



Primary-side LED driver Chip

Description

The D8041 is a high performance AC/DC power supply controller for battery charger and adapter applications. The device uses Pulse Frequency Modulation (PFM) method to build discontinuous conduction mode (DCM) fly back power supplies.

The driver circuit uses few components to achieve wide-voltage (85V-265V) input and constant current output.

The D8041 is available in SOT-23-6 package.

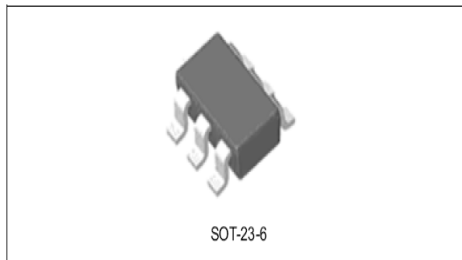


Figure 1. Package Type of D8041

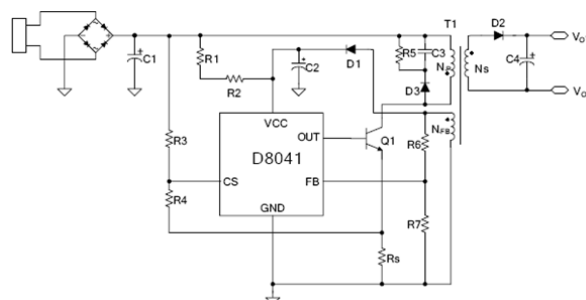
Features

- Sub-microampere Start-up Current
- 30mW No-load Standby Power Feasible
- Tight CC Regulation Performance, output current $\pm 5\%$ in total voltage
- Provides Constant Voltage, Constant Current (CV/CC) Regulation without Requiring an Opto coupler and Secondary Control Circuitry. Primary Side Control for Rectangular Constant Current and Constant Voltage Output
- EMI Random Frequency Modulation to Reduce System EMI
- Valley Turn on of External Power NPN Transistor to Reduce Switch Consumption, increase power can drive NMOSFET.
- Built-in Soft Start
- Open Circuit Protection
- Over Voltage Protection
- Short Circuit Protection
- Small SOT-23-6 Package Size. Few Components in Total Circuit.

Applications

- Adapters/Chargers for Cell/Cordless Phones, Pads, MP3 and Other Portable Apparatus
- LED Drivers
- Standby and Auxiliary Power Supplies

Typical Application





Pin Configuration

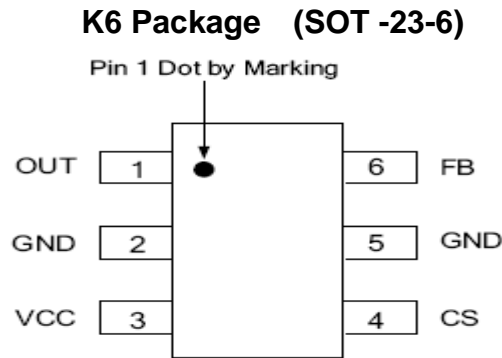


Figure 2. Pin Configuration of D8041(Top View)

Pin Description

Pin Number	Pin Name	Function
1	OUT	This pin drives the base of external power NPN switch
2,5	GND	Ground
3	VCC	Supply voltage
4	CS	The primary current sense
6	FB	The Voltage feedback from the auxiliary winding

