

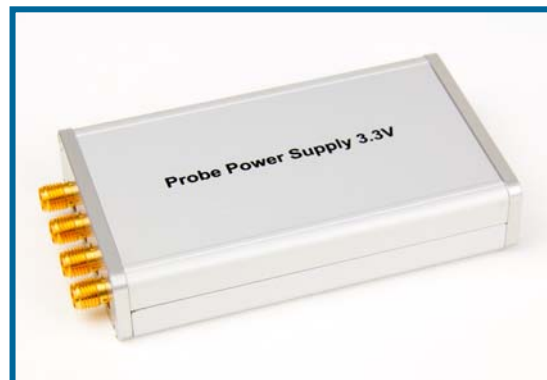
PPS033B

BIAS-Tee Power Adapter

Datasheet

Description

The BIAS-Tee power adapter taps power from USB port (through type-B connector). The adapter then regulates the tapped power to 3.3V then outputs it to 4 SMA connectors. The adapter can be turn on and off by pressing a toggle switch next to the type-B connector.



For power rating protection, these are the characteristic:

- The adapter performs no USB enumeration function.
- The maximum current drawn from USB is 100mA. Excessive of 100mA draw by external load is limited by USB port.
- The adapter limits the current at 250mA by itself, this is a redundant function to host USB powering function.
- The adapter performs thermal shutdown when power regulator junction temperature reach 150°C.

Electric Characteristic

Current draws

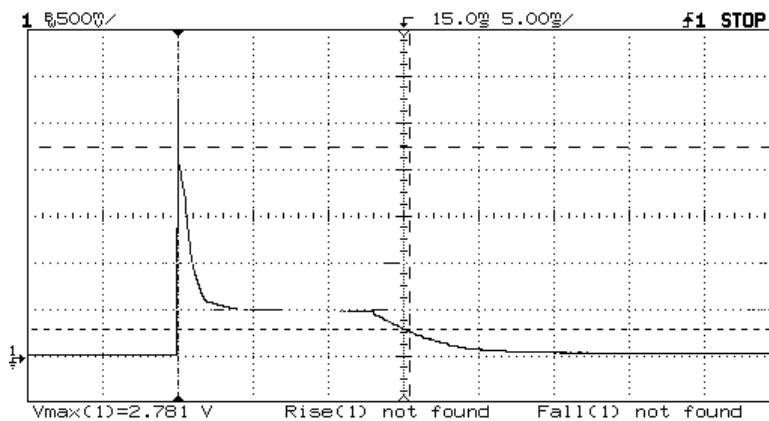
Description	Data	Remark
Adapter & USB connected	2mA typical, quiescent current	
Adapter in standby	8mA max.	Green LED and circuitry

Inrush current cause by hot insertion and voltage sag

USB specification request that the voltage of USB power bus may drop when hot inserting an USB device, the maximum USB power bus voltage drop need to be less than 330mV measured at the USB connector.

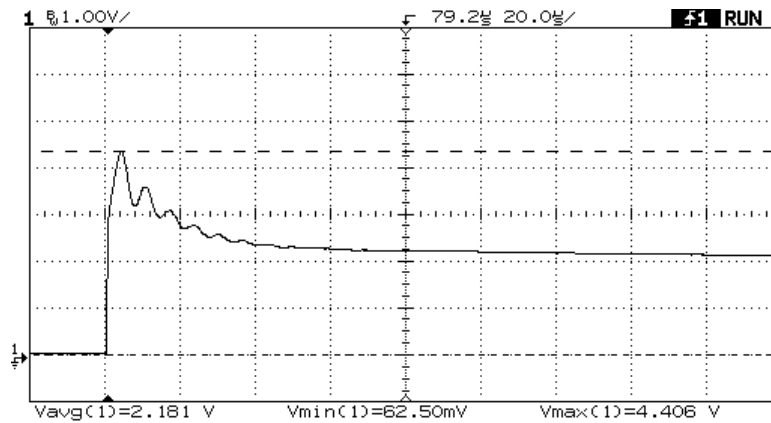
When first-time plug in (all BIAS-Tee capacitors fully discharged)

USB plug in, current profile, measured the voltage drop across a 5-ohm sense resistor. The following waveform had shown the instantaneous inrush current reach to 560mA approximately. The USB 2.0 allows inrush current to 1.5-Amp before triggering the power protection mechanism.



