



Double Balanced Mixer Operating From 16 GHz to 32 GHz With an IF Range From DC to 8 GHz And LO Power of +13 dBm, Field Replaceable 2.92mm

Mixers Technical Data Sheet

PE86X1000

Features

- Double Balanced Mixer Module
- RF/LO Frequency 16 to 32 GHz
- Wide IF Bandwidth DC to 8 GHz
- GaAs MESFET MMIC Technology
- No external components or matching circuitry
- LO Drive level +13 dBm
- Low Conversion loss 8 dB
- High LO/RF Isolation 40 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 PE86X1000 is a double balanced mixer module that operates across an RF and LO frequency range from 16 GHz to 32 GHz with a wide IF frequency range of DC to 8 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 that range from 35 to 40 dB are the result of using optimized balun structures. The LO drive level is +13 dBm with typical conversion loss of 8 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	16		32	GHz
LO Frequency Range	16		32	GHz
IF Frequency Range	DC		8	GHz
Impedance		50		Ohms
RF Input Power			+27	dBm
LO Input Power		+13	+13	dBm
IF Input Power			+13	dBm

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Performance by Frequency

Description	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range, RF & LO		16 - 26		26 - 32			GHz
Frequency Range, IF		DC - 8		DC - 8			GHz
Conversion Loss		8	12	8	12		dB
Noise Figure		8	12	8	12		dB
LO to RF Isolation	30	40		25	35		dB
LO to IF Isolation	30	40		30	40		dB
RF to IF Isolation	17	25		20	28		dB
IP3 (Input)		19		19			dBm
IP2 (Input)		50		50			dBm
1 dB Gain Compression (Input)		12		13			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	0.08 lbs [36.29 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

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Temperature Cycle
Hermetic Seal

ESD Sensitive

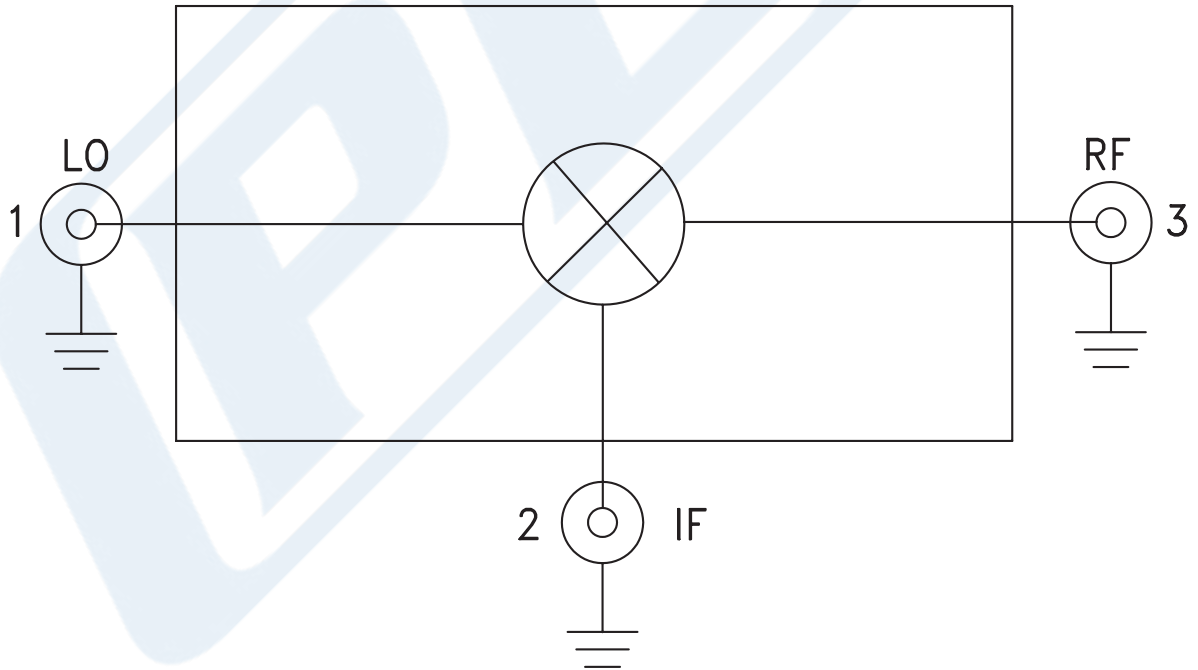


MIL-STD-883, Method 101C, Cond B
Gross Leak MIL-STD-883 Method 1014C1/Fine Leak
MIL-STD-883, Method 1014A2, 5 x 10-8 atm cc
ESD Sensitive Material, Transport material in Approved
ESD bags. Handle only in ESD Workstation.

