QW2886
LED Emergency Lighting driver

General Description

QW2886 is a LED driver designed for Emergency Lighting., The QW2886 employs patent protected main line detecting methodology to control and drive the emergency lighting system, without any peripheral components. The QW2886 can drive an LED load directly or to enable a boost circuitry, while the AC input main line could be 85-265Vac.

QW2886 integrates a precise single lithium-ion /polymer battery management functional blocks to protect the lithium-ion/polymer battery, including Over Current Protection, Over Charge Protection, Over Discharge Protection, Battery Reverse Protection and Short Circuit Protection.

QW2886 can deliver directly output current. QW2886 is available in SOP-8 package.

Features

- Simplified application circuitry
- AC main line detecting directly
- 85-265Vac
- EN PIN   drive LED load directly
- Integrated single lithium-ion/polymer battery management and protection
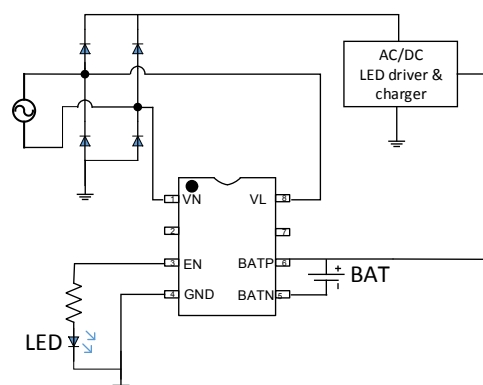
Package Reference
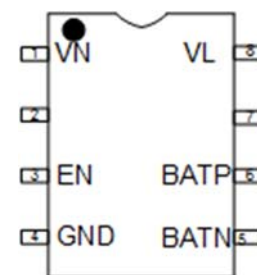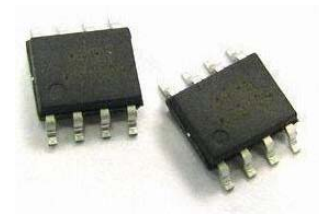
(Top View) SOP-8

Application

- Emergency lighting
- Stand-by Lighting

Typical Application

PIN FUNCTIONS

PIN#	PIN Name	Description
1	VN	Neutral Line
2	NC	
3	EN	Enable output
4	GND	GND PIN
5	BATN	Battery negative
6	BATP	Battery positive
7	NC	
8	VL	Live Line

FUNCTION DIAGRAM

ABSOLUTE MAXIMUM RATINGS (@T$_A$= +25°C, unless otherwise specified. Note 4)

Parameter	Symbol	Value	Units
V_BATP	Vcc	-0.3 to GND+10V	V
V_EN	VD	-0.3 to BATP +10V	V
VL, VN	VL, Vn	400V	V
Junction Temperature	TJ	+150	ºC
Storage Temperature	TSTG	-65 to +150	ºC
Thermal Resistance(Note 5)	θJA	100	°C/W
Lead Temperature (Soldering, 10sec)	TLEAD	+300	ºC
ESD (Machine Model)	–	200	V
ESD (Human Body Model))	–	2000	V

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
T$_A$		-40	+105	°C

Electrical Characteristics (@T$_A$ = +25°C, unless otherwise specified. Note 6)

Parameter	Symbol	Condition	Min	Typical	Max	Unit
Standby current Section						
Standby current	I$_{CC}$	V$_{CC}$ =3.3V		55	–	uA
MOSFET Switch Section						
MOS On resistance	R$_{DSON}$	–	–	0.2	–	Ω
AC detect Section						
Enable threshold resistance				500		KΩ
Battery management Section						
Over Charge voltage		–	4.15	4.25	4.35	V
Over Charge Release voltage			3.85	3.95	4.05	V
Over Discharge voltage		–	2.5	2.6	2.7	V
Over Discharge Release voltage			2.	3.0	3.1	V
Over Charge delay				80	200	mS
Over Discharge delay				20	60	mS
Over Current delay				10	20	mS
Short current delay				5	50	uS
Charging detect voltage			-1.2	-0.7	-0.2	V

Operation

1、AC main line detection

QW2886 is an ASIC for LED emergency lighting. The output PIN EN switch is turned on if the resistance between VL and VN is less than the threshold resistance, while there is no AC power signal.   If the AC power is detected or the resistance between VL and VN is larger than the threshold, the EN PIN is high impedance state.

| AC input	EN	NOTE
AC power	High impedance	
AC open	High impedance	
AC short	High level(battery voltage)	Resistance is less than threshold

2、Battery Management

QW2886 integrates battery protection including to protect lithium-ion/polymer battery from damage or degrading the lifetime due to overcharge, over discharge, battery reverse protection and overcurrent for one-cell lithium-ion/polymer battery.

3、Output current

In order to set the LED current, a ballast resister could be added between EN PIN and LED load. The internal MOSFET resistance is 200mohm.

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Package
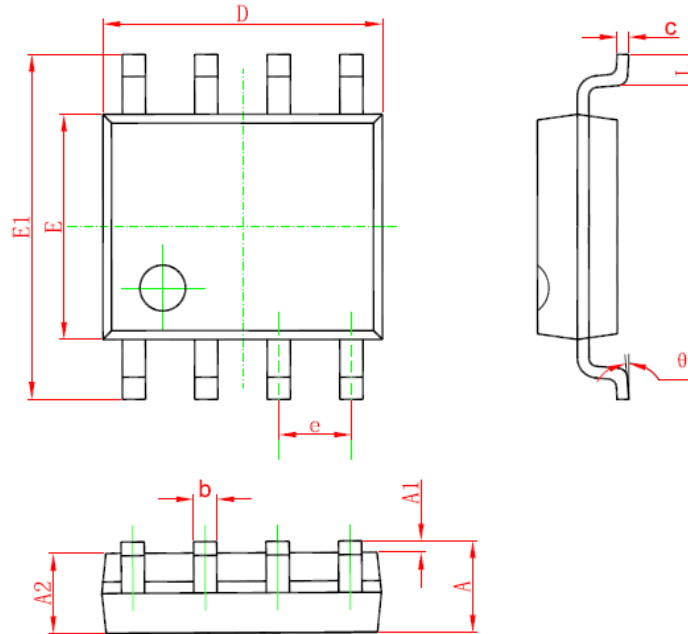
symbol	UNIT (mm)		UNIT (mm)	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°