



## Frequency Divider, Divide by 8 Prescaler Module, 500 MHz to 18 GHz, Field Replaceable SMA

### Frequency Dividers Technical Data Sheet

PE88D8000

#### Features

- Divide by 8 Prescaler
- Wide Frequency Band
- GaAs HBT MMIC Technology
- Low Phase Noise -150 dBc/Hz @ 100 kHz offset
- Output Power -4 dBm
- Low Reverse Leakage Level 55 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 PE88D8000 is a low noise Divide-by-8 Static Prescaler Module that covers a wide input frequency bandwidth from 0.5 GHz to 18 GHz. The design utilizes advanced GaAs HBT MMIC semiconductor technology that produces low additive SSB phase noise performance with a typical level of -150 dBc/Hz at 100 kHz offset. Additional typical performance includes an output power level of -4 dBm and reverse leakage up to 55 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 = 98 mA)

Description	Minimum	Typical	Maximum	Units
Input Frequency (Sine Wave)	0.5		18	GHz
Impedance		50		Ohms
Input Power (CW)	-20			dBm
Output Power	-7	-4		dBm
Reverse Leakage		55		dB
Operating DC Voltage 1		5		V
Operating DC Current 1		98		mA

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 8 Prescaler Module, 500 MHz to 18 GHz, Field Replaceable SMA PE88D8000](#)



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### Performance by Frequency

Description	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

### 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

Temperature Cycling	MIL-STD-883, Method 101C, Cond B
Hermetic Seal	Gross Leak MIL-STD-883 Method 1014C1/Fine Leak MIL-STD-883, Method 1014A2, 5 x 10 <sup>-8</sup> atm cc

#### ESD Sensitivity

ESD Class 1A Material, Transport in Approved ESD bags. Handle only in approved ESD Workstation.



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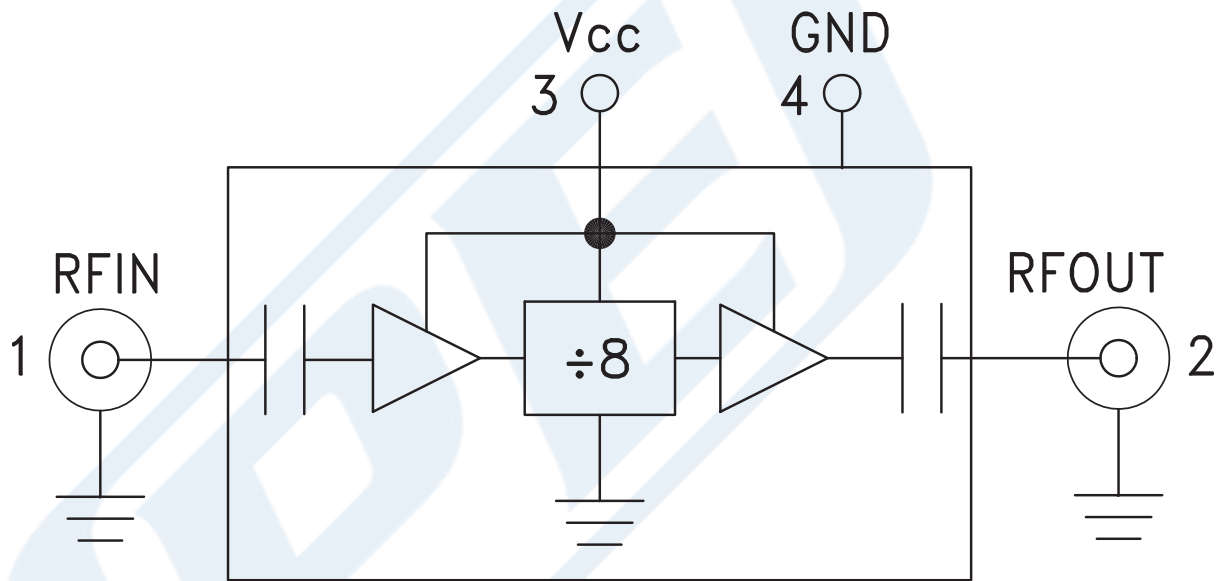
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**Compliance Certifications** (visit [www.Pasternack.com](http://www.Pasternack.com) for current document)  
RoHS Compliant

