

GENERAL DESCRIPTION

HM2675HV is the monolithic IC designed for a step-down DC/DC converter capable of driving 3A load without an additional transistor. The input voltage range is up to 60V. Its feedback voltage, V_{FB} , is 200mV. The HM2675HV operates at a switching frequency of 52kHz. The external shutdown function is controlled by a logic level on the ON/OFF pin and then the circuit comes into the standby mode with $I_{STBY} \sim 50\mu A$ (typ.). The ON/OFF pin may be used for the analog dimming. As the voltage on the ON/OFF pin is increased from 0.07V to 0.67V, the voltage on the FB pin falls from 200mV to 0.

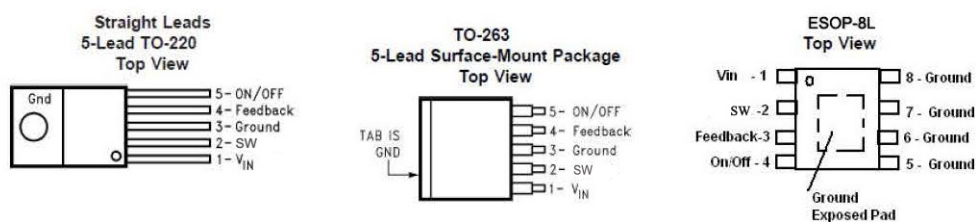
The self-protection features include a cycle-by-cycle current limit and a thermal protection.

The HM2675HV is available in standard TO-220, TO-263 packages and ESOP8 package (for $I_{LOAD} < 3.0A$).

FEATURES

- $V_{IN\ Max} = 60V$
- $V_{FB} = 200mV$
- Frequency 52kHz
- $I_{LED\ Max} = 3A$
- On/Off input may be used for the Analog Dimming
- Thermal protection
- Cycle-by-cycle current limit
- $I_{LOAD\ max} = 3A$
- V_{OUT} from 0.2V to 55V

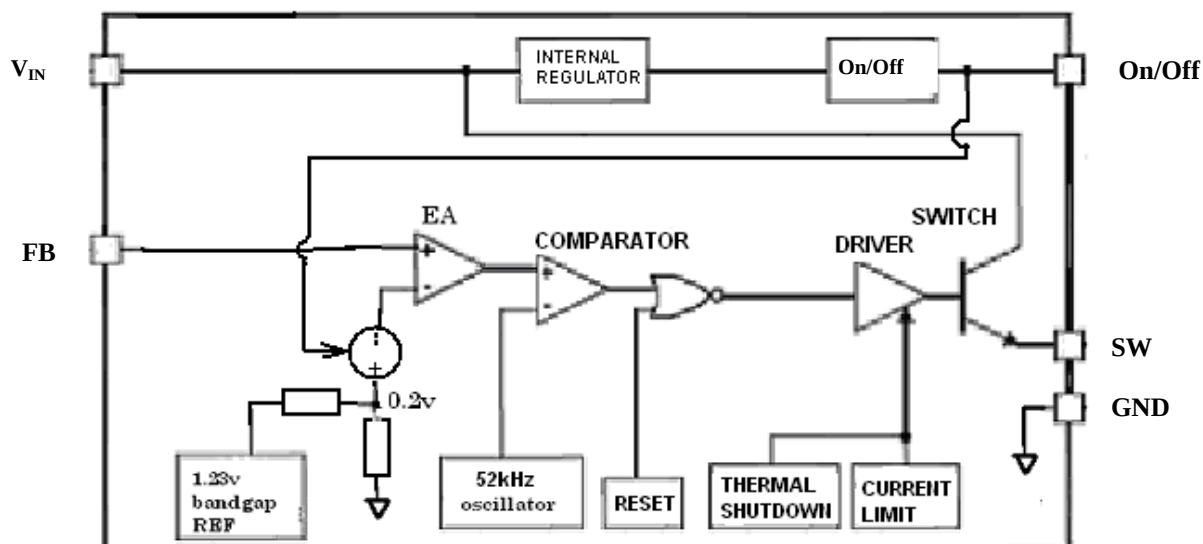
PIN CONFIGURATION



PIN ASSIGNMENT

PIN	ESOP8 (ESOP8 is used at $I_{LED} < 3.0A$)	TO-220, TO-263
1	V_{IN}	V_{IN}
2	SW	SW
3	FB	GND
4	On/Off and Dimming	FB
5 to 8	GND	On/Off and Dimming (pin 5)

