



Double Balanced Mixer Operating From 7 GHz to 14 GHz With an IF Range From DC to 5 GHz And LO Power of +13 dBm, Field Replaceable SMA

Mixers Technical Data Sheet

PE86X1003

Features

- Double Balanced Mixer Module
- RF/LO Frequency 7 to 14 GHz
- Wide IF Bandwidth DC to 5 GHz
- GaAs MESFET MMIC Technology
- No external components or matching circuitry
- LO Drive level +13 dBm
- Low Conversion loss 7 dB
- High LO/RF Isolation 45 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 PE86X1003 is a double balanced mixer module that operates across an RF and LO frequency range from 7 GHz to 14 GHz with a wide IF frequency range of DC to 5 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 48 dB are the result of using optimized balun structures. The LO drive level is +13 dBm with typical conversion loss of 7 dB and an input IP3 level up to +20 dBm. The drop-in package is hermetically sealed with field replaceable SMA 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= 100 MHz, LO = +13 dBm)

Description	Minimum	Typical	Maximum	Units
RF Frequency Range	7		14	GHz
LO Frequency Range	7		14	GHz
IF Frequency Range	DC		5	GHz
Impedance		50		Ohms
RF Input Power			+25	dBm
LO Input Power		+13	+25	dBm
IF Input Power			+25	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 7 GHz to 14 GHz With an IF Range From DC to 5 GHz And LO Power of +13 dBm, Field Replaceable SMA PE86X1003](#)

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Performance by Frequency

Description	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range, RF & LO		7 - 11		11 - 14			GHz
Frequency Range, IF		DC - 5		DC - 5			GHz
Conversion Loss		7	9.5	8	11		dB
Noise Figure		7		8			dB
LO to RF Isolation	37	48		35	45		dB
LO to IF Isolation	27	35		32	40		dB
RF to IF Isolation	12	22		22	30		dB
IP3 (Input)		18		20			dBm
IP2 (Input)		48		47			dBm
1 dB Compression (Input)		11		12			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	0.076 lbs [34.47 g]

Configuration

Design	Double Balanced
Connector Option	Field Replaceable
RF Connector	SMA Female
LO Connector	SMA 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

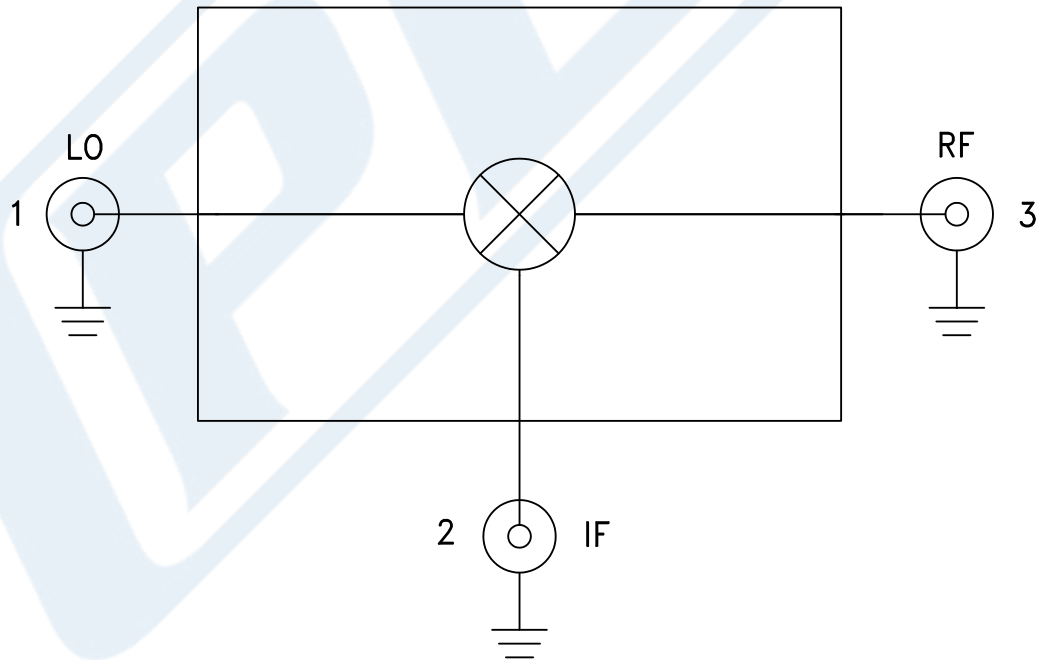


MIL-STD-883, Method 101C, Cond B
Gross Leak MIL-STD-883 Method 1014C1/Fine Leak
MIL-STD-883, Method 1014A2, 5 x 10-8 atm cc
ESD Sensitive Material, Transport material in Approved
ESD bags. Handle only in ESD Workstation.