**Plotted and Other Data**  
Notes:

**Functional Block Diagram**



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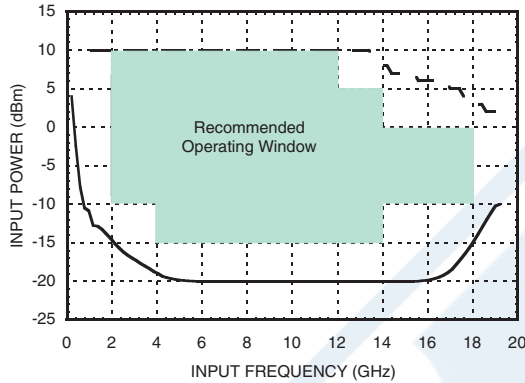
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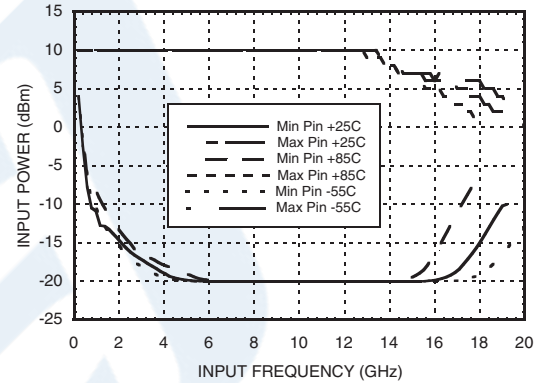
PE88D8000

Typical Performance Data

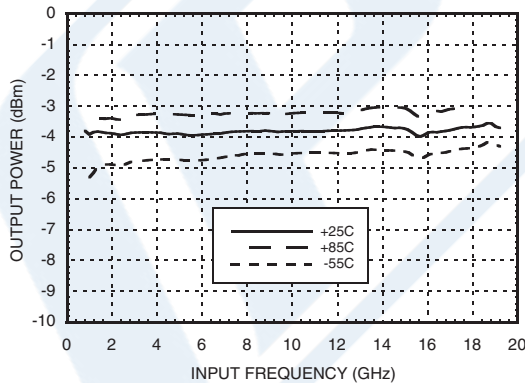
Input Sensitivity Window,  $T = 25\text{ }^{\circ}\text{C}$



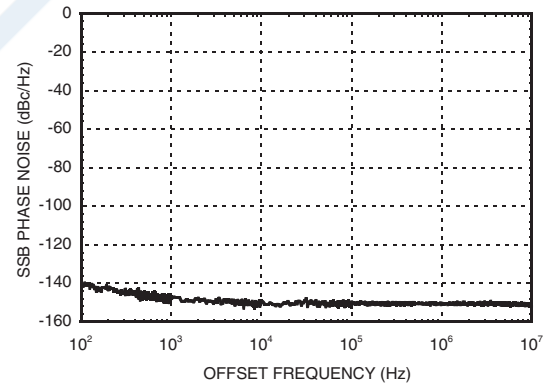
Input Sensitivity vs. Temperature



Output Power vs. Temperature



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



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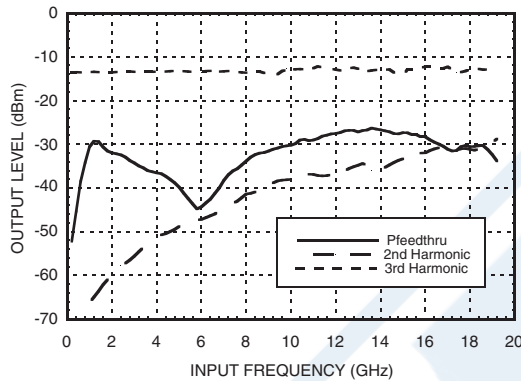


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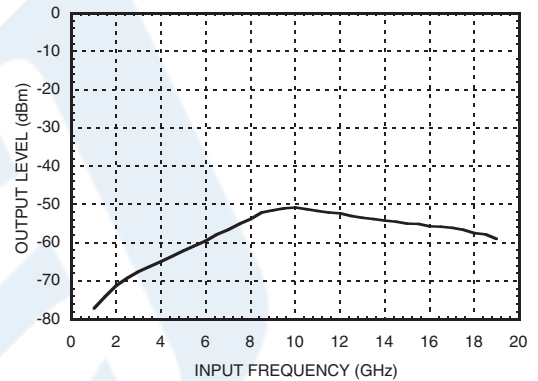
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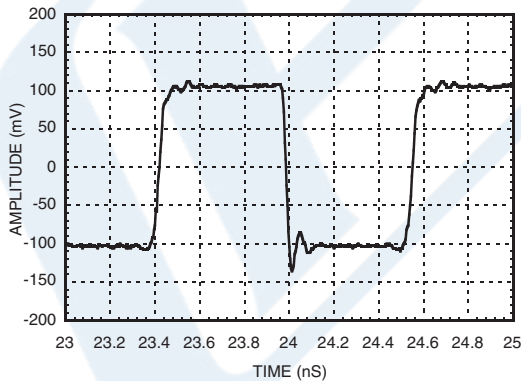
**Output Harmonic Content,**  
*Pin= 0 dBm, T= 25 °C*



