

## DIVIDE-BY-8 PRESCALER MODULE, 0.5 - 18 GHz

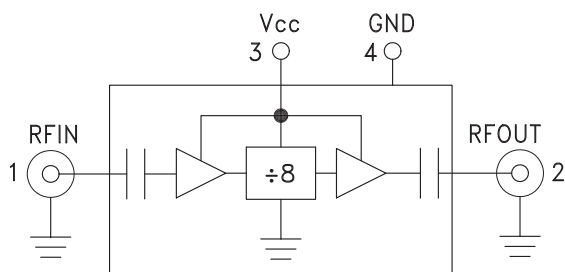


### Typical Applications

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
- Very Wide Bandwidth
- Output Power: -4 dBm
- Single DC Supply: +5V
- Hermetically Sealed Module
- Field Replaceable SMA Connectors
- 55 to +85 °C Operating Temperature

### General Description

The HMC-C007 is a low noise Divide-by-8 Static Divider utilizing InGaP GaAs HBT technology packaged in a miniature, hermetic module with replaceable SMA connectors. This device operates from 0.5 to 18 GHz input frequency from a single +5V DC supply. The low additive SSB phase noise of -150 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, $V_{CC} = +5V$

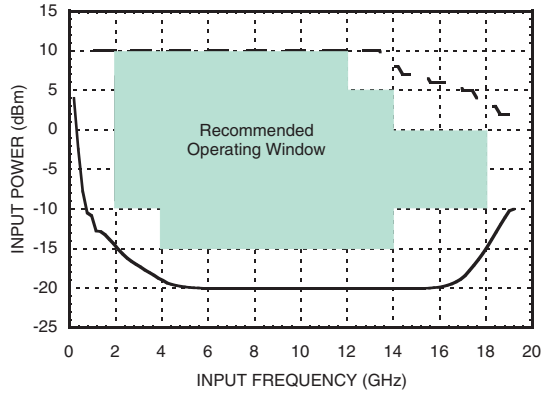
| Parameter                        | Conditions                  | Min. | Typ. | Max. | Units  |
|----------------------------------|-----------------------------|------|------|------|--------|
| Maximum Input Frequency          |                             | 18   | 19   |      | GHz    |
| Minimum Input Frequency          | Sine Wave Input             |      |      | 0.5  | GHz    |
| Input Power Range                | Fin = 2 to 4 GHz            | -15  | -10  | +10  | dBm    |
|                                  | Fin = 4 to 12 GHz           | -20  | -15  | +10  | dBm    |
|                                  | Fin = 12 to 14 GHz          | -20  | -15  | +5   | dBm    |
|                                  | Fin = 14 to 18 GHz          | -15  | -10  | 0    | dBm    |
| Output Power                     | Fin = 0.5 to 18 GHz         | -7   | -4   |      | dBm    |
| Reverse Leakage                  | Fin = 0.5 to 18 GHz         |      | 55   |      | dB     |
| SSB Phase Noise (100 kHz offset) | Pin = 0 dBm, Fin = 4.8 GHz  |      | -150 |      | dBc/Hz |
| Output Transition Time           | Pin = 0 dBm, Fout = 882 MHz |      | 100  |      | ps     |
| Supply Current (Icc)             |                             |      | 98   |      | mA     |

**DIVIDE-BY-8 PRESCALER  
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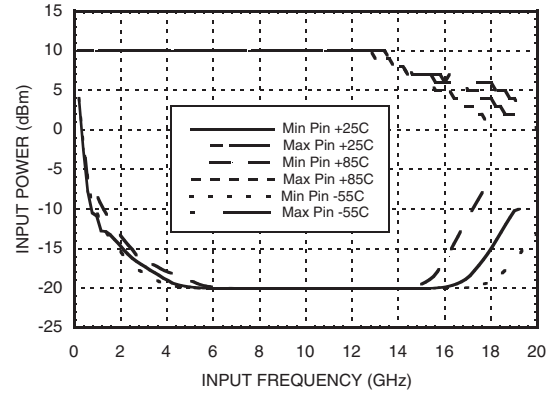
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CONNECTORIZED MODULES - FREQUENCY DIVIDERS

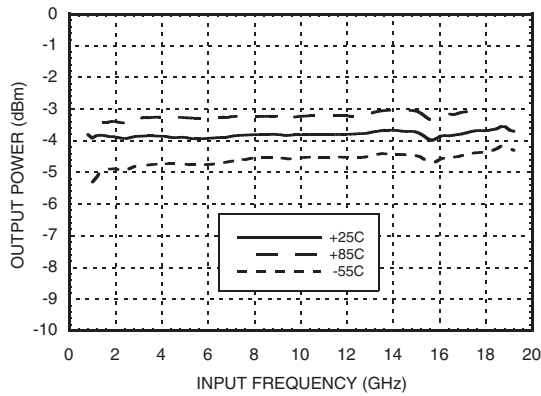
**Input Sensitivity Window,  $T = 25\text{ }^{\circ}\text{C}$**



