Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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# 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

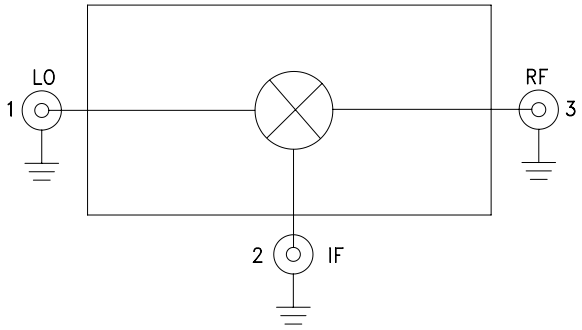
The HMC-C035 is ideal for:

- 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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# HMC-C035* PRODUCT PAGE QUICK LINKS

**Last Content Update: 02/23/2017**

## COMPARABLE PARTS

View a parametric search of comparable parts.

## DOCUMENTATION

**Data Sheet**

- HMC-C035 Data Sheet

## DESIGN RESOURCES

- HMC-C035 Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

## DISCUSSIONS

View all HMC-C035 EngineerZone Discussions.

## SAMPLE AND BUY

Visit the product page to see pricing options.

## TECHNICAL SUPPORT

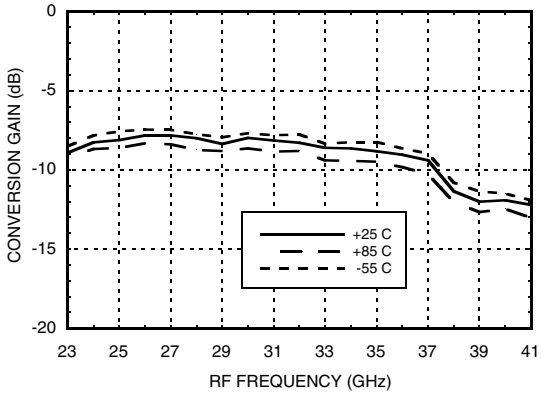
Submit a technical question or find your regional support number.

## DOCUMENT FEEDBACK

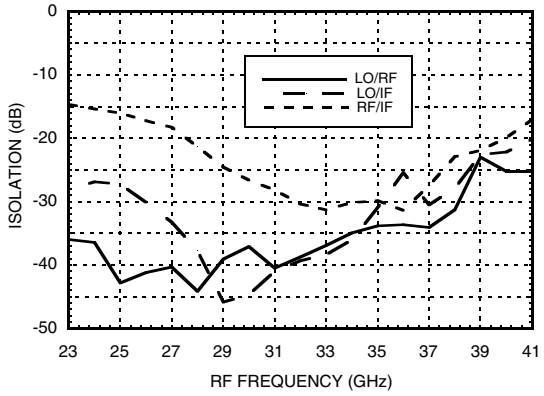
Submit feedback for this data sheet.

