Frequency Dividers Technical Data Sheet

**Features**

- Divide by 5 Prescaler
- Wide Frequency Band
- GaAs HBT MMIC Technology
- Low Phase Noise -155 dBc/Hz @ 100 kHz offset
- Output Power -1 dBm
- Low Reverse Leakage Level 58 dB typical
- Single +5V Bias Voltage
- Integrated DC Blocking Capacitors
- Hermetically Sealed Module
- Mil Spec Compliant
- Field Replaceable SMA Connectors
- -55°C to +85°C Operating Temperature

**Applications**

- Electronic Warfare
- Electronic Countermeasures
- Point-To-Point Radio
- Point-To-Multipoint Radio
- VSAT Radios
- Fiber Optic
- Space Systems
- Test Instrumentation
- Telecom Infrastructure

**Description**

The PE88D5000 is a low noise Divide-by-5 Static Prescaler Module that covers a wide input frequency bandwidth from 0.5 GHz to 8 GHz. The design utilizes advanced GaAs HBT MMIC semiconductor technology that produces low additive SSB phase noise performance with a typical level of -155 dBc/Hz at 100 kHz offset. Additional typical performance includes an output power level of -1 dBm and reverse leakage up to 58 dB. Input/output ports are matched for 50 ohms and are DC blocked. The design requires a single +5V DC supply. The compact drop-in package is RoHS compliant and hermetically sealed with field replaceable SMA connectors. And for added confidence, this rugged package assembly is designed to meet MIL-STD-883 test conditions for Hermeticity and Temperature Cycle.

**Electrical Specifications** (TA= 25°C, Vd1 = 5 V, Id1 = 80 mA)

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Frequency (Sine Wave)</td>
<td>0.5</td>
<td>8</td>
<td></td>
<td>GHz</td>
</tr>
<tr>
<td>Impedance</td>
<td>50</td>
<td></td>
<td></td>
<td>Ohms</td>
</tr>
<tr>
<td>Input Power (CW)</td>
<td>-20</td>
<td></td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Output Power</td>
<td>-4</td>
<td>-1</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Reverse Leakage</td>
<td>58</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Operating DC Voltage 1</td>
<td>5</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Operating DC Current 1</td>
<td>80</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
</tbody>
</table>

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: Frequency Divider, Divide by 5 Prescaler Module, 500 MHz to 8 GHz, Field Replaceable SMA PE88D5000
**Frequency Dividers Technical Data Sheet**

**PE88D5000**

### Performance by Frequency

<table>
<thead>
<tr>
<th>Description</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Input Frequency</td>
<td></td>
<td>8</td>
<td>9</td>
<td>0.5</td>
<td>GHz</td>
</tr>
<tr>
<td>Minimum Input Frequency</td>
<td>Sine Wave Input</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fin = 0.5 To 7 GHz</td>
<td>-20</td>
<td>-15</td>
<td>+15</td>
<td>dBm</td>
</tr>
<tr>
<td></td>
<td>Fin = 7 To 8 GHz</td>
<td>-20</td>
<td>-15</td>
<td>+10</td>
<td>dBm</td>
</tr>
<tr>
<td>Input Power Range</td>
<td>Fin = 0.5 To 8 GHz</td>
<td>-4</td>
<td>-1</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Output Power</td>
<td>Fin = 0.5 To 8 GHz</td>
<td>58</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Reverse Leakage</td>
<td>Fin = 0.5 To 8 GHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSB Phase Noise (100 KHz Offset)</td>
<td>Pin = 0 dBm, Fin = 4.8 GHz</td>
<td>-155</td>
<td></td>
<td></td>
<td>dBc/Hz</td>
</tr>
<tr>
<td>Output Transition Time</td>
<td>Pin = 0 dBm, Fout = 882 MHz</td>
<td>100</td>
<td></td>
<td></td>
<td>ps</td>
</tr>
<tr>
<td>Supply Current (Idc)</td>
<td></td>
<td>80</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
</tbody>
</table>

