Wide Input 2A Step-Down Converter

Features

- 2A Output Current
- 4.75V to 18V Input Range
- 5μA Shutdown Supply Current
- 500kHz Switching Frequency
- Adjustable Output Voltage
- Cycle-by-Cycle Current Limit Protection
- Thermal Shutdown Protection
- Frequency Foldback at Short Circuit
- Stability with Wide Range of Capacitors, Including Low ESR Ceramic Capacitors

General Description

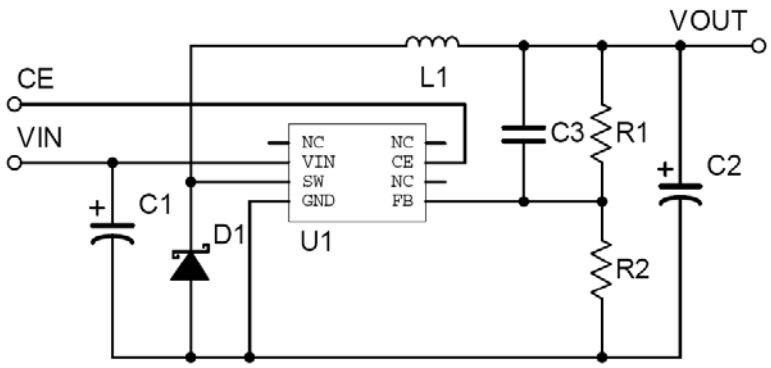
The FS1060 is a current-mode step-down DC/DC converter that generates up to 2A of output current at 410kHz switching frequency. The device utilizes special process for operation with input voltages up to 18V. Consuming only 8μA in shutdown mode, the FS1060 is highly efficient with peak operating efficiency at 95%. Protection features include cycle-by-cycle current limit, thermal shutdown, and frequency foldback at short circuit.
The FS1060 is available in a SOP-8 package and requires very few external devices for operation

Applications

- TFT LCD Monitors
- Portable DVDs
- Car-Powered or Battery-Powered Equipments
- Set-Top Boxes
- Telecom Power Supplies
- DSL and Cable Modems and Routers
- Termination Supplies

Application Information

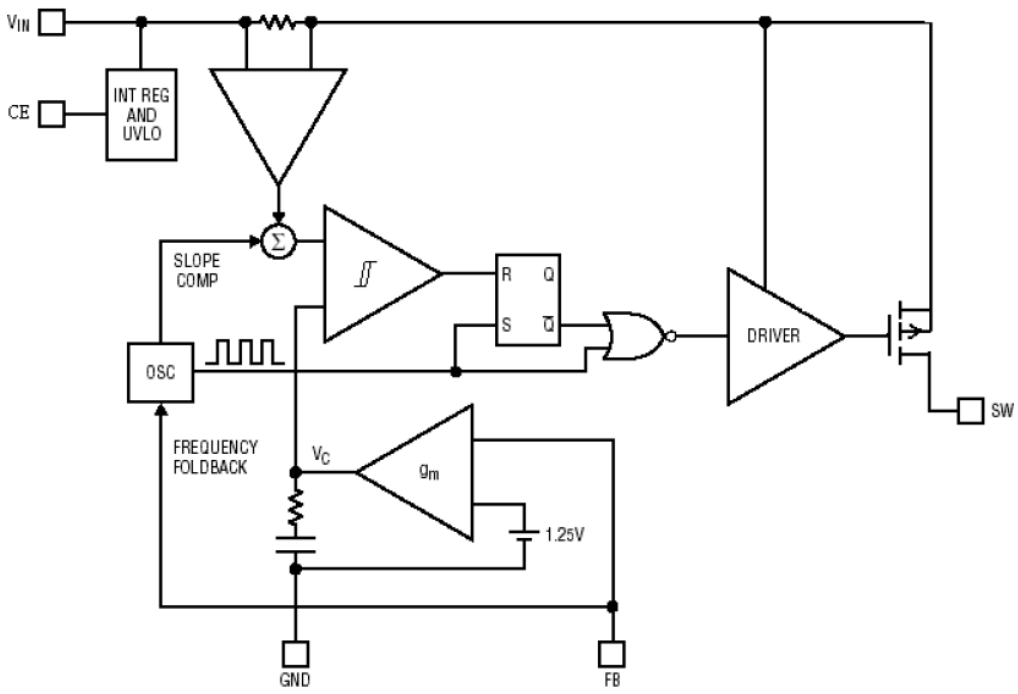
1 C1 Capacitor MLCC 10uF; SMD 0805
2 C2 Capacitor Tantalum Capacitor; 25V/22uF; SMD
3 C3 Capacitor MLCC 100pF; SMD 0805
4 D1 Diode SS34; 40V, 3A; SMD
6 L1 Inductor 22uH; 3A; SMD, Shielding
7 IC1 IC FS1060; SMD SOP-8
8 R1 Resistor SMD 0805; 9.1K；1%
9 R2 Resistor SMD 0805; 3K；1%



