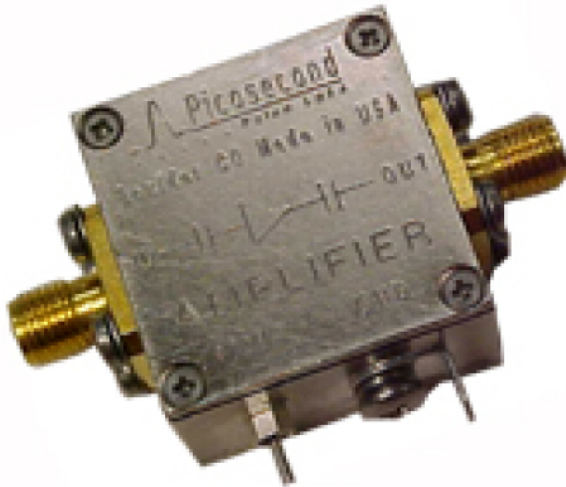


# 14 GHz Ultra-Broadband Amplifier

## PSPL5828A Datasheet

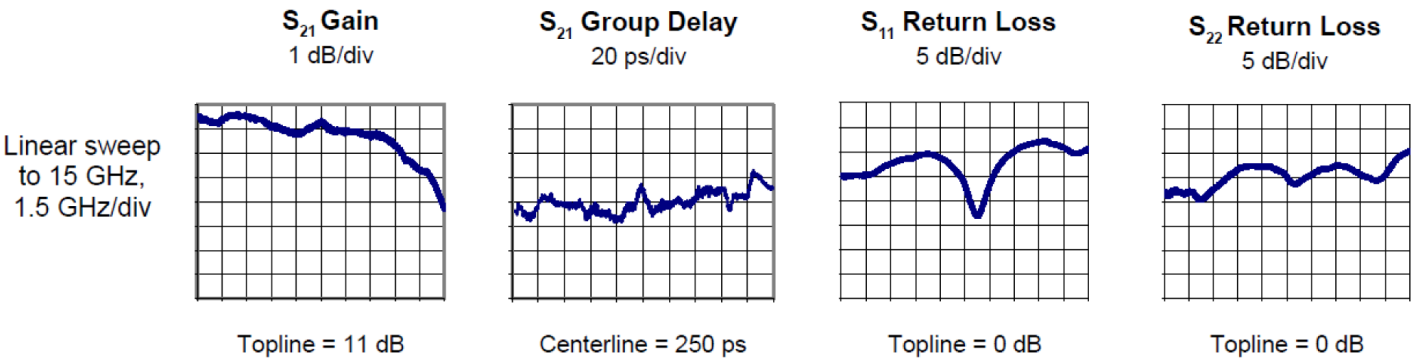


This Ultra-Broadband Amplifier is an excellent choice for either pulse or RF applications. It offers a very attractive price/performance ratio. It is AC coupled and is extremely broadband, covering 5 ½ decades from 50 kHz to 14 GHz. It has clean transient response and smooth gain vs. frequency response. This is a stable 50  $\Omega$  amplifier, and several can be connected in cascade for higher gains. The PSPL5828A is ideal for 10 Gb/s systems.

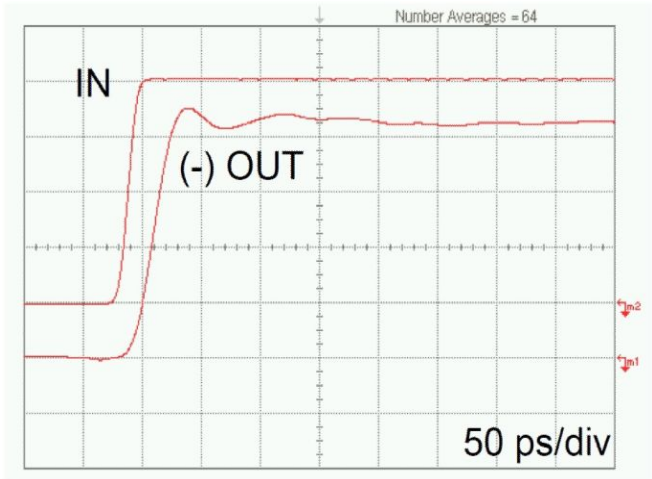
### Key performance specifications

- Linear amplifier with 10 dB gain
- 50 kHz to 14 GHz bandwidth
- +12 dBm output
- Single 12 V power supply