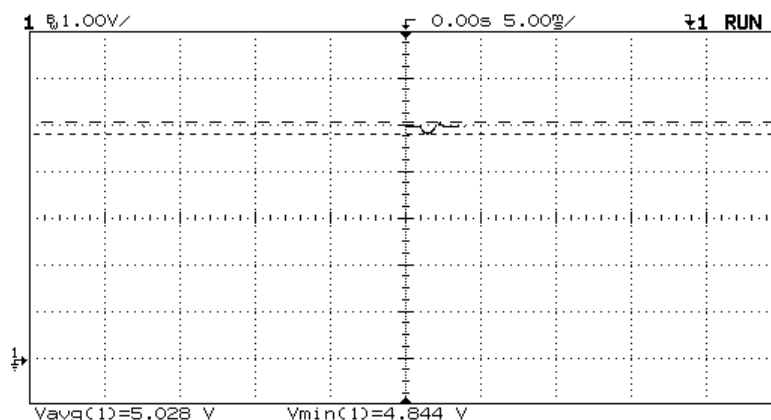
When first-time plug in (detail of time distribution)

The peak current occurs within the first 40-us duration then decline to 2V level which is 400mA for 1ms. Afterward further decline to 100mA for 10ms and then down to 2mA.



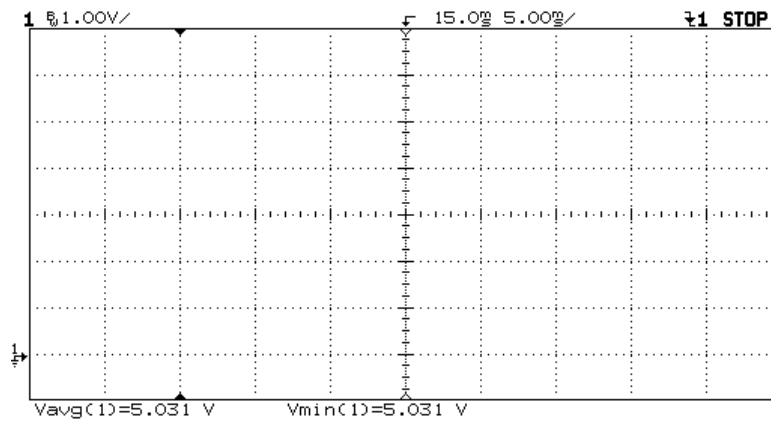
USB power bus voltage sag when first insertion with all BIAS-Tee capacitors fully discharged

The waveform below was taken before the current sensing resistor, the main contribution of the sag is cause by the USB cable line-loss with associated current. The maximum sag is 184mV which is within the requirement 330mV. However according to the USB standard, the sag should be measured at the point where the host USB located which has greater chance to affect the adjacent USB.



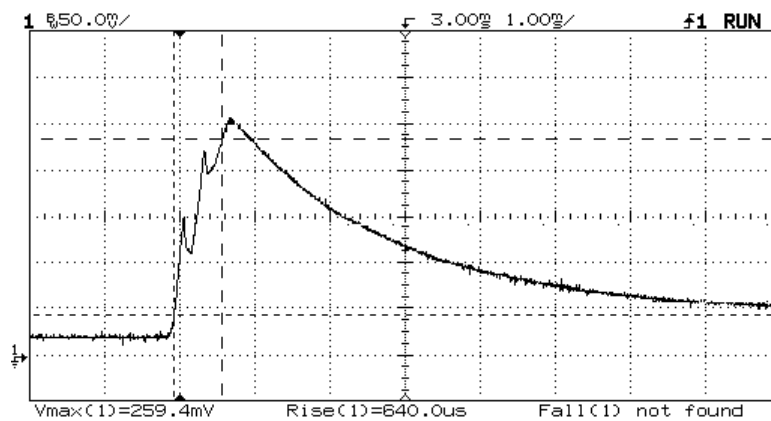
USB power bus voltage sag when first insertion with all BIAS-Tee capacitors fully discharged, measured at the host USB

The waveform below shows the voltage sag is nearly invisible. (the trace is not shown, but the data underneath tells the truth)

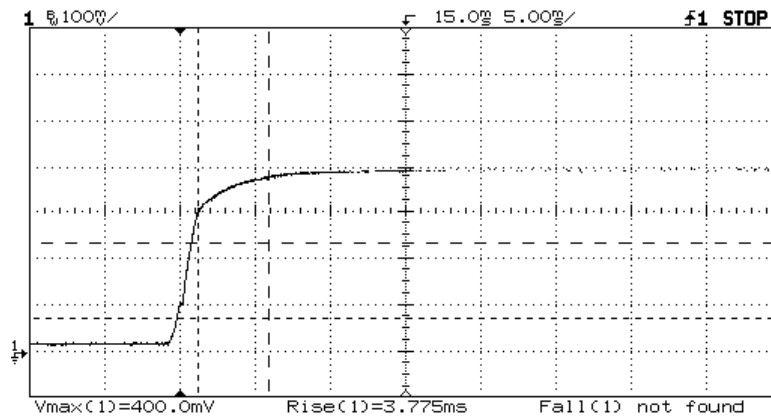


When power on and in stand-by mode (with no external load)

While toggle switch pressed and entering in stand-by mode, the inrush current profile is as the waveform shown below. Where the maximum current reach to 52mA and last for 5ms approximately. This amount of inrush current is least likely to cause USB bus voltage sag.

