GaAs MMIC DOUBLE BALANCED MIXER MODULE, 23 - 37 GHz

Features

Wide IF Bandwidth: DC - 13 GHz

Passive: No DC Bias Required

Input IP3: +19 dBm

LO/RF Isolation: 35 dB

Hermetically Sealed Module

Field Replaceable Coaxial Connectors

-55 to +85 °C Operating Temperature

Typical Applications

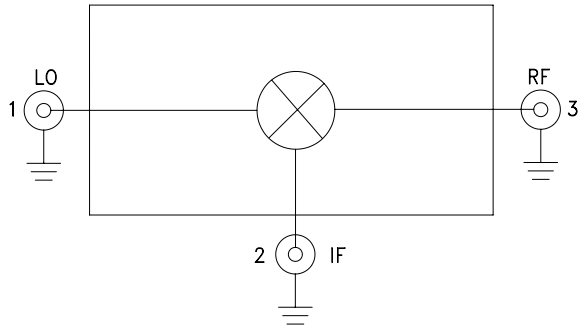
The HMC-C035 is ideal for:

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

General Description

The HMC-C035 is a general purpose double-balanced mixer housed in a miniature hermetic module which can be used as an upconverter or downconverter between 23 and 37 GHz. This mixer requires no external components or matching circuitry. The HMC-C035 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-C035 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° C, IF= 1 GHz, LO= +13 dBm*

Parameter	Min.	Typ.	Max.	Units
Frequency Range, RF & LO		23 - 37		GHz
Frequency Range, IF		DC - 13		GHz
Conversion Loss		9	12	dB
Noise Figure (SSB)		9	12	dB
LO to RF Isolation	20	35		dB
LO to IF Isolation	20	35		dB
RF to IF Isolation	13	25		dB
IP3 (Input)		19		dBm
IP2 (Input)		50		dBm
1 dB Gain Compression (Input)		12		dBm

*Unless otherwise noted, all measurements performed as downconverter, IF= 1 GHz.

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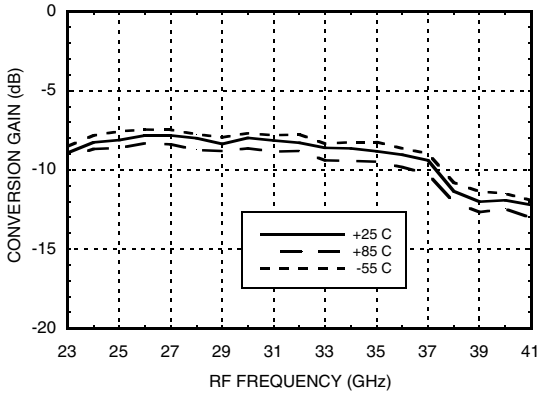
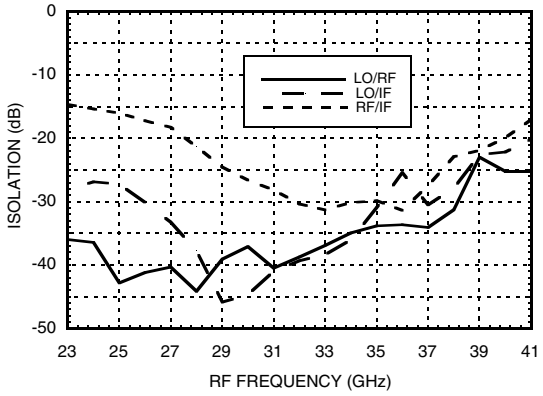
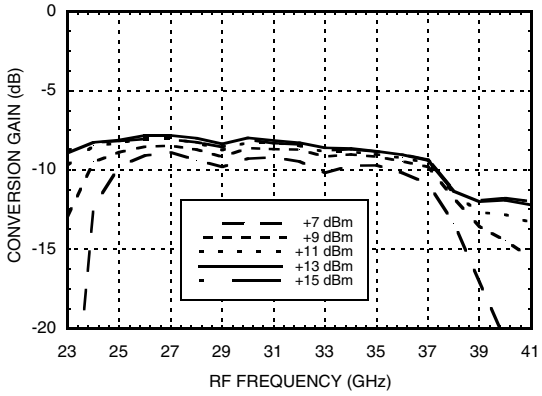
Conversion Gain vs. Temperature



