



GaAs MMIC x2 ACTIVE FREQUENCY MULTIPLIER MODULE, 6 - 10 GHz OUTPUT



Typical Applications

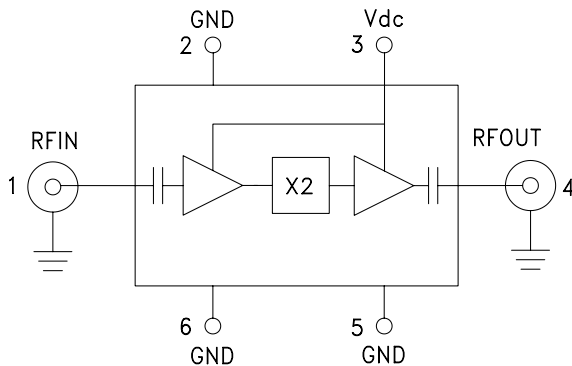
The HMC-C031 is suitable for:

- Wireless Local Loop
- Point-to-Point & VSAT Radios
- Test Instrumentation
- Military & Space

Features

- High Output Power: +17 dBm
- Low Input Power Drive: -2 to +6 dBm
- 100 KHz SSB Phase Noise: -140 dBc/Hz
- Single Supply: +5V @ 90 mA
- Hermetically Sealed Module
- Field Replaceable SMA Connectors
- 55 °C to +85 °C Operating Temperature

Functional Diagram

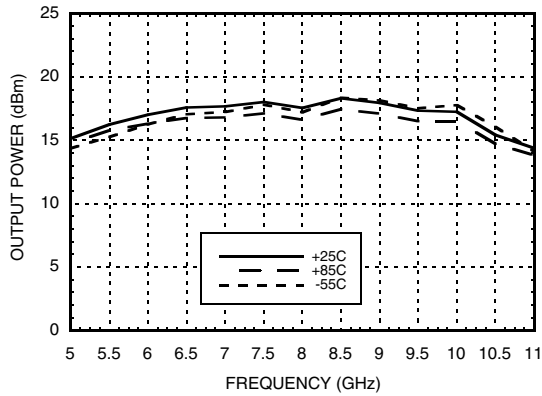
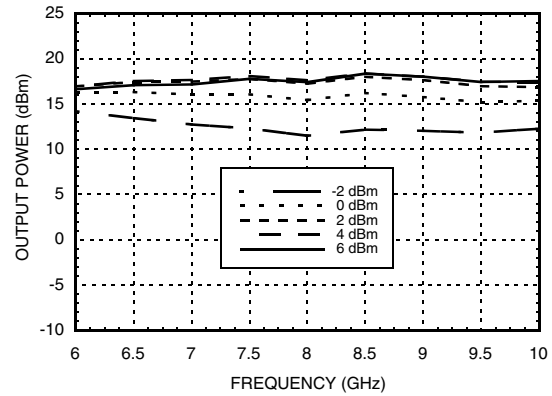
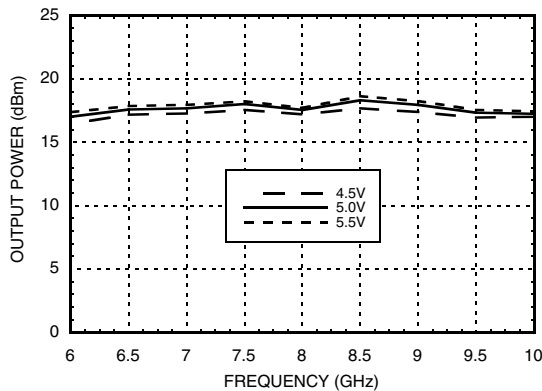
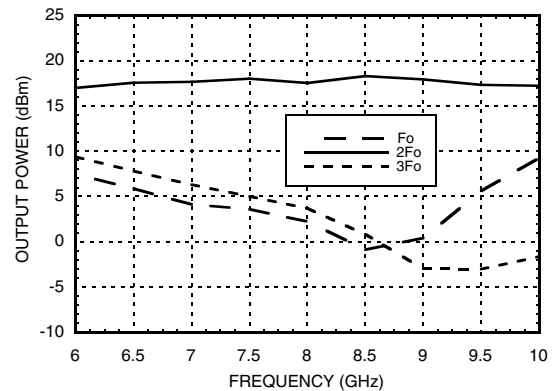
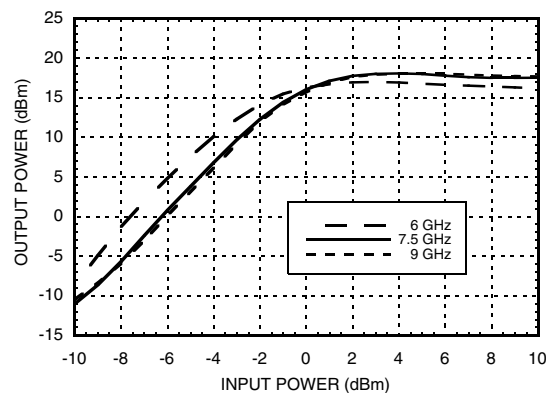


