PASTERNACK®
THE ENGINEER'S RF SOURCE

Double Balanced Mixer Operating From 23 GHz to 37 GHz With an IF Range From DC to 13 GHz And LO Power of +13 dBm, Field Replaceable 2.92mm

Mixers Technical Data Sheet PE86X1002

Features

- Double Balanced Mixer Module
- RF/LO Frequency 23 to 37 GHz
- Wide IF Bandwidth DC to 13 GHz
- GaAs MESFET MMIC Technology
- No external components or matching circuitry
- LO Drive level +13 dBm
- Low Conversion loss 9 dB
- High LO/RF Isolation 35 dB
- Hermetically Sealed Module
- Mil Spec Compliant
- Field Replaceable Connectors
- -55°C to +85°C Operating Temperature

Applications

- Electronic Warfare
- Point-to-Point Radios
- Point-to-Multipoint Radios
- VSAT
- Radar
- Space Systems
- Test Instrumentation
- Sensors
- Telecom Infrastructure
- Military End-Use

Description

The PE86X1002 is a double balanced mixer module that operates across an RF and LO frequency range from 23 GHz to 37 GHz with a wide IF frequency range of DC to 13 GHz. The design utilizes GaAs MESFET MMIC technology and requires no external components or matching circuitry. Excellent LO to RF and LO to IF Isolation levels of 35 dB that are the result of using optimized balun structures. The LO drive level is +13 dBm with typical conversion loss of 9 dB and an input IP3 level up to +19 dBm. The drop-in package is hermetically sealed with field replaceable 2.92mm connectors for the RF and LO ports, and an SMA connector for the IF port. Operating temperature range is -55°C to +85°C. And for added confidence, this rugged package assembly is designed to meet MIL-STD-883 test conditions for Hermeticity and Temperature Cycle, and the design exhibits a robust 1000V ESD, Class IC rating.

Electrical Specifications (TA = +25° C, IF= 1 GHz, LO = +13 dBm)

Description	Minimum	Typical	Maximum	Units
RF Frequency Range	23		37	GHz
LO Frequency Range	23		37	GHz
IF Frequency Range	DC		13	GHz
Impedance		50		Ohms
Conversion Loss		9	12	dB
Noise Figure		9	12	dB
LO to RF Isolation	20	35		dB
LO to IF Isolation	20	35		dB
RF to IF Isolation	13	25		dB
Input at 1dB Compression Point	+12			dBm
Input at 2nd Order Intercept Point		+50		dBm
Input at 3rd Order Intercept Point		+19		dBm

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: Double Balanced Mixer Operating From 23 GHz to 37 GHz With an IF Range From DC to 13 GHz And LO Power of +13 dBm, Field Replaceable 2.92mm PE86X1002

Pasternack Enterprises, Inc. • P.O. Box 16759, Irvine, CA 92623
Phone: (866) 727-8376 or (949) 261-1920 • **Fax:** (949) 261-7451
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RF Input Power			+23	dBm
LO Input Power	+11	+13	+23	dBm
IF Input Power			+25	dBm

Electrical Specification Notes:
All measurements performed as downconverter unless otherwise noted.
Conversion loss measured as IRM.

Mechanical Specifications

Size

Length	0.89 in [22.61 mm]
Width	0.68 in [17.27 mm]
Height	0.36 in [9.14 mm]
Weight	0.079 lbs [35.83 g]

Configuration

Design	Double Balanced
Connector Option	Field Replaceable
RF Connector	2.92mm Female
LO Connector	2.92mm Female
IF Connector	SMA Female

Environmental Specifications

Temperature

Operating Range	-55 to +85 deg C
Storage Range	-65 to +150 deg C
Temperature Cycle	MIL-STD-883, Method 101C, Cond B
Hermetic Seal	Gross Leak MIL-STD-883 Method 1014C1/Fine Leak MIL-STD-883, Method 1014A2, 5 x 10-8 atm cc
ESD Sensitive	ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in ESD Workstation.