Pin Configuration

Pin No.	SOP8
①	NC
②	IN
③	SW
④	GND
⑤	FB
⑥	NC
⑦	EN
⑧	N/C

- **Functional Block Diagram**



- **Ordering information**

FS1060 - □ □

Package Code
SQ : SOP8
Indicates the product number

- **Absolute Maximum Ratings** @T_A=25℃ unless otherwise noted

Parameter	Symbol	Ratings	Unit
VIN	VIN	18	V
SW Voltage	VSW	VIN+1	V
BS Voltage	VBS	VSW – 0.3 to VSW + 8	V
EN, FB, COMP Voltage	VEN, VFB, VCOMP	-0.3 to 6	V
Maximum Power Dissipation	PD	800	mW
Junction Temperature	TJ	125	℃
Operating Temperature Range (Note 2)	TOPR	–40 to 85	℃
Storage Temperature Range	TSTG	–65 to +150	℃
Lead Temperature (Soldering, 10 sec)	TLEAD	300	℃

- **Electrical Characteristics** @T_A=25℃ unless otherwise noted

Symbol	Item	Conditions	Min.	Typ.	Max.	Unit
VUVLO	Under Voltage Lockout			3.35	3.6	V
VFB	Feedback Voltage		1.225	1.25	1.275	V
IFB	FB Pin Bias Current	VFB=1.25V		150	600	nA
IQ	Supply Current	VFB=1.3V, VCE=VIN		2		mA
	Quiescent Current in Shutdown	VCE=0V		2	5	uA
△VFB/△V	Reference Line Regulation	VIN=5V to 20V		0.08		%/V
△VFB/△T	Feedback Voltage Temperature Coefficient	-40℃ ≤ Topt≤ 85℃		±100		ppm/℃
FOSC_MAX	Oscillator Frequency	VFB=1.1V		500		KHz
FOSCTH	Frequency Shift Threshold on FB Pin	FSW=200K		0.44		V
DMAX	Max Duty Cycle			97		%
ILIMIT	Switch Current Limit			2.5		A
Rds_on	Static P-Channel MOSFET On State Resistance			90*		mΩ
ISW	Switch Leakage Current				1	uA
ICEH	CE “H” Input Current	VCE =3V		6.7	15	uA
ICEL	CE “L” Input Current	VCE = 0V		0.03	0.1	uA
VCEH	CE “H” Input Voltage	VIN = 12V	1.8			V
VCEL	CE “L” Input Voltage	VIN = 12V			0.4	V

