

30 dB With 10 Bit Programmable TTL Controlled Attenuator, 2.4mm Female To 2.4mm Female, 0.03 dB Steps From 18 GHz To 40 GHz



## PE70A6001

### Features

- 10 Bit Programmable 30 dB Attenuator
- 18 GHz to 40 GHz Frequency Range
- 30 dB Attenuation Range
- Step Resolution of 0.03 dB
- +10 dBm typ P1dB
- Insertion Loss 6 dB typ
- VSWR 2.5:1 Max
- RF Connectors are 2.4mm Female
- 15 Pin Micro-D Female Connector

### Applications

- Electronic Warfare
- Test & Measurement
- Military & Space
- Radar
- Military Communications Systems

### Description

The PE70A6001 is 10 Bit Programmable 30 dB Pin Diode Attenuator with Step Resolution as Low as 0.03 dB over the Operating Frequency Range from 18 GHz to 40 GHz. The PE70A6001 is offered in a slim line housing measuring only 0.5" Height. The RF Input/Output Connectors are 2.4mm Female. Along with a 15 Pin Micro-D Female Control Socket. The unit is shipped with a Micro-D Mating Connector. Pasternack also offers a Digital TTL Control module capability in both single and dual formats (PE70A7000 and PE70A7001). This interface module gives Designers the capability to streamline the BIT command control the functions of the PE70A6001 programmable attenuator using a PC computer. Using GUI downloadable software, the module acts as a TTL programmable interface that sends command control BITs to the attenuator.

### Electrical Specifications (Values at +25°C, sea level)

| Description                              | Min | Typ  | Max   | Unit |
|--|-----|------|-------|------|
| Frequency Range                          | 18  |      | 40    | GHz  |
| Impedance                                |     | 50   |       | Ohms |
| Attenuation Range                        | 0   |      | 30    | dB   |
| VSWR                                     |     |      | 2.5:1 |      |
| Power Rating                             |     |      | 24    | dBm  |
| Input at 1 dB Compression Point          |     | +15  |       | dBm  |
| Survial Power Average -40 to +85 deg C   |     |      |       |      |
| Attenuation Flatness<br>@ 30 dB          |     | ±1.5 |       | dB   |
| Accuracy of Attenuation<br>0 dB to 30 dB |     | ±2   |       | dB   |
| Step Size                                |     | 0.03 |       | dB   |
| Switching Time                           |     |      | 1     |      |
| Off Time                                 |     |      | 0.5   | us   |
| DC Voltage                               |     |      | 15    |      |
| DC Current                               |     |      | 100   | mA   |
| Control Bits                             |     | 10   |       | Bits |

30 dB With 10 Bit Programmable TTL Controlled Attenuator, 2.4mm Female To 2.4mm Female, 0.03 dB Steps From 18 GHz To 40 GHz



## PE70A6001

### Electrical Specifications (Values at +25°C, sea level)

| Description               | Min  | Typ | Max | Unit  |
|---------------------------|------|-----|-----|-------|
| Logic Input "0" (Bit Off) | -0.3 |     | 0.8 | Volts |
| Logic Input "1" (Bit On)  | 2    |     | 5   | Volts |

### Mechanical Specifications

#### Size

|             |                     |
|-------------|---------------------|
| Length      | 2 in [50.8 mm]      |
| Width       | 1.8 in [45.72 mm]   |
| Height      | 0.5 in [12.7 mm]    |
| Weight      | 0.141 lbs [63.96 g] |
| Connector 1 | 2.4mm Female        |
| Connector 2 | 2.4mm Female        |

### Environmental Specifications

#### Temperature

|                   |                                   |
|-------------------|-----------------------------------|
| Operating Range   | -40 to +85 deg C                  |
| Storage Range     | -65 to +125 deg C                 |
| Humidity          | MIL-STD-202F, METHOD 103B COND. B |
| Shock             | MIL-STD-202F, METHOD 213B COND. B |
| Vibration         | MIL-STD-202F, METHOD 204D COND. B |
| Altitude          | MIL-STD-202F, METHOD 105C COND. B |
| Temperature Cycle | MIL-STD-202F, METHOD 107          |
| Salt Spray        | MIL-STD-202F, METHOD 105C COND. B |

### Compliance Certifications (see [product page](#) for current document)

### Plotted and Other Data

#### Notes:

- Values at 25 °C, sea level
- ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in approved ESD Workstation.