General Description

The HMC-C031 is a x2 active broadband frequency multiplier utilizing GaAs PHEMT technology in a miniature hermetic module. When driven by a 3 dBm signal, the multiplier provides +17 dBm typical output power from 6 to 10 GHz. The Fo and 3Fo isolations are 12 dBc with respect to output signal level. This frequency multiplier features DC blocked I/O's, and is ideal for use in LO multiplier chains for Pt to Pt & VSAT Radios yielding reduced parts count vs. traditional approaches. The low additive SSB Phase Noise of -140 dBc/Hz at 100 kHz offset helps maintain good system noise performance.

Electrical Specifications, $T_A = +25^\circ C$, Vdc = +5V, 3 dBm Drive Level

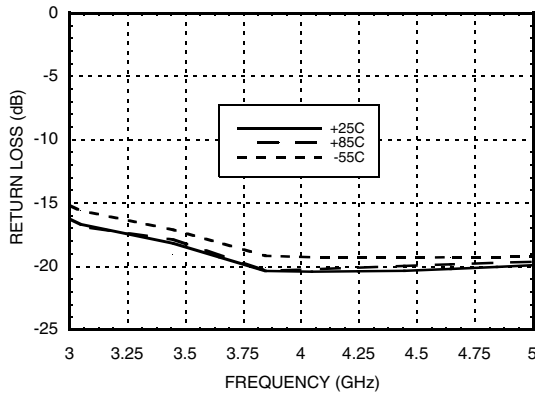
| Parameter | Min. | Typ. | Max. | Units |
|--|--------|------|------|--------|
| Frequency Range, Input | 3 - 5 | | | GHz |
| Frequency Range, Output | 6 - 10 | | | GHz |
| Output Power | 14 | 17 | | dBm |
| Fo Isolation (with respect to output level) | | 12 | | dBc |
| 3Fo Isolation (with respect to output level) | | 12 | | dBc |
| Input Return Loss | | 20 | | dB |
| Output Return Loss | | 14 | | dB |
| SSB Phase Noise (100 kHz Offset) | | -140 | | dBc/Hz |
| Supply Current | | 90 | | mA |

GaAs MMIC x2 ACTIVE FREQUENCY MULTIPLIER MODULE, 6 - 10 GHz OUTPUT
Output Power vs. Temperature @ 3 dBm Drive Level

Output Power vs. Drive Level

Output Power vs. Supply Voltage @ 3 dBm Drive Level

Isolation @ 3 dBm Drive Level

Output Power vs. Input Power


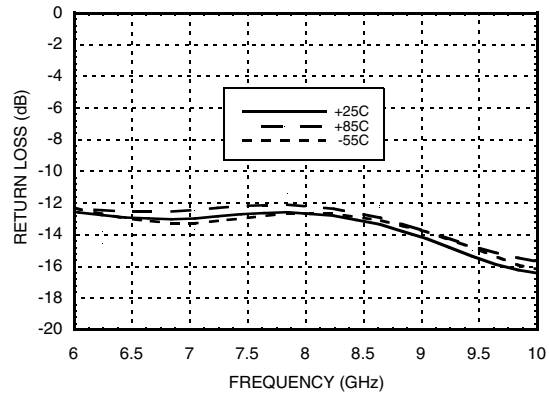


GaAs MMIC x2 ACTIVE FREQUENCY MULTIPLIER MODULE, 6 - 10 GHz OUTPUT

Input Return Loss vs. Temperature @ 0 dBm Drive Level



Output Return Loss vs. Temperature @ 0 dBm Drive Level



Absolute Maximum Ratings

| | |
|---------------------------|----------------|
| RF Input (Vdc = +5V) | +13 dBm |
| Bias Supply Voltage (Vdc) | +6 Vdc |
| Storage Temperature | -65 to +150 °C |
| Operating Temperature | -55 to +85 °C |

Typical Supply Current vs. Vdd

| Vdd (Vdc) | Idd (mA) |
|-----------|----------|
| 4.5 | 89 |
| 5.0 | 90 |
| 5.5 | 91 |

Note:
Multiplier will operate over full voltage range shown above.



