

## DIVIDE-BY-5 PRESCALER MODULE, 0.5 - 8.0 GHz

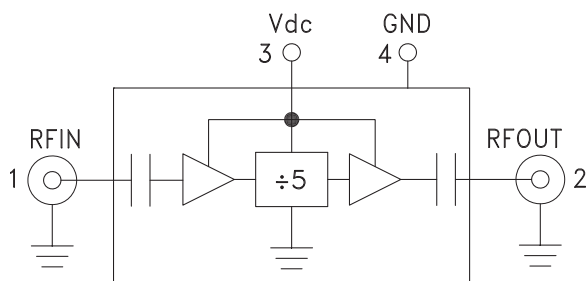


### Typical Applications

Prescaler for 0.5 to 18 GHz PLL Applications:

- Point-to-Point / Multi-Point Radios
- VSAT Radios
- Fiber Optic
- Test Equipment
- Military & Space

### Functional Diagram



### Features

- Ultra Low SSB Phase Noise: -150 dBc/Hz
- Wide Bandwidth
- Output Power: -1 dBm
- Single DC Supply: +5V @ 80mA
- RoHS Compliant Hermetically Sealed Module
- Field Replaceable SMA Connectors
- 55 to +85 °C Operating Temperature

### General Description

The HMC-C039 is a low noise Divide-by-5 Static Divider utilizing InGaP GaAs HBT technology packaged in a miniature, hermetic module with replaceable SMA connectors. This device operates from 0.5 to 8GHz input frequency from a single +5V DC supply. The low additive SSB phase noise of -155 dBc/Hz at 100 kHz offset helps the user maintain excellent system noise performance.

### Electrical Specifications, $T_A = +25^\circ\text{C}$ , 50 Ohm System, $V_{dc} = +5V$

| Parameter                        | Conditions                            | Min. | Typ. | Max. | Units  |
|----------------------------------|---------------------------------------|------|------|------|--------|
| Maximum Input Frequency          |                                       | 8    | 9    |      | GHz    |
| Minimum Input Frequency          | Sine Wave Input                       |      |      | 0.5  | GHz    |
| Input Power Range                | $F_{in} = 0.5$ to 7 GHz               | -20  | -15  | +15  | dBm    |
|                                  | $F_{in} = 7$ to 8 GHz                 | -20  | -15  | +10  | dBm    |
| Output Power                     | $F_{in} = 0.5$ to 8 GHz               | -4   | -1   |      | dBm    |
| Reverse Leakage                  | $F_{in} = 0.5$ to 8 GHz               |      | 58   |      | dB     |
| SSB Phase Noise (100 kHz offset) | $P_{in} = 0$ dBm, $F_{in} = 4.8$ GHz  |      | -155 |      | dBc/Hz |
| Output Transition Time           | $P_{in} = 0$ dBm, $F_{out} = 882$ MHz |      | 100  |      | ps     |
| Supply Current ( $I_{dc}$ )      |                                       |      | 80   |      | mA     |

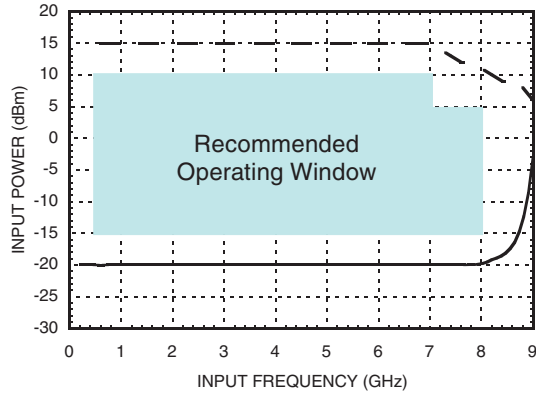
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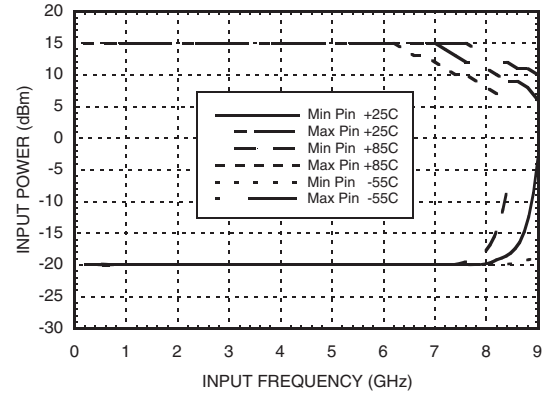


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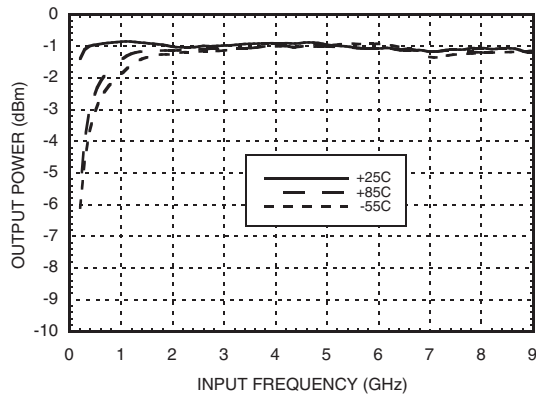
**Input Sensitivity Window, T= 25 °C**