Compliance Certifications (see product page for current document)

Plotted and Other Data

Notes:

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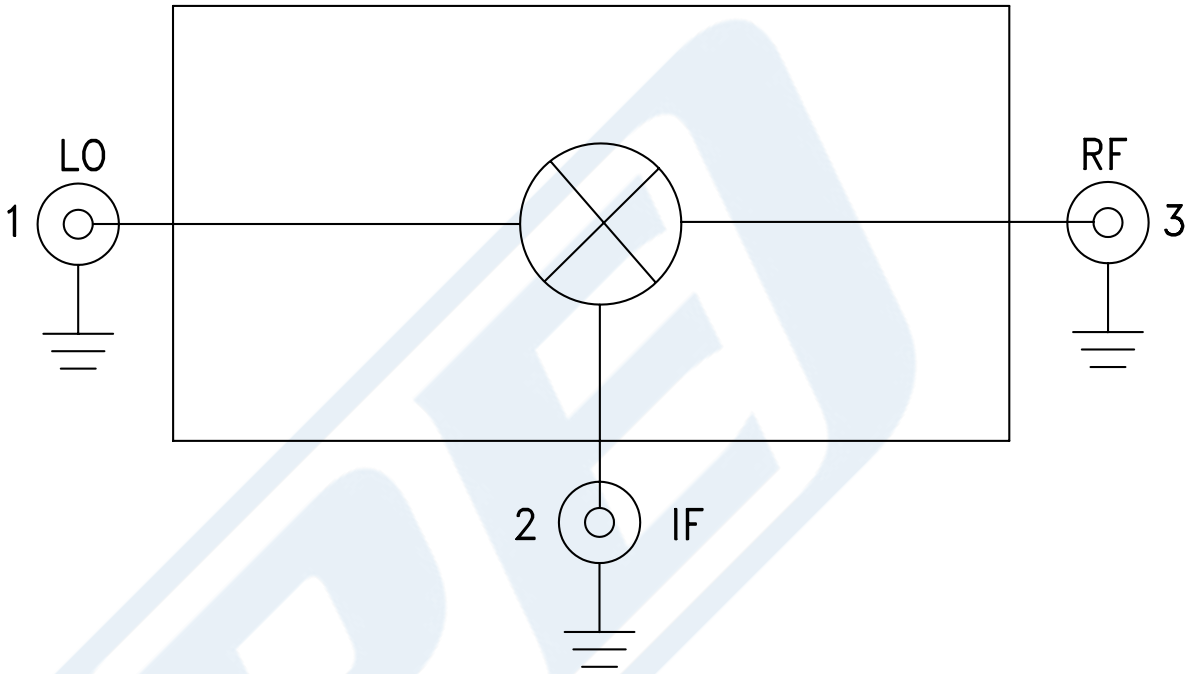
Functional Block Diagram



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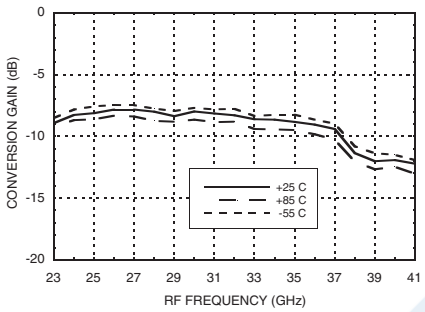
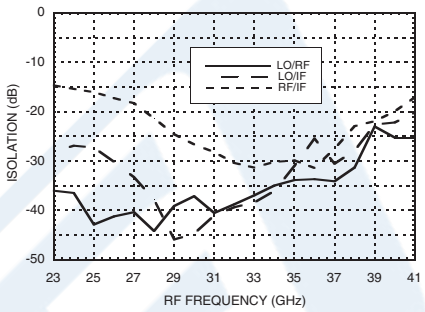
Typical Performance Data

