

GENERAL DESCRIPTION

The SP6669 is a synchronous current mode PWM step down (buck) converter capable of delivering up to 800mA of current and optimized for portable battery-operated applications.

Based on a current-mode 1.5MHz constant frequency PWM control scheme, the SP6669 reduces the overall component count and solution footprint. It provides low output voltage ripple and excellent line and load regulation. It also implements a 100% duty cycle LDO mode. Output voltage is adjustable to as low as 0.6V with a better than 3% accuracy while a low quiescent current supports the most stringent battery operating conditions.

Built-in over temperature and under voltage lock-out protections insure safe operations under abnormal operating conditions.

The SP6669 is offered in a RoHS compliant, "green"/halogen free 5-pin SOT23 package.

EVALUATION BOARD MANUAL



FEATURES

- **Guaranteed 800mA Output Current**
 - Input Voltage: 2.5V to 5.5V
- **1.5MHz PWM Current Mode Control**
 - 100% Duty Cycle LDO Mode Operations
 - Achieves 95% Efficiency
- **Adjustable Output Voltage Range**
 - As Low as 0.6V with $\pm 3\%$ Accuracy
- **Over Temperature & UVLO Protection**

EVALUATION BOARD SCHEMATICS

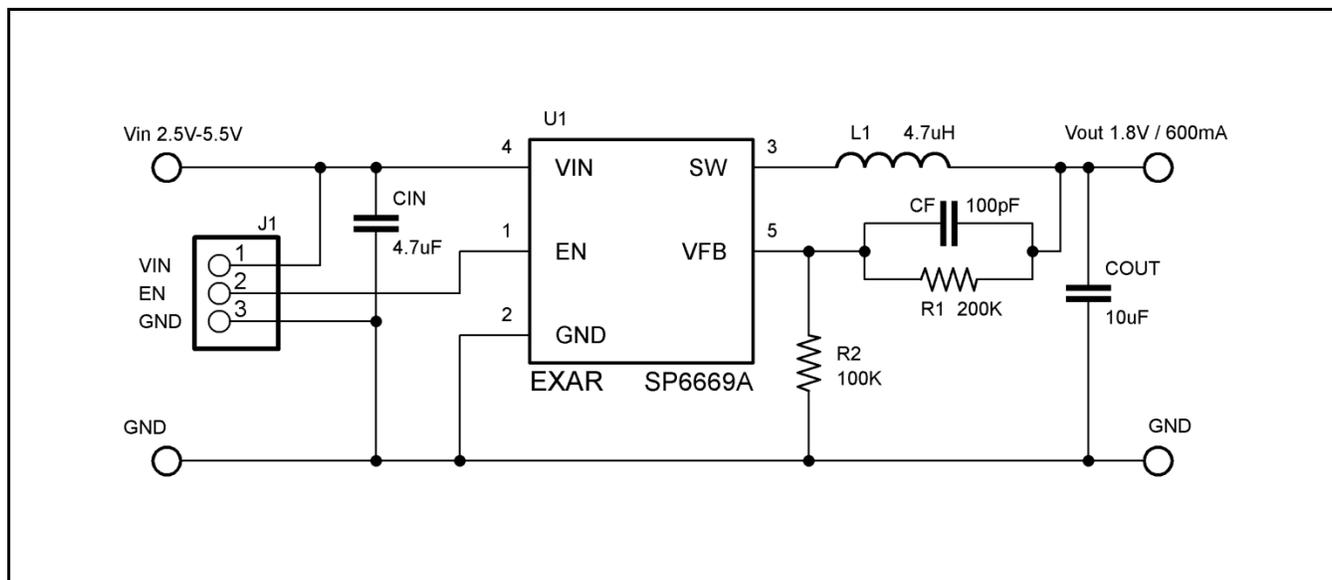


Fig. 1: SP6669 Evaluation Board Schematics

800mA 1.5MHz Synchronous Step-Down Converter

PIN ASSIGNMENT

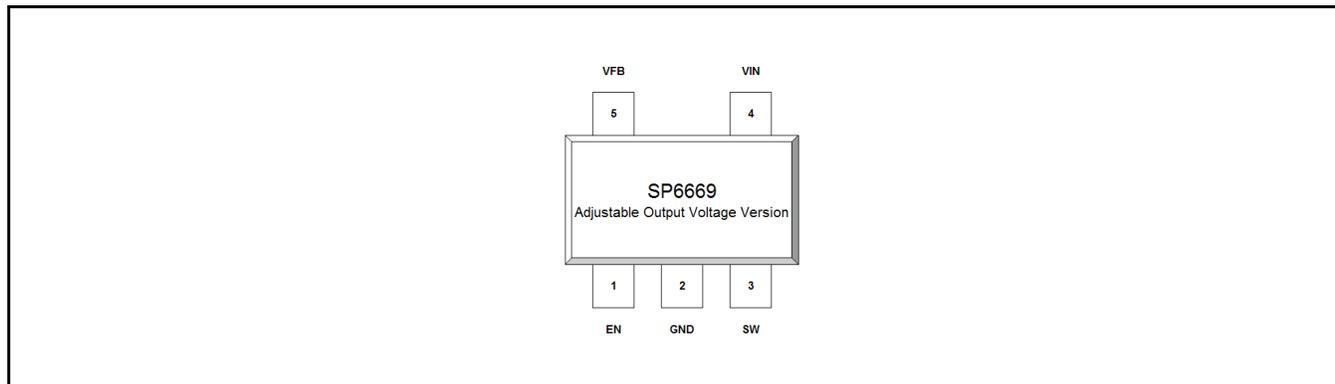


Fig. 2: SP6669 Pin Assignment

PIN DESCRIPTION

Name	Pin Number	Description
EN	1	Enable Pin. Do not leave the pin floating. $V_{EN} < 0.4V$: Shutdown mode $V_{EN} > 1.2V$: Device enabled
GND	2	Ground Signal Pin.
SW	3	Switching node.
VIN	4	Power Supply Pin. Must be decoupled to ground with a 4.7 μ F or greater ceramic capacitor.
VFB	5	Adjustable Version Feedback Input Pin. Connect VFB to the center point of the resistor divider.

ORDERING INFORMATION

Refer to SP6669's datasheet and/or www.maxlinear.com for exact and up to date ordering information.

USING THE EVALUATION BOARD**INITIAL SETUP**

