

GaAs MMIC DOUBLE BALANCED MIXER MODULE, 24 - 38 GHz

Features

- Passive: No DC Bias Required
- Input IP3: +20 dBm
- LO/RF Isolation: 35 dB
- Wide IF Bandwidth: DC - 8 GHz
- Hermetically Sealed Module
- Field Replaceable Coaxial Connectors
- 55 to +85 °C Operating Temperature

Typical Applications

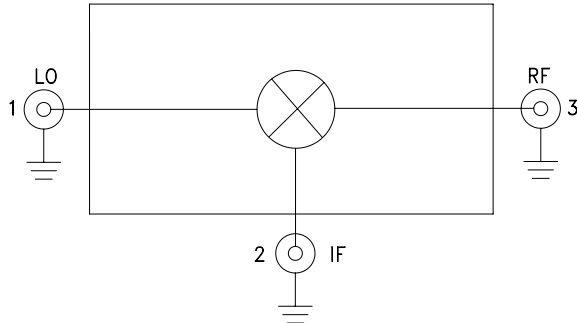
The HMC-C015 is ideal for:

- Telecom Infrastructure
- Military Radio, Radar & ECM
- Space Systems
- Test Instrumentation

General Description

The HMC-C015 is a general purpose double-balanced mixer housed in a miniature hermetic module which can be used as an upconverter or downconverter between 24 and 38 GHz. This mixer requires no external components or matching circuitry. The HMC-C015 provides excellent, LO to RF, and LO to IF suppression due to optimized balun structures. The mixer operates with LO drive levels from +11 to +15 dBm and requires no DC bias. The HMC-C015 may also be used as a Bi-Phase Modulator/Demodulator or phase comparator. The module features removable coaxial connectors which can be detached to allow direct connection of the I/O pins to a microstrip or coplanar circuit.

Functional Diagram



Electrical Specifications, $T_A = +25^\circ\text{C}$, $IF = 1\text{ GHz}$, $LO = +13\text{ dBm}^*$

Parameter	Min.	Typ.	Max.	Units
Frequency Range, RF & LO	24 - 38			GHz
Frequency Range, IF	DC - 8			GHz
Conversion Loss		9	12	dB
Noise Figure (SSB)		9	12	dB
LO to RF Isolation	27	35		dB
LO to IF Isolation	26	40		dB
RF to IF Isolation	20	30		dB
IP3 (Input)		20		dBm
IP2 (Input)		55		dBm
1 dB Gain Compression (Input)		11		dBm

*Unless otherwise noted, all measurements performed as downconverter, $IF = 1\text{ GHz}$.

HMC-C015* PRODUCT PAGE QUICK LINKS

Last Content Update: 02/23/2017

COMPARABLE PARTS

View a parametric search of comparable parts.

DOCUMENTATION

Data Sheet

- HMC-C015 Data Sheet

TOOLS AND SIMULATIONS

- HMC-C015 S-Parameter

DESIGN RESOURCES

- HMC-C015 Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

DISCUSSIONS

View all HMC-C015 EngineerZone Discussions.

SAMPLE AND BUY

Visit the product page to see pricing options.

TECHNICAL SUPPORT

Submit a technical question or find your regional support number.

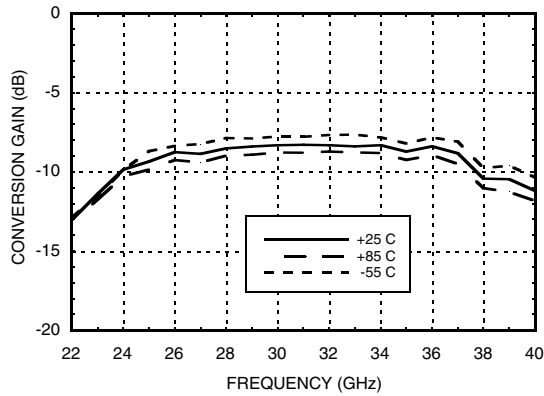
DOCUMENT FEEDBACK

Submit feedback for this data sheet.

