user's own risk.

No patent rights or licenses to any circuits described in this data sheet are implied or granted to any third party.

Peregrine's products are not designed or intended for use in devices or systems intended for surgical implant, or in other applications intended to support or sustain life, or in any application in which the failure of the Peregrine product could create a situation in which personal injury or death might occur. Peregrine assumes no liability for damages, including consequential or incidental damages, arising out of the use of its products in such applications.

Peregrine products are protected under one or more of the following U.S. patents: 6,090,648; 6,057,555; 5,973,382; 5,973,363; 5,930,638; 5,920,233; 5,895,957; 5,883,396; 5,864,162; 5,863,823; 5,861,336; 5,663,570; 5,610,790; 5,600,169; 5,596,205; 5,572,040; 5,492,857; 5,416,043. Other patents may be pending or applied for.

UTSi, the Peregrine logotype, SEL Safe, and Peregrine Semiconductor Corp. are registered trademarks of Peregrine Semiconductor Corp. All PE product names and prefixes are trademarks of Peregrine Semiconductor Corp. Copyright © 2001 Peregrine Semiconductor Corp. All rights reserved.