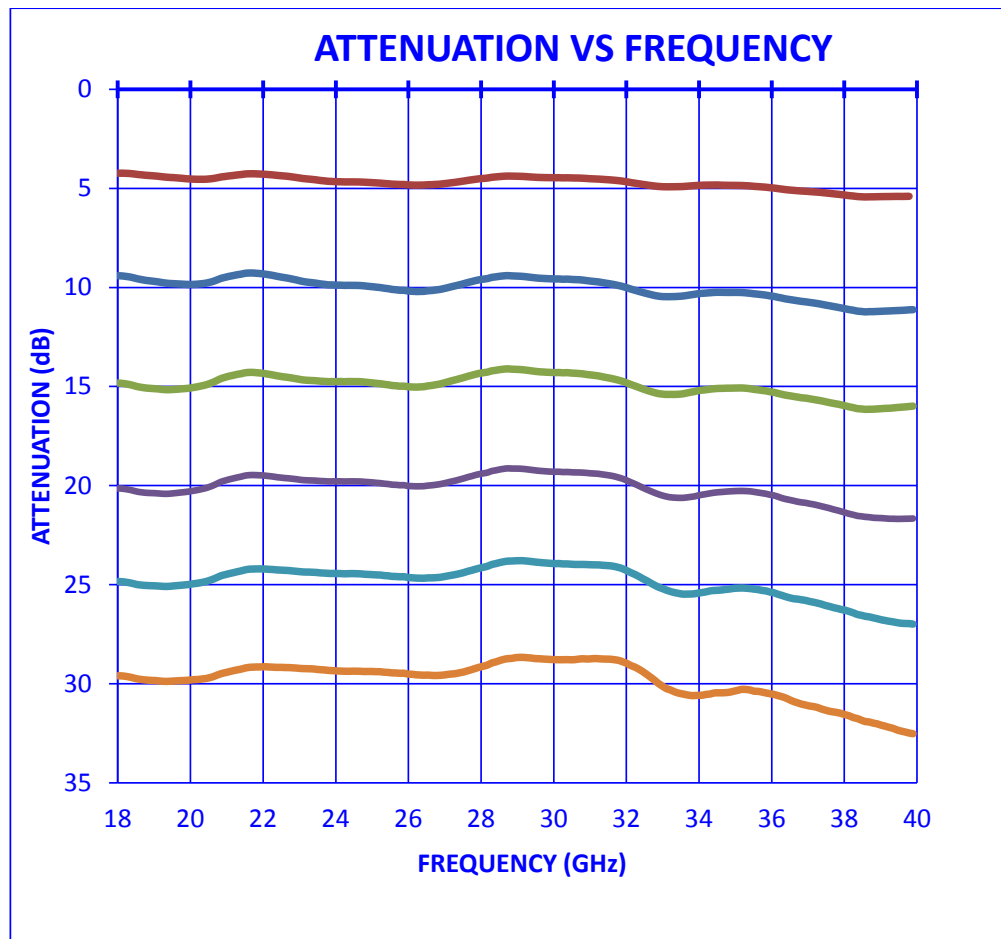
30 dB With 10 Bit Programmable TTL Controlled  
Attenuator, 2.4mm Female To 2.4mm Female,  
0.03 dB Steps From 18 GHz To 40 GHz