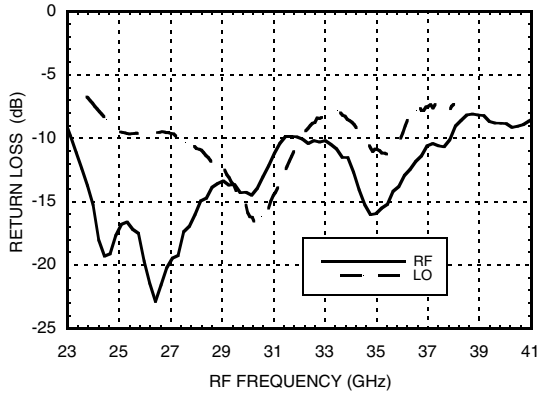
Isolation



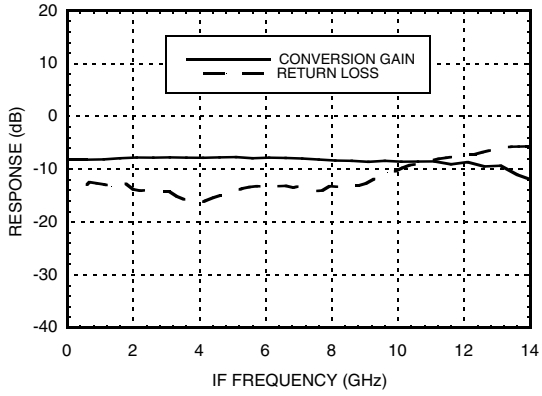
Conversion Gain vs. LO Drive



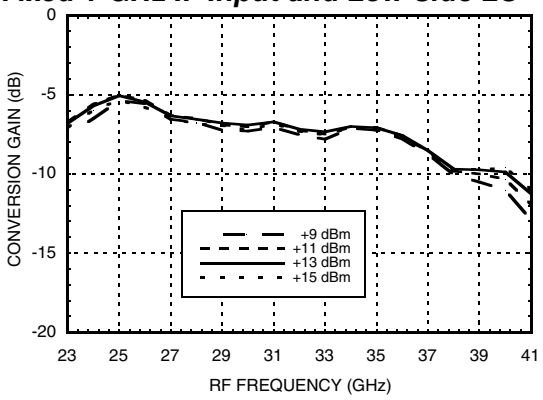
Return Loss



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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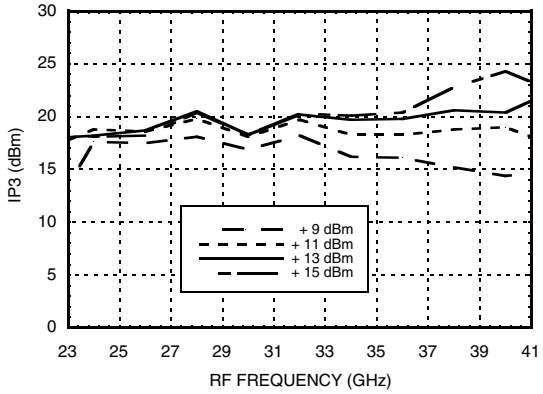
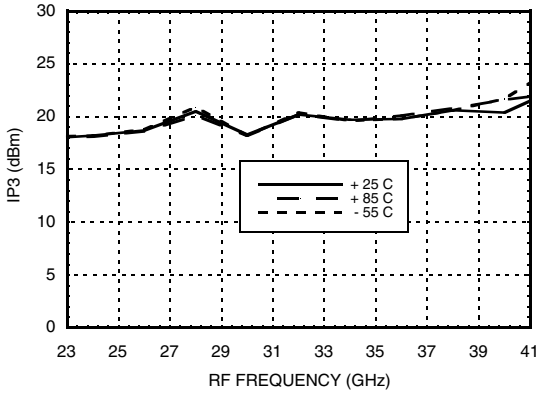
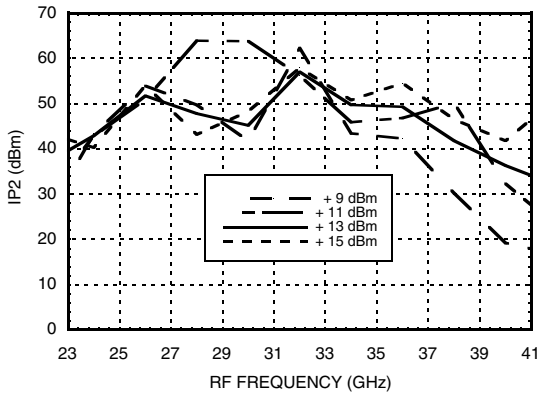
Input IP3 vs. LO Drive *



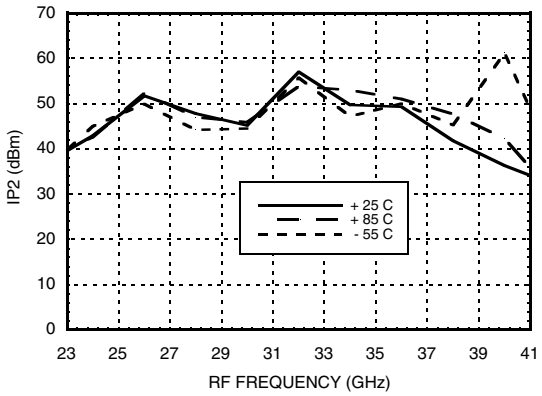
Input IP3 vs. Temperature*



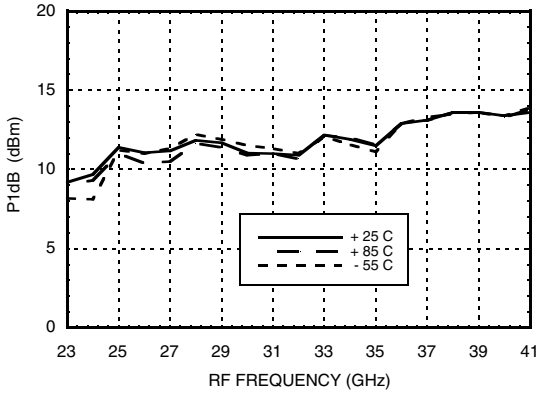
Input IP2 vs. LO Drive *



Input IP2 vs. Temperature *



Input P1dB vs. Temperature



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

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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).