Functional Block Diagram

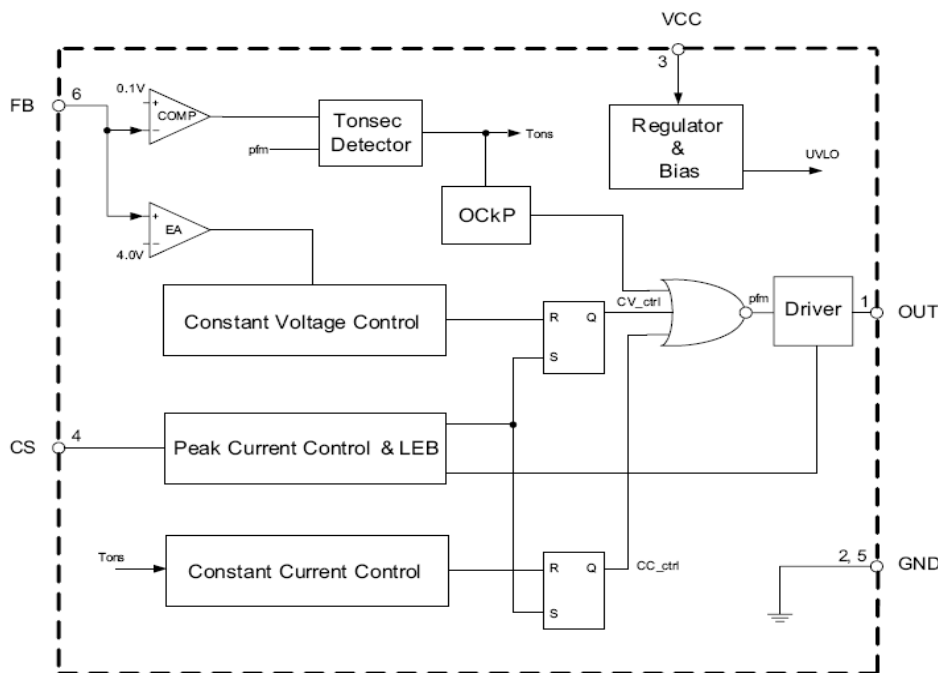


Figure 3. Functional Block Diagram of D8041



Absolute Maximum Ratings (Note 1)

Parameter	value	unit
Supply Voltage VCC	-0.3 to 36	°C/V
Voltage at CS ,OUT to GND	-0.3 to 7	V
FB Input	-40 to 10	V
Output Current at OUT	Internally limited	A
Operating Junction Temperature	150	°C
Storage Temperature	-65 to 150	°C
Lead Temperature(Soldering ,10s)	300	°C
Thermal Resistance Junction-to-Ambient	250	°C/W
ESD (Machine Model)	200	V

Note 1:Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Electrical Characteristics ($V_{CC}=15V$, $T_A=25^{\circ}C$, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Uvlo Section						
Start-up Threshold	$V_{TH(ST)}$		19.6	21.8	24	V
Minimal Operating Voltage	$V_{OPR(min)}$		9.6	10.8	12	V
Standby Current Section						
Start-up Current	I_{ST}	$V_{CC}=V_{TH(ST)}-V_{TH(ST)}-0.5V$, Before Start-up			0.6	μA
Operating Current	$I_{CC(OPR)}$	Static		290	360	μA
Drive Output Section						
OUT Maximum Current	Sink	I_{OUT}	50			mA
	Source		22	30	36	
CURRENT SENSE SECTION						
Current Sense Threshold	V_{CS}		455	510	545	mV
Pre-Current Sense	$V_{CX(PRE)}$		365	410	455	mV
Leading Edge Blanking				750		ns



Feedback Input Section

Feedback Pin Input Leakage Current	I_{FB}	$V_{FB}=4V$	2.0	2.5	3.1	μA
Feedback Threshold	V_{FB}		3.59	3.83	4.07	V