# GaAs MMIC DOUBLE BALANCED MIXER MODULE, 23 - 37 GHz

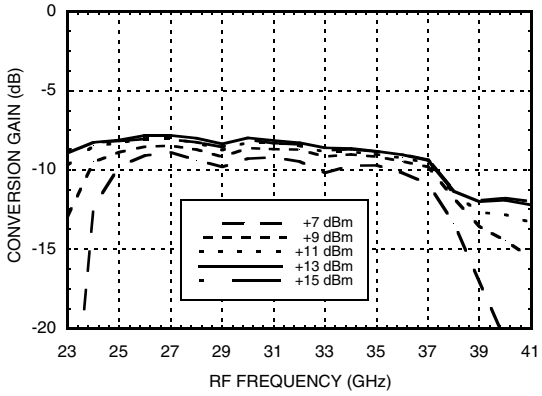
### Conversion Gain vs. Temperature



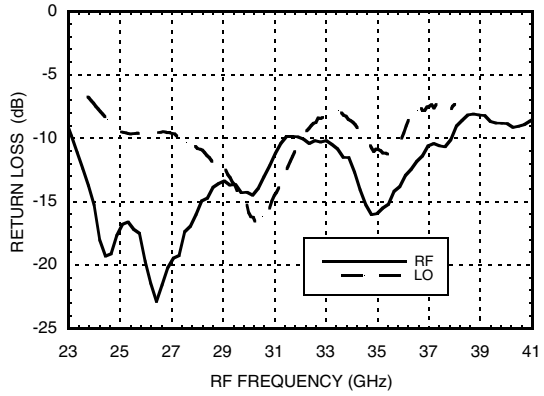

### Isolation



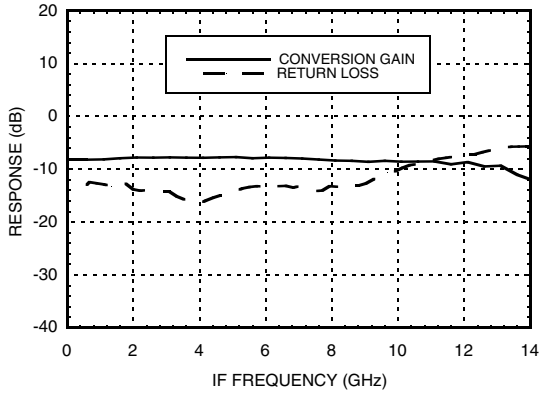

### Conversion Gain vs. LO Drive



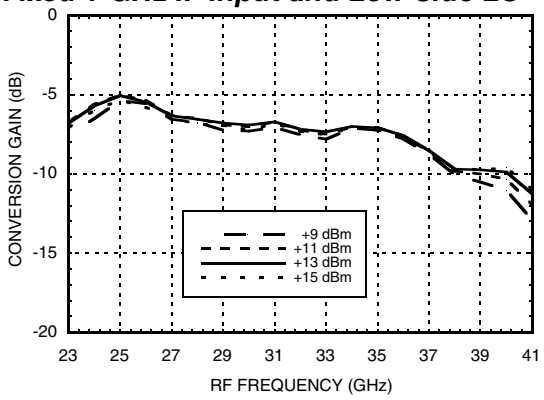

### Return Loss




### 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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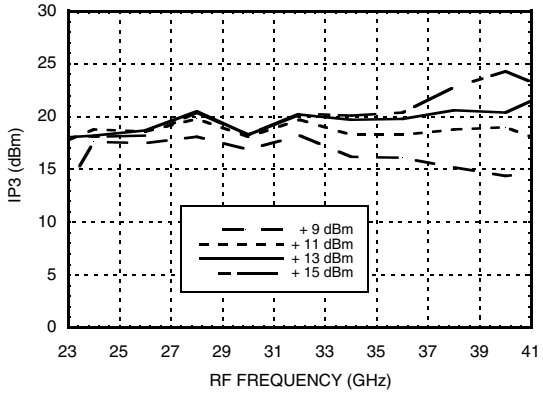
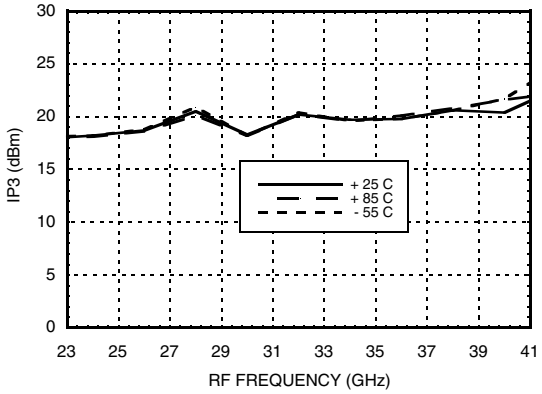
## GaAs MMIC DOUBLE BALANCED MIXER MODULE, 23 - 37 GHz



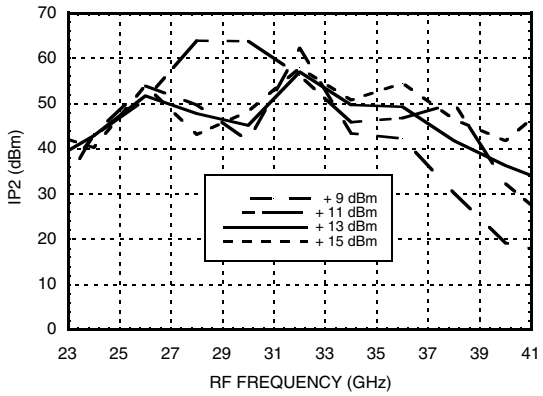
### Input IP3 vs. LO Drive *



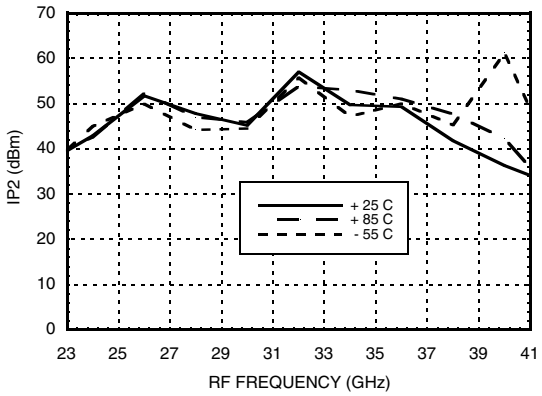

### Input IP3 vs. Temperature*



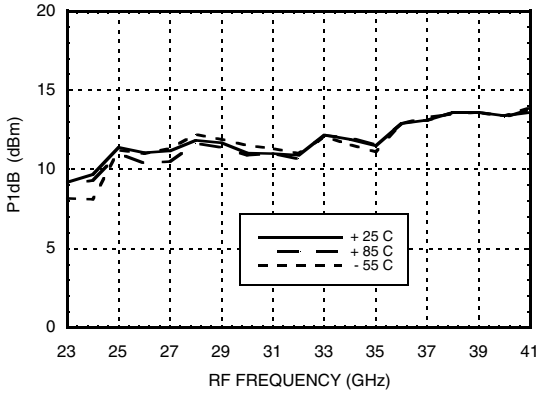

### Input IP2 vs. LO Drive *




### Input IP2 vs. Temperature *




### Input P1dB vs. Temperature




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



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# GaAs MMIC DOUBLE BALANCED MIXER MODULE, 23 - 37 GHz