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



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



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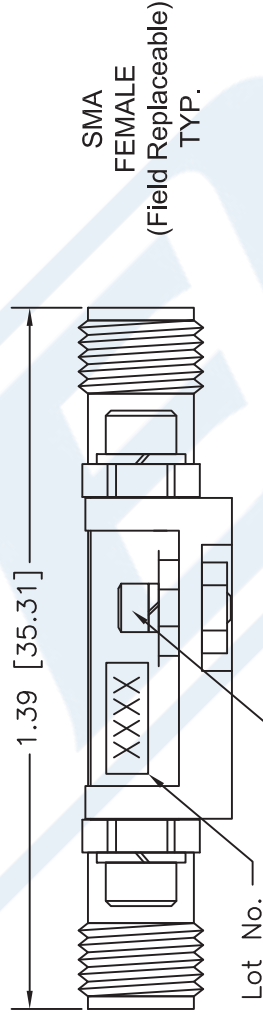
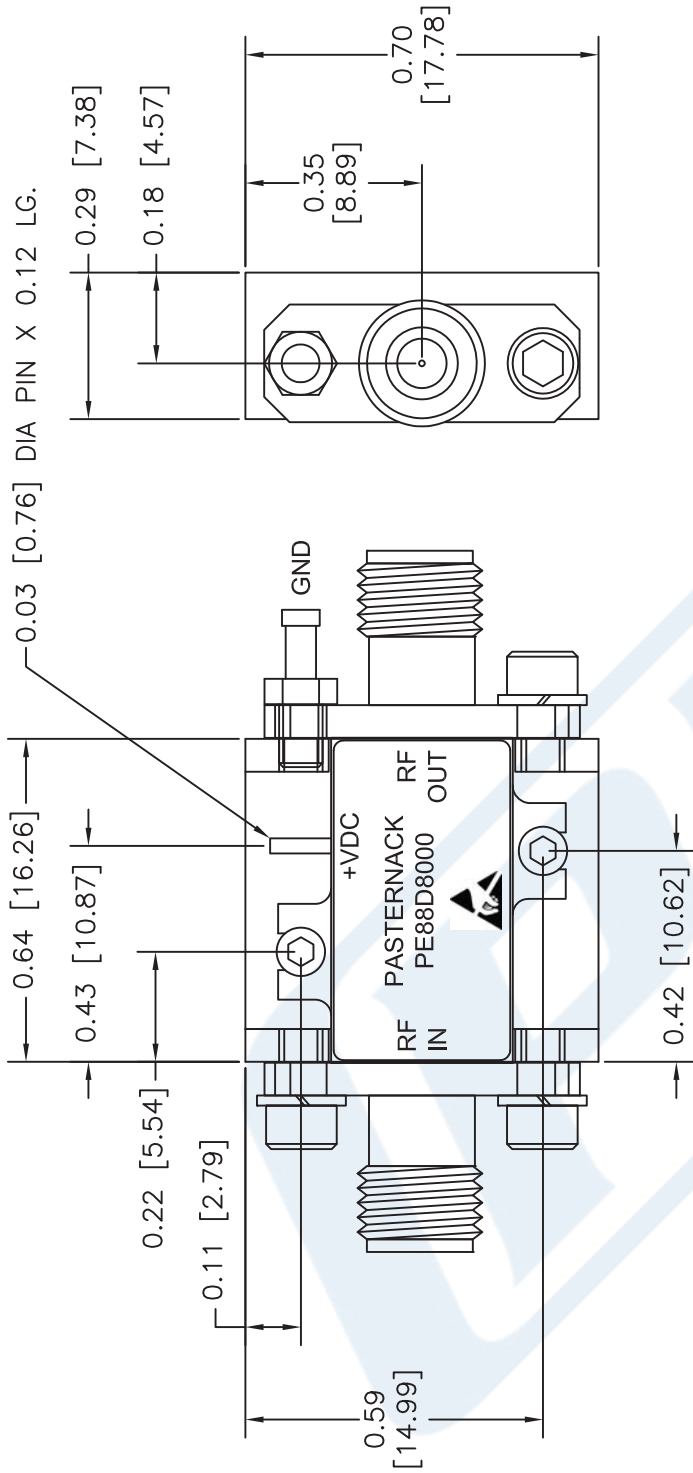
URL: <http://www.pasternack.com/frequency-divider-divide-8-prescaler-module-500-mhz-18-ghz-sma-pe88d8000-p.aspx>

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# PE88D8000 CAD Drawing

Frequency Divider, Divide by 8 Prescaler Module,  
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NOTE:  
HEAT SINK REQUIRED FOR PROPER OPERATION,  
UNIT IS COOLED BY CONDUCTING TO HEAT SINK.



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DWG TITLE

**PE88D8000**

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].

FSCM NO. 53919

CAD FILE 050616

SCALE N/A

SIZE A

2233