Typical Performance Characteristics

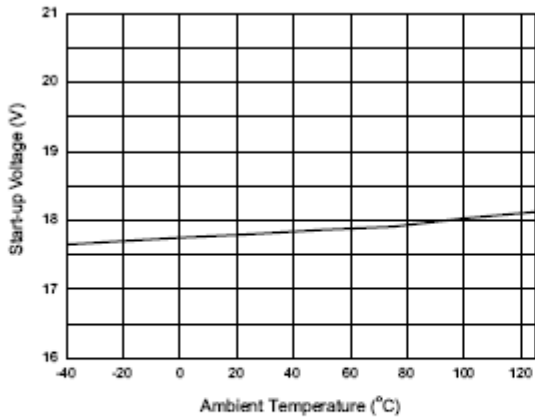


Figure 4. Start-up Voltage vs. Ambient Temperature

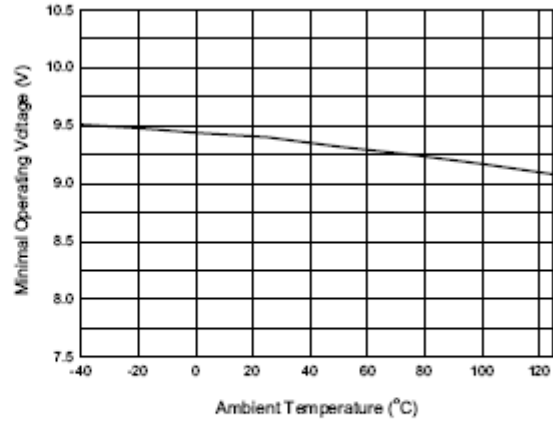


Figure 5. Minimal Operating Voltage vs. Ambient Temperature

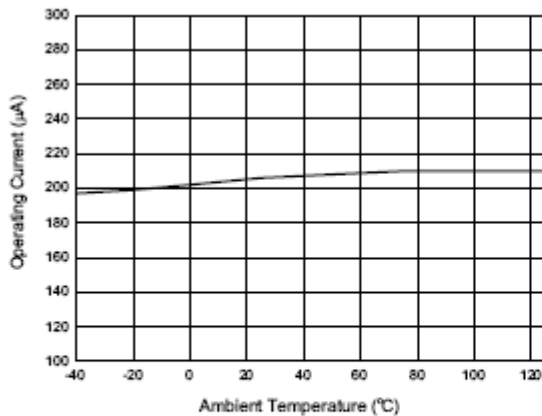


Figure 6. Operating Current vs. Ambient Temperature

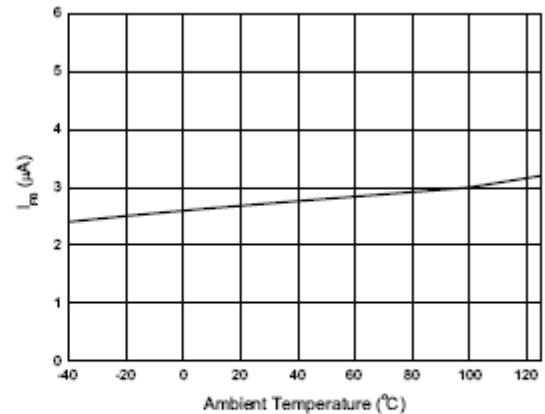
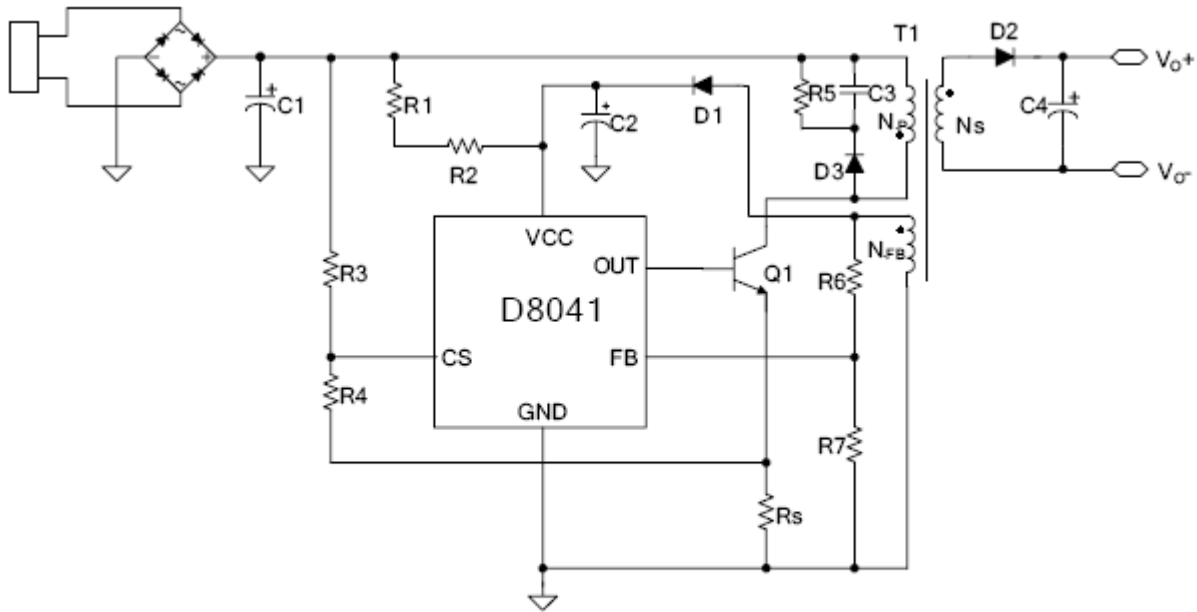