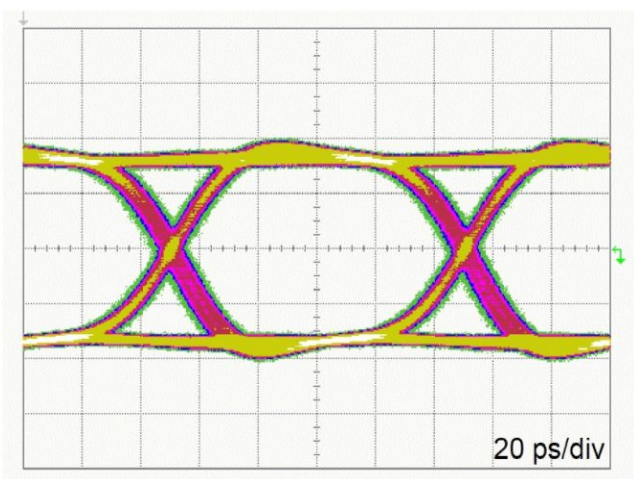
Typical performance



Step Response  
Input is 15 ps rise time



Eye diagram  
10 Gb/s



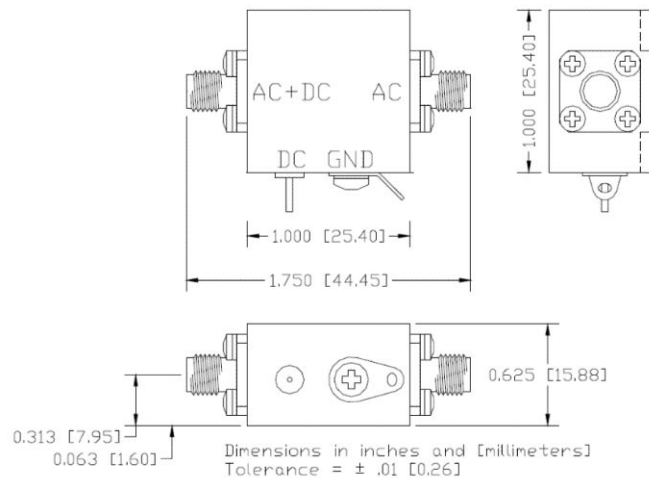
Specifications

| Parameter                    | Symbol                             | Units | Minimum <sup>1</sup> | Typical  | Maximum  | Comments              |
|------------------------------|------------------------------------|-------|----------------------|----------|----------|-----------------------|
| Impedance                    | Z                                  | Ohms  |                      | 50       |          |                       |
| Upper 3 dB freq.             | f <sub>c,h</sub>                   | GHz   | 12                   | 14.4     |          |                       |
| Lower 3 dB freq.             | f <sub>c,l</sub>                   | kHz   |                      | 50       |          |                       |
| Small signal gain            | S <sub>21</sub>                    | dB    | 9                    | 10.6     |          | Meas. at 100 MHz      |
| Return Loss, Input<br>Output | S <sub>11</sub><br>S <sub>22</sub> | dB    |                      | 15<br>18 |          | Meas. at 100 MHz      |
| Isolation                    | S <sub>12</sub>                    | dB    |                      | 19       |          | Meas. at 100 MHz      |
| Rise Time<br>Fall Time       | t <sub>r</sub><br>t <sub>f</sub>   | ps    |                      | 23<br>23 | 30<br>30 | 10-90%, 25 ps input   |
| Overshoot                    |                                    | %     |                      | 5        | 8        | 25 ps rise time input |

<sup>1</sup> Guaranteed at +12 V and 23 C when max/min limits are given.

| Parameter                          | Symbol                                 | Units    | Minimum <sup>1</sup> | Typical                       | Maximum    | Comments                    |
|------------------------------------|----------------------------------------|----------|----------------------|-------------------------------|------------|-----------------------------|
| Gain Flatness                      |                                        | dB       |                      | +/- 0.5                       |            | f < 4 GHz                   |
| Eff. Input RMS Noise Voltage       |                                        | µV rms   |                      | 112                           |            |                             |
| Noise Figure                       |                                        | dB       |                      | 6                             | 8          | Meas. at 100 MHz            |
| TDR Refl. Input<br>Output          |                                        | %        |                      | +25<br>-10                    |            |                             |
| Max Power Out<br>(-1 dB gain comp) |                                        | dBm      |                      | +12 dBm<br>+14 dBm<br>+11 dBm |            | 100 MHz<br>5 GHz<br>10 GHz  |
| Max RF In (cw)<br>or peak pulse    |                                        | dBm<br>V |                      |                               | 10<br>1    | Damage threshold            |
| Supply Voltage                     | V <sub>DC</sub>                        | V        | 11.5                 |                               | 12.5       |                             |
| Supply Current                     | I <sub>DC</sub>                        | mA       |                      | 53                            |            |                             |
| Temperature                        | T <sub>CASE</sub><br>T <sub>stor</sub> | Deg C    | -25<br>-25           |                               | +75<br>+90 | Operating (case)<br>Storage |
| Temp Coeff - Gain                  |                                        | dB/Deg C |                      | -0.002                        |            |                             |
| Temp Coeff - BW                    |                                        | %/Deg C  |                      | -0.16                         |            |                             |
| Polarity                           | Inverting                              |          |                      |                               |            |                             |
| Coupling                           | AC, input and output                   |          |                      |                               |            |                             |
| RF Connectors                      | SMA jacks (f)                          |          |                      |                               |            |                             |
| DC Connector                       | Solder pin                             |          |                      |                               |            |                             |
| Warranty                           | One Year                               |          |                      |                               |            |                             |

### Mechanical dimensions



<sup>1</sup> Guaranteed at +12 V and 23 C when max/min limits are given.

