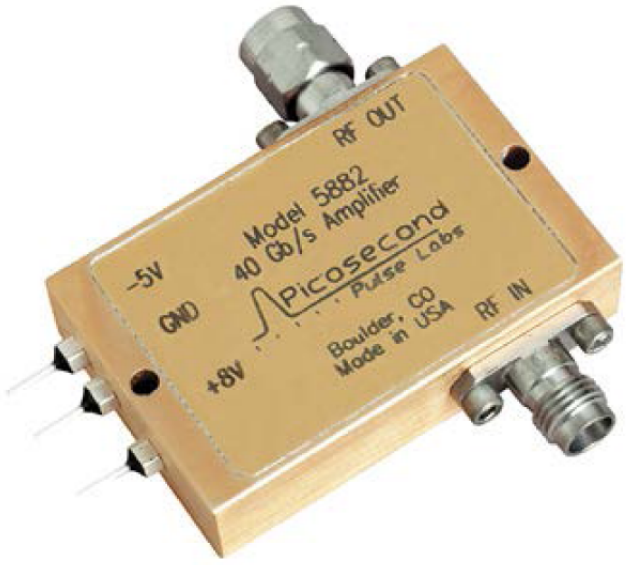
Tektronix®

40 Gb/s Broadband Amplifier

PSPL5882 Datasheet

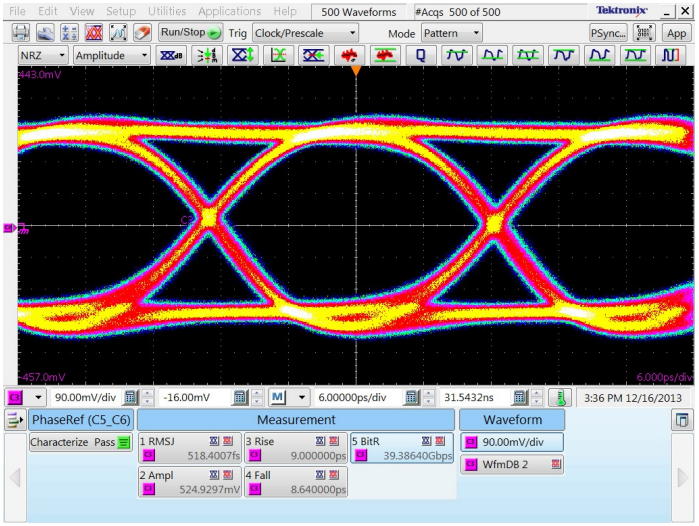


The PSPL5882 is extremely broadband, covering over 6 decades from 25 kHz to 35 GHz. It also demonstrates a very clean time domain response, resulting in high quality 40 Gb/s eye diagrams. The PSPL5882 includes internal reverse voltage protection, power supply regulation, and sequencing circuitry, making it insensitive to power supply voltage variation and application sequence.

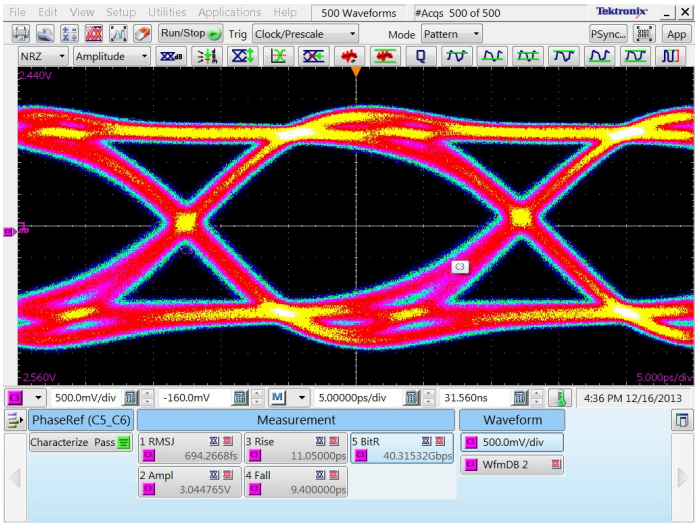
Key performance specifications

- Electro-Absorption Modulator driver or optical receiver amplifier
- Linear amplifier with 16 dB gain
- 25 kHz to 35 GHz bandwidth
- 2.7 V_{amp} eye amplitude
- 9 ps rise time

