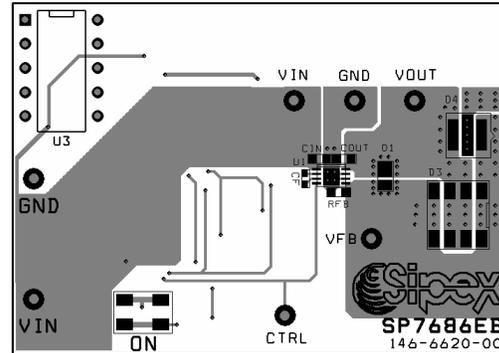




SP7686EB Evaluation Board Manual

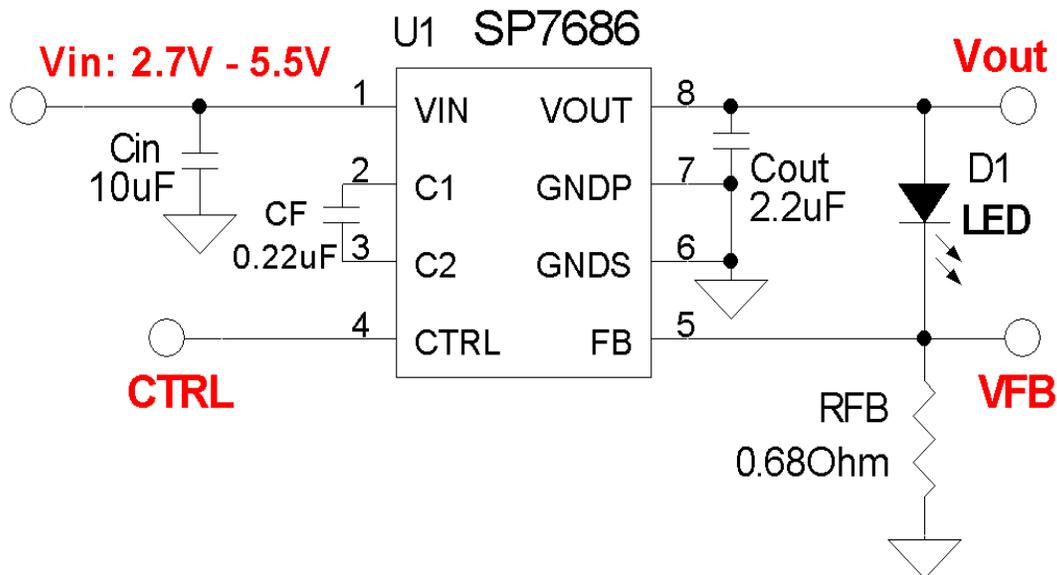
- 2.7V to 5.5V Input Range
- One line serial interface
- Output Current up to 500mA
- High Efficiency in 1X mode, high V_{OUT} in 2X mode
- Small 2x3mm 8-Pin DFN Package
- 2.4MHz Switching Frequency
- Integrated Design with Minimal Components.
- 3.5sec Time out function to protect the LED
- Thermal shutdown protection
- Built-in over-voltage & over-current protection
- Use with 1 cell Lithium Ion Battery



DESCRIPTION AND BOARD SCHEMATIC

The **SP7686EB Evaluation Board** is a compact circuit including the SP7686 in 3x2mm DFN and 3 small 0603 capacitors which can provide a stable drive current for a 1W LED such as the AOT White LED, Lumi-LEDs Luxeon I or PWF1 type light sources. The evaluation board is a completely assembled and tested surface mount board which provides easy probe access points to all SP7686 inputs and outputs so that the user can quickly connect and measure electrical characteristics and waveforms.

SP7686EB Schematic



TO GET STARTED:

1. Connect VIN from VIN to GND (VIN range 2.7V to 4.2V).
2. Apply a combination of positive pulses on CTRL pin to enable the part.