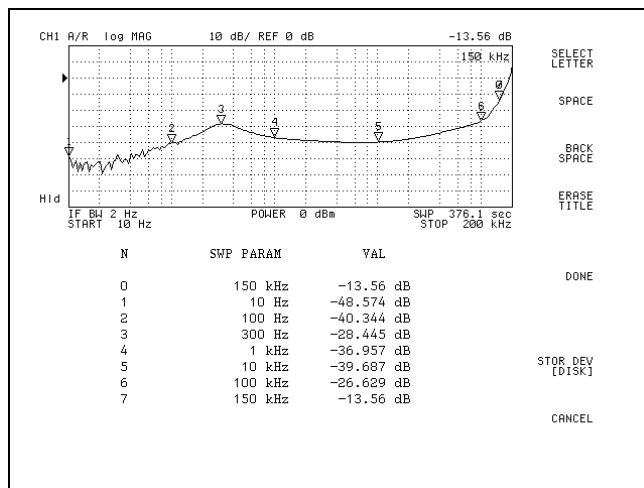


Power-on while load=80ma

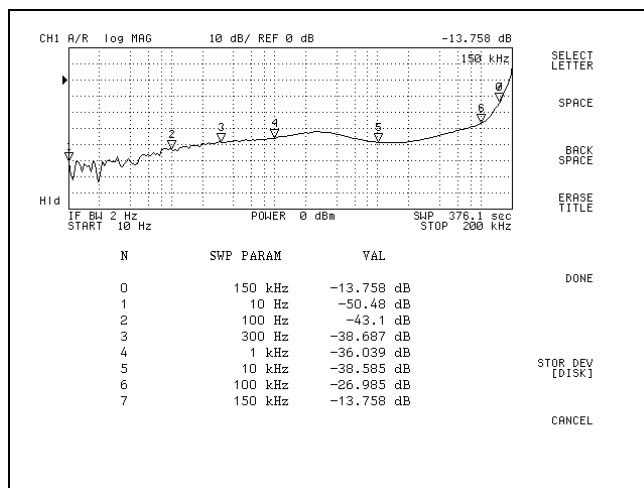


Noise immunization

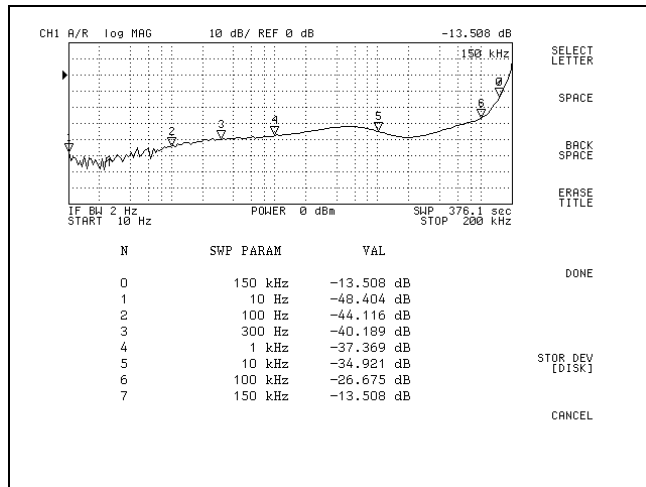
Adapter & USB connected, draws 2mA typical.



