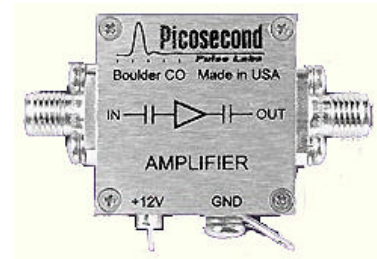


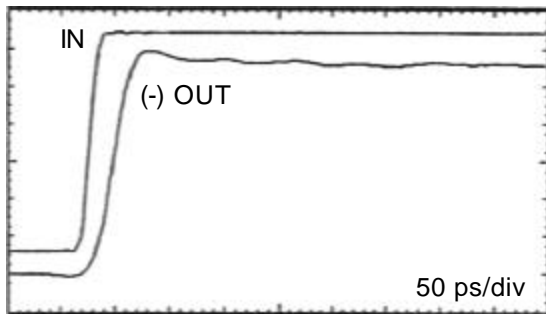
- **22 ps Risetime**
- **15 GHz Bandwidth**



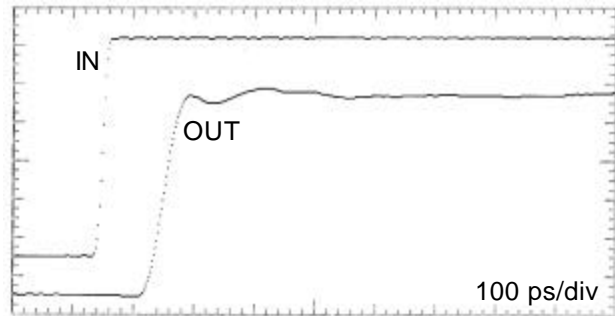
These two Ultra-Broadband Amplifiers are an excellent choice for either pulse or RF applications. They offer a very attractive price/performance ratio. They are AC coupled and are extremely broadband, covering 5 ½ decades from 65 kHz to 15 GHz. They have clean transient responses and smooth gain vs. frequency responses. Gains of 10 dB or 22 dB and risetimes as fast as 22 ps are available. These are stable 50 Ω amplifiers, and several can be connected in cascade for higher gains. The Models 5828 and 5840A are ideal for 10 Gb/s systems.

**Time Domain Pulse Responses at 50 ps/div; Input is 15 ps Risetime**

Measured with a PSPL Model 4015C, 15 ps Pulse Generator and an Agilent, 50 GHz digital sampling oscilloscope



**Model 5828**  
 10 dB, 22 ps rise  
 65 kHz --- 15 GHz  
 +12 dBm 6.2 dB NF



**Model 5840A**  
 22 dB, 41 ps rise  
 80 kHz --- 9.3 GHz  
 +12 dBm 5.8 dB NF

**Ordering Information**

Model Number	Description
5828-107	SMA jack (f) – jack (f), solder pin on DC
5828-108	SMA jack (f) – jack (f), solder pin on DC, mounting plate option
5840A-107	SMA jack (f) – jack (f), solder pin on DC

Parameter	5828	5840A
<b>Gain, S<sub>21</sub></b> (100 MHz) min limit	10 dB 9 dB min.	22 dB 21 dB min.
<b>Polarity</b>	inverting	Non-inverting
<b>Bandwidth (-3 dB) [3]</b> min limit	15 GHz 12 GHz min.	8.5 GHz 8 GHz min.
<b>Gain Flatness [3]</b>	± 0.5 dB f<4 GHz	± 0.5 dB f<2 GHz
<b>Low Frequency (-3 dB)</b>	65 kHz	80 kHz
<b>Risetime (10%-90%) [4]</b> max. limit	22 ps 30 ps max.	41 ps 50 ps max.
<b>Overshoot [4]</b> max limit	5% 8% max.	4% 8% max.
<b>Max Power Out</b> (-1 dB gain comp)	+12 dBm (100 MHz) +14 dBm (5 GHz) +11 dBm (10 GHz)	+12 dBm (100 MHz) +14 dBm (5 GHz) +11 dBm (10 GHz)
<b>Noise Figure</b> (100 MHz) max limit typical NF vs. frequency	6.2 dB 8 dB max. 6.7 dB (5 GHz) 7.5 dB (10 GHz)	5.8 dB 8 dB max. 7 dB (5 GHz) 8 dB (10 GHz)
<b>Effective Input RMS Noise Voltage</b>	112 µV rms	85 µV rms
<b>TDR Refl.</b> Input output	±1% -35%	±1% -9%
<b>Max. RF In</b> (cw) or peak pulse	+10 dBm 1 V	0 dBm 315 mV
<b>Return Loss</b> S <sub>11</sub> input (100 MHz) S <sub>22</sub> output	>40 dB 9 dB	>40 dB 21 dB
<b>Isolation</b> S <sub>12</sub> (100 MHz)	19 dB	35 dB
<b>DC Current</b>	53 mA	106 mA
<b>DC Voltage</b>	12 V DC, ± 0.5 V	
<b>Temperature</b>	-25 C to +75 C case temperature operating, -25 C to +90 C storage	
Temp Coeff - Gain	-0.002 dB/C	-0.007 dB/C
Temp Coeff - BW	-0.16%/C	-0.1%/C
Connectors	RF in and out = SMA jacks (f), DC in = solder pin	
<b>Warranty</b>	Static-sensitive devices. Limited 30-day warranty	