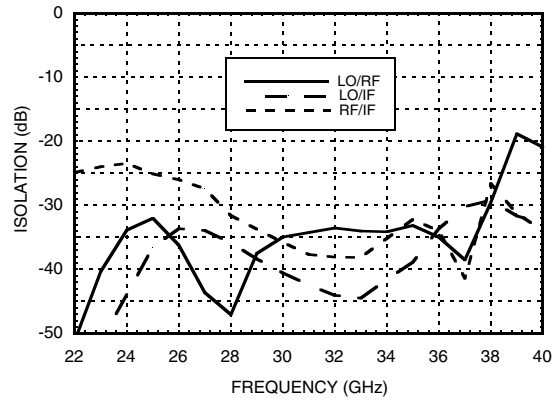


GaAs MMIC DOUBLE BALANCED MIXER MODULE, 24 - 38 GHz

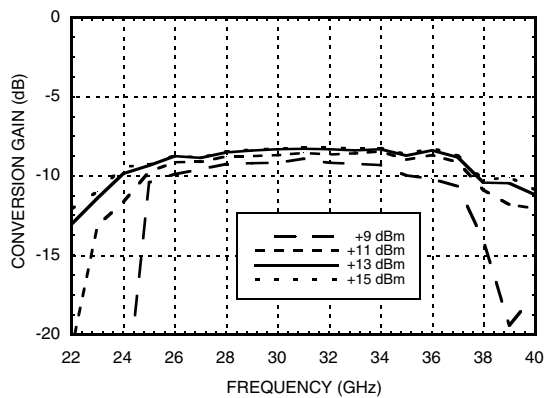
Conversion Gain vs. Temperature



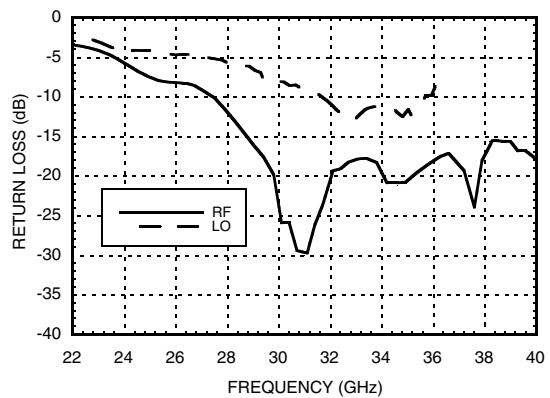
Isolation



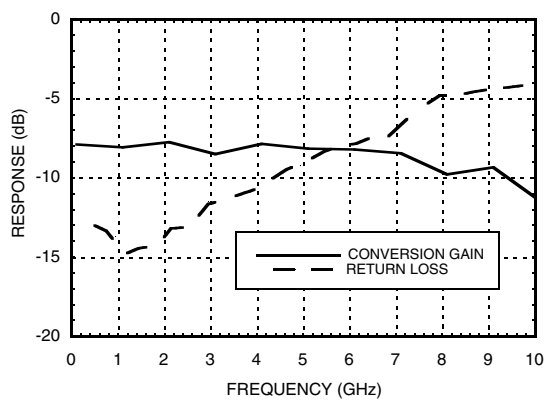
Conversion Gain vs. LO Drive



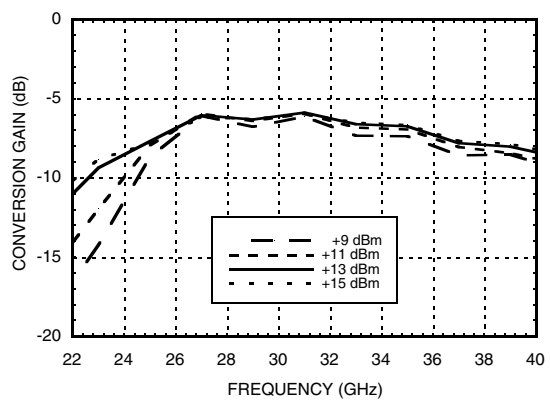
Return Loss



IF Bandwidth



Upconverter Performance Conversion Gain vs. LO Drive



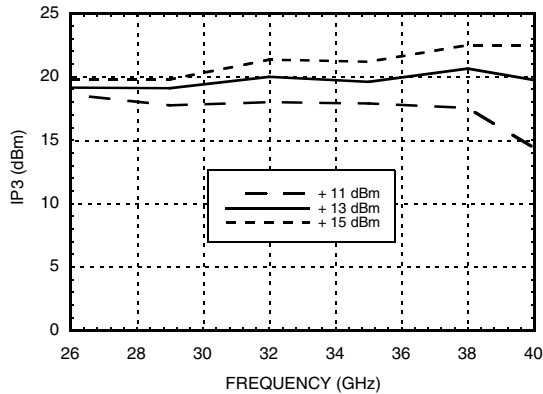
Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106 Phone: 781-329-4700 • Order online at www.analog.com Application Support: Phone: 1-800-ANALOG-D