- **Typical Performance Characteristics**

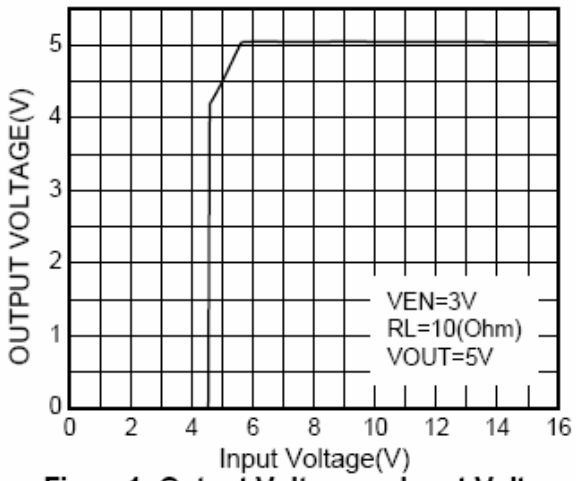


Figure1: Output Voltage vs Input Voltage

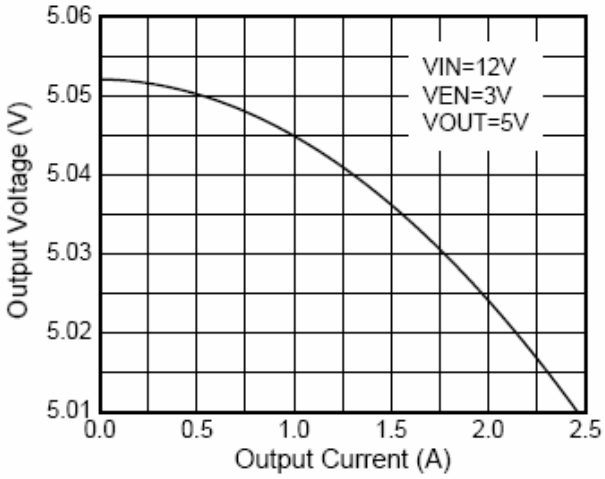


Figure2: Output Voltage vs Output Current

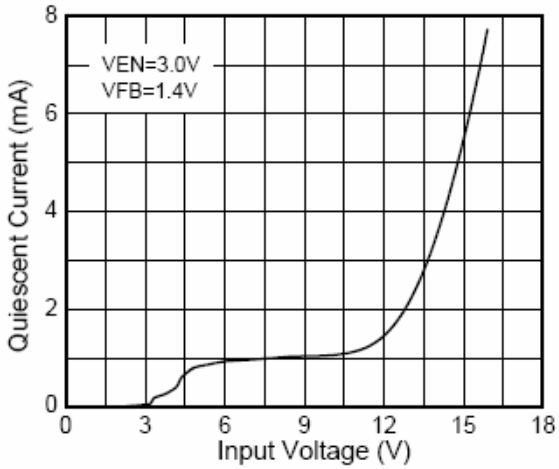


Figure3: Quiescent Current vs Input Voltage

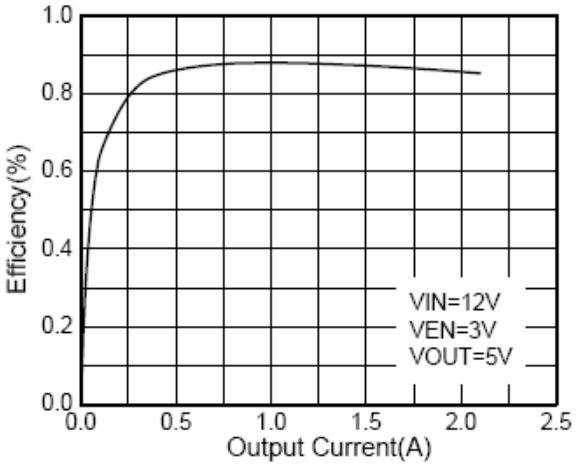


Figure4: Efficiency vs output current