## PE70A6001

### Typical Performance Data

#### Attenuation vs. Frequency Plot

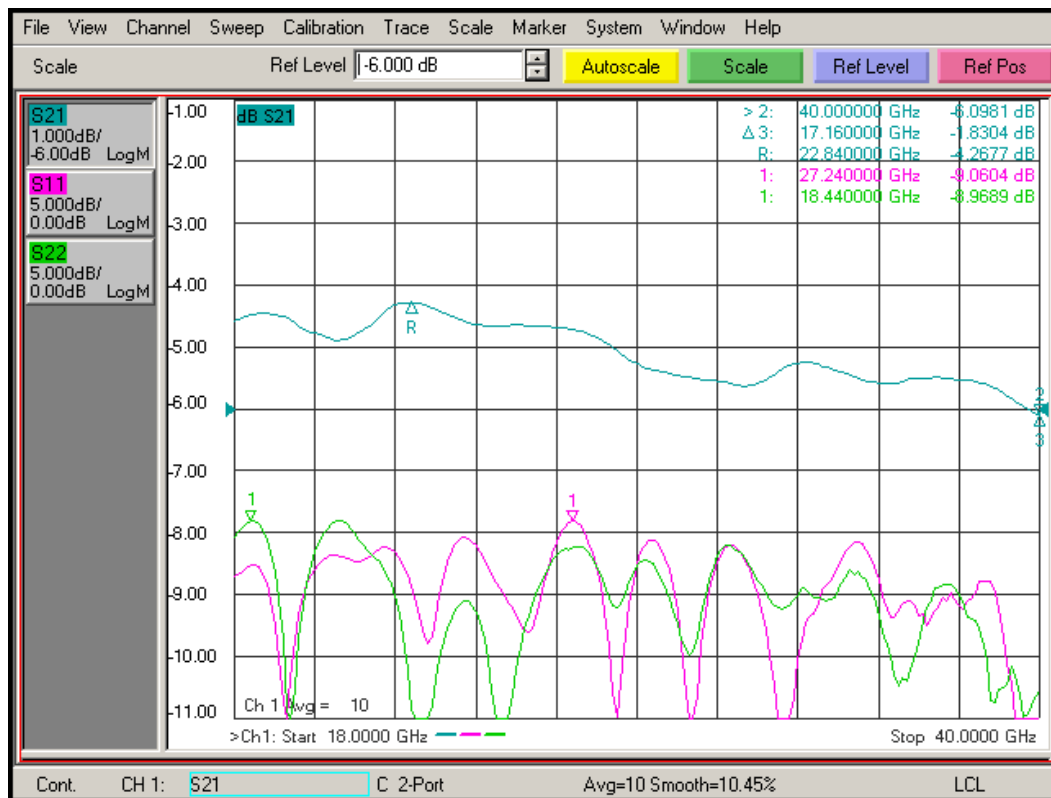


30 dB With 10 Bit Programmable TTL Controlled  
Attenuator, 2.4mm Female To 2.4mm Female,  
0.03 dB Steps From 18 GHz To 40 GHz



## PE70A6001

### Insertion Loss & Return Loss

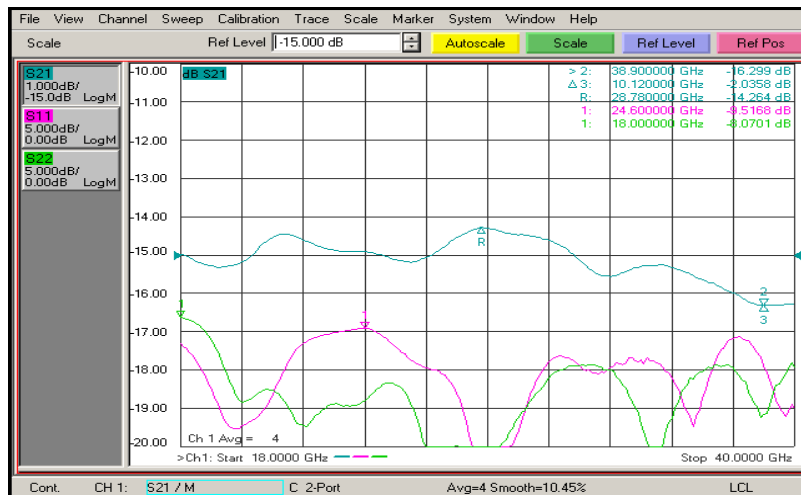


30 dB With 10 Bit Programmable TTL Controlled Attenuator, 2.4mm Female To 2.4mm Female, 0.03 dB Steps From 18 GHz To 40 GHz