POWER SUPPLY DATA

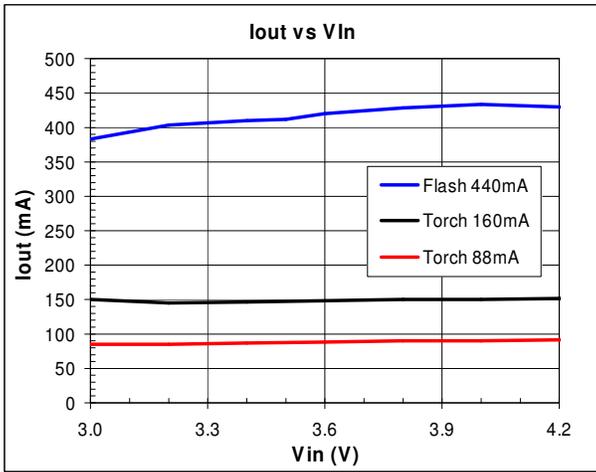


Figure 1. Output Current with PWF1 LED

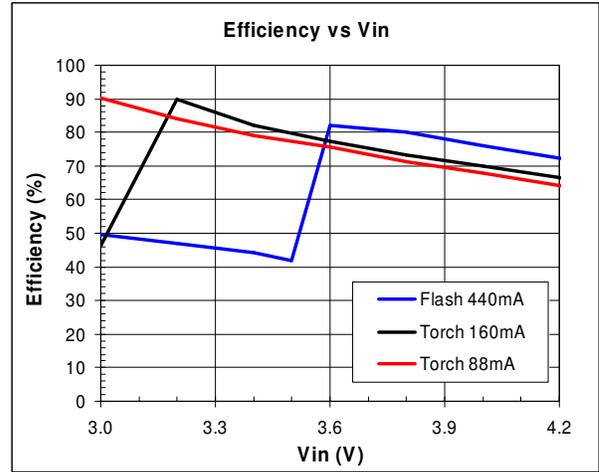


Figure 2. Output Efficiency with PWF1 LED

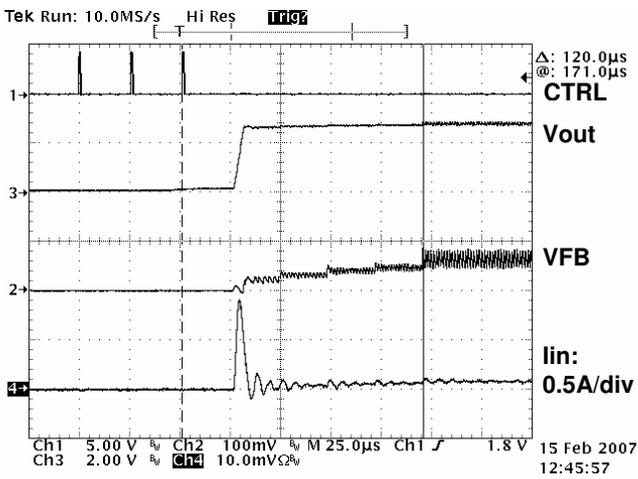


Figure 3. Start Up, Iout = 80mA, Vin=4.2V

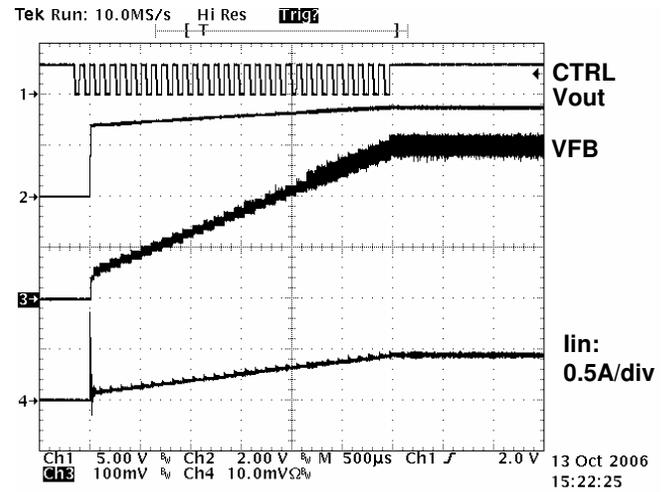


Figure 4. Start Up, Iout = 450mA, Vin=4.2V

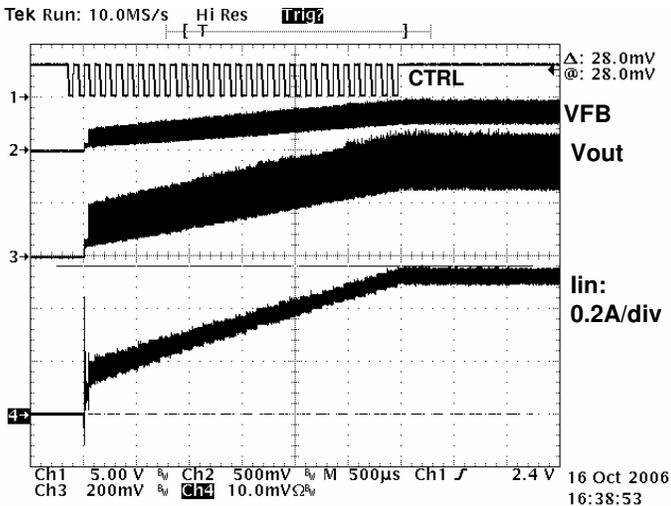


Figure 5. LED Shorted, Vin=4.2V

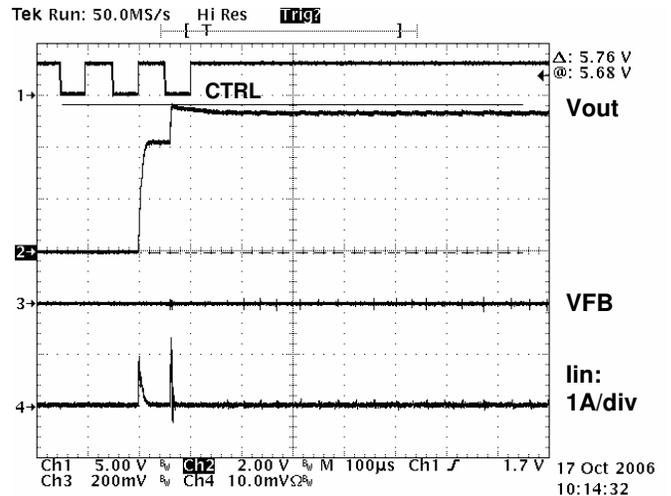


Figure 6. LED Open, Vin=4.2V

EVALUATION BOARD LAYOUT