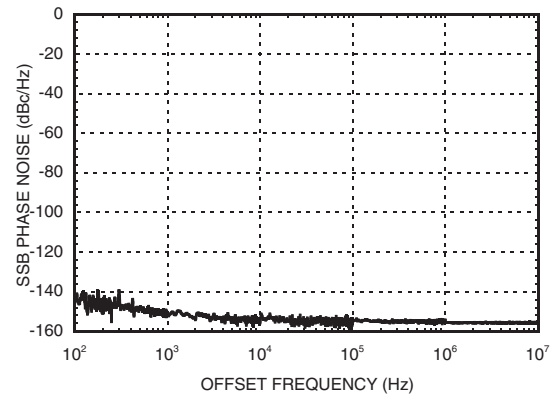
**Input Sensitivity vs. Temperature**



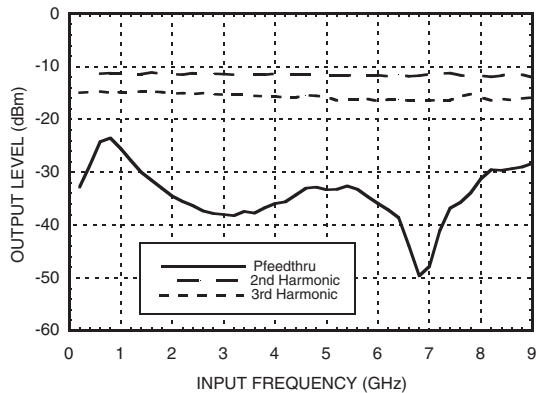
**Output Power vs. Temperature**



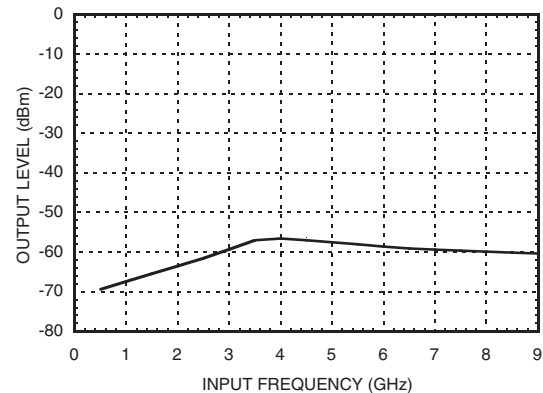
**SSB Phase Noise Performance, Pin= 0 dBm, T= 25 °C**



**Output Harmonic Content, Pin= 0 dBm, T= 25 °C**



**Reverse Leakage, Pin= 0 dBm, T= 25 °C**



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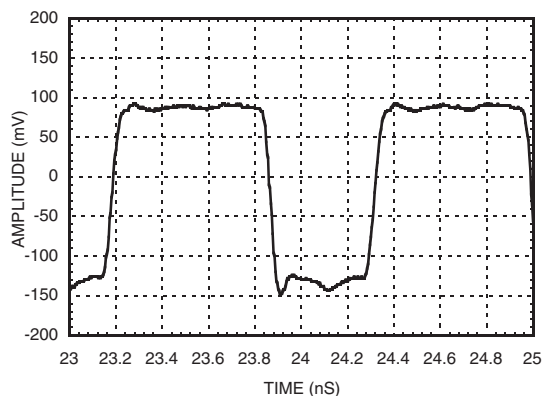


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CONNECTORIZED MODULES - FREQUENCY DIVIDERS

**Output Voltage Waveform,**  
*Pin= 0 dBm, Fout= 882 MHz, T= 25 °C*



### Absolute Maximum Ratings

|                       |                |
|-----------------------|----------------|
| Supply Voltage (Vdc)  | +5.5V          |
| RF Input (Vdc = +5V)  | +13 dBm        |
| Storage Temperature   | -65 to +150 °C |
| Operating Temperature | -55 to +85 °C  |



ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS

### Typical Supply Current vs. Vdc

| Vdc  | Idc (mA) |
|------|----------|
| 4.75 | 74       |
| 5.0  | 80       |
| 5.25 | 86       |

Note: Divider will operate over full voltage range shown above

### Pin Description

| Pin Number | Function          | Description  | Interface Schematic |
|------------|-------------------|--|---------------------|
| 1          | RFIN & RF Ground  | RF input connector, SMA female, field replaceable.<br>RF Input is AC coupled.        |                     |
| 2          | RFOUT & RF Ground | RF output connector, SMA female, field replaceable.<br>Divided output is AC coupled. |                     |
| 3          | Vdc               | Supply voltage 5V ± 0.25V.   |                     |
| 4          | GND               | Power supply ground.   |                     |

