BM 60V LED DRIVER

BM0152HV- buck LED driver with 5000:1 dimming

DESCRIPTION

The BM0152HV is a continuous conduction mode inductive step-down converter, designed for driving single or multiple series connected LED efficiently from a voltage source higher than the total LED chain voltage.

The device operates from an input supply between 7V and 60V and provides an externally adjustable output current of up to 1A. Depending upon the supply voltage and external components, the BM0152HV can provide max. 30 watts of output power.

The BM0152HV includes the power switch and a high-side output current sensing circuit, which uses an external resistor to set the nominal average output current, and a dedicated DIM input accepts either a DC voltage or a wide range of pulsed dimming. Applying a voltage of 0.3V or lower to the DIM pin turns the output off and switches the device into a low current standby state.

The BM0152HV is available in PSOP-8 (ESOP8) with power pad packages.

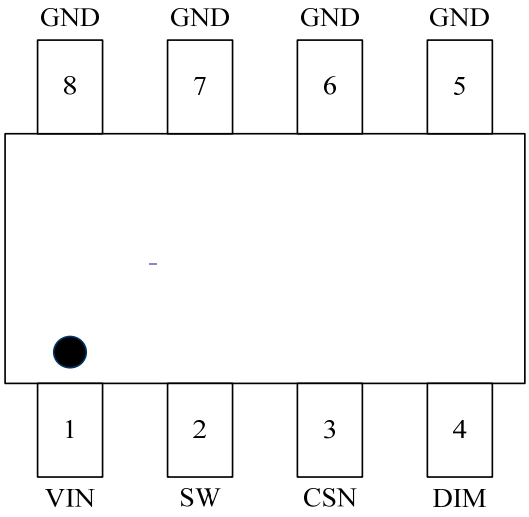
FEATURES

- Low components count
- Wide input voltage range: 7V to 60V
- Up to 1A output current
- Linear and PWM dimming capability
- Up to 1MHz switching frequency
- Typical 5% output current accuracy
- Open/short circuit LED protection
- High efficiency (up to 97%)
- High-Side Current Sense
- Hysteretic Control: No Compensation
- Constant current LED driver

APPLICATIONS

- DC/DC LED driver applications
- Automotive lighting
- General purpose constant current source
- LED back-up lighting
- SELV lighting
- Backlighting for flat panel displays

PIN CONFIGURATION (PSOP-8)



出色的调光特性，非常高的效率，宽电压输入，简洁的外围电路。
BM0152HV 专为 LED 背光---车灯---LED 照明的各种恒流应用打造。

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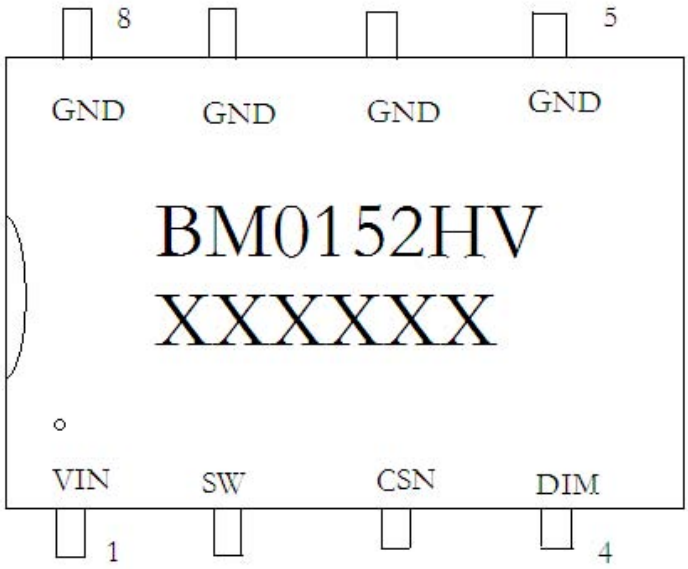
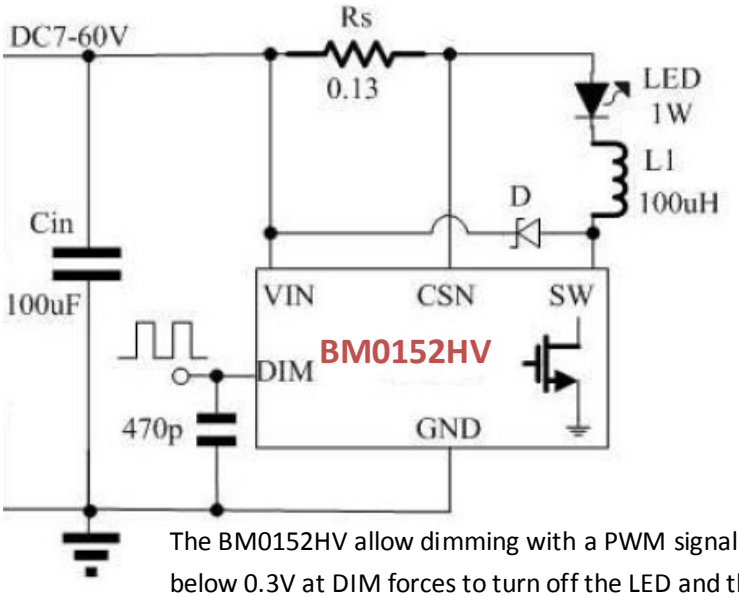
PART MARKING