**Notes**

- [1] Parameters listed are typical values. Guaranteed at +12 V and 23 C only when max/min limits are given.  
 [2] Gain, return loss, isolation, noise figure and max. power output all measured at 100 MHz.  
 [3] Frequency response measured using a Wiltron 5447A, 10 MHz - 20 GHz network analyzer.  
 [4] Time domain step responses measured with an Agilent 20 GHz oscilloscope and 25 ps risetime test pulse.  
 [5] PSPL does 100% QA testing on amplifiers. All amps are stored at -25 C and +90 C and then receive a minimum of 24 hours burn-in. QA tests include gain and noise figure at 100 MHz, S<sub>21</sub> frequency response including -3 dB bandwidth, time domain pulse response risetime, overshoot, pulse fidelity and low frequency square wave response. All parameters measured with +12 V DC power at +23 C ambient temperature.  
 [6] Static sensitive! Avoid static discharges. Do not exceed max. input limits.

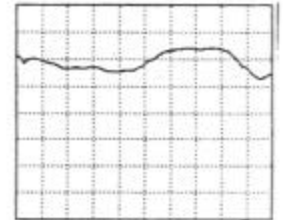
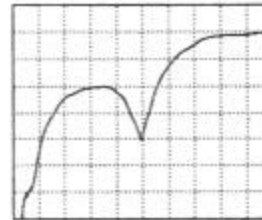
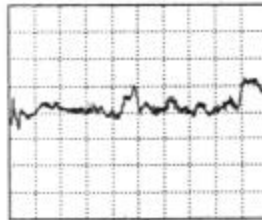
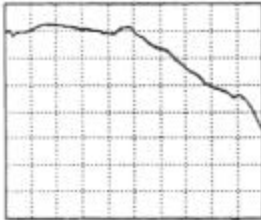
**S<sub>21</sub> Gain**  
1 dB/div

**S<sub>21</sub> Group Delay**  
20 ps/div

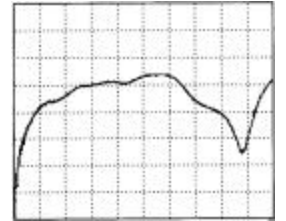
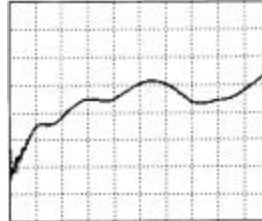
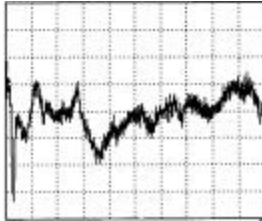
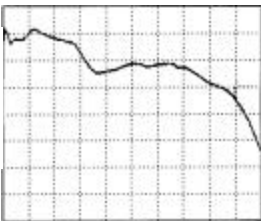
**S<sub>11</sub> Return Loss**  
5 dB/div