Typical 40 Gb/s eye measurements

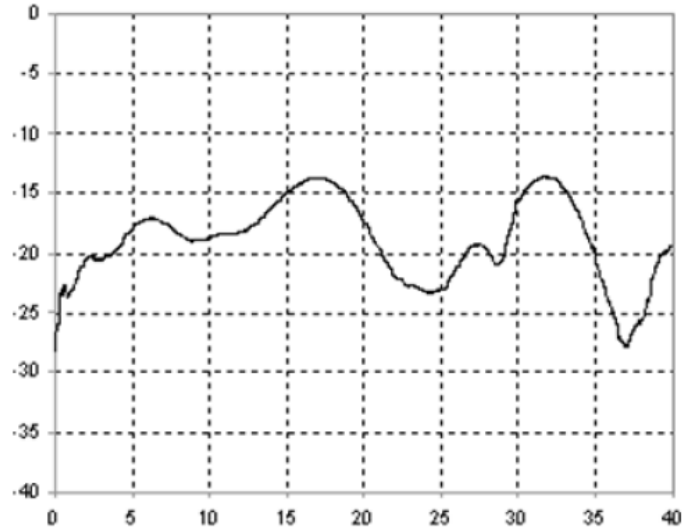


Input from Tektronix PPG4001, PRBS = 2^{31}–1, 525 mV

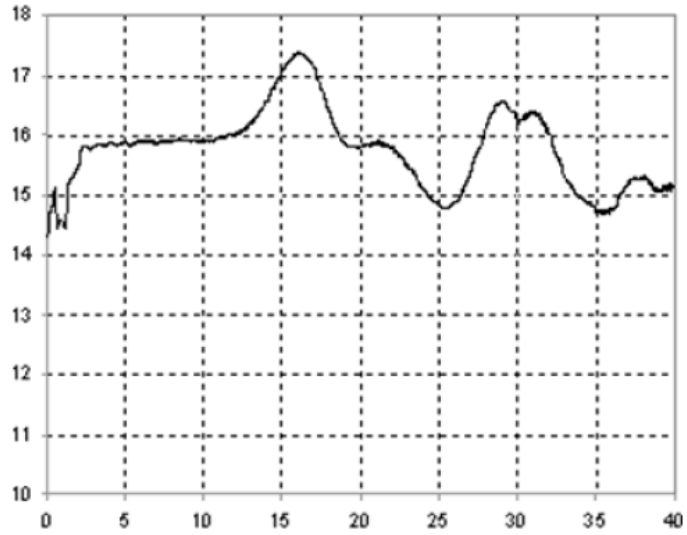


Output amplitude, 3 V

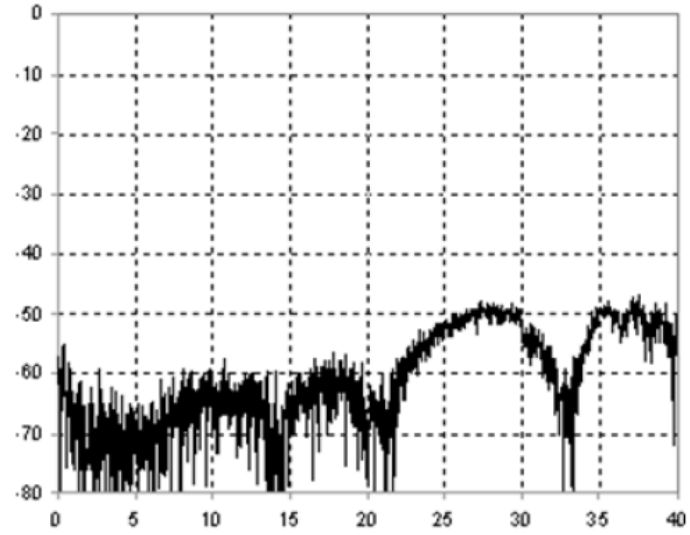
Typical performance