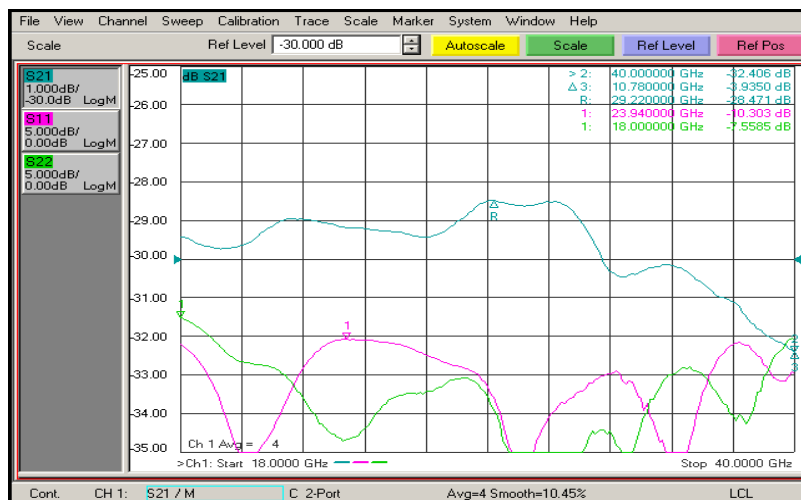


## PE70A6001

### -15dB Attenuation



### -30dB Attenuation

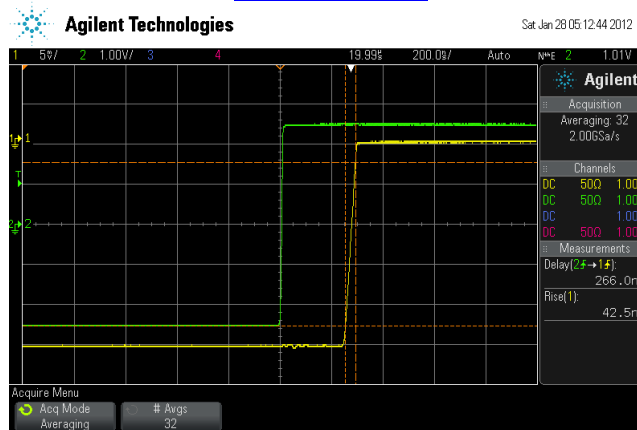


30 dB With 10 Bit Programmable TTL Controlled Attenuator, 2.4mm Female To 2.4mm Female, 0.03 dB Steps From 18 GHz To 40 GHz



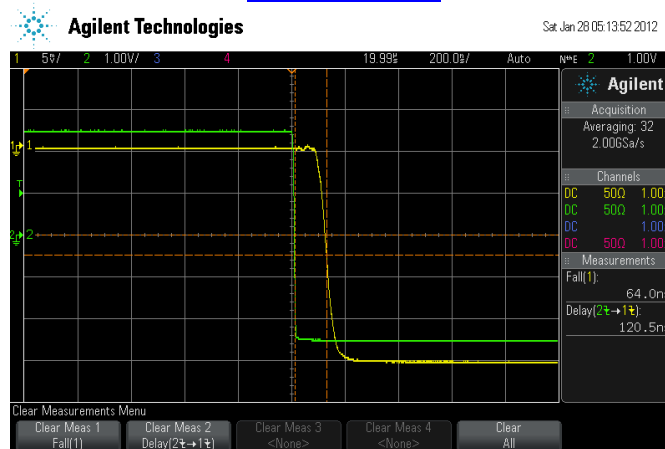
## PE70A6001

Delay On  
Measured with a Tunnel Diode @ 30GHz  
Input Power @ -5dBm



Channel 1 (Yellow): Tunnel Diode output  
Channel 2 (Green): TTL Input from Signal Generator

