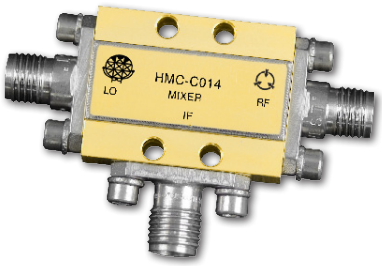
HMC-C014

v05.0211

GaAs MMIC FUNDAMENTAL MIXER MODULE, 16 - 32 GHz

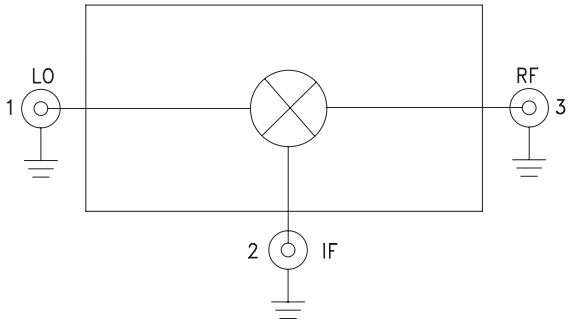


Typical Applications

The HMC-C014 is ideal for:

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

Functional Diagram



Features

Passive: No DC Bias Required

Input IP3: +19 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

General Description

The HMC-C014 is a general purpose passive double-balanced mixer housed in a miniature hermetic module that can be used as an upconverter or downconverter between 16 and 32 GHz. This mixer requires no external components or matching circuitry. The HMC-C014 provides excellent LO to RF and LO to IF suppression due to optimized balun structures. The mixer operates with LO drive levels from +9 dBm to +15 dBm and requires no DC Bias. The HMC-C014 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.

Electrical Specifications, T_A = +25° C, IF= 1 GHz, LO= +13 dBm*

Parameter	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 (SSB)		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

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

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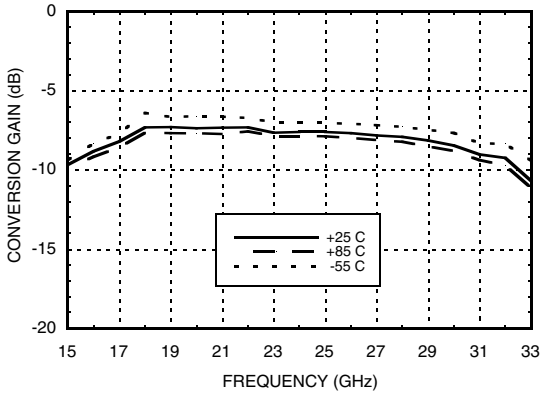
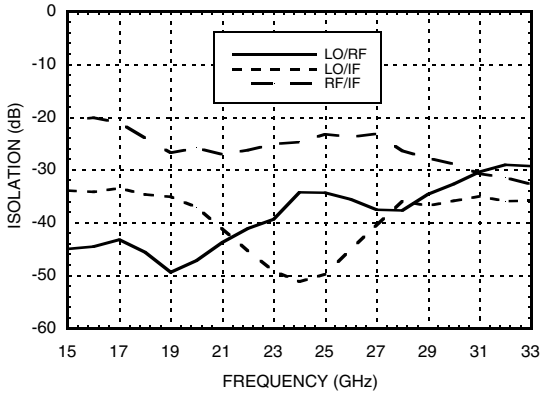
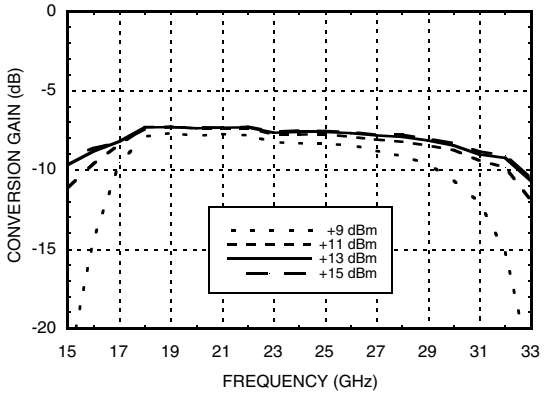
Conversion Gain vs. Temperature