BLOCK DIAGRAM



PIN ASSIGNMENT

PIN	ESOP8 (ESOP8 is used at $I_{LED} < 3.0A$)	TO-220, TO-263
1	V_{IN}	V_{IN}
2	SW	SW
3	FB	GND
4	On/Off and Dimming	FB
5 to 8	GND	On/Off and Dimming (pin 5)

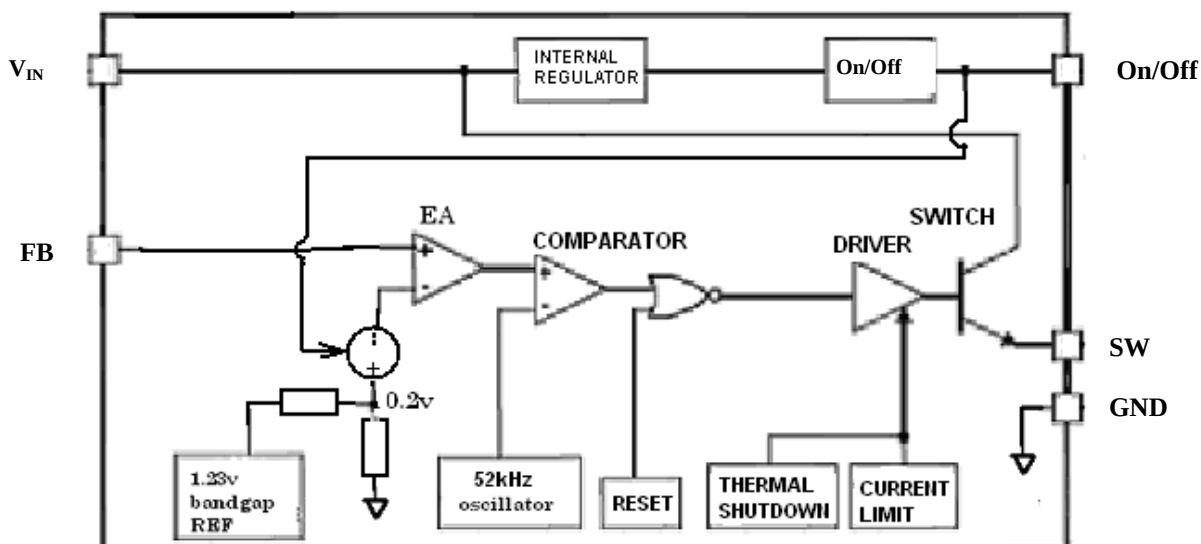
ABSOLUTE MAXIMUM RATING

$V_{IN Max}$	V_{IN}	63V
On/Off pin input voltage	$V_{On/Off}$	-0.3V to V_{IN}
FB (Feedback) pin voltage	V_{FB}	-0.3V to V_{IN}
SW voltage (Min)	V_{SW}	-0.8V
Minimum ESD rating, HBM (C = 100pF, R = 1.5k)	ESD	2000V
Maximum junction temperature	$T_{J Max}$	150°C

OPERATING RATINGS

Operating $V_{IN Max}$	V_{IN}	60V
Operating temperature range	T_{Op}	-40°C to +125°C

BLOCK DIAGRAM



PIN ASSIGNMENT

PIN	ESOP8 (ESOP8 is used at $I_{LED} < 3.0A$)	TO-220, TO-263
1	V_{IN}	V_{IN}
2	SW	SW
3	FB	GND
4	On/Off and Dimming	FB
5 to 8	GND	On/Off and Dimming (pin 5)