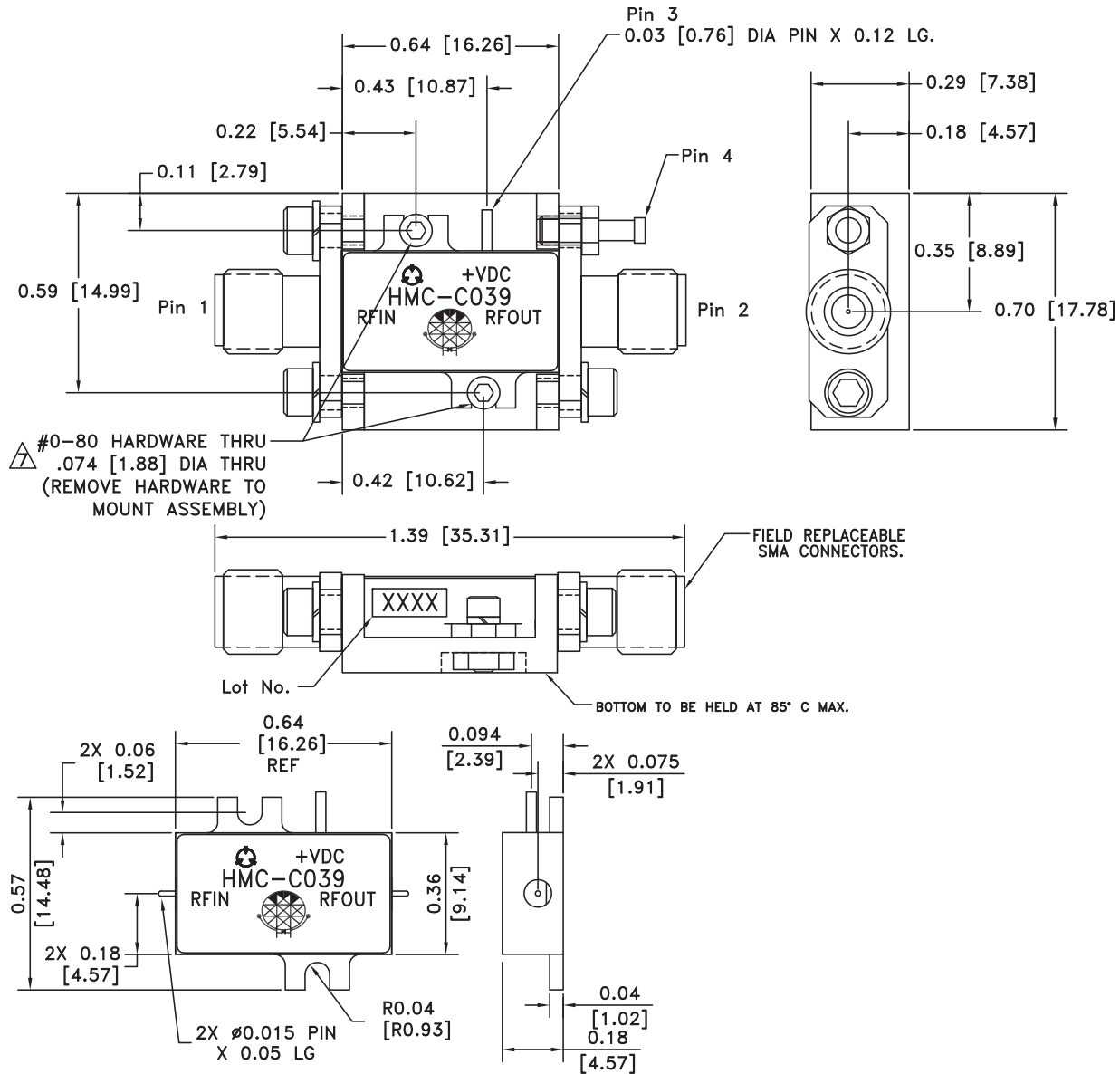
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**DIVIDE-BY-5 PRESCALER  
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**Outline Drawing**



**Package Information**

|                               |                         |
|-------------------------------|-------------------------|
| Package Type                  | C-1                     |
| Package Weight <sup>[1]</sup> | 10.2 gms <sup>[2]</sup> |
| Spacer Weight                 | N/A                     |

[1] Includes the connectors

[2] ±1 gms Tolerance

NOTES:

1. PACKAGE, LEADS, COVER MATERIAL: KOVAR™
  2. BRACKET MATERIAL: ALUMINUM
  3. PLATING: ELECTROLYTIC GOLD 50 MICROINCHES MIN., OVER ELECTROLYTIC NICKEL 75 MICROINCHES MIN.
  4. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
  5. TOLERANCES ±.005 [0.13] UNLESS OTHERWISE SPECIFIED.
  6. FIELD REPLACEABLE SMA CONNECTORS. TENSOLITE 5602 - 5CCSF OR EQUIVALENT.
- △ TO MOUNT MODULE TO SYSTEM PLATFORM REPLACE 0-80 HARDWARE WITH DESIRED MOUNTING SCREWS.