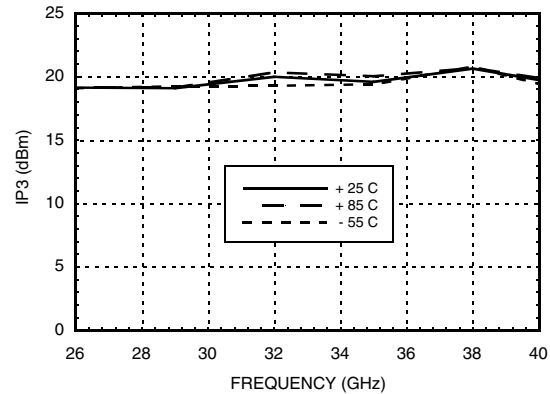


**GaAs MMIC DOUBLE BALANCED
MIXER MODULE, 24 - 38 GHz**

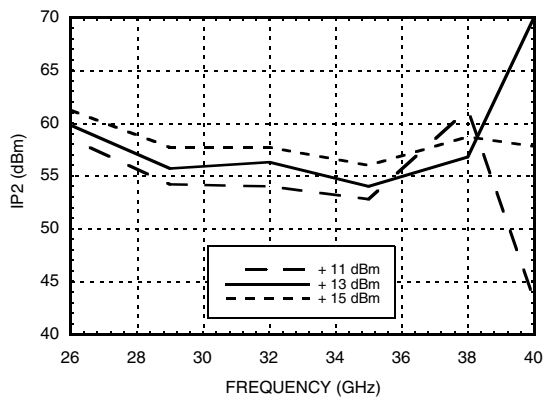
Input IP3 vs. LO Drive *



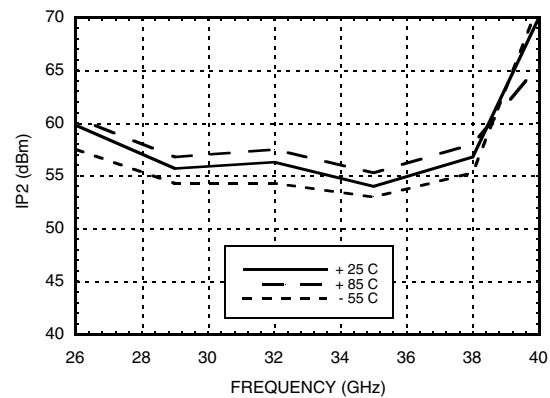
Input IP3 vs. Temperature*



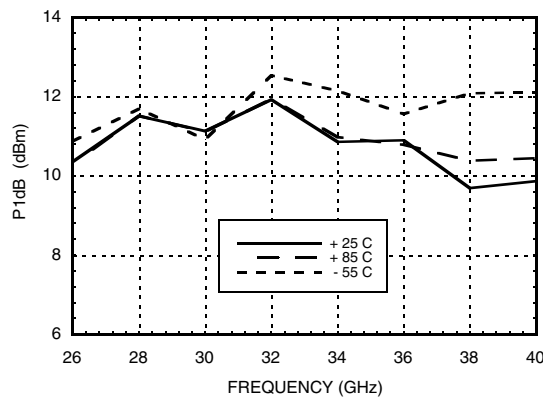
Input IP2 vs. LO Drive *



Input IP2 vs. Temperature *



Input P1dB vs. Temperature



* Two-tone input power = -10 dBm each tone, 1 MHz spacing.

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106 Phone: 781-329-4700 • Order online at www.analog.com Application Support: Phone: 1-800-ANALOG-D


**GaAs MMIC DOUBLE BALANCED
MIXER MODULE, 24 - 38 GHz**
MxN Spurious Outputs

mRF	nLO				
	0	1	2	3	4
0	xx	10	xx	xx	xx
1	23	0	45	xx	xx
2	xx	72	58	72	xx
3	xx	xx	103	68	90
4	xx	xx	xx	103	104

RF = 28 GHz @ -10 dBm
LO = 27 GHz @ +13 dBm
All values in dBc below the IF output power level.

