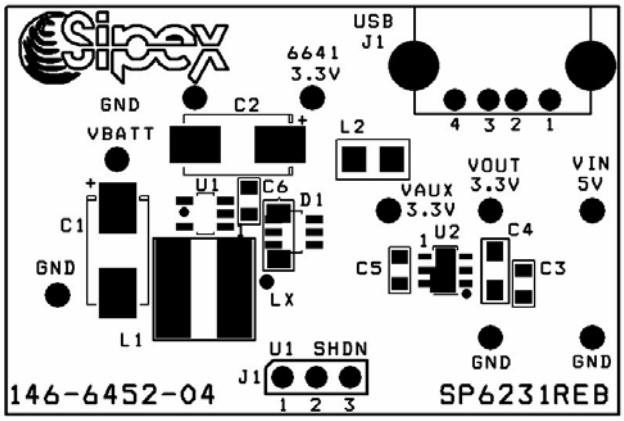
SP6231EB
Evaluation Board Manual

- **Easy Evaluation for the SP6231 Linear Regulator with Auxiliary Backup.**
- **Evaluation Board provides complete, ready to use solutions ideal for Digital Still Camera (DSC) with USB port.**
- **5.0 In, 3.3V Out, 500mA LDO.**
- **Integrated Auxiliary Voltage Switch 0.2Ω.**
- **Glitch Free Transition between Two Supplies: Battery or USB downloading.**
- **Current Limit and Thermal Shutdown Protection.**
- **Fast Transient Response.**
- **Applications: DSC, PCMCIA/PCI cards, NIC Cards, Dual Power Systems.**

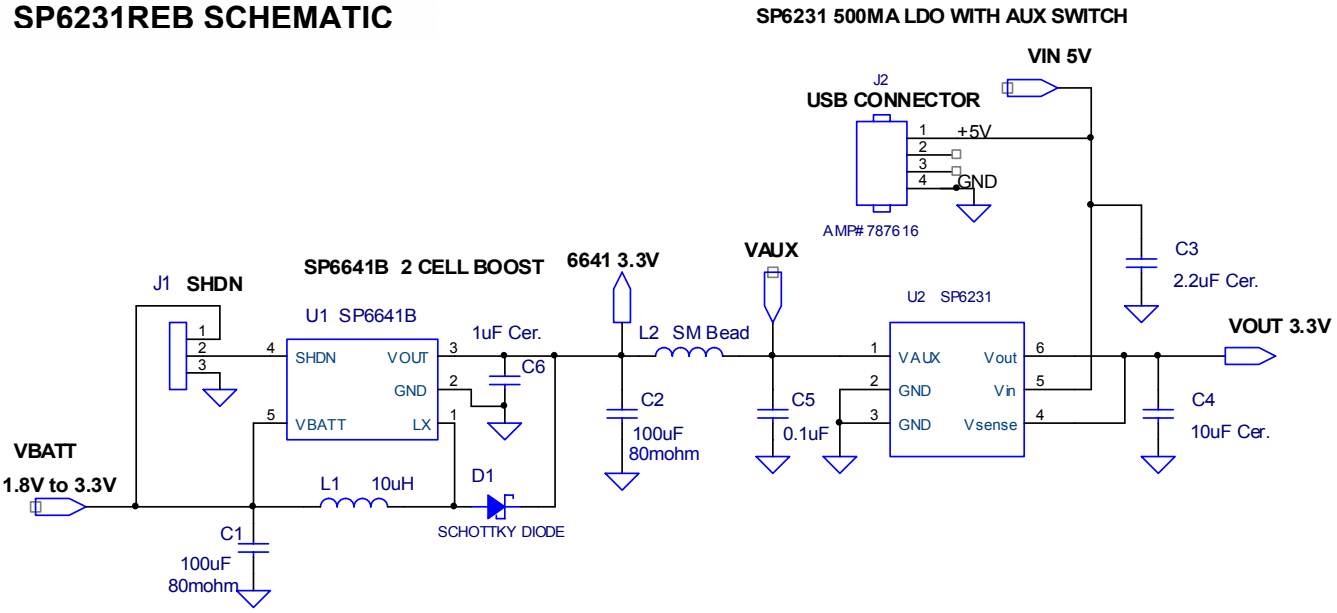


DESCRIPTION

The SP6231 Evaluation Board is designed to help the user evaluate the performance of the SP6231 for use as a dual power source for applications like a DSC with USB port power for downloading. The Evaluation Board operates from a 5V main supply which can be from the on-board USB connector, providing a regulated 3.3V output at 500mA or if that input is not present then from a 3.3V AUX switch input. The 3.3V AUX input is available from an on-board option: Sipex's SP6641B 2 Cell Battery Boost Converter to 3.3V auxiliary supply.