Delay Off  
Measured with a Tunnel Diode @ 30GHz  
Input Power @ -5dBm



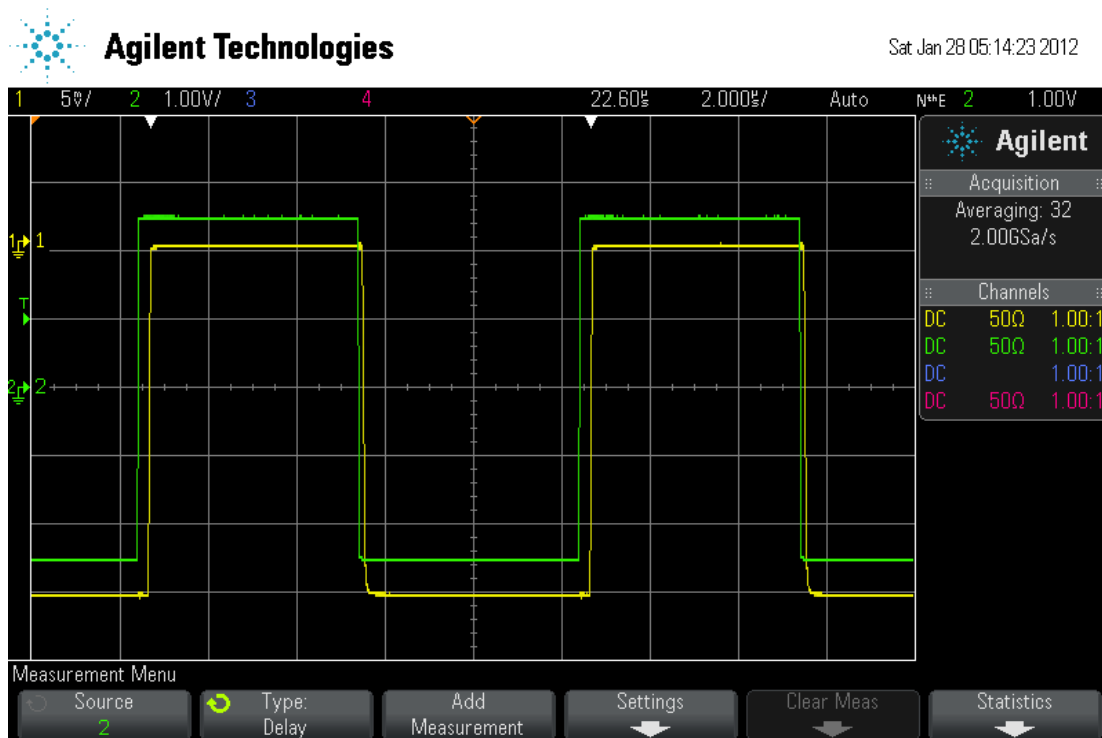
Channel 1 (Yellow): Tunnel Diode output  
Channel 2 (Green): TTL Input from Signal Generator

30 dB With 10 Bit Programmable TTL Controlled  
Attenuator, 2.4mm Female To 2.4mm Female,  
0.03 dB Steps From 18 GHz To 40 GHz



## PE70A6001

### Full Pulse Measured with a Tunnel Diode @ 30GHz Input Power @ -5dBm



**Channel 1 (Yellow): Tunnel Diode output**  
**Channel 2 (Green): TTL Input from Signal Generator**

30 dB With 10 Bit Programmable TTL Controlled Attenuator, 2.4mm Female To 2.4mm Female, 0.03 dB Steps From 18 GHz To 40 GHz