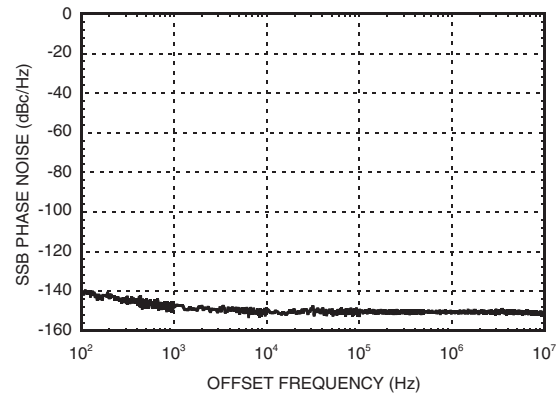
**Input Sensitivity vs. Temperature**



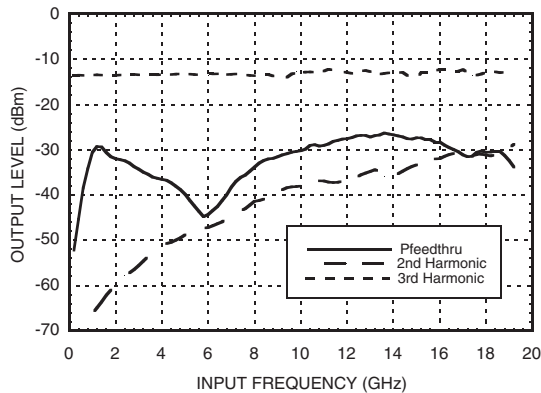
**Output Power vs. Temperature**



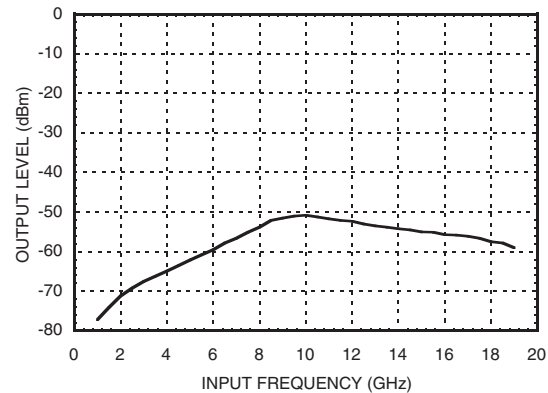
**SSB Phase Noise Performance,  
 $P_{in} = 0\text{ dBm}$ ,  $T = 25\text{ }^{\circ}\text{C}$**



**Output Harmonic Content,  
 $P_{in} = 0\text{ dBm}$ ,  $T = 25\text{ }^{\circ}\text{C}$**

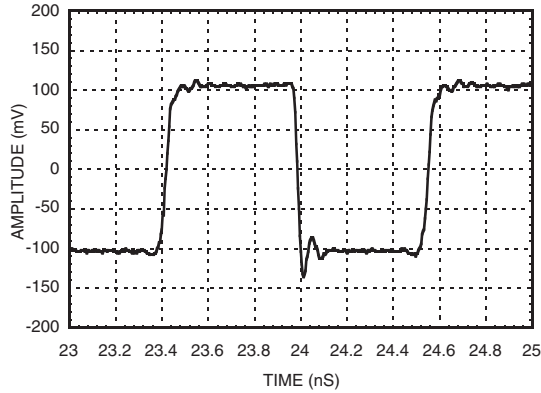


**Reverse Leakage,  $P_{in} = 0\text{ dBm}$ ,  $T = 25\text{ }^{\circ}\text{C}$**



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**Output Voltage Waveform,**  
 **$P_{in} = 0 \text{ dBm}$ ,  $F_{out} = 882 \text{ MHz}$ ,  $T = 25^\circ \text{C}$**


**Absolute Maximum Ratings**

|                             |                |
|-----------------------------|----------------|
| Supply Voltage ( $V_{cc}$ ) | +5.5V          |
| RF Input ( $V_{cc} = +5V$ ) | +13 dBm        |
| Storage Temperature         | -65 to +150 °C |
| Operating Temperature       | -55 to +85 °C  |
| ESD Sensitivity (HBM)       | Class 1A       |



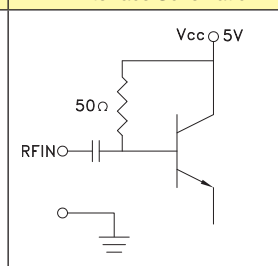
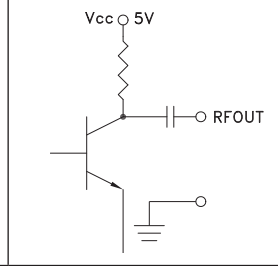
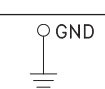
**ELECTROSTATIC SENSITIVE DEVICE**  
**OBSERVE HANDLING PRECAUTIONS**