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

Plotted and Other Data
Notes:

Functional Block Diagram



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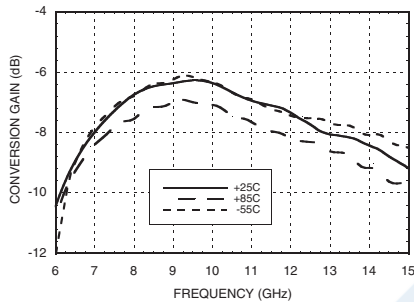
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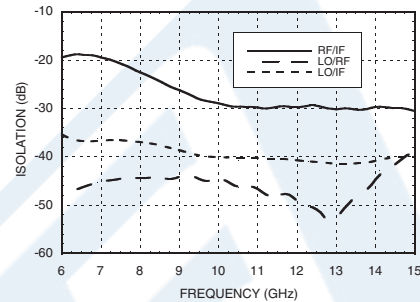
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Typical Performance Data

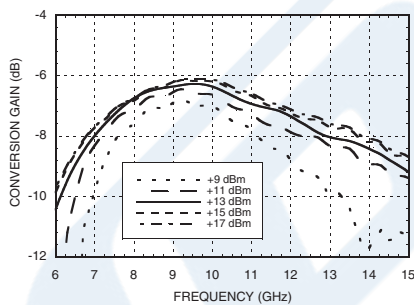
Conversion Gain vs. Temperature
@ LO = +13 dBm



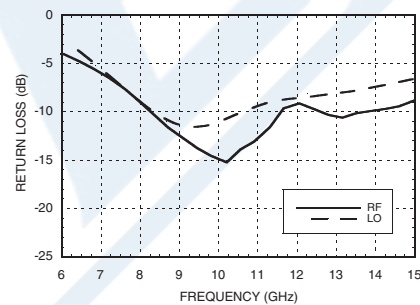
Isolation @ LO = +13 dBm



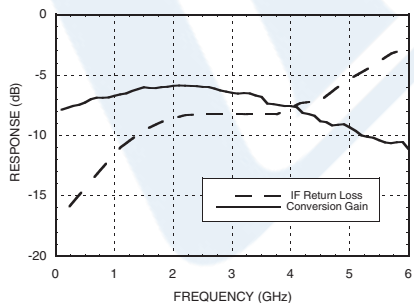
Conversion Gain vs. LO Drive



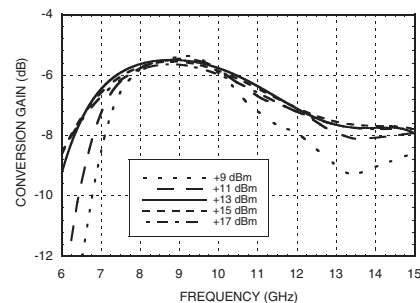
Return Loss @ LO = +13 dBm



IF Bandwidth @ LO = +13 dBm



Upconverter Performance
Conversion Gain vs. LO Drive



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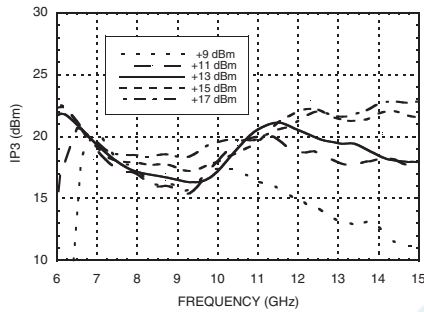


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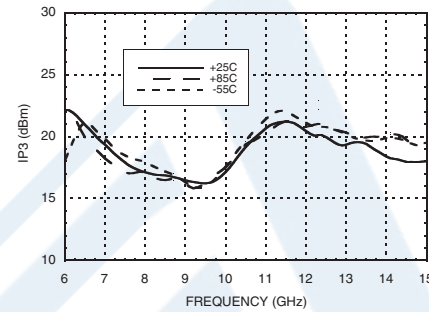
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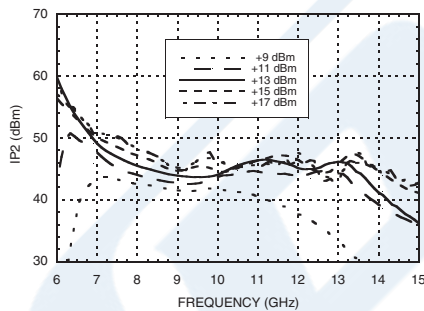
Input IP3 vs. LO Drive *



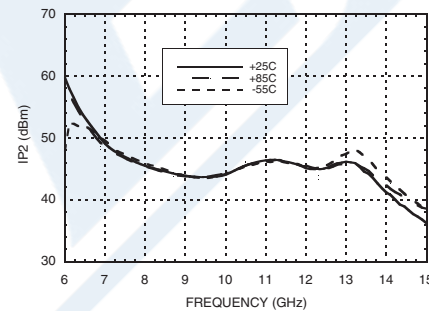
Input IP3 vs. Temperature @ LO = +13 dBm *