Set the input supply to a voltage between 2.5V to 5.5V and connect it to VIN and GND connectors on the left side of the evaluation board. Connect the load to the VOUT and GND connectors on the right hand side of the board. Check to make sure that jumper J1 is set to VIN. The board will power-up and regulate to the desired output voltage VOUT set by the feedback resistors. The board will operate with a load current I_{OUT} of up to 800mA.

JUMPER J1 FUNCTION

Jumper J1 can be used to either short EN pin to VIN or to GND. The Board is supplied from MaxLinear with the jumper set to connect EN to VIN.

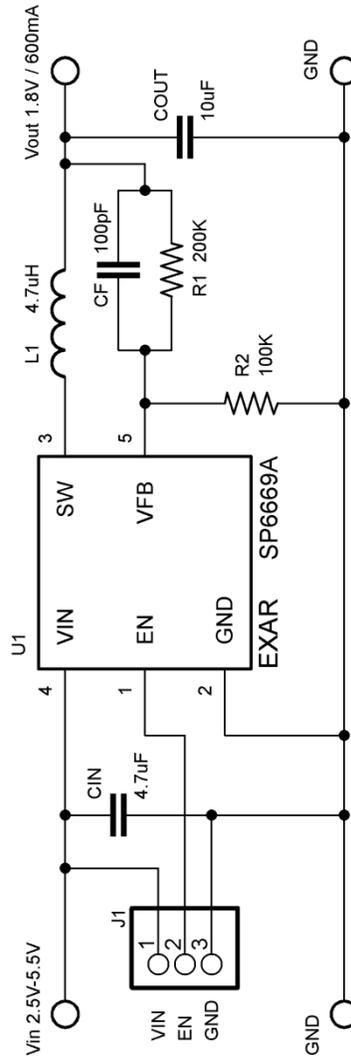
V_{OUT} PROGRAMMING

The SP6669 has a dynamically programmable output voltage using 2 feedback resistors to control the output voltage:

$$V_{OUT} = 0.6V \times \left(1 + \frac{R_1}{R_2}\right)$$

800mA 1.5MHz Synchronous Step-Down Converter

EVALUATION BOARD SCHEMATICS



800mA 1.5MHz Synchronous Step-Down Converter
BILL OF MATERIAL

Ref.	Qty	Manufacturer	Part Number	Size	Component
Board	1	MaxLinear	146-6595-00	1"x1.5"	SP6669 Eval board
U1	1	MaxLinear	SP6669AEK-L	SOT23-5L	800mA Buck Reg.
CIN	1	Murata	GRM188R60J475KE19D	0603	Ceramic 4.7µF 6.3V X5R
COUT	1	Murata	GRM21BR60J106KE19	0805	Ceramic 10µF 6.3V X5R
CF	1	Murata	GRM1885C1H101JA01B	0603	Ceramic 100pF 50V COG
L1	1	Würth Elektronik	744025004	2.8mm x 2.8mm x 2.8mm	Inductor 4.7µH, 1.35A, 100mΩ
R1	1	Vishay	CRCW06032003F 0603	0603	200KΩ, 1/10W, 1%
R2	1	Vishay	CRCW06031003F	0603	100KΩ, 1/10W, 1%
J1	1	Würth Elektronik	61303611121	0.64mm SQ x 6mm	3 Pin Header, 2.54mm pitch
J1 (Jumper)	1	Würth Elektronik	609002115121	0.1"	Jumper short
TP	3	Mill-Max	0300-115-01-4727100	0.042" dia	Test Point Female Pin

REVISION HISTORY

Revision	Date	Description
1.0.0	09/16/2010	Initial release of document
1.0.1	04/12/2021	Updated I _{OUT} , Reformat of document (new logo), updated Manufacturer name to MaxLinear in BOM table

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