**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**

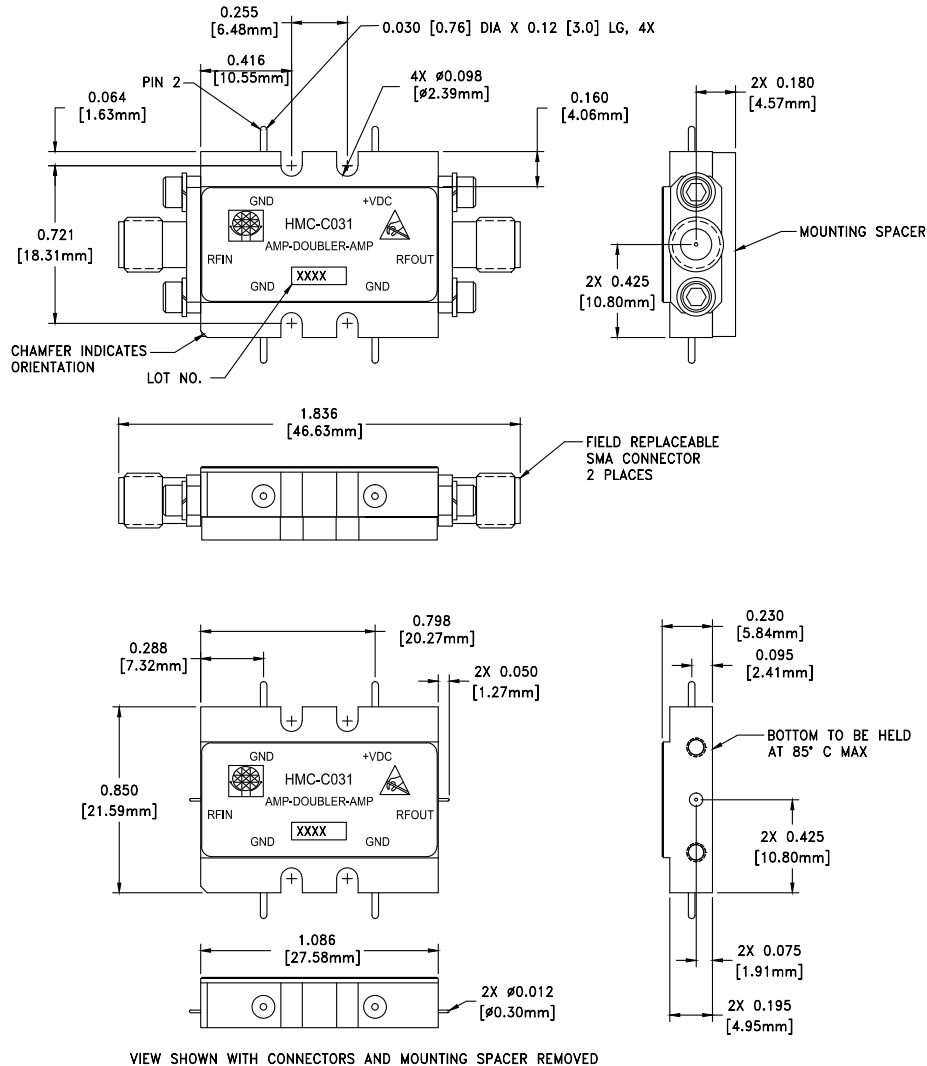
Pin Description

| Pin Number | Function | Description | Interface Schematic |
|------------|---------------------|---|---------------------|
| 1 | RFIN and RF Ground | Pin is AC coupled and matched to 50 Ohms. RFIN uses a female SMA connector. | |
| 2, 5, 6 | GND | One of these pins must be connected to power supply ground. | |
| 3 | Vdc | Power supply voltage for the amplifier includes a 7.5V zener diode for over voltage and negative voltage protection | |
| 4 | RFOUT and RF Ground | Pin is AC coupled and matched to 50 Ohms. RFOUT uses a female SMA connector. | |



GaAs MMIC x2 ACTIVE FREQUENCY MULTIPLIER MODULE, 6 - 10 GHz OUTPUT

Outline Drawing



Package Information

| | |
|--------------------|--------------|
| Package Type | C-10 |
| Package Weight [1] | 18.7 gms [2] |
| Spacer Weight | 3.3 gms [2] |

[1] Includes the connectors

[2] \pm 1 gms Tolerance

NOTES:

1. PACKAGE, LEADS, COVER MATERIAL: KOVAR™
2. FINISH: GOLD PLATE OVER NICKEL PLATE
3. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]
4. TOLERANCES:
 - 4.1 .XX = \pm 0.02
 - 4.2 .XXX = \pm 0.010
5. FIELD REPLACEABLE 2.92mm CONNECTORS TENSOLITE 231CCSF OR EQUIVALENT