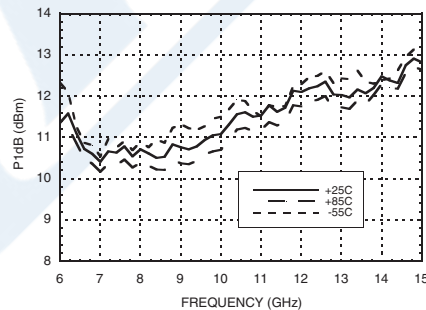
Input IP2 vs. LO Drive *



Input IP2 vs. Temperature @ LO = +13 dBm *



Input P1dB vs. Temperature @ LO = +13 dBm



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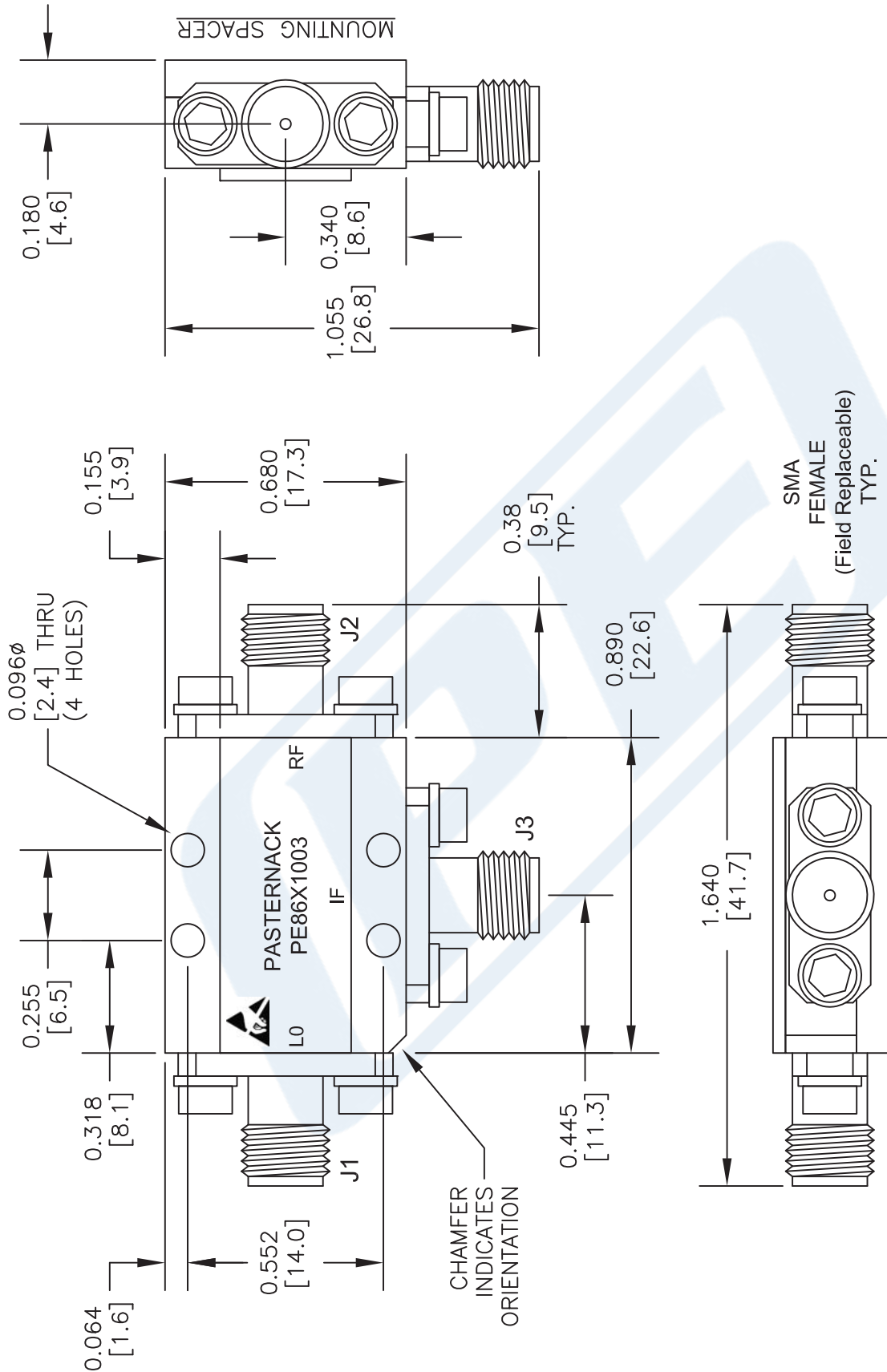
URL: <http://www.pasternack.com/50-ohm-sma-mixer-7-14-ghz-if-dc-5-ghz-pe86x1003-p.aspx>

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PE86X1003 CAD Drawing

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DWG TITLE

PE86X1003

- 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].

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FSCM NO. 53919

CAD FILE 050316

SCALE N/A

SIZE A

2233