Compliance Certifications (visit www.Pasternack.com for current document)
RoHS Compliant

Plotted and Other Data
Notes:

Functional Block Diagram



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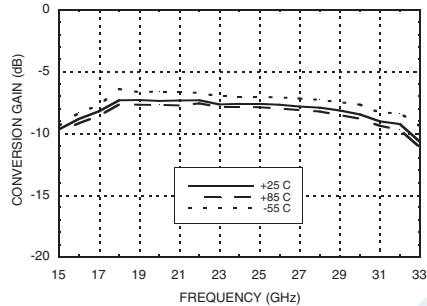
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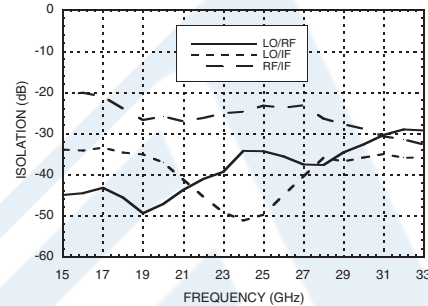
PE86X1000

Typical Performance Data

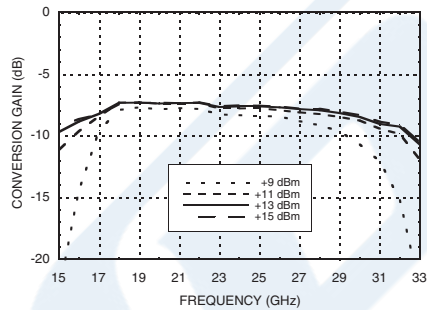
Conversion Gain vs. Temperature



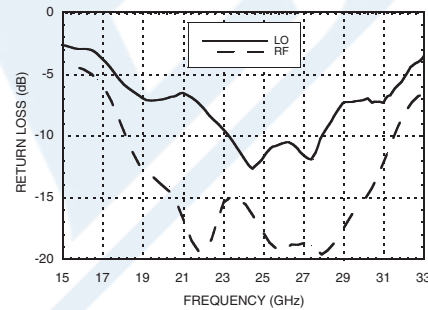
Isolation



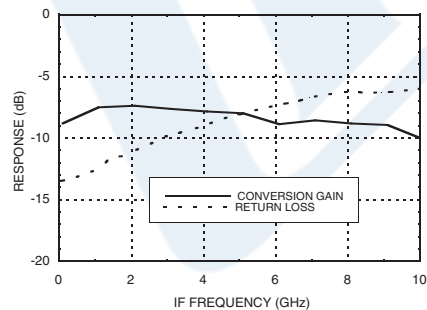
Conversion Gain vs. LO Drive



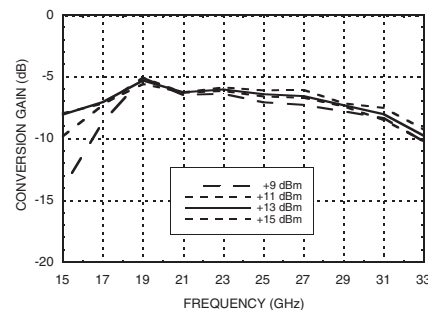
Return Loss



IF Bandwidth



Upconverter Performance
Conversion Gain vs. LO Drive



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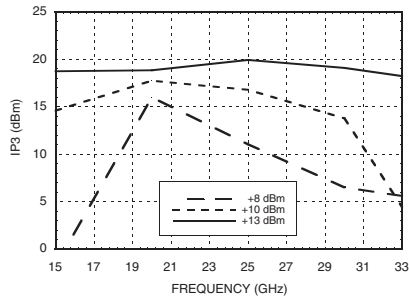


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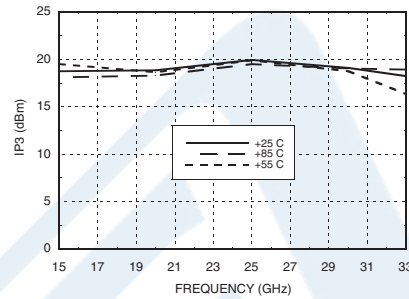
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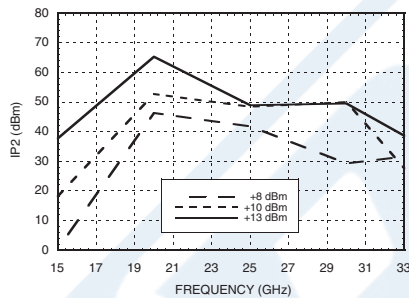
Input IP3 vs. LO Drive *