ABSOLUTE MAXIMUM RATING

$V_{IN Max}$	V_{IN}	63V
On/Off pin input voltage	$V_{On/Off}$	-0.3V to V_{IN}
FB (Feedback) pin voltage	V_{FB}	-0.3V to V_{IN}
SW voltage (Min)	V_{SW}	-0.8V
Minimum ESD rating, HBM (C = 100pF, R = 1.5k)	ESD	2000V
Maximum junction temperature	$T_{J Max}$	150°C

OPERATING RATINGS

Operating $V_{IN Max}$	V_{IN}	60V
Operating temperature range	T_{Op}	-40°C to +125°C

ELECTRICAL CHARACTERISTICS

$V_{IN} = 12V$, $I_{LOAD} = 350mA$, unless otherwise specified.

SYMBOL	PARAMETER	CONDITION	$T_J, ^\circ C$	MIN	TYP	MAX	UNITS
V_{FB}	Feedback voltage	$V_{IN} = 12V$, $I_{LOAD} = 350mA$, On/Off = 0	25	190	200	210	mV
		$5.5V < V_{IN} < 60V$; $0.2A < I_{LOAD} < 3A$, On/Off = 0 (Note 1)	25	184		216	
			-40 $^\circ C$ to +125 $^\circ C$	180		220	
η	Efficiency	$V_{IN} = 12V$, $I_{LOAD} = 3A$	25		65		%
I_{FB}	FB input current	$V_{FB}=250mV$, On/Off = 0	25	-150	-50	150	nA
			-40 $^\circ C$ to +125 $^\circ C$	- 500		500	
F_{OSC}	Oscillator frequency		25	47	52	58	kHz
			-40 $^\circ C$ to +125 $^\circ C$	42		63	
V_{SAT}	Saturation voltage	$I_{SW} = 3A$	25		1.35	1.50	V
			-40 $^\circ C$ to +125 $^\circ C$			1.70	
CL	Current limit		25	3.7	5	6.7	A
DC _(Max)	Max duty cycle		25	100	100		%
I_{Lo}	SW leakage current	$V_{IN} = 60V$, $V_{sw} = 0$, $V_{FB} = 1.5V$	25	-0.3	-	0.07	mA
		$V_{IN} = 60V$, $V_{sw} = -1V$, $V_{FB} = 1.5V$	25	-30	-8		
V_{TH} On/Off	Threshold voltage On/Off		25	1.0	1.4	2.0	V
			-40 $^\circ C$ to +125 $^\circ C$	0.8		2.2	
I_{IH}	Input current On/Off	$V_{On/Off} = 2.5V$	25	-5	0.01	5	μA
I_{IL}		$V_{On/Off} = 0V$	25	-2	-0.3		μA
I_Q	Quiescent current	$V_{FB} = 1.5V$	25		5.3	10	mA
I_{STBY}	Standby current	$V_{On/Off} = 5V$, $V_{IN} = 60V$	25		50	200	μA
$V_{On/Off}$	Dimming voltage (On/Off pin)	$I_{LED} = 0$, $V_{IN} = 12V$	25	600	670	750	mV

Note 1. LED must be ensured with load current (I_{LOAD}) at $V_{IN Min}$.