Absolute Maximum Ratings

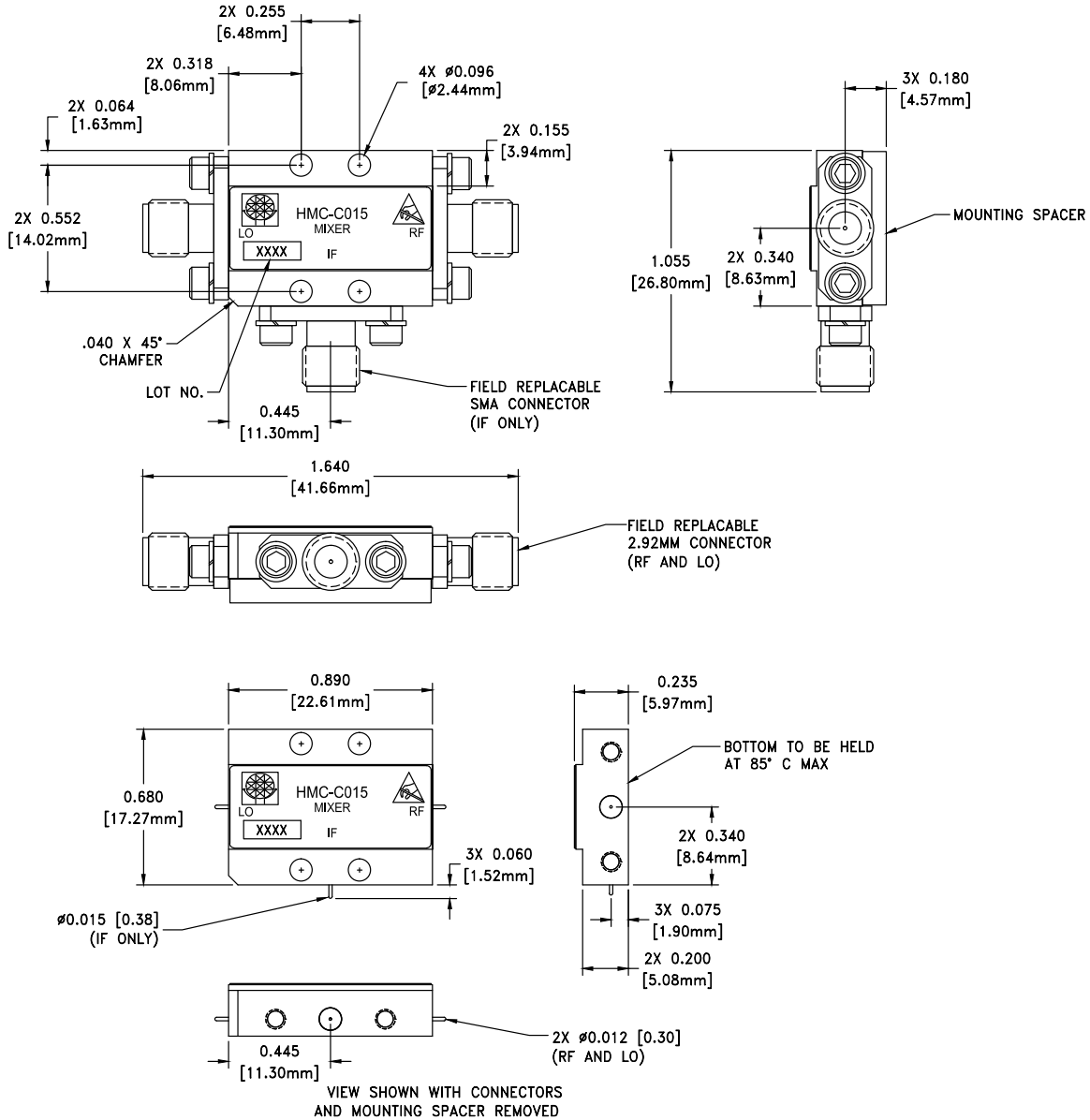
RF / IF Input	+13 dBm
LO Drive	+27 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C


**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**



**GaAs MMIC DOUBLE BALANCED
MIXER MODULE, 24 - 38 GHz**

Outline Drawing



Package Information

Package Type	C-11
Package Weight ^[1]	18.2 gms ^[2]
Spacer Weight	2.6 gms ^[2]

[1] Includes the connectors

[2] \pm 1 gms Tolerance

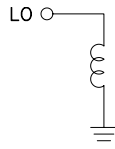
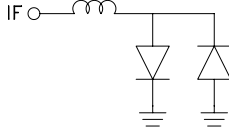
NOTES:

1. PACKAGE, LEADS, COVER MATERIAL: KOVAR™
2. PLATING: GOLD PLATE OVER NICKEL PLATE.
3. MOUNTING SPACER: NICKEL PLATED ALUMINUM.
4. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. TOLERANCES: \pm 0.010 [0.23] UNLESS OTHERWISE SPECIFIED
6. FIELD REPLACEABLE 2.92mm CONNECTORS. TENSOLITE 231CCSF OR EQUIVALENT.

GaAs MMIC DOUBLE BALANCED MIXER MODULE, 24 - 38 GHz



Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1	LO	This pin is DC coupled and matched to 50 Ohms.	
2	IF	This pin is DC coupled. For applications not requiring operation to DC, this port should be DC blocked externally using a series capacitor whose value has been chosen to pass the necessary IF frequency range. For operation to DC, this pin must not source or sink more than 2 mA of current or part non-function and possible part failure will result.	
3	RF	This pin is DC coupled and matched to 50 Ohms.	