### Mechanical Specifications

- **Size**
  - Length: 0.64 in [16.26 mm]
  - Width: 0.59 in [14.99 mm]
  - Height: 0.29 in [7.37 mm]
  - Weight: 0.06 lbs [27.22 g]
- **Body Material and Plating**: Nickel, Gold
- **Input Connector**: Field Replaceable SMA Female
- **Output Connector**: Field Replaceable SMA Female
- **Power Supply Connector**: Solder Pin

### Environmental Specifications

- **Temperature**
  - Operating Range: -55 to +85 deg C
  - Storage Range: -65 to +150 deg C
  - Hermetic Seal: Gross Leak MIL-STD-883 Method 1014C1/Fine Leak
  - ESD Sensitivity: ESD Class 1A Material, Transport in Approved ESD bags. Handle only in approved ESD Workstation.

---

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: Frequency Divider, Divide by 5 Prescaler Module, 500 MHz to 8 GHz, Field Replaceable SMA PE88D5000

---

Pasternack Enterprises, Inc. • P.O. Box 16759, Irvine, CA 92623
Phone: (866) 727-8376 or (949) 261-1920 • Fax: (949) 261-7451
Sales@Pasternack.com • Techsupport@Pasternack.com

© 2016 Pasternack Enterprises All Rights Reserved
Frequency Divider, Divide by 5 Prescaler Module, 500 MHz to 8 GHz, Field Replaceable SMA

**Frequency Dividers Technical Data Sheet**

**Compliance Certifications** (visit www.Pasternack.com for current document)
RoHS Compliant

**Plotted and Other Data**

Notes:

Functional Block Diagram

---

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: **Frequency Divider, Divide by 5 Prescaler Module, 500 MHz to 8 GHz, Field Replaceable SMA PE88D5000**
Frequency Divider, Divide by 5 Prescaler Module, 500 MHz to 8 GHz, Field Replaceable SMA

**Typical Performance Data**

**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**

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications:

Frequency Divider, Divide by 5 Prescaler Module, 500 MHz to 8 GHz, Field Replaceable SMA PE88D5000
Frequency Divider, Divide by 5 Prescaler Module, 500 MHz to 8 GHz, Field Replaceable SMA from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99% availability and are part of the broadest selection in the industry.

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: Frequency Divider, Divide by 5 Prescaler Module, 500 MHz to 8 GHz, Field Replaceable SMA PE88D5000

**Frequency Divider, Divide by 5 Prescaler Module, 500 MHz to 8 GHz, Field Replaceable SMA**

NOTE:
HEAT SINK REQUIRED FOR PROPER OPERATION, UNIT IS COOLED BY CONDUCTING TO HEAT SINK.

**Part Number:** PE88D5000

**Revision:** REV 1.0

**Design:** PASTERNACK

**Dimensions:**
- 0.59 [14.99]
- 0.42 [10.62]
- 1.39 [35.31]
- 0.64 [16.26]
- 0.43 [10.87]
- 0.03 [0.76] DIA PIN X 0.12 LG.
- 0.29 [7.38]
- 0.18 [4.57]
- 0.35 [8.89]
- 0.70 [17.78]

**Wiring:**
- RF IN
- PASTERNACK
- RF OUT

**Connectors:**
- SMA FEMALE (Field Replaceable) TYP.

**Materials:**
- #0-80 HARDWARE THRU 0.074 [1.88] DIA THRU

**NOTES:**
1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.
2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.
3. DIMENSIONS ARE IN INCHES [mm].

**Manufacturer:** PASTERNACK

**Address:**
P.O. Box 16759 | Irvine | CA | 92623

**Contact:**
Phone: (949) 261-1920 | Fax: (949) 261-7451
Website: www.pasternack.com | E-Mail: sales@pasternack.com

**CAD Drawing:**
PE88D5000 CAD Drawing

**FSCM No.:** 53919

**File No.:** 050616

**Scale:** N/A

**Size:** 2233