## 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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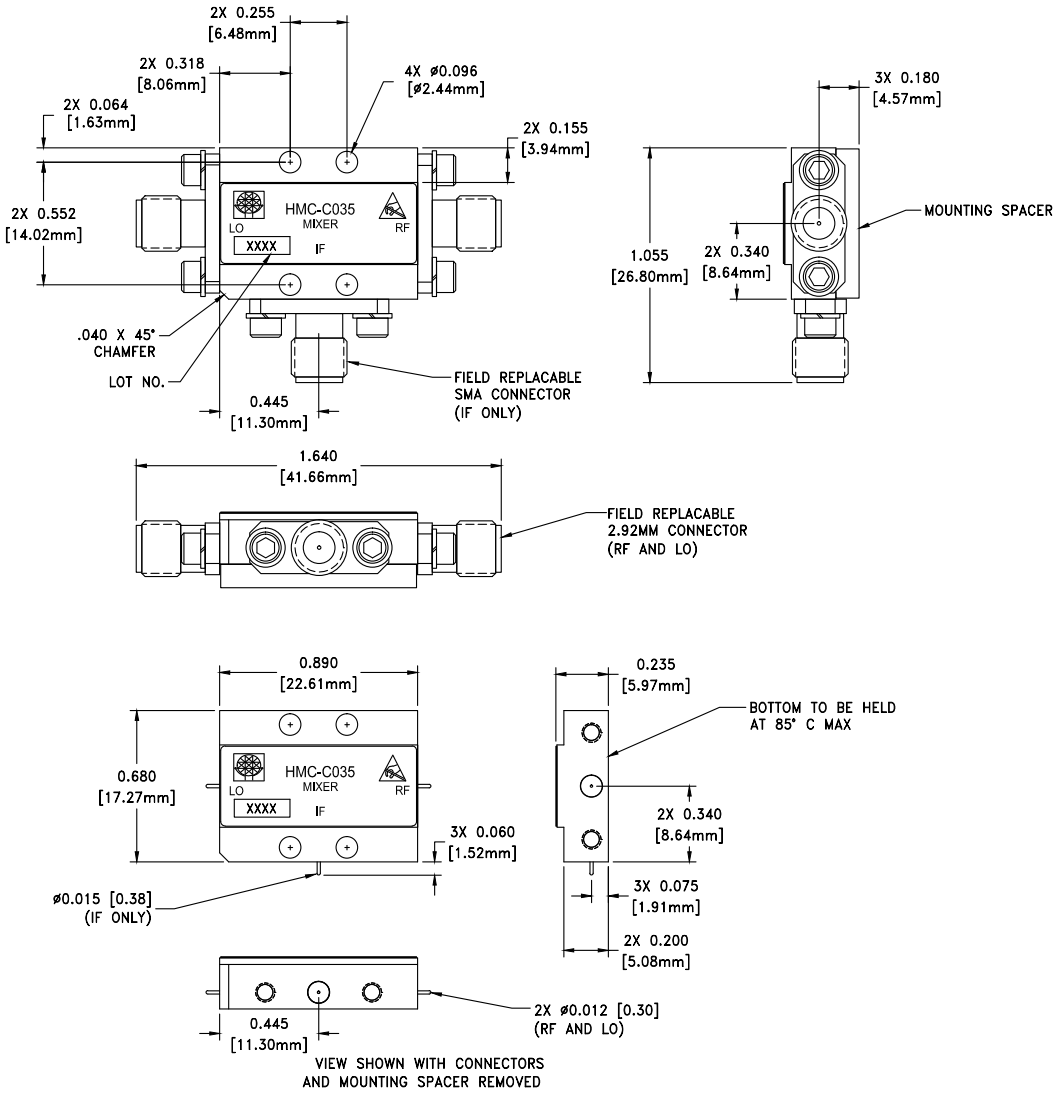
## Outline Drawing




## 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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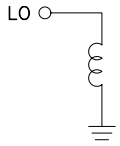
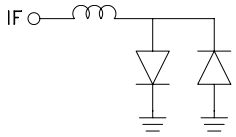
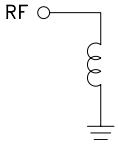
## Pin Descriptions

| 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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