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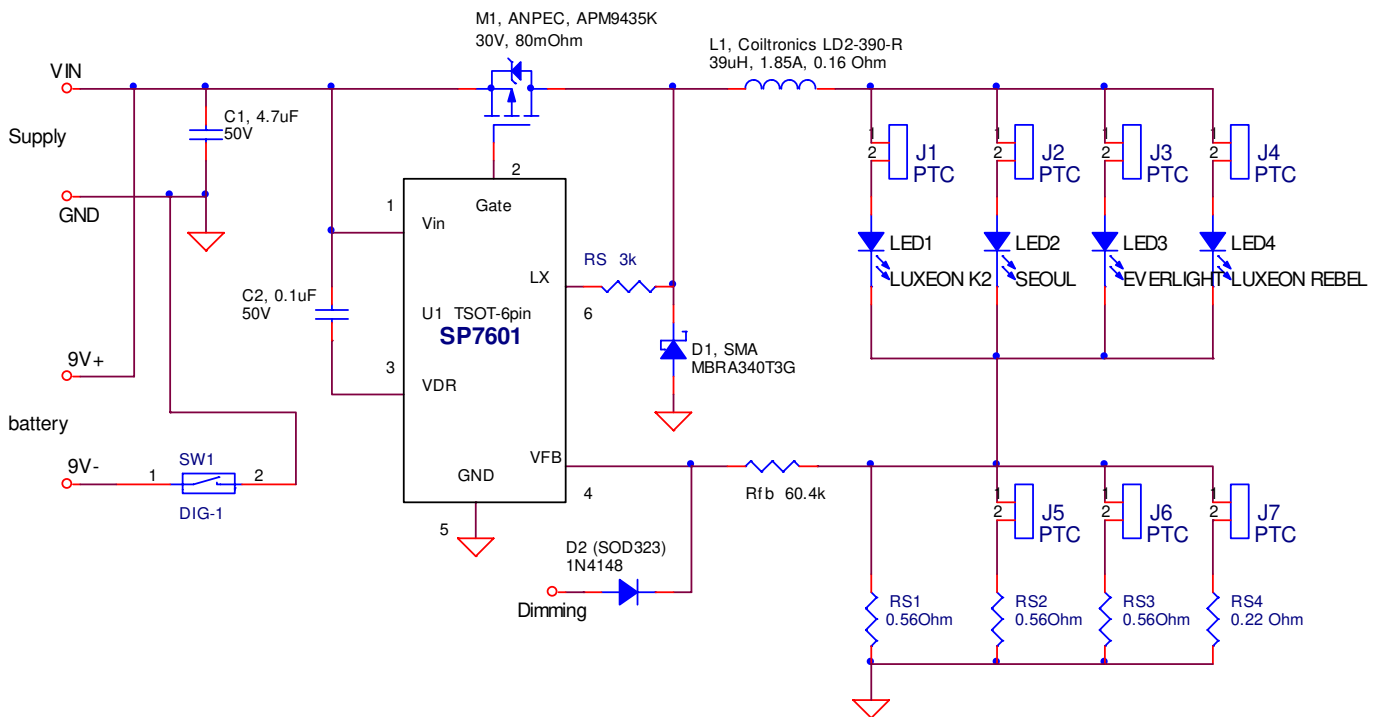
SP7601
Evaluation Board Manual

- Ideal for 24V or 12V Bus Application
- Single Board for 0.35A, 0.7A, 1A and 1.2A Applications
- PWM Dimming and power cycling
- Small 6-Pin TSOT Package
- 1.2MHz Switching Frequency Enables Small Components
- Integrated Design with Minimal Components.
- Low 0.2V Reference Voltage
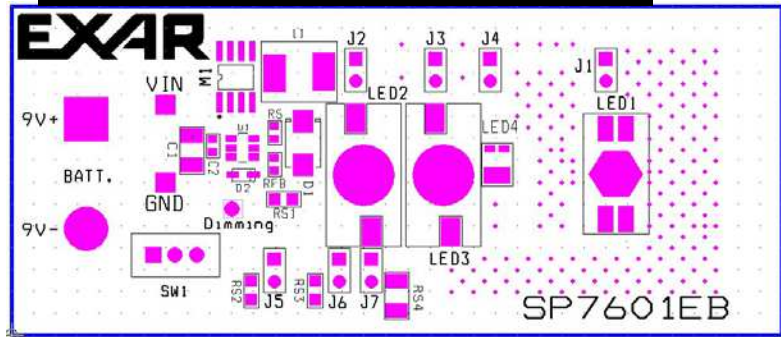
DESCRIPTION AND BOARD SCHEMATIC

The **SP7601 Evaluation Board** is designed to help the user evaluate the performance of the SP7601 in driving LEDs. The board can accommodate any of four different types of LEDs that should be provided by the user.