TYPICAL APPLICATION CIRCUIT



最大可以输出到 30W

The BM0152HV allow dimming with a PWM signal at the DIM input. A logic level below 0.3V at DIM forces to turn off the LED and the logic level at DIM must be at least 2.5V to turn on the full LED current. The frequency of PWM dimming ranges from 100Hz to more than 20 kHz. The DC voltage is valid from 0.5V to 2.5V. When the dc voltage is higher than 2.5V, the output current keeps constant.

Constant LED current : I=100mV/Rs

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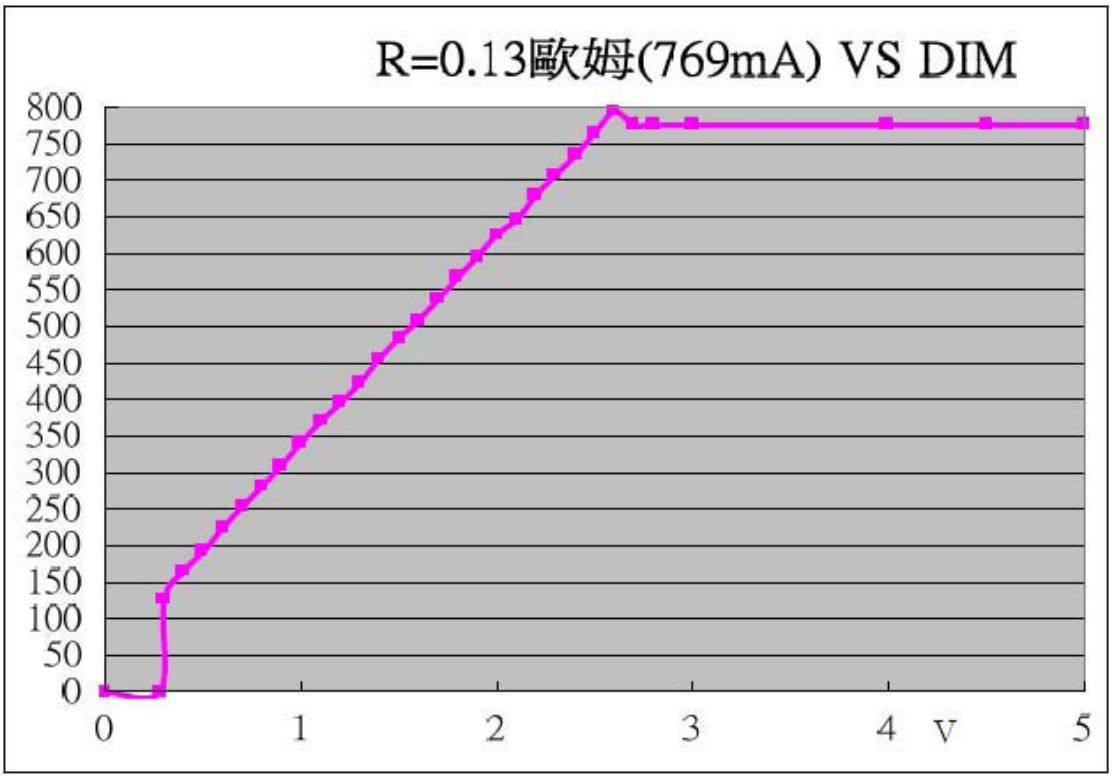
PIN DESCRIPTION

Pin	Symbol	Description
1	VIN	Supply Voltage Input
2	SW	Switch Output. SW is the internal N MOSFET switch.
3	CS	Current sense.
4	DIM	Logic level dimming control.
5	GND	Power Ground. Connect directly to the ground plane.
6	GND	Signal Ground. Connect directly to the ground plane.
7	GND	Signal Ground. Connect directly to the ground plane.
8	GND	Signal Ground. Connect directly to the ground plane.