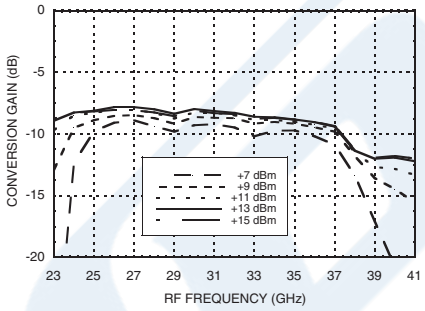
Conversion Gain vs. Temperature



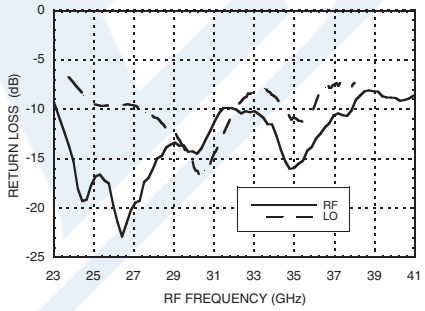
Isolation



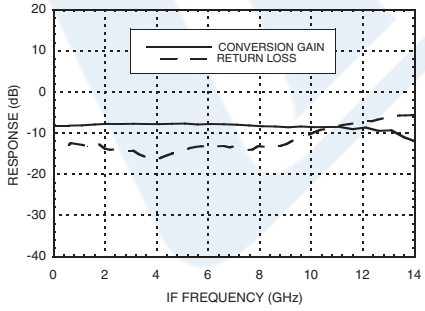
Conversion Gain vs. LO Drive



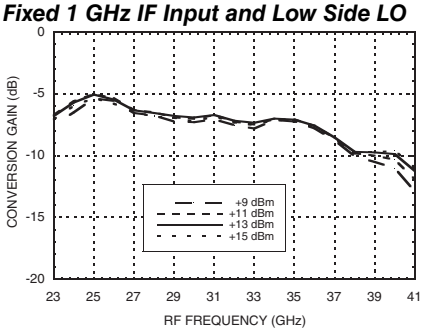
Return Loss



IF Bandwidth Downconversion with Low Side LO = 24 GHz @ +13 dBm



Upconverter Performance, Conversion Gain vs. LO Drive for Fixed 1 GHz IF Input and Low Side LO



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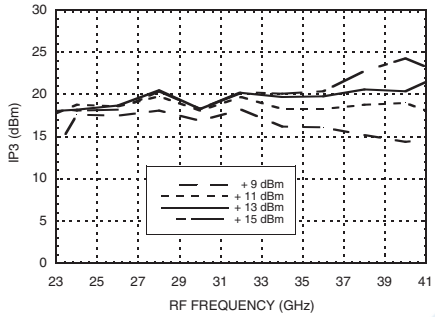
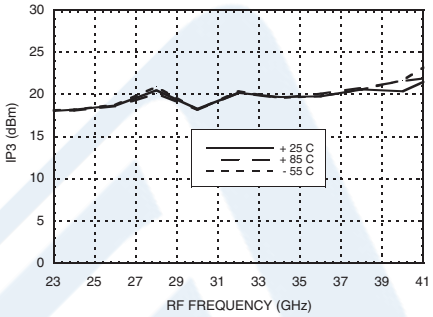
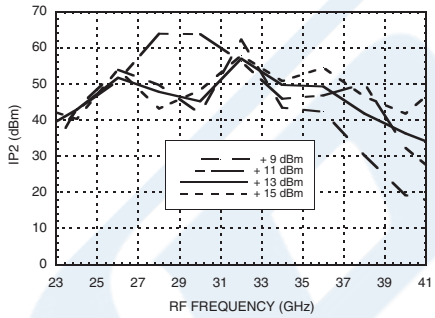
Input IP3 vs. LO Drive *



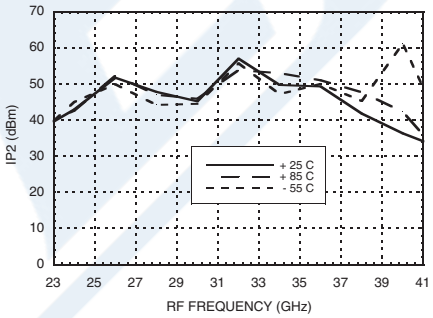
Input IP3 vs. Temperature*



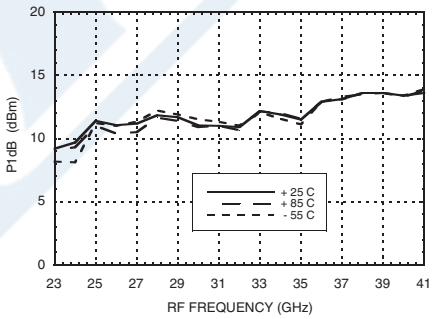
Input IP2 vs. LO Drive *



Input IP2 vs. Temperature *



Input P1dB vs. Temperature



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MxN Spurious Outputs

	nLO				
mRF	0	1	2	3	4
0	xx	0	13	xx	xx
1	8	0	29	xx	xx
2	69	53	50	64	xx
3	xx	78	80	67	86
4	xx	xx	87	92	94

RF = 24 GHz @ -10 dBm
LO = 25 GHz @ +13 dBm
All values in dBc below the IF output power level (-1 RF + 1 LO).

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Double Balanced Mixer Operating From 23 GHz to 37 GHz With an IF Range From DC to 13 GHz And LO Power of +13 dBm, Field Replaceable 2.92mm from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99% availability and are part of the broadest selection in the industry.