The SP6231 Evaluation Board can be used to provide glitch free transition between two supplies. When the main power 5.0V input drops below 4.4V the auxiliary 3.3V is switched to the output through the internal PFET. Thus, the SP6231 guarantees 3.3V output "glitch free" operation.

SP6231REB SCHEMATIC



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USING THE EVALUATION BOARD

To power up the SP6231 evaluation board, connect +5.0Vin (or use the USB connector) to the Vin 5V post and GND located on the top right corner of the SP6231 evaluation board. Connect +3.3V Auxiliary Power to the VAUX 3.3V post and GND pin near the U2 IC. An alternative 3.3VAUX input to U2 is to use U1, the SP6641B DC/DC converter located on the left side of the Board. The SP6641B boost converter can provide 3.3V out from a Battery input of 1.0V @ 150mA or 2.0V @ 400mA for the 3.3VAUX (see figure 3 for SP6641B maximum load current curve). Just connect the Battery voltage input to the VBATT and GND posts.

The SHDN connector J1 can be used to enable or disable the SP6641B. If the SP6641B is not used the wire jumper J2 can be removed and the VAUX 3.3V input alone should be used. Low voltage start up voltage for the SP6641B is around 0.9V at light load RL=3.0KΩ.

Connect the Load to the pins Vout 3.3V and GND on the right side of the Board.

EVALUATION BOARD DATA

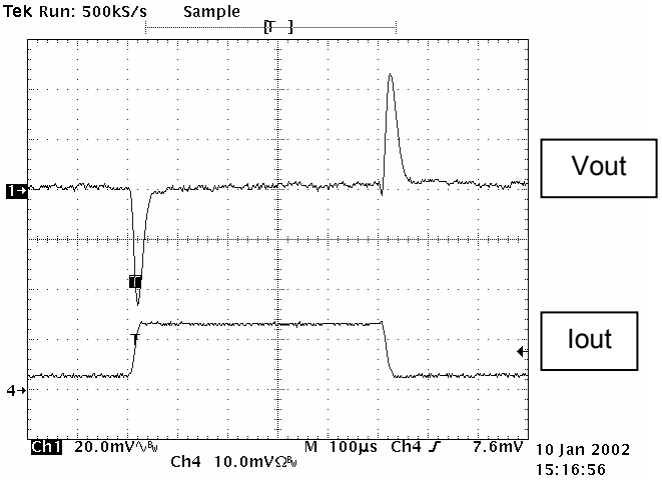


FIGURE 1. Vout for 500mA Load Step
Vin = 5V Supply
Ch1 = Vout (AC)
Ch4 = Iout 500mA/div

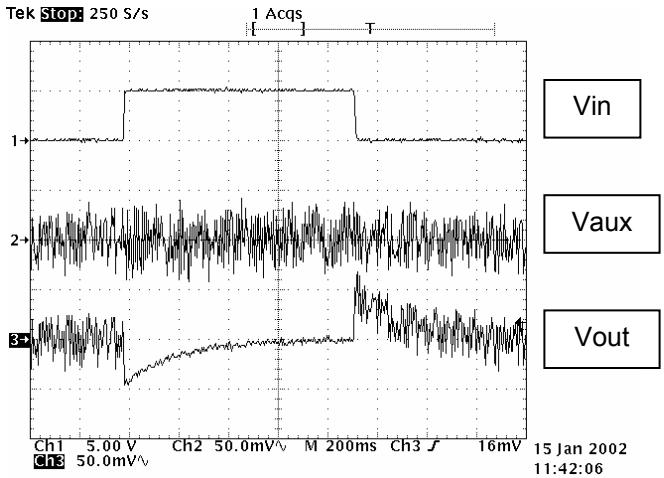
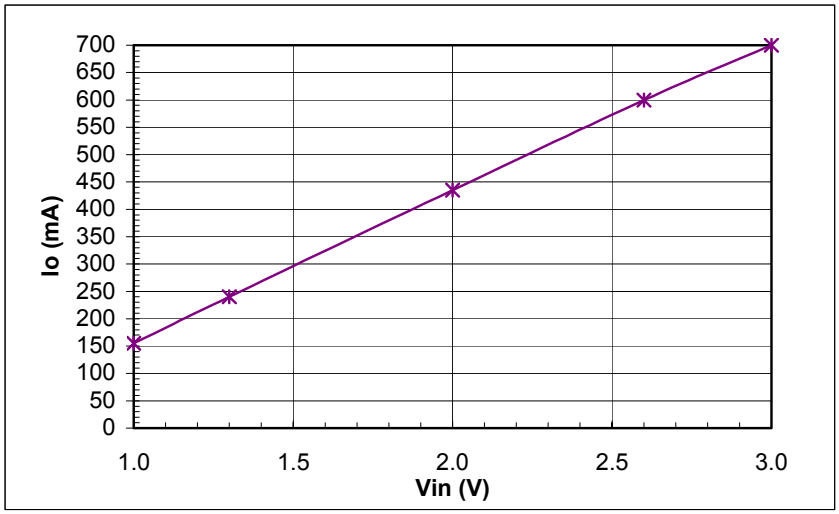