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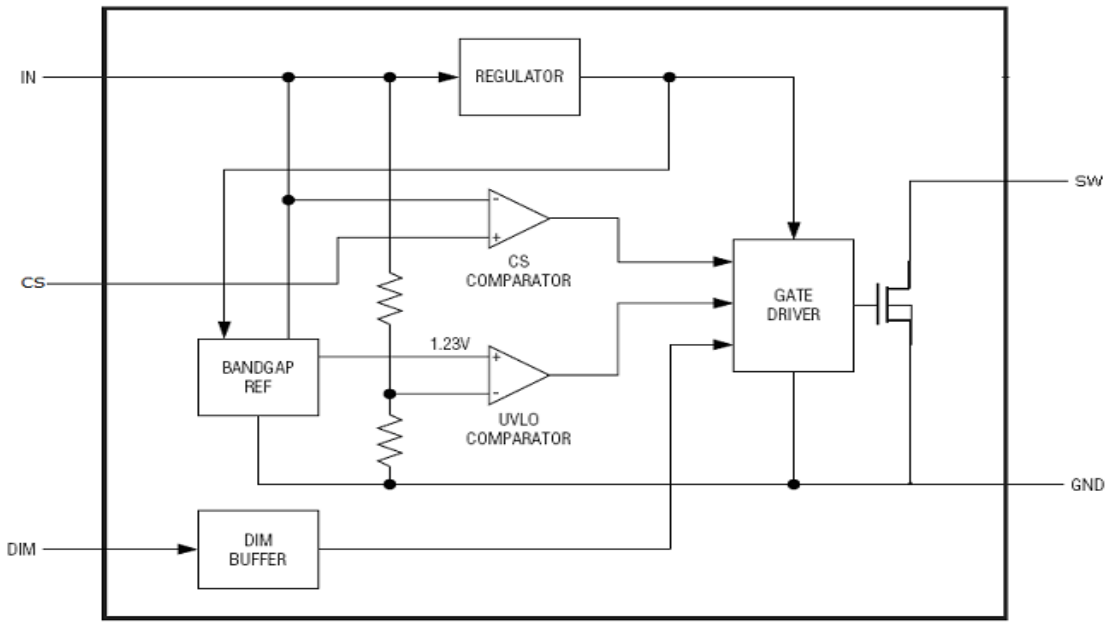
BLOCK DIAGRAM



ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise specified)

Parameter	Symbol	Value	Unit
DC Supply Voltage	V_{IN}	-0.3~45	V
Drain of internal switch	SW	-0.3~45	V
Current Sense	CS	V_{IN}+0.3	V
Logic Level Dimming Input	DIM	-0.3~6	V
Output Current	I_{SW}	1.5	A
Operating Temperature	T_{OPR}	-40～85	℃
Maximum Junction Temperature	$T_{J(Max)}$	-40~125	℃
Storage Temperature	T_S	-65～150	℃
Thermal Resistance Junction – Case (*)	$R_{\Theta JC}$	150	℃/W
Power Dissipation	P_D	1.5	W