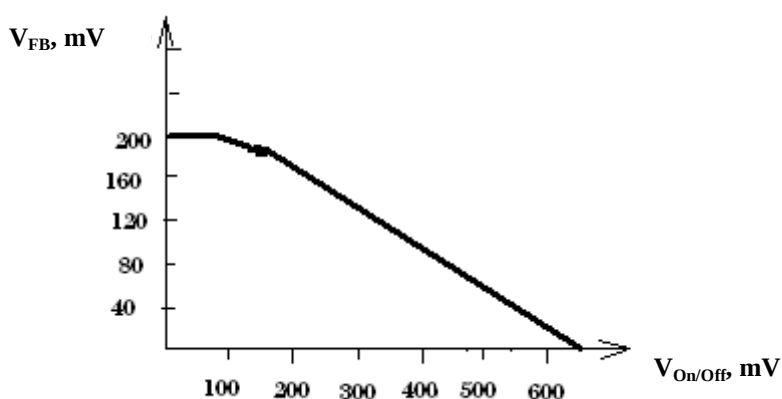
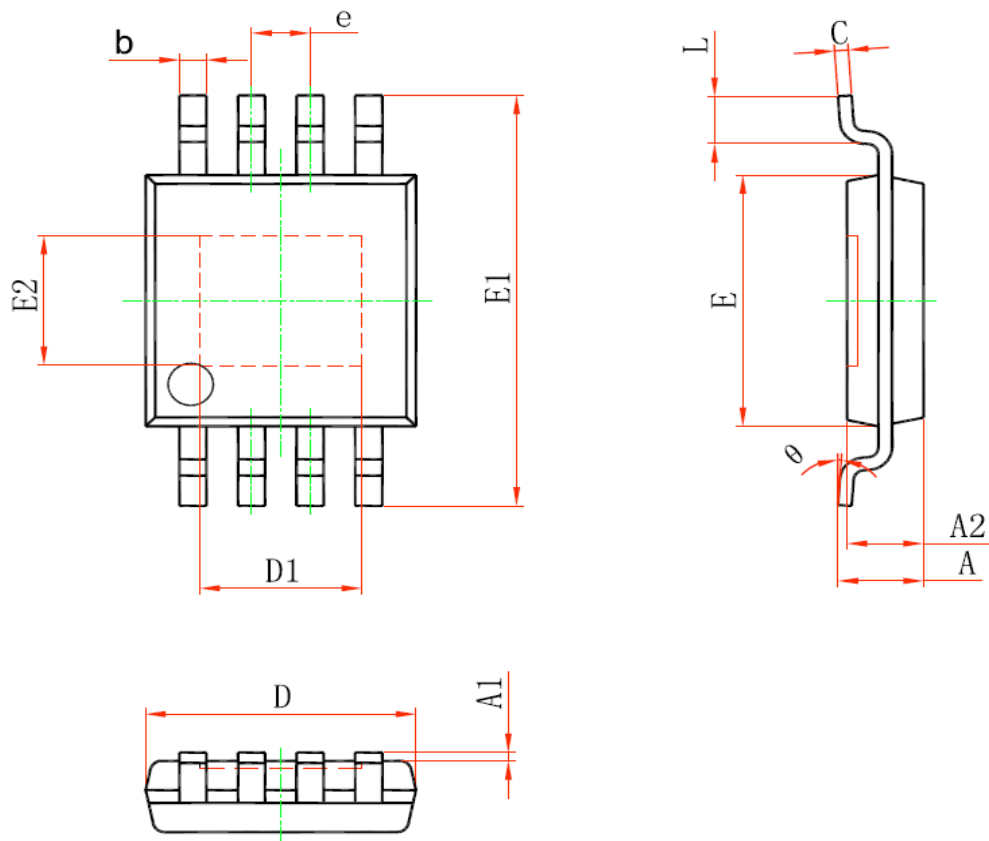