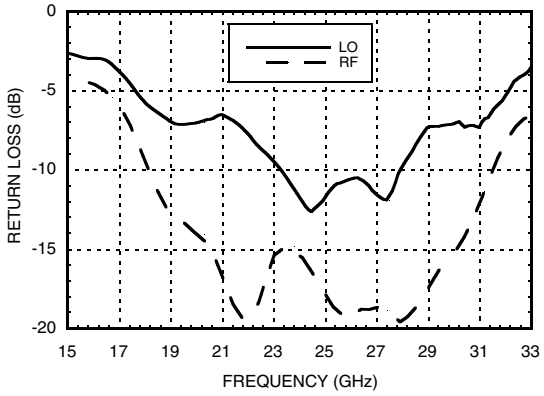
Isolation



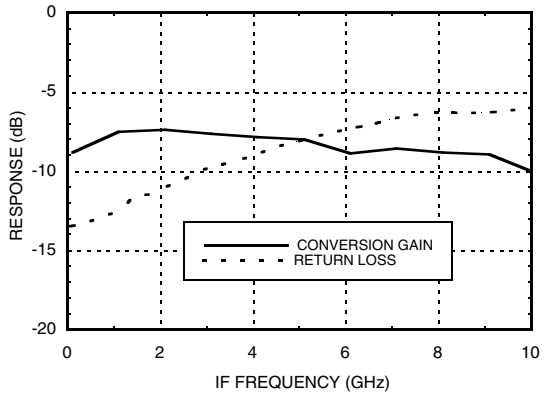
Conversion Gain vs. LO Drive



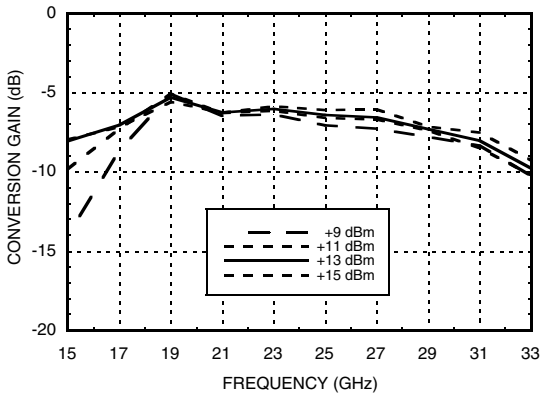
Return Loss



IF Bandwidth



Upconverter Performance Conversion Gain vs. LO Drive



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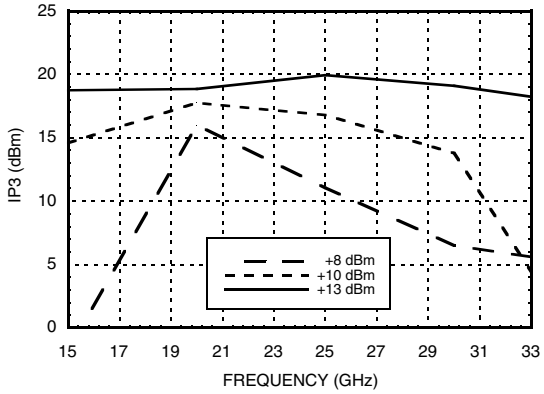
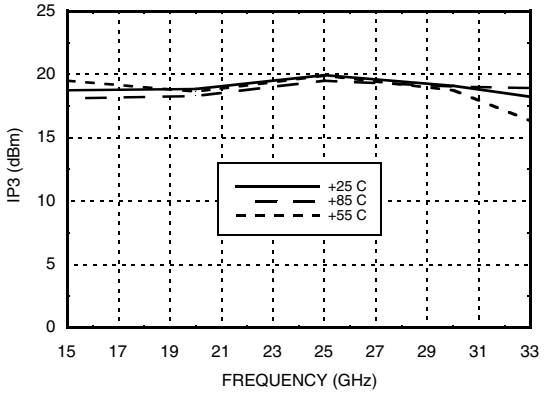
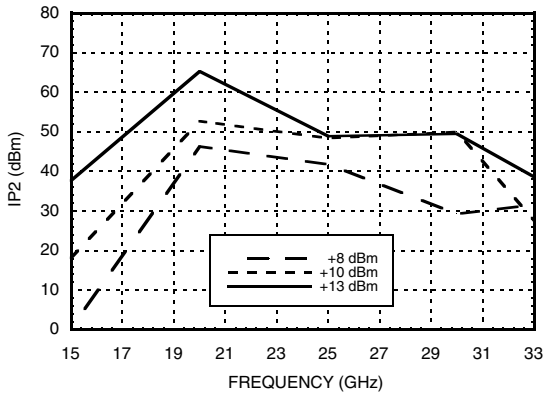
Input IP3 vs. LO Drive *



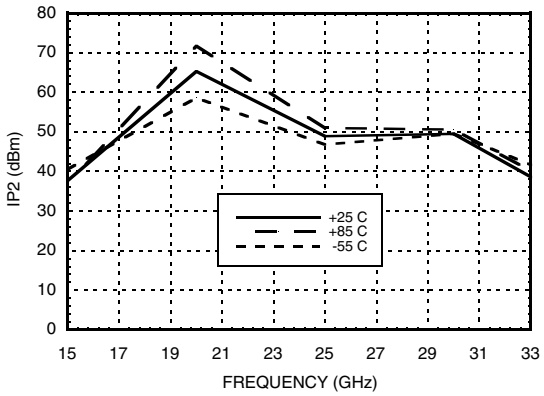
Input IP3 vs. Temperature *



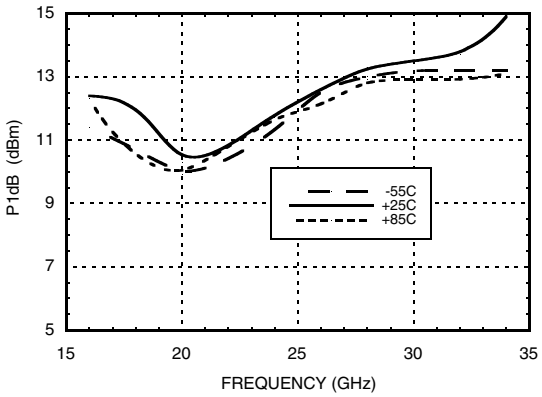
Input IP2 vs. LO Drive *



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	14	31	xx	xx
1	21	0	44	37	xx
2	78	84	69	81	89
3	xx	86	90	81	91
4	xx	xx	86	89	100