FIGURE 2. Switching: Vaux to Vin to Vaux
Vin = 5V, Vaux = 3.3V, Iout = 300mA
Ch1 = Vin
Ch2 = Vaux (AC)(SP6641B 3.3Vo, 2.6Vin)
Ch3 = Vout (AC)

Figure 3. SP6641B Maximum Load Current in Operation



PC LAYOUT DRAWING

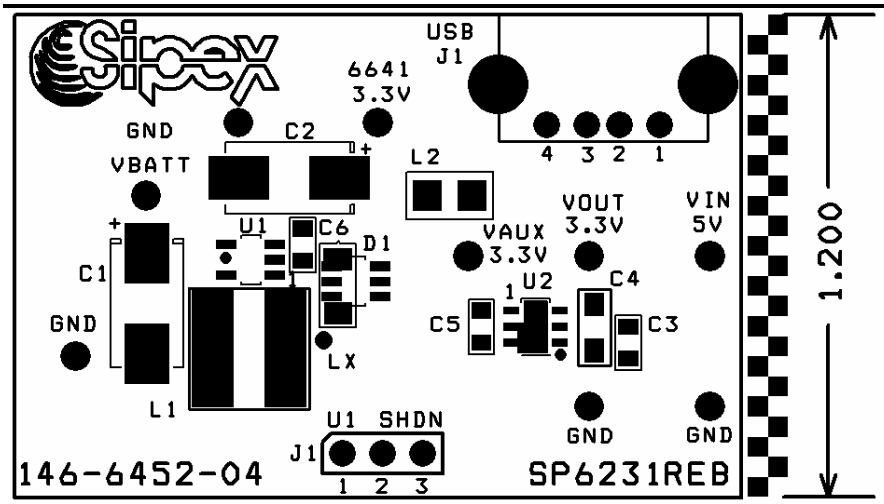


FIGURE 4. SP6231REB COMPONENT PLACEMENT

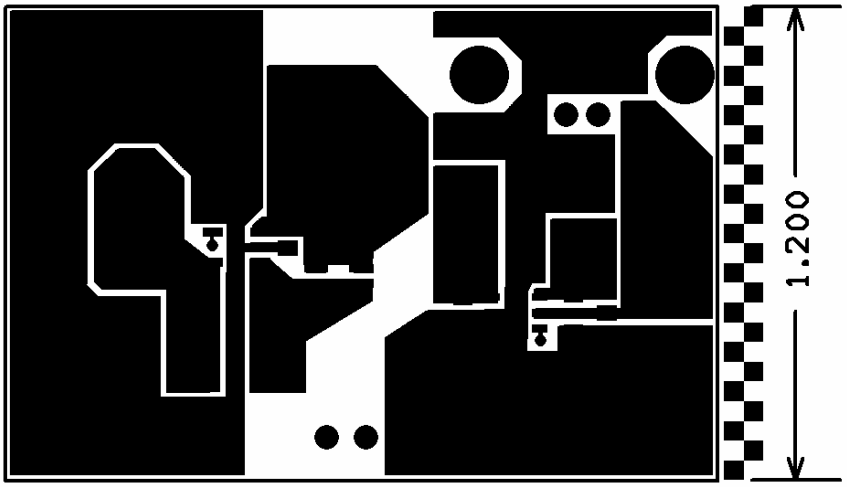


FIGURE 5. SP6231REB PC LAYOUT TOP SIDE

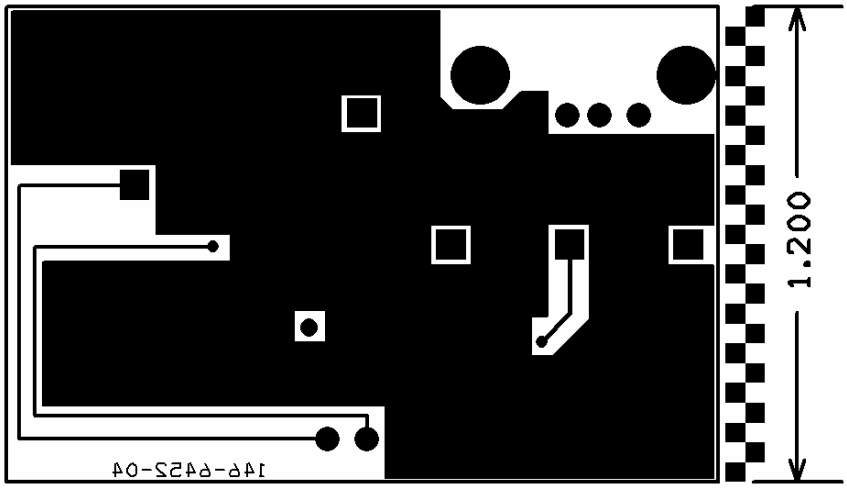


FIGURE 6. SP6231REB PC LAYOUT BOTTOM SIDE

SP6231 EVALUATION BOARD BILL OF MATERIALS

Ref. Des.	Qty.	Manufacturer	Part Number	Layout Size	Component	Vendor
				LxWxH		
	1	Sipex Corp.	146-6447-03	1"x1.5"	SP6641 Eval PC Board	Sipex 978-667-8700
U1	1	Sipex Corp.	SP6641BEK-3.3	SOT23-5	5-pin SOT23 Step-Up DC/DC Conv	Sipex
U2	1	Sipex Corp.	SP6231ER-3.3	6 Pin MLP	500mA 3.3V LDO with AUX Input	Sipex
C1,C2	2	Sanyo Video	10TPA100M	7343	6.3V 100uF SMT POSCAP 0.080ohm ESR	Sanyo 978-922-6573
C3	1	TDK	C2012X5R1A225M	805	Ceramic 6.3V 2.2uF SM 0.02ohm ESR	TDK 847-803-6100