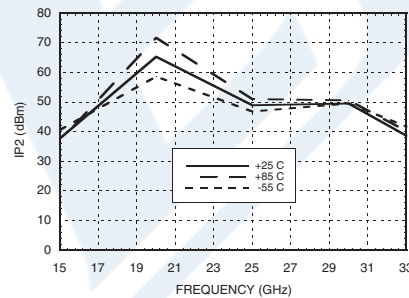
Input IP3 vs. Temperature *



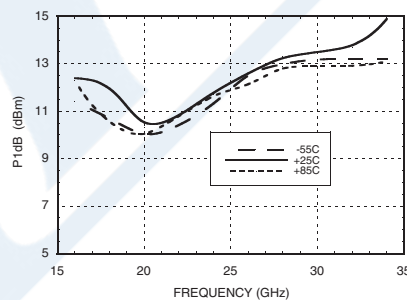
Input IP2 vs. LO Drive *



Input IP2 vs. Temperature *



Input P1dB vs. Temperature



* Conversion gain data taken with external IF hybrid

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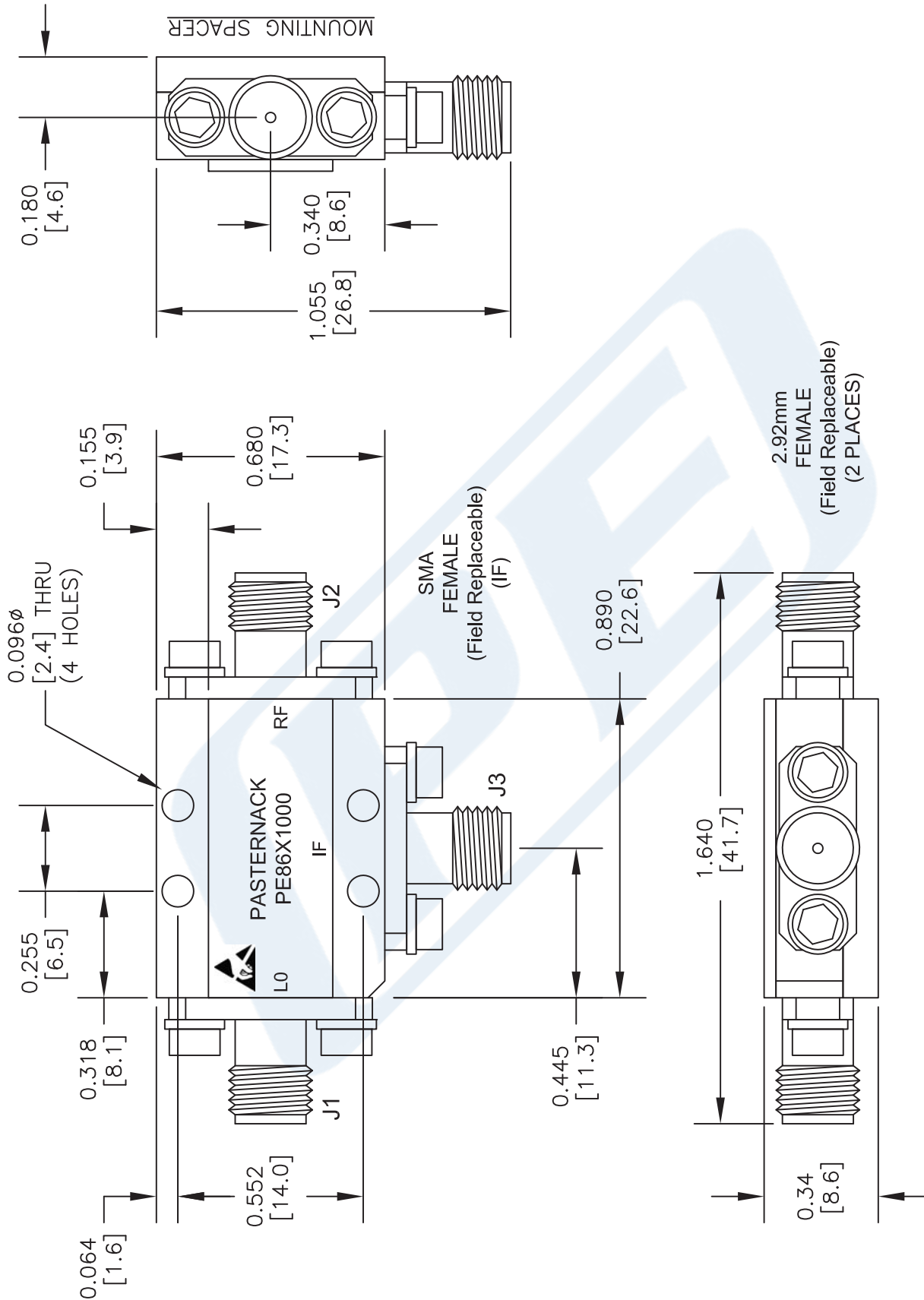
URL: <https://www.pasternack.com/50-ohm-2.92mm-mixer-16-32-ghz-if-dc-8-ghz-pe86x1000-p.aspx>

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PE86X1000 CAD Drawing

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DWG TITLE

PE86X1000

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].

PE PASTERNAK
 THE ENGINEER'S RF SOURCE
 Pasternack Enterprises, Inc.
 P.O. Box 16759 | Irvine | CA | 92623
 Phone: (949) 261-1920 | Fax: (949) 261-7451
 Website: www.pasternack.com | E-Mail: sales@pasternack.com

FSCM NO. 53919

CAD FILE 051916

SCALE N/A

SIZE A

2233