**S<sub>22</sub> Return Loss**  
5 dB/div

**Model 5828,**  
linear sweep  
to 15 GHz,  
1.5 GHz/div

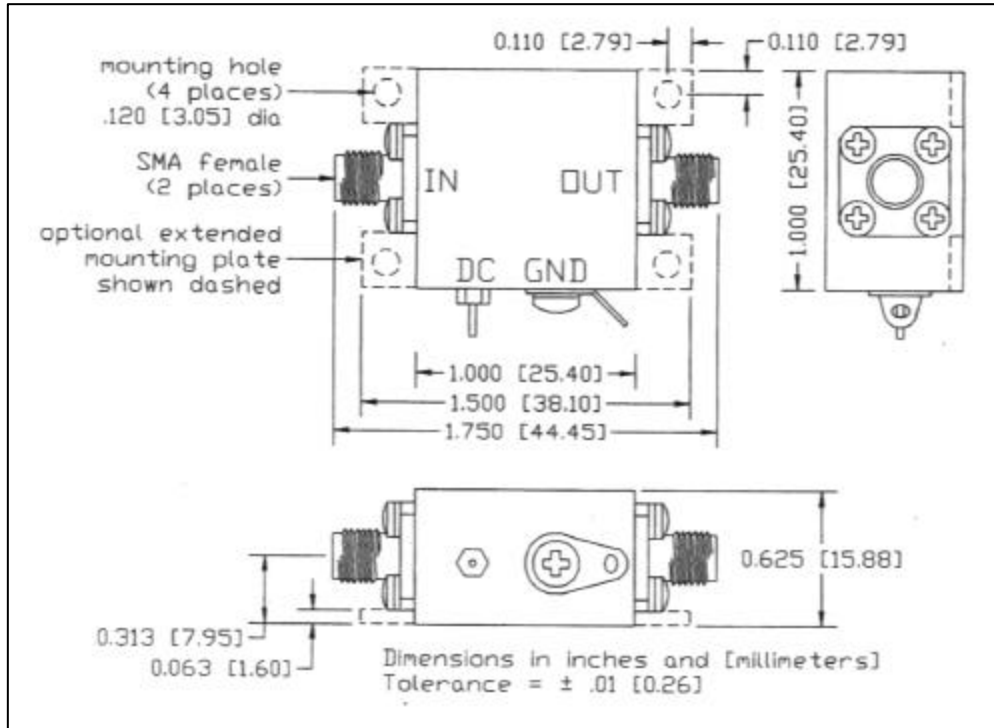


**Model 5840A,**  
linear sweep  
to 10 GHz,  
1.0 GHz/div



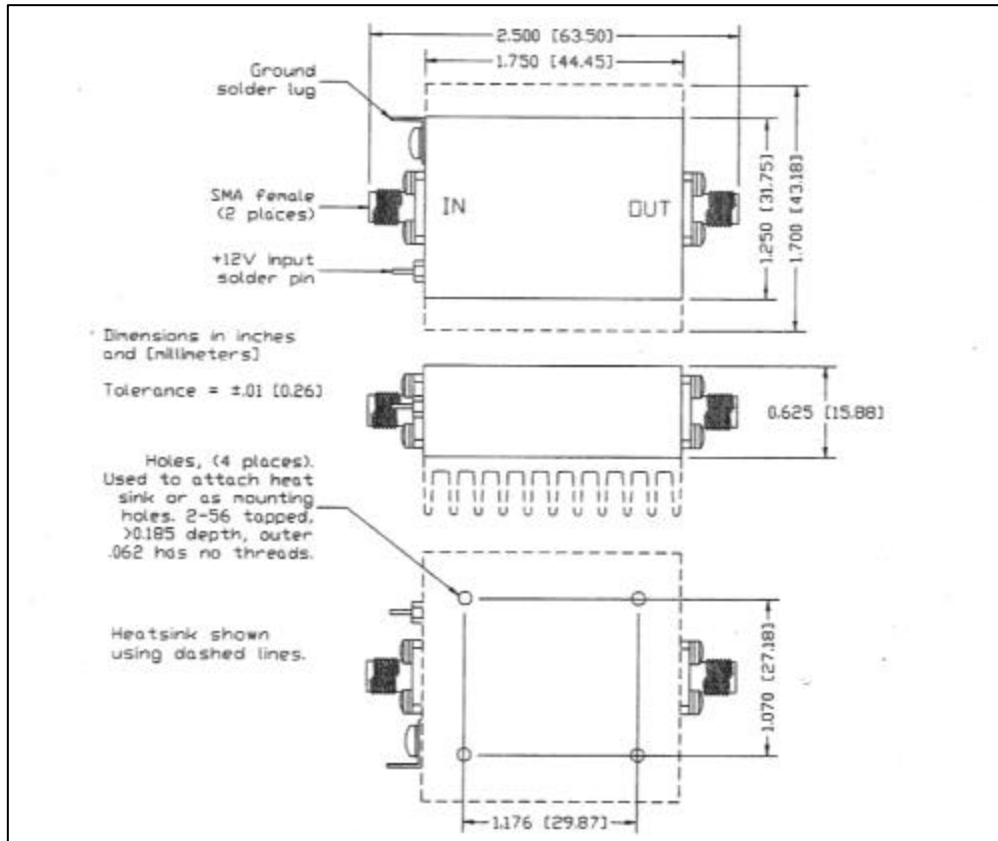
Measured by a Wiltron 37369A vector network analyzer

**Mounting Instructions for Model 5828**



This amplifier is not normally supplied with a mounting plate. If you desire to mount the amplifier permanently to some other object, it is necessary for you to purchase the amplifier including the mounting plate, shown here as the dashed lines. This mounting plate must be ordered at the same time the amplifier is ordered. Order it as 5828-108.

**Heatsink and mounting Instructions for Model 5840A**



This amplifier is supplied attached to a heatsink. With the heatsink attached, the amplifier can be used in an ambient temperature up to approximately 50 C in still air. This amplifier can be mounted by removing the heatsink. The heatsink attachment holes can then be used as mounting holes for the amplifier. If the amplifier's heatsink is removed, it must be mounted to another surface that provides a low enough thermal impedance that the amplifier case will never exceed +75 C while in operation.