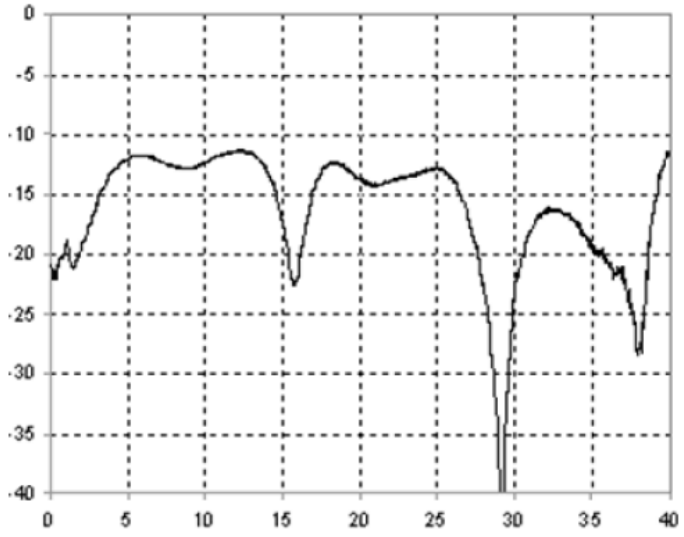
S11, 5 dB/div, 5 GHz/div



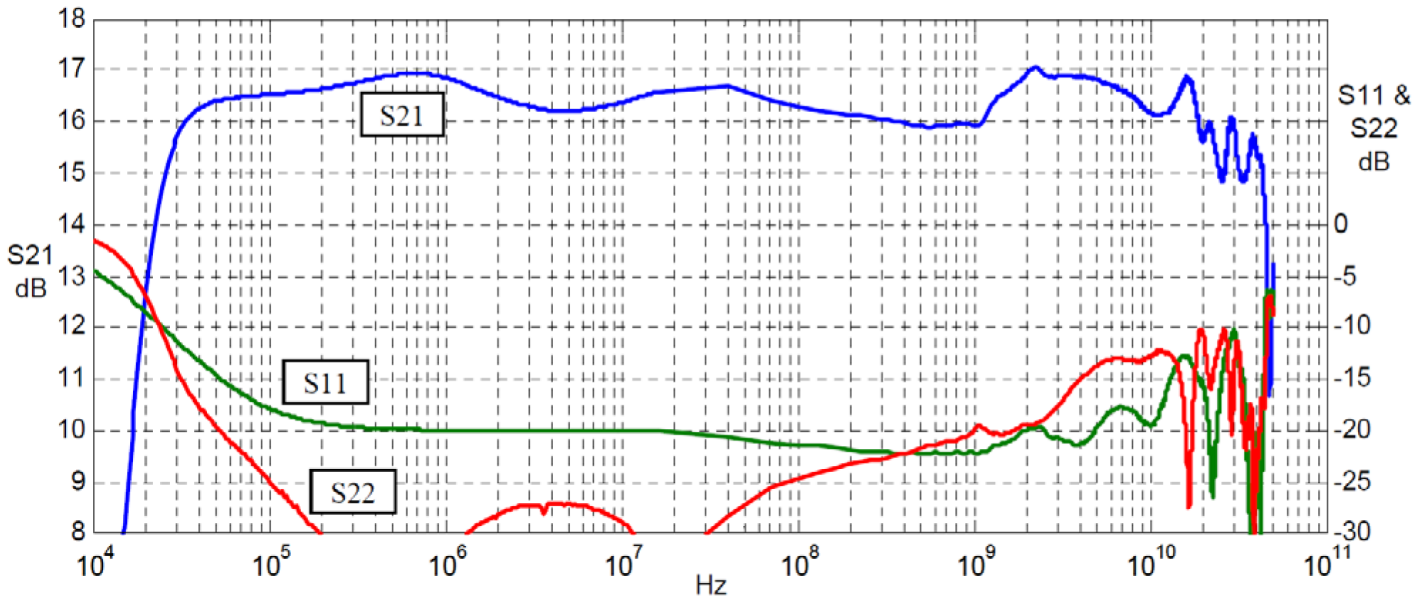
S21, 1 dB/div, 5 GHz/div



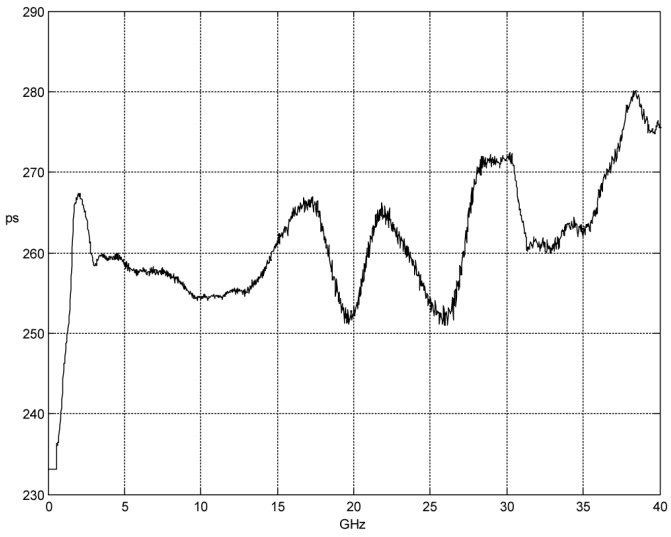
S12, 10 dB/div, 5 GHz/div



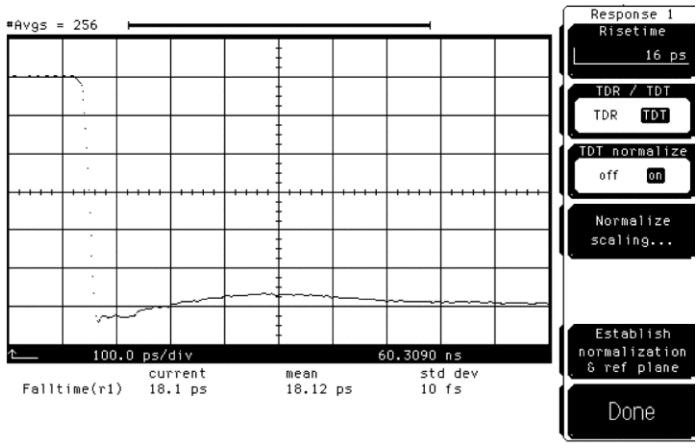