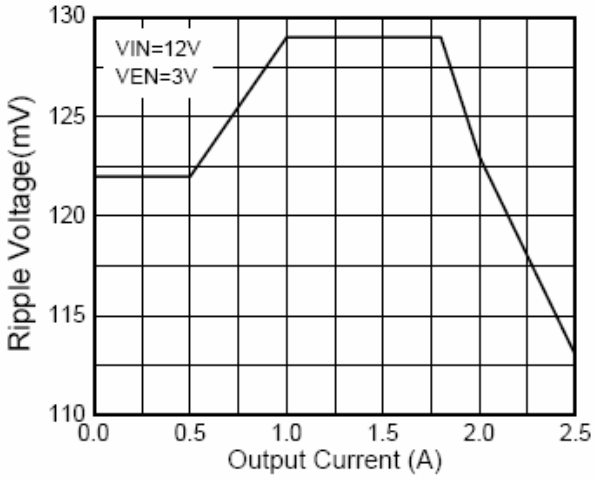


Figure5: Ripple Voltage vs Output Current

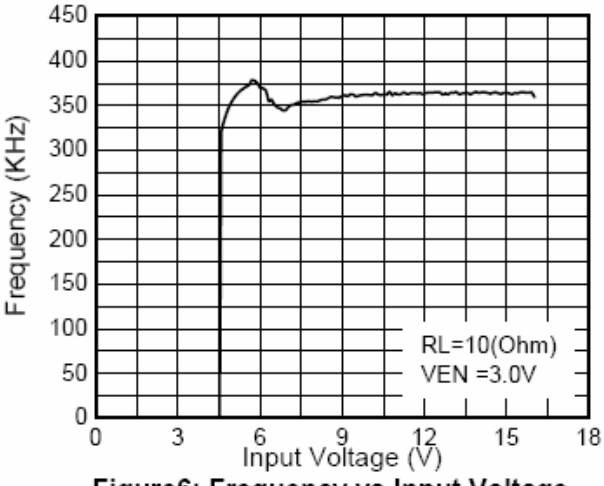


Figure6: Frequency vs Input Voltage

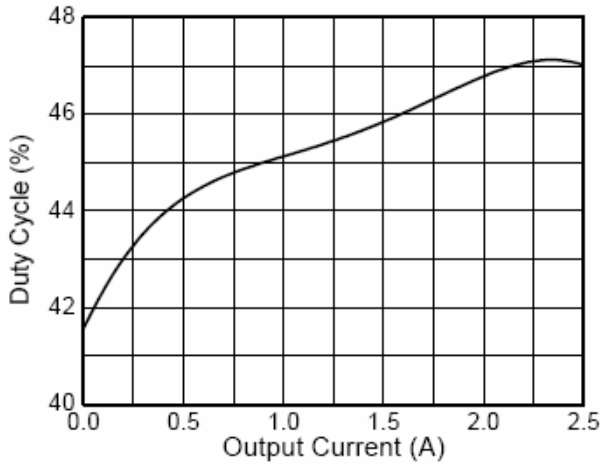


Figure7: Duty Cycle vs Output Current

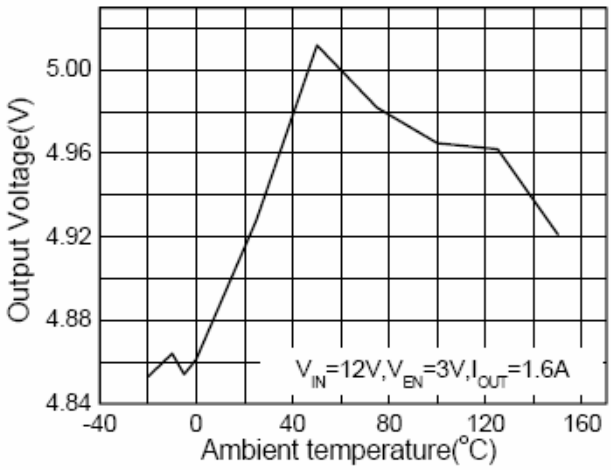


Figure8: Ripple Voltage vs Temperature

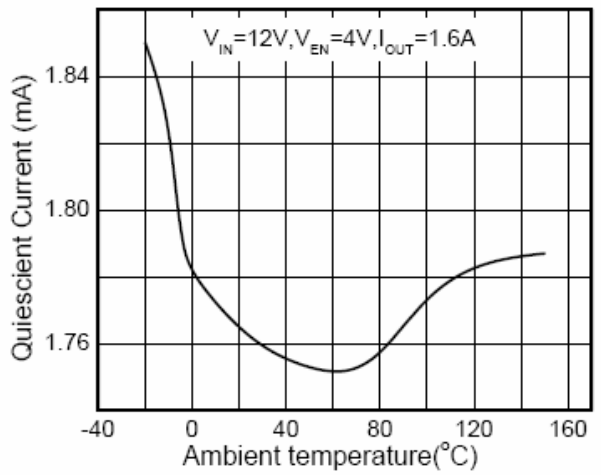


Figure9:Quiescient Current vs. Temperature