Adapter powered on, external load draws 16mA

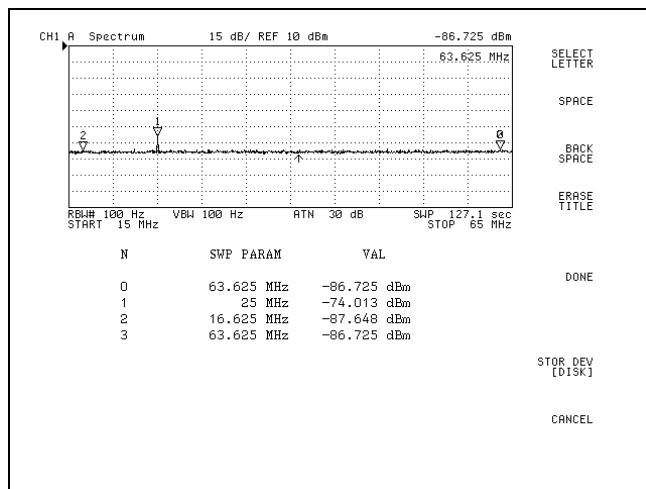


Adapter powered on, external load draws 80mA

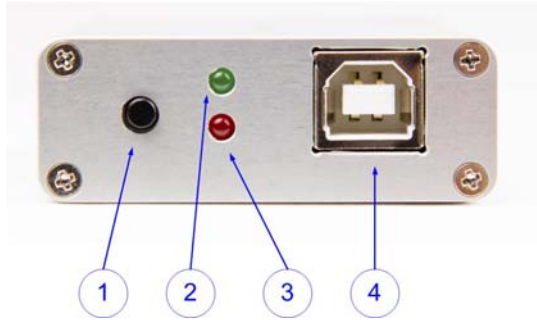


Noise profile

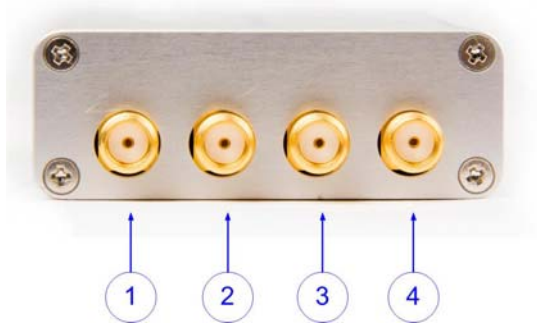
The following trace illustrates the spectrum noise distribution ranged from 5MHz to 65MHz. Notice at 25MHz the highest detectable peak is -74dBm.



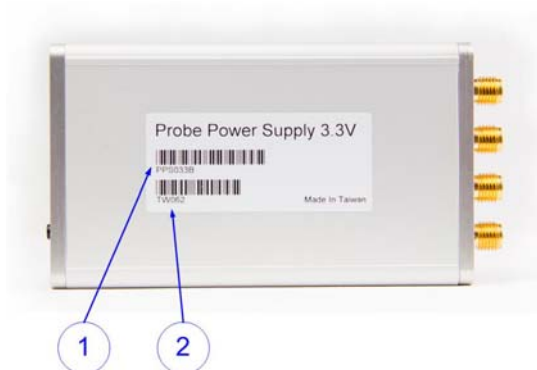
Ports and Label



- (1) Power On/Off toggle switch
 - (2) Power output on/off indicator
 - (3) While the total current drawn from PPS033B exceeds 50mA, the red warning LED will turn on
 - (4) USB port
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- (1) DC power output port 1
 - (2) DC power output port 2
 - (3) DC power output port 3
 - (4) DC power output port 4
-



- (1) Product model
 - (2) Product serial number
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General Specifications

Weight (net)	90g, typical	
USB connector	Type B	
DC power out connectors	SMA (f)	Qty=4

Environmental Specifications

Temperature		
Operating	0°C to 55 °C	
Storage	-40 °C to 70 °C	
Humidity		
Operating / Storage	15 to 95% Relative Humidity (RH)	

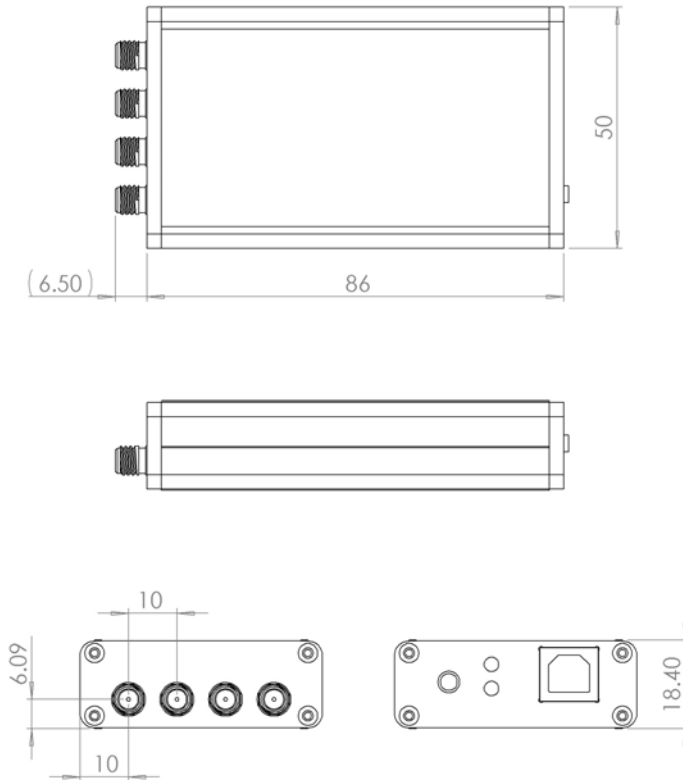
Kit Content

Description	Qty
Power Adapter body	1
SMA cable (M-M) L=60cm	4
USB cable (A-B) L=180cm	1

Ordering Information

PPS033B	BIAS-Tee Power Adapter
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Mechanical Dimensions (unit=mm)



Product specifications and descriptions in this document subject to change without notice.



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