S22, 5 dB/div, 5 GHz/div



Typical S21, S11, and S22 from 10 kHz to 50 GHz



Typical Group Delay (10 ps/div, 5 GHz/div, 0.8 GHz aperture)



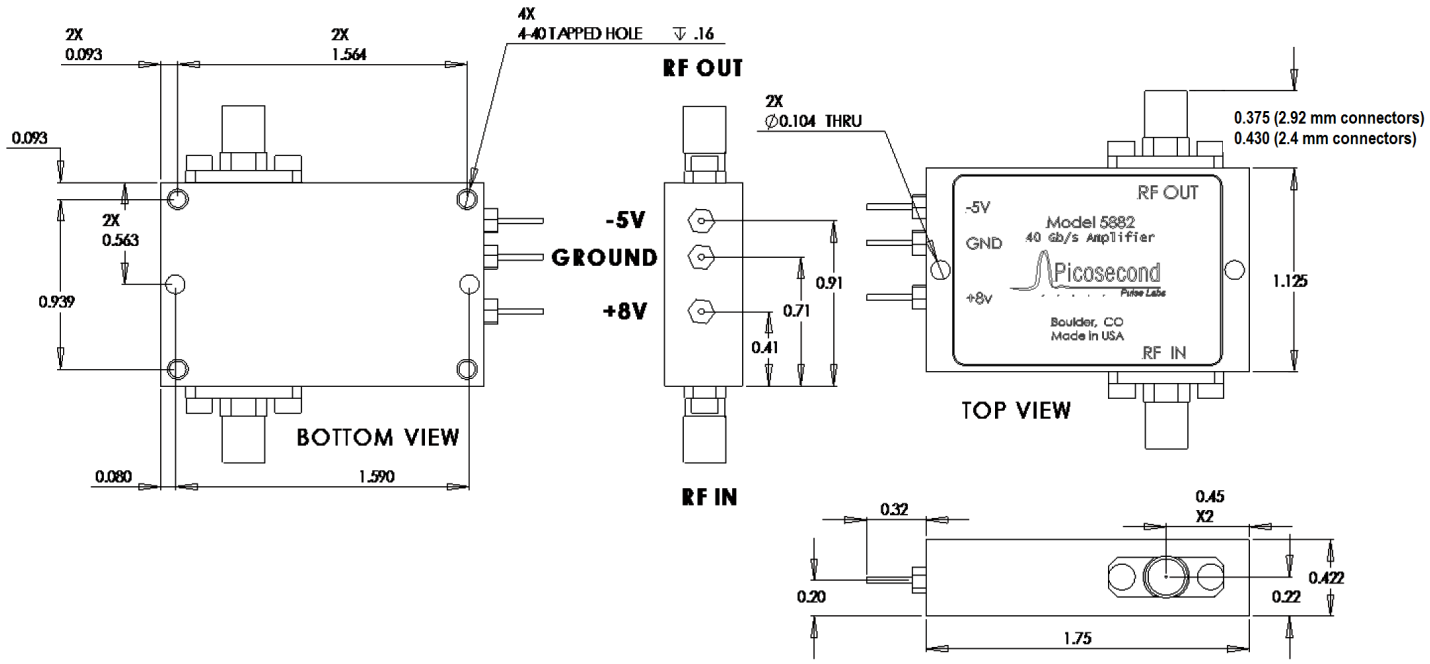
Typical Step Response (input signal is 16 ps fall time)