RF = 22 GHz @ -10 dBm
LO = 21 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

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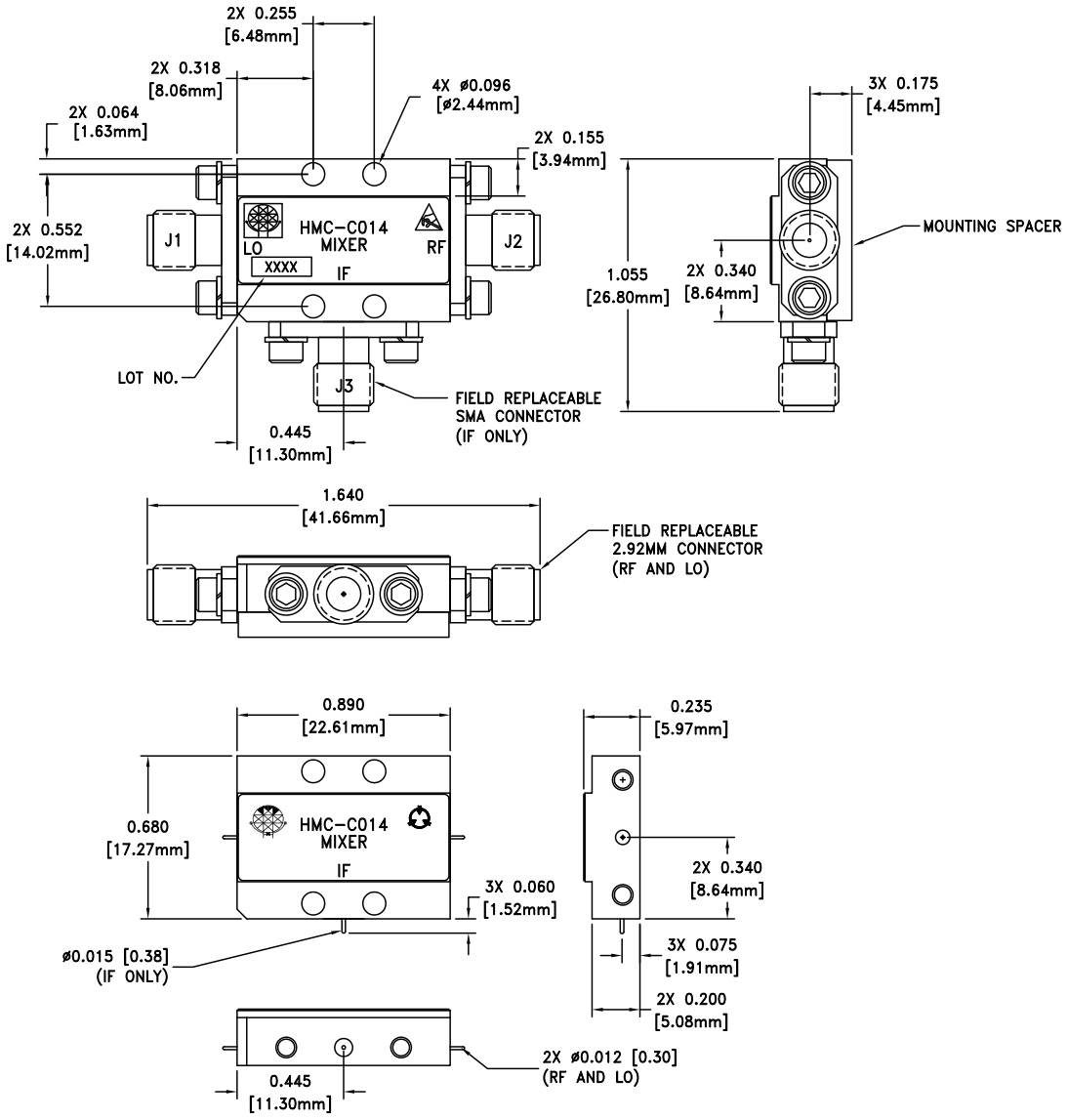
Outline Drawing



VIEW SHOWN WITH CONNECTORS REMOVED

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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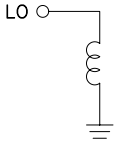
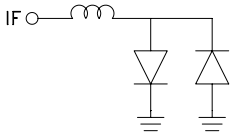
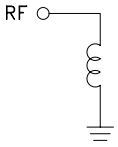
Pin Descriptions

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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