Figure 7. I_{FB} vs. Ambient Temperature

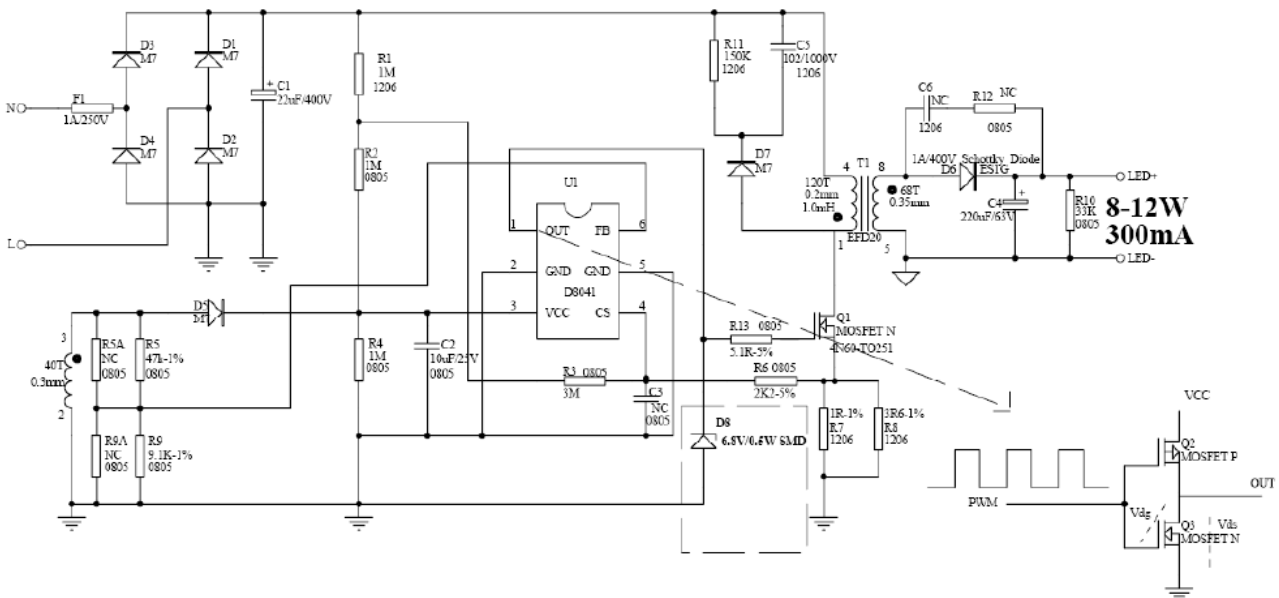


Typical Application



5V/700mA Output for Battery Charger of Mobile Phone

D8041 Driver MOSFET Application Circuit



Notes:

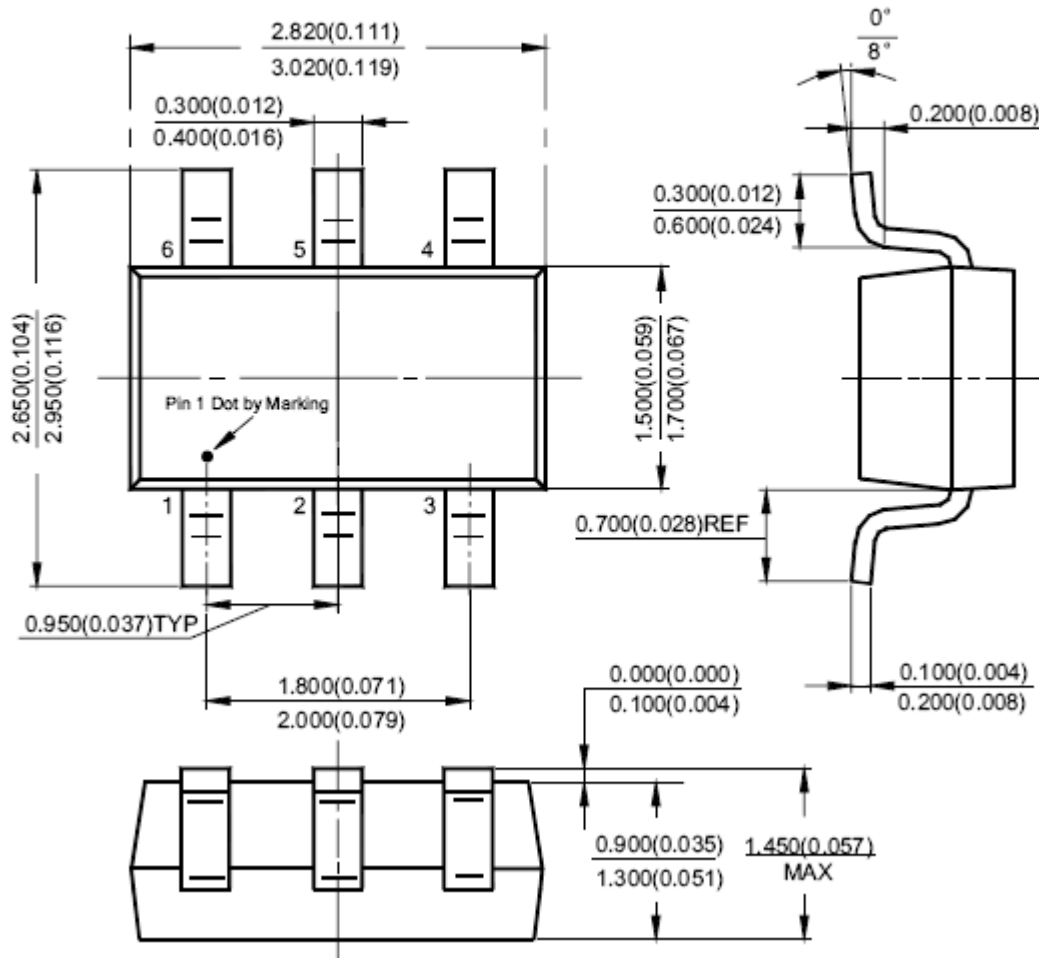
When driving MOSFET, add a D8 (6.8V/0.5W) voltage regulator tube at Out pin.



Mechanical Dimensions

SOT-23-6

Unit: mm(inch)





D8041

日期 Date	版本 Version	说明 Description	排版 Typeset	工程师 Engineer	状态 Status
2012-11-26	A3		W	/	Cancel
2014-4-12	A4		E	/	Cancel
2015-10-29	A5		Jasper		Active