**Typical Supply Current vs.  $V_{cc}$** 

| $V_{cc}$ | $I_{cc}$ (mA) |
|----------|---------------|
| 4.75     | 87            |
| 5.00     | 98            |
| 5.25     | 110           |

Note: Divider will operate over full voltage range shown above

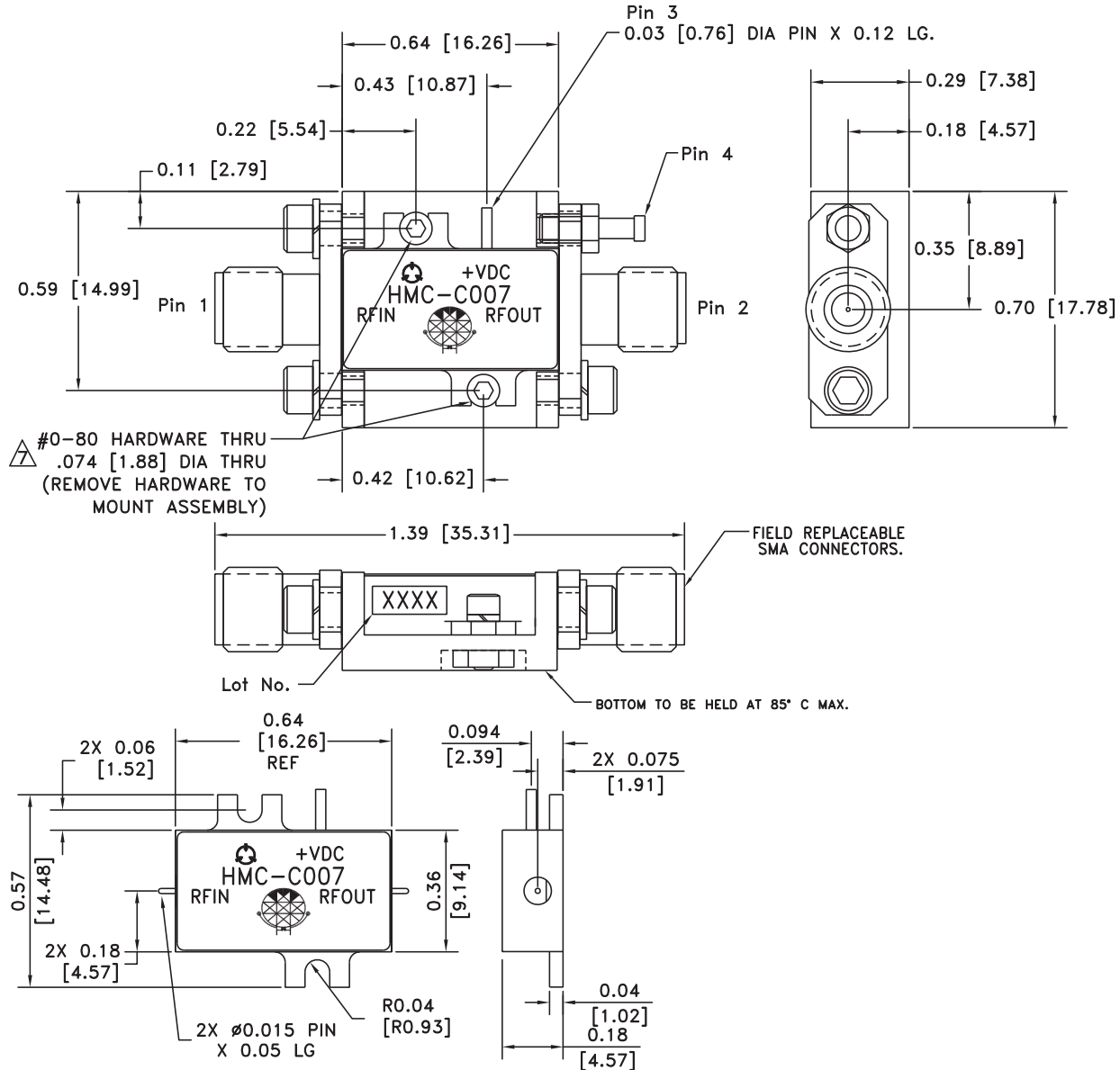
**Pin Description**

| 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          | $V_{cc}$          | Supply voltage 5V $\pm$ 0.25V.   |   |
| 4          | GND               | Power supply ground.   |  |

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**DIVIDE-BY-8 PRESCALER  
MODULE, 0.5 - 18 GHz**

**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.

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