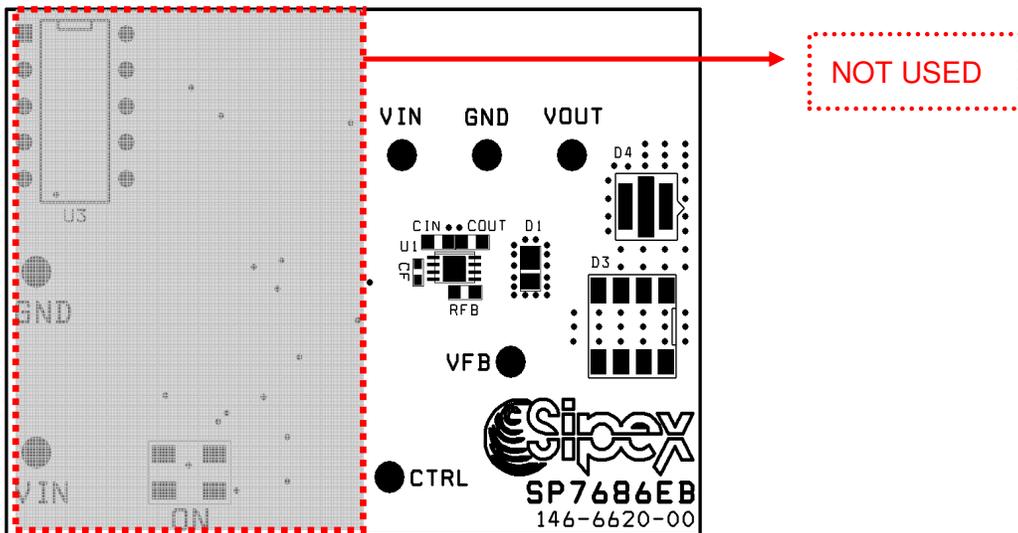


FIGURE 7: SP7686EB COMPONENT PLACEMENT

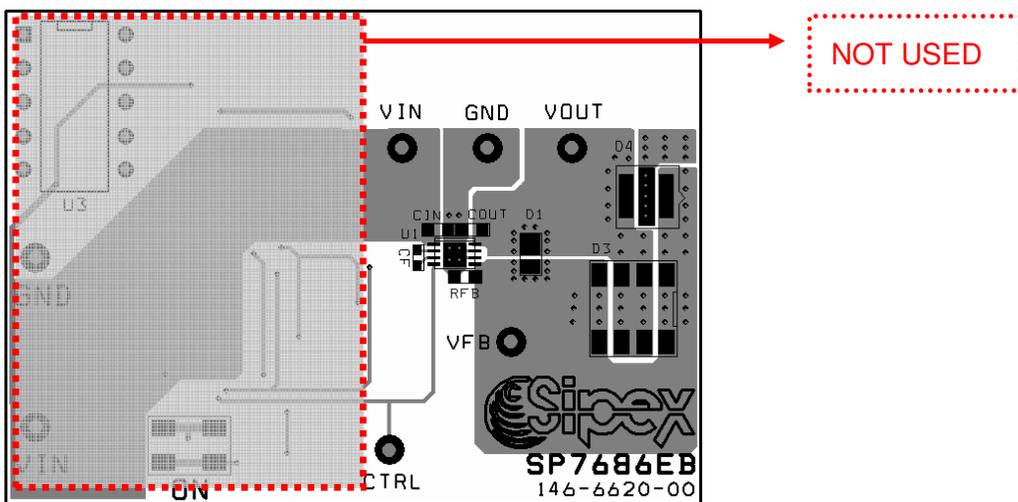


FIGURE 8: SP7686EB PC LAYOUT TOP SIDE

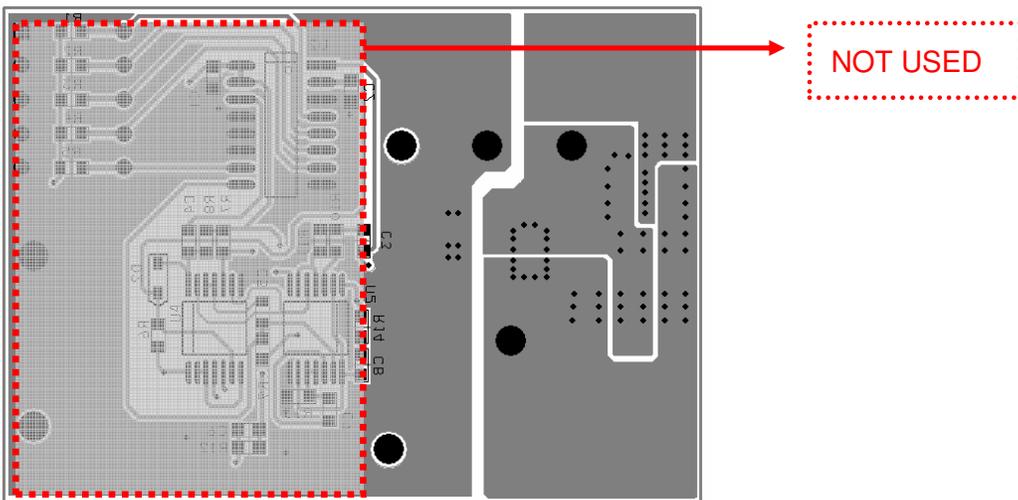


FIGURE 9: SP7686EB PC LAYOUT BOTTOM SIDE

Note: “Not Used” section of the board is for optional CTRL PULSE digital circuit – consult factory Applications for details.

TABLE1: SP7686EB LIST OF MATERIALS

Part Reference	Part Number	Value	Size	Manufacturers/ Website
U1	SP7686ER		3x2mm DFN - 8 pin	www.sipex.cpm
CIN	GRM188R60J106M	10uF/6.3V/X5R	0603	www.murata.com
COUT	GRM188R61A225K	2.2uF/10V/X5R	0603	www.murata.com
CF	GRM155R60J224K	0.22uF/6.3V/X5R	0402	www.murata.com
RFB	CRCW0603R680F	0.68Ω/1%, 1/10W	0603	www.vishay.com
J1	61303611121	3-Pin 2.54mm Header	6.0x2.54mm	www.we-online.com
	60900213421	2.54mm Jumper	5.0x2.54mm	www.we-online.com
TP(VIN,GND,VOUT,CTRL&VFB)	0300-11501-4727100	Test point female pin	.042" Dia	Mil-Max (digi-key)

ORDERING INFORMATION

Model	Temperature Range	Package Type
SP7686EB.....	-40°C to +85°C.....	SP7686AEB Evaluation Board
SP7686ER.....	-40°C to +85°C.....	8-pin 3x2 DFN