$t_r(\text{amplifier}) = \sqrt{[t_r(\text{system})]^2 - [t_r(\text{generator})]^2}$

Specifications

Parameter	Symbol	Units	Minimum	Typical	Maximum	Comments
Impedance	Z	ohms		50		
Upper 3 dB freq.	$f_{c,h}$	GHz	30	35		Relative to gain at 100 MHz
Lower 3 dB freq.	$f_{c,l}$	kHz		25	40	
Small Signal Gain	S_{21}	dB	14.5	16		Measured at 100 MHz
Gain Ripple		dB		±1	±2	50 MHz < f < 30 GHz
Max Power Out (-1 dB gain comp)	$P_{1\ dB}$	dBm		12 11		f < 25 GHz 25 GHz ≤ f < 40 GHz
Output Eye Voltage	V_{OUT}	V_{amp}	2.4	2.7		V_{in} = 0.6 V_{amp}, 12.5 Gb/s PRBS
Input Return Loss	S_{11}	dB		-18 -10	-14 -8	50 MHz < f < 10 GHz 10 GHz ≤ f < 30 GHz
Output Return Loss	S_{22}	dB		-13 -10	-10 -8	50 MHz < f < 10 GHz 10 GHz ≤ f < 30 GHz
Rise Time	t_r	ps		9		10-90%, root-sum-of-squares extraction, 16 ps system rise time
Fall Time	t_f	ps		9		
Overshoot		%		7		1 ns window, 16 ps system rise time
Undershoot		%		7		
Noise Figure	NF	dB		6		Measured at 1.5 GHz
Group Delay Variation		ps		±20	±30	3 GHz < f < 35 GHz, 0.8 GHz aperture
Polarity	Non-Inverting					
Coupling	AC, input and output					
DC Connector	Solder pins					
Voltage Supply (+)	$+V_{DC}$	V_{DC}	7	8	9	
Voltage Supply (-)	$-V_{DC}$	V_{DC}	-5.5	-5	-4.5	
Supply Current (+)	$+I_{DC}$	mA		155		
Supply Current (-)	$-I_{DC}$	mA		10		
Max Allowed Input		dBm			16	Input damage threshold
DC Voltage applied to RF Input or Output		V_{DC}	-4		8	Damage threshold
Operating Temp	T_{CASE}	°C	0		70	Case temperature
RF Connectors	2.92 mm or 2.4 mm jacks (f)					
Warranty	One year					

Mechanical dimensions



Ordering information

Models

PSPL5882	AMPLIFIER, 40-45 GHz, 16 dB GAIN

Options

Opt. 240JJ	Female 2.4 mm connectors on Input and Output
Opt. 292JJ	Female 2.92 mm connectors on Input and Output

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