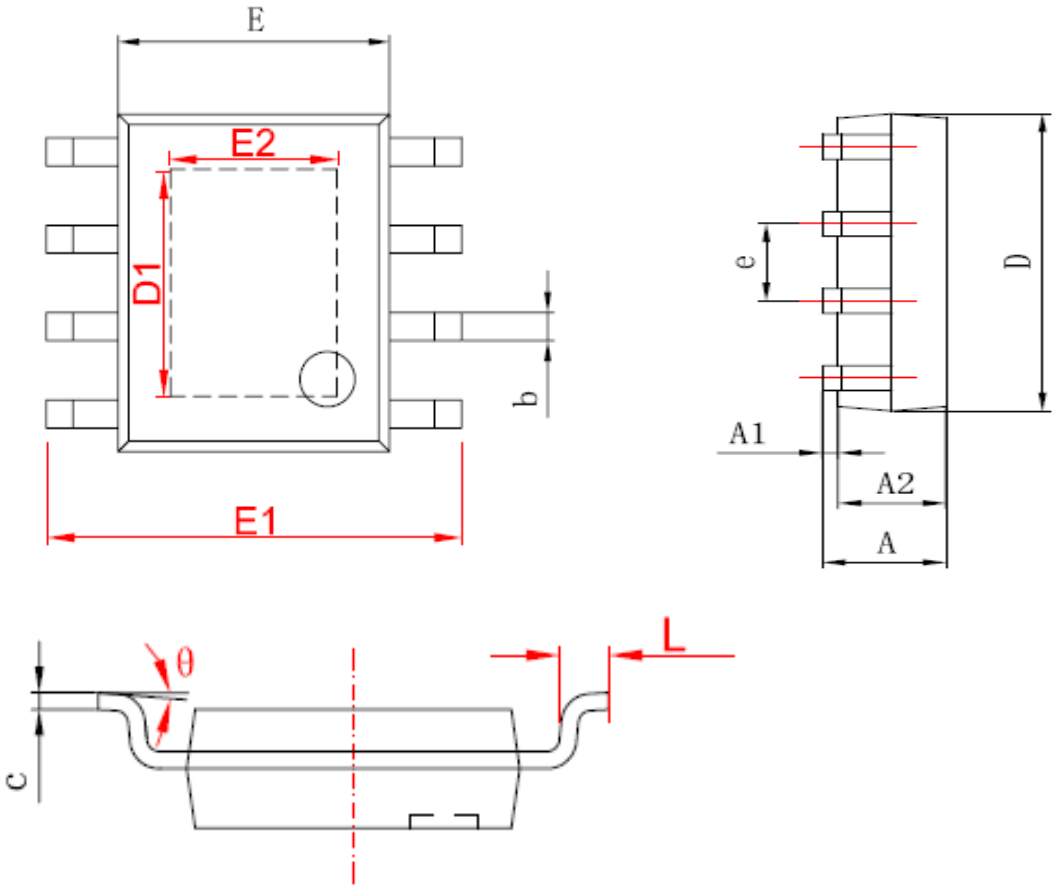
The IC has a protection circuit against static electricity. Do not apply high static electricity or high voltage that exceeds the performance of the protection circuit to the IC.

ELECTRICAL CHARACTERISTICS

(T_A=25℃, V_{IN}=12V, Unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Supply Voltage (V_{IN} Pin)						
V_{IN}	DC Input Supply Voltage		7		60	V
UVLO (on)	Start Threshold Voltage	V_{IN} Falling		6.8		V
ΔUVLO	Under Voltage Lockout Hysteresis	V_{IN} Rising		400		mV
F_{SW}	Switching Frequency				1	MHz
Iq	Quiescent Current	V_{DIM} <0.3V		200		uA
Current Sensing (CS Pin)						
Vcs(TH)	Current Sense Pull-in Threshold Voltage	T_A=-40℃~85℃	95	100	105	mV
V_{CS-HYS}	Sense threshold hysteresis			15		%
I_{CS}	Current Sense Current	V_{IN} - V_{CS}=50mV		7		uA
Switch Output (SW Pin)						
R_{SW}	SW on resistance	V_{IN}=-12V V_{IN}=-24V		0.6 0.4		Ω
I_{SW}	Output Current				1.5	A
I_{LEAK}	Leakage Current			0.5	5	uA
PWM Dimming (DIM Pin)						
$V_{DIM(LO)}$	PWM Dimming Input Low Voltage	Vin=10V~40V			0.3	V
$V_{DIM(HI)}$	PWM Dimming Input High Voltage	Vin=10V~40V	2.5			V
R_{DIM}	PWM Dimming Pull Up Resistance	V_{EN}=5V		250		KΩ
f_{DIM}	Max Dimming Frequency	f_{OSC} =500KHz			50	KHz
D_{DIM}	Duty	f_{DIM}=200Hz f_{DIM}=20KHz	0.02 4		100 100	%

PSOP-8P(ESOP8) PACKAGE OUTLINE



字符	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.050	0.150	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
D1	3.202	3.402	0.126	0.134
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
E2	2.313	2.513	0.091	0.099
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°