## PE70A6001

30 dB With 10 Bit Programmable TTL Controlled Attenuator, 2.4mm Female To 2.4mm Female, 0.03 dB Steps From 18 GHz To 40 GHz from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% 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: [30 dB With 10 Bit Programmable TTL Controlled Attenuator, 2.4mm Female To 2.4mm Female, 0.03 dB Steps From 18 GHz To 40 GHz PE70A6001](https://www.pasternack.com/30db-programmable-2.4mm-female-2.4mm-female-0-watts-attenuator-pe70a6001-p.aspx)

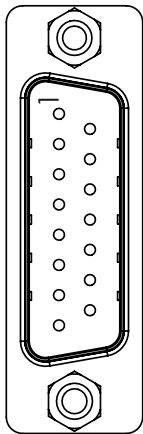
URL: <https://www.pasternack.com/30db-programmable-2.4mm-female-2.4mm-female-0-watts-attenuator-pe70a6001-p.aspx>

The information contained within this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part in order to implement improvements. Pasternack Enterprises reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Pasternack Enterprises does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Pasternack Enterprises does not assume liability arising out of the use of any part or document.

30 dB With 10 Bit Programmable TTL Controlled Attenuator, 2.4mm Female  
To 2.4mm Female, 0.03 dB Steps From 18 GHz To 40 GHz

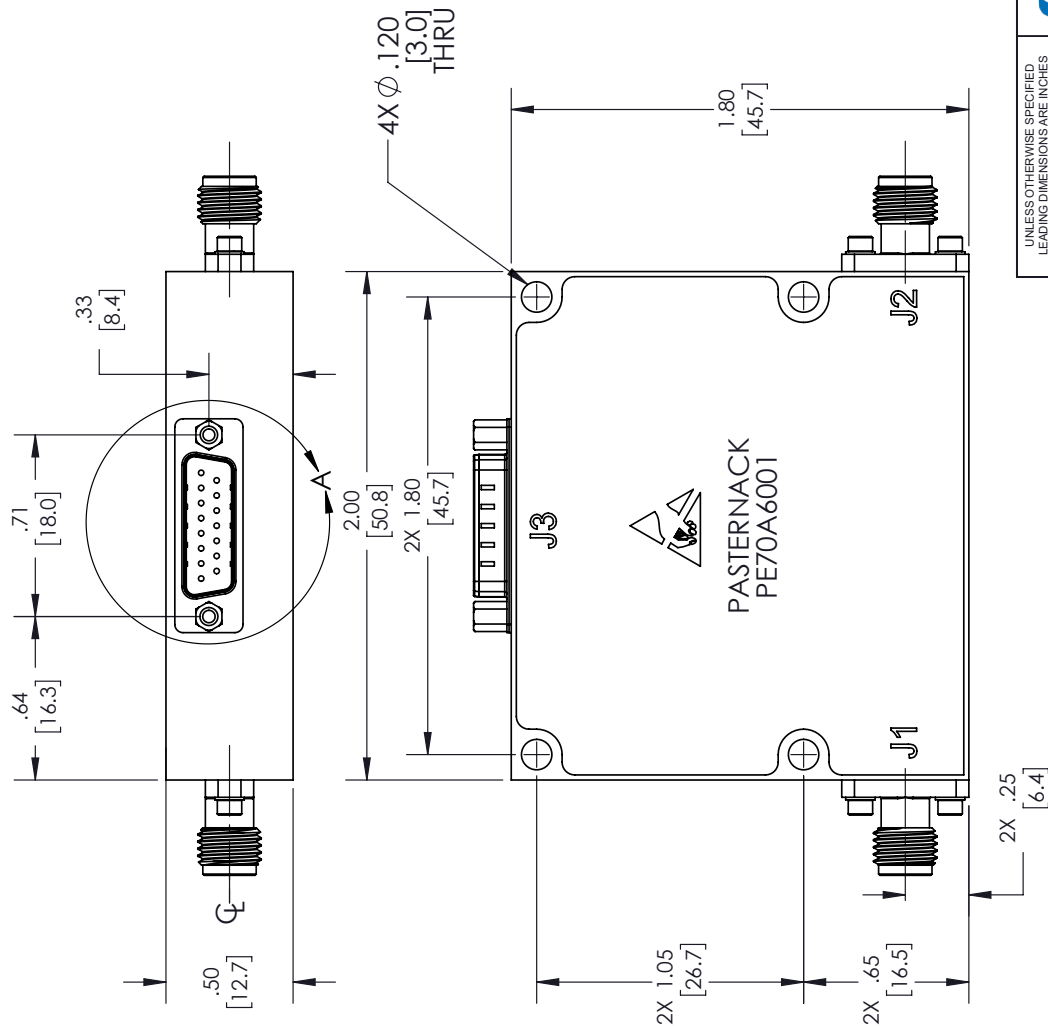
| REVISIONS |                        |          |
|-----------|------------------------|----------|
| REV.      | DESCRIPTION            | DATE     |
| B         | PCR PE70A6001 20220713 | 07/20/22 |
|           |                        | KGIFFORD |