Evaluation Board Schematic

USING THE EVALUATION BOARD

1) Powering Up the SP7601 LED Circuit

The SP7601 LED Evaluation Board can be powered from either a 9V battery or from a power supply. To operate with a battery, plug in a 9V battery in its corresponding socket under the board. Toggle the switch SW1 to apply battery power to LED. To operate from a power supply connect leads from the supply to "VIN" and "GND" posts at the left side of the board and apply power. The board is optimized to operate from input voltage ranging from 9V to 24V.

2) Using different LEDs

The SP7601 Evaluation Board has footprints for four different LEDs. Populate desired LED in the appropriate foot print and set corresponding jumper as shown in table 1.

Footprint designator	Recommended LED	Jumper setting
LED 1	LUXEON K2	J1
LED 2	EVERLIGHT ELECTRONICS EHP-AX08L/DT01-P01	J2
LED 3	SEOUL SEMICONDUCTOR W42180	J3
LED 4	LUXEON REBEL	J4

Table 1- LED Jumper setting

3) Setting the LED current

SP7601 has a 0.2V reference and output current can be set from Io=0.2V/Rset. Evaluation board comes equipped with Rset resistors for selecting 0.35A, 0.7A, 1A and 1.2A. Use jumper settings shown in table 2 for setting the output current to desired value.

Output current(A)	Jumper setting
0.35	none
0.7	J5
1	J5 and J6
1.2	J7

Table 2- Jumper setting for output current

4) PWM dimming signal

For LED dimming apply a logic-level signal to the pin marked "Dimming" (connect the signal ground to the pin marked "GND"). Frequency of the dimming signal can be up to 1kHz with duty cycle ranging from 10% to 90%. As the duty cycle of dimming signal is increased, average current delivered to LED and light emitted by the LED is decreased.
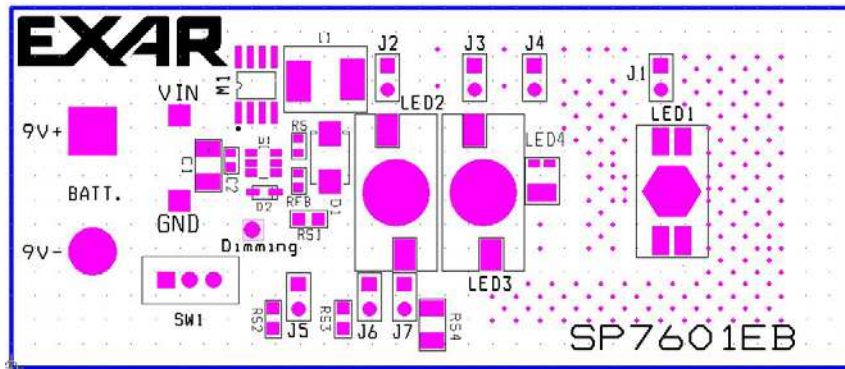
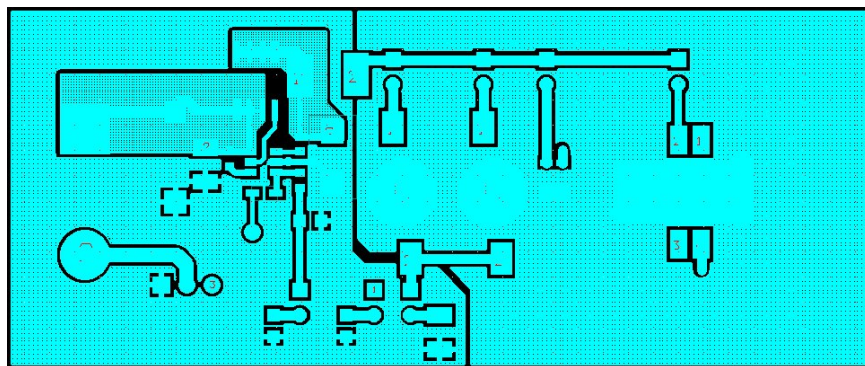# EVALUATION BOARD LAYOUT