C4	1	TDK	C3216X5R0J106M	1206	Ceramic 6.3V 10uF SM 0.01ohm ESR	TDK 847-803-6100
C5	1	TDK	C1608X7R1E104M	603	Ceramic 0.1uF SM 0.05ohm ESR	TDK 847-803-6100
C6	1	TDK	C2012X5R1A105M	805	Ceramic 6.3V 1uF SM 0.03ohm ESR	TDK 847-803-6100
L1	1	Sumida	CDRH5D28-100	5.7x5.5x3mm	10uH, 1.3A, 0.065ohm, SM Inductor	Sumida 847-956-0666
L2	1	TDK	MPZ2012S300A	805	SM Bead Core 100MHz	TDK 847-803-6100
D1	1	Zetex	ZCHS1000 or ZCHS2000	SOT23-6	Schottky diode 1A or 2A, 0.4V	Zetex 631-360-2222
TP	9	Mill-Max	0300-115-01-4727100	.042 Dia	Test Point Female Pin	800-Digi-Key
J1	1	Sullins	PTC36SAAN	.23x.12	3-Pin Header	800-Digi-Key
J2	1	Assmann	AU-Y1005	13x14x7mm	USB 4P Female Rt Angle DIP Type A Conn.	800-Digi-Key
J3	1				Jumper Wire	
	1	Sullins	STC02SYAN	.2x.1	Shunt	800-Digi-Key

ORDERING INFORMATION

Model	Temperature Range	Package Type
SP6231EB	-40°C to +85°C	SP6231EB Evaluation Board
SP6231ER	-40°C to +85°C	6 Pin DFN
SP6231EN	-40°C to +85°C	8 Pin NSOIC