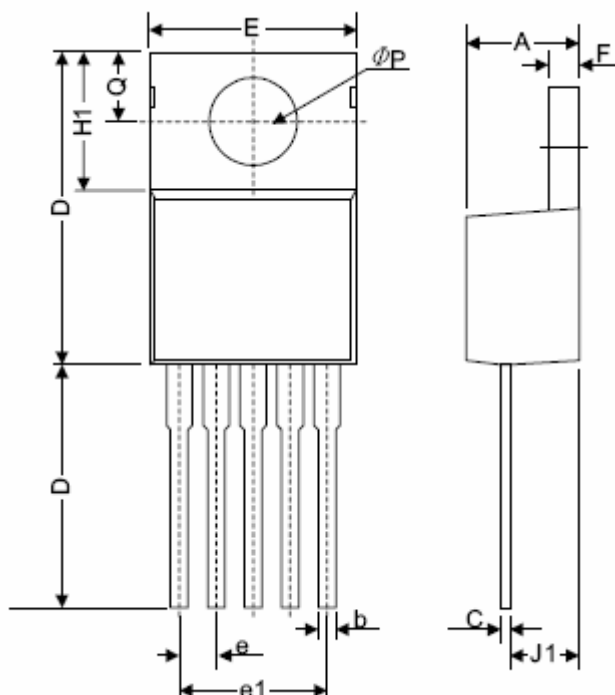
Fig.1. Dimming voltage (typical), $V_{FB} = f(V_{On/Off})$

ESOP8



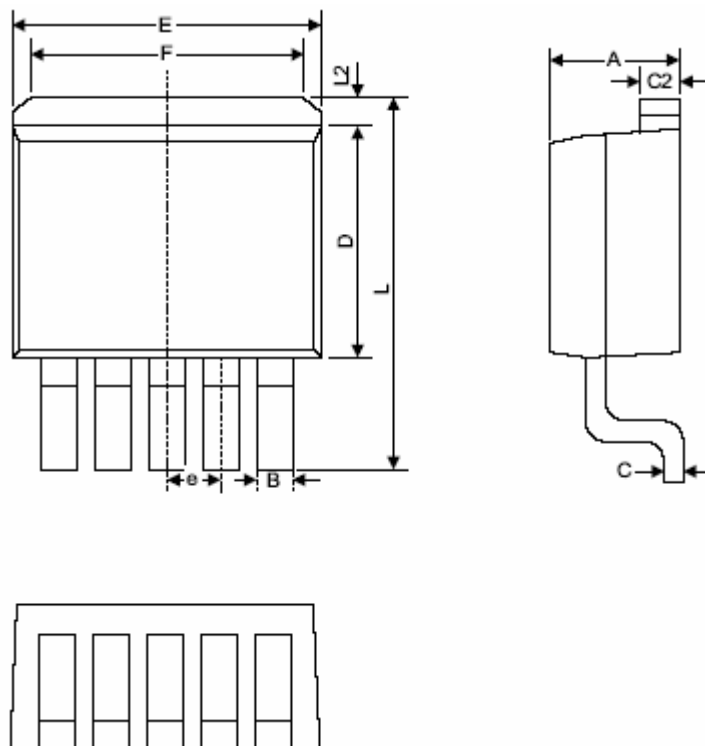
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
D1	1.700	1.900	0.067	0.075
e	0.65 (BSC)		0.026 (BSC)	
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
E2	1.450	1.650	0.057	0.065
L	0.400	0.800	0.016	0.031
θ	0°	6°	0°	6°

TO-220-5L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	0.160	0.190
b	0.76	1.02	0.030	0.040
C	0.36	0.64	0.014	0.025
D	14.22	15.49	0.560	0.610
E	9.78	10.54	0.385	0.415
e	1.57	1.85	0.062	0.073
e(1)	6.68	6.93	0.263	0.273
F	1.14	1.40	0.045	0.055
H(1)	5.46	6.86	0.215	0.270
J(1)	2.29	3.18	0.090	0.125
L	13.21	14.73	0.520	0.580
ϕP	3.68	3.94	0.145	0.155
Q	2.54	2.92	0.100	0.115

TO-263-5L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	0.160	0.190
B	0.76	1.02	0.030	0.040
C	0.36	0.64	0.014	0.025
C2	1.14	1.40	0.045	0.055
D	8.64	9.65	0.340	0.380
E	9.78	10.54	0.385	0.415
e	1.57	1.85	0.062	0.073
F	6.60	7.11	0.260	0.280
L	15.11	15.37	0.595	0.605
L2	-	1.40	-	0.055