FIGURE 1: SP7601EB COMPONENT PLACEMENT
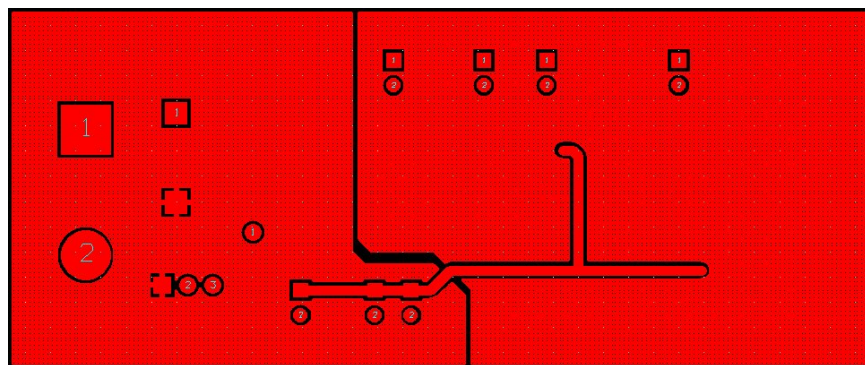

FIGURE 2: SP7601EB PC LAYOUT TOP SIDE

FIGURE 3: SP7601EB PC LAYOUT BOTTOM SIDE

TABLE1: SP7601EB LIST OF MATERIALS

Line No.	Ref. Des.	Qty.	Manuf.	Manuf. Part Number	Layout Size	Component	Vendor Phone Number
1	PCB	1	Exar			SP7601EB	408-934-7500
2	U1	1	Sipex	SP7601ER	TSOT-6	Non-synchronous Buck Controller	408-934-7500
3	M1	1	ANPEC	APM9435K	SOP-8	PFET -30V, 4.6A, Rds=0.080 Ohm	
4	DS	1	On Semi	MBRA340T3	SMA	Schotkky, 40V, 3A	602-244-6600
5	L1	1	COILTRONICS	LD2-390-R	7.8mmX7mm	39uH, 1.85A, 0.16 Ohm	914-347-2474
6	D1	1	MCC	1N4148WX	SOD323	Fast Switching Diode 500mW	818-701-4933
7	C1	1	MURATA	GRM31CR71H475K	1206	Ceramic 4,7uF, 50V, X7R, 1206	770-436-1300
8	C2	1	MURATA	GRM188R71H104K	0603	Ceramic 0.1uF, 50V, X7R, 0603	770-436-1300
9	RS	1	ROHM	MCR03EZPFX3001	0603	Chip Resistor 3.00K, 1%, 0603	800-344-4539
10	Rfb	1	ROHM	MCR03EZPFX6042	0603	Chip Resistor 60.4K, 1%, 0603	800-344-4539
11	RS1, RS2, RS3	3	PANASONIC-ECG	ERJ-6RQFR56V	0805	Chip Resistor 0.56 Ohm, 1%, 0805	800-344-4539
12	RS4	1	PANASONIC-ECG	ERJ-8RQFR22V	1206	Chip Resistor 0.22 Ohm, 1%, 1206	800-344-4539
13	J1- J7	7	Sullins Electr.	PEC02SAAN		Conn. Header .100 2 pos	800-344-4539
14		1	KEYSTONE	968		VERTICAL 9V PC SNAP-ONS	718-956-9040
15	SW1	1	E-SWITCH	500ASSP1M2QE		SW. SLIDE, SPDT PC MOUNT	925-277-3142
16	J1- J7	7	Sullins Electr.	STC02SYAN		Conn. Jumper Shorting	800-344-4539
17	VIN, VOUT, GND, GND, SHDN	3	Vector Electronic	K24C/M	.042 Dia	Test Point Post	800-344-4539

ORDERING INFORMATION

Model	Temperature Range	Package Type

SP7601EB......................................-40°C to +125°C.......................SP7601 Evaluation Board
SP7601ER1....................................-40°C to +125°C...6 Pin TSOT