15 PIN MICRO-D FEMALE



VIEW A

| PIN | DESCRIPTION   |
|-----|---------------|
| 1   | 1dB           |
| 2   | 0.5dB         |
| 3   | 0.25dB        |
| 4   | 0.125dB       |
| 5   | GND           |
| 6   | 0.06dB        |
| 7   | 0.03dB (LSB)  |
| 8   | GND           |
| 9   | NO CONNECTION |
| 10  | NO CONNECTION |
| 11  | +12 VDC       |
| 12  | 16dB (MSB)    |
| 13  | 8dB           |
| 14  | 4dB           |
| 15  | 2dB           |



UNLESS OTHERWISE SPECIFIED  
LEADING DIMENSIONS ARE INCHES  
DIMENSIONS IN [ ] ARE MILLIMETERS

| TOLERANCES:   |        |             |
|---------------|--------|-------------|
| X = ± 2       | [5.08] | FRACTIONS   |
| .XX = ± 0.2   | [.51]  | ± 1/32      |
| .XXX = ± 0.05 | [.13]  | ANGLES ± 1° |

| CABLE LENGTH (L) TOLERANCES: |                |
|------------------------------|----------------|
| L ≤ 12 [305]                 | ± 1 [25] / -0  |
| 12 [305] < L ≤ 60 [1524]     | ± 2 [51] / -0  |
| 60 [1524] < L ≤ 120 [3048]   | ± 4 [102] / -0 |
| 20 [3048] < L ≤ 300 [7620]   | ± 6 [152] / -0 |
| 300 [7620] < L = 5% L        | -0             |

THESE COMMODITIES, TECHNOLOGY OR SOFTWARE WERE EXPORTED FROM THE UNITED STATES IN ACCORDANCE WITH THE EXPORT ADMINISTRATION REGULATIONS. DIVERSION CONTRARY TO U.S. LAW PROHIBITED.

THIRD-ANGLE PROJECTION



THE INFORMATION AND  
DESIGN IN THIS DOCUMENT  
IS THE PROPERTY OF  
PASTERNAK CORPORATION  
ALL RIGHTS RESERVED

SHEET 1 OF 1

|       |     |
|-------|-----|
| SCALE | N/A |
|-------|-----|

|     |  |
|-----|--|
| REV |  |
|-----|--|



**PASTERNAK**  
an INFINITE brand

Pasternack Enterprises, Inc.  
P.O.Box 16759, Irvine, CA 92623.  
Phone: 1.949.261.1920 | 1.866.727.8376  
Fax: 1.949.261.7451

Website: [www.pasternack.com](http://www.pasternack.com)  
E-mail: [sales@pasternack.com](mailto:sales@pasternack.com)

| ITEM NO. | DRAWN BY | ITEM NO. |
|----------|----------|----------|
|          |          |          |

300 [7620] < L = +5% L /

T-Row D