Absolute Maximum Ratings

RF / IF Input	+25 dBm
LO Drive	+23 dBm
IF DC Current	±2 mA
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

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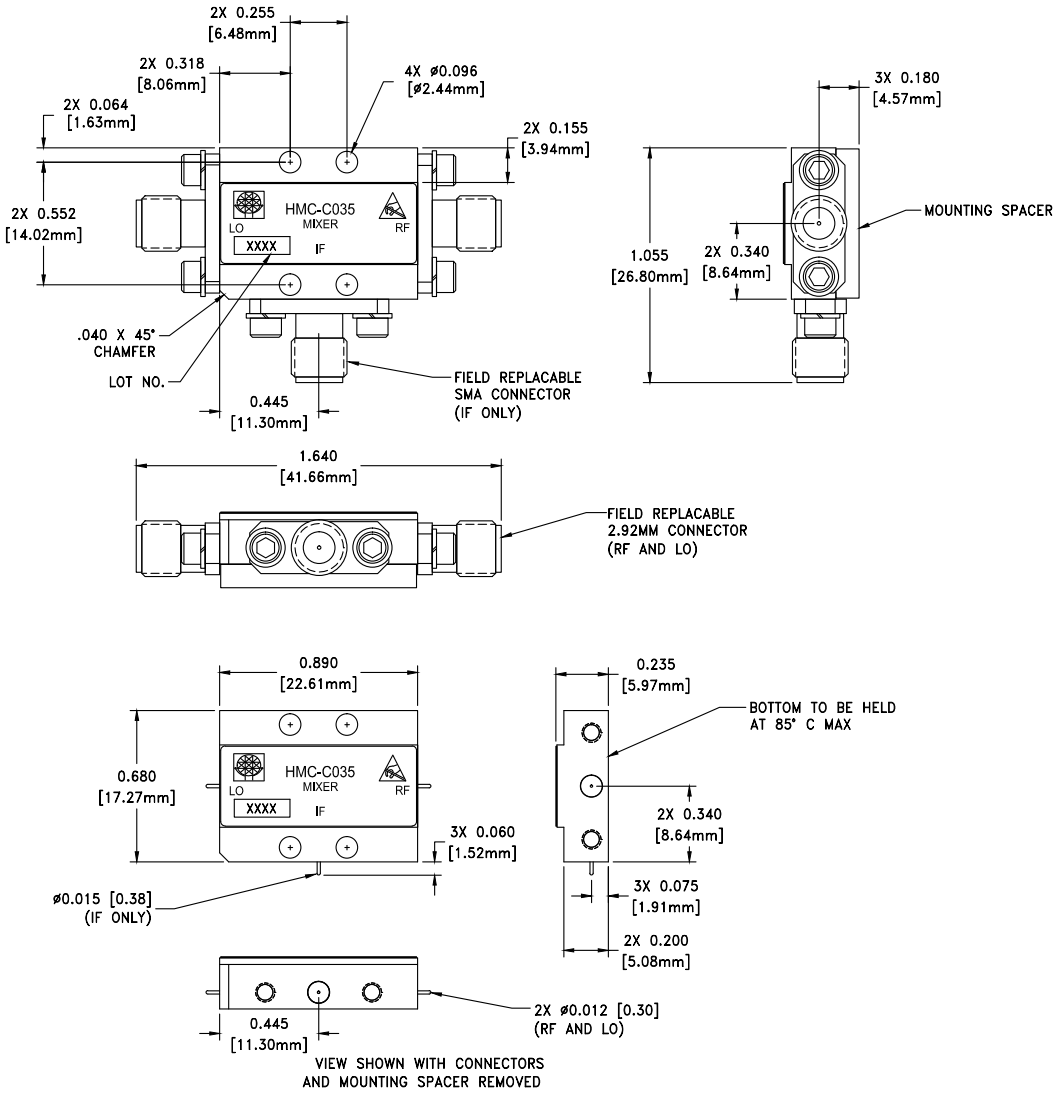
Outline Drawing



Package Information

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

[1] Includes the connectors

[2] ±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: ±0.010 [0.23] UNLESS OTHERWISE SPECIFIED
6. FIELD REPLACEABLE 2.92mm CONNECTORS. TENSOLITE 231CCSF OR EQUIVALENT.

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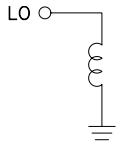
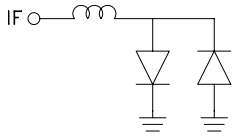
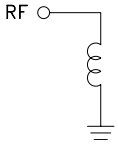
Pin Descriptions

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.	

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