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URL: https://www.pasternack.com/50-ohm-2.92mm-mixer-23-37-ghz-if-dc-13-ghz-pe86x1002-p.aspx

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PE86X1002 CAD Drawing

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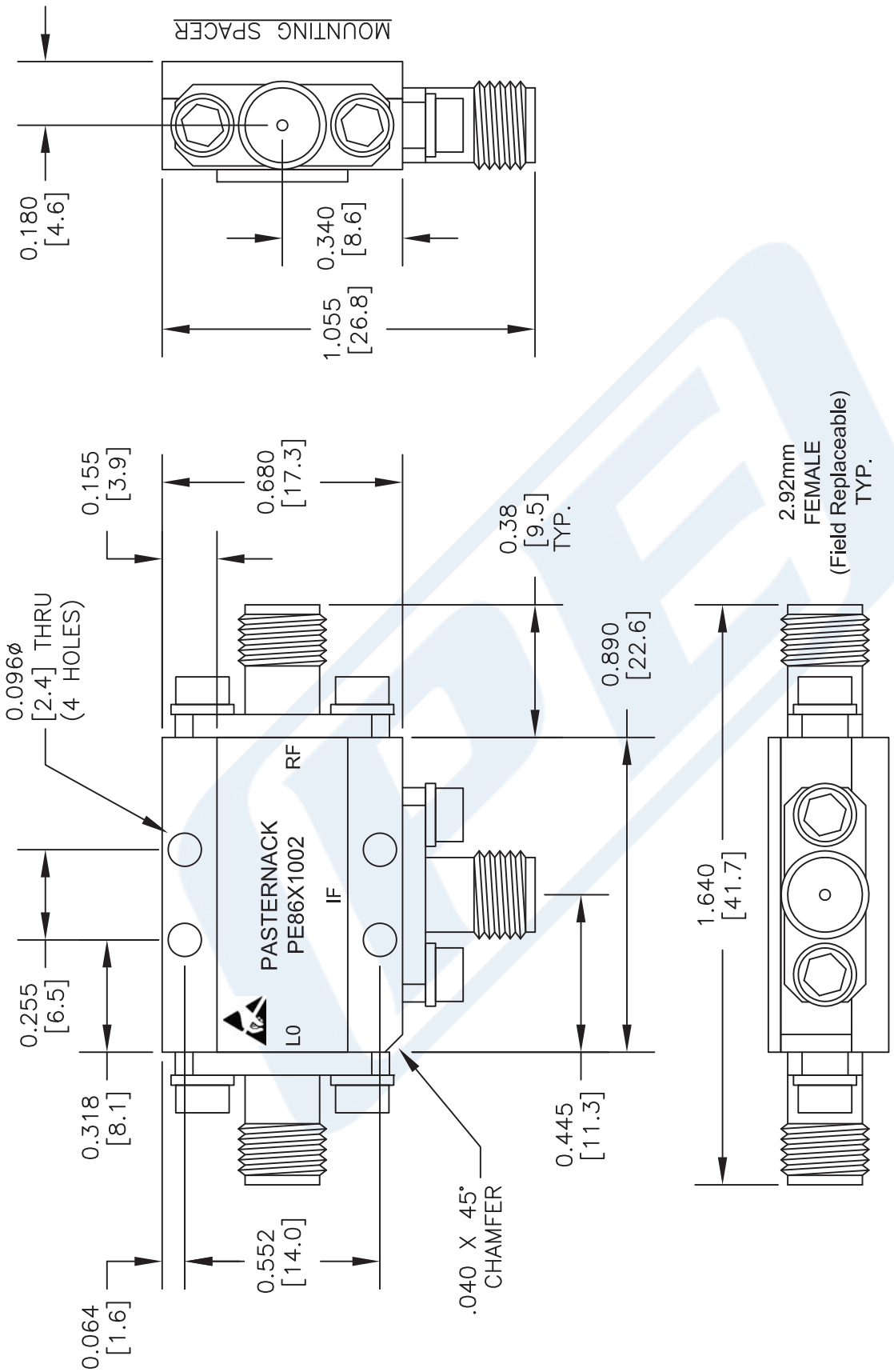

NOTES:
1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.
2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.
3. DIMENSIONS ARE IN INCHES [mm].

CAD FILE	050316	SCALE N/A	SIZE A	2233

DWG TITLE: PE86X1002

FSCM NO. 53919

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