

General Description

QW2880A is a LED driver designed for Emergency Lighting. The QW2880A employs patent protected main line detecting methodology to control and drive the emergency lighting system, without any peripheral components. The QW2880A can drive an LED load directly or to enable a boost circuitry, while the AC input main line could be 85-265Vac.

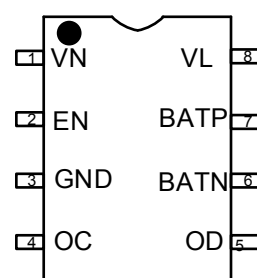
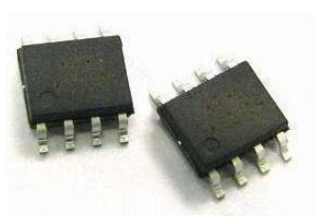
QW2880A integrates a precise single lithium-ion/polymer battery management functional blocks to protect the lithium-ion/polymer battery, including Over Current Protection, Over Charge Protection, Over Discharge Protection and Short Circuit Protection.

QW2880A can deliver as large as 2A output current. QW2880A is available in SOP-8 package.

Features

- Simplified application circuitry
- AC main line detecting directly
- 85-265Vac
- EN PIN 2A output current
- Integrated single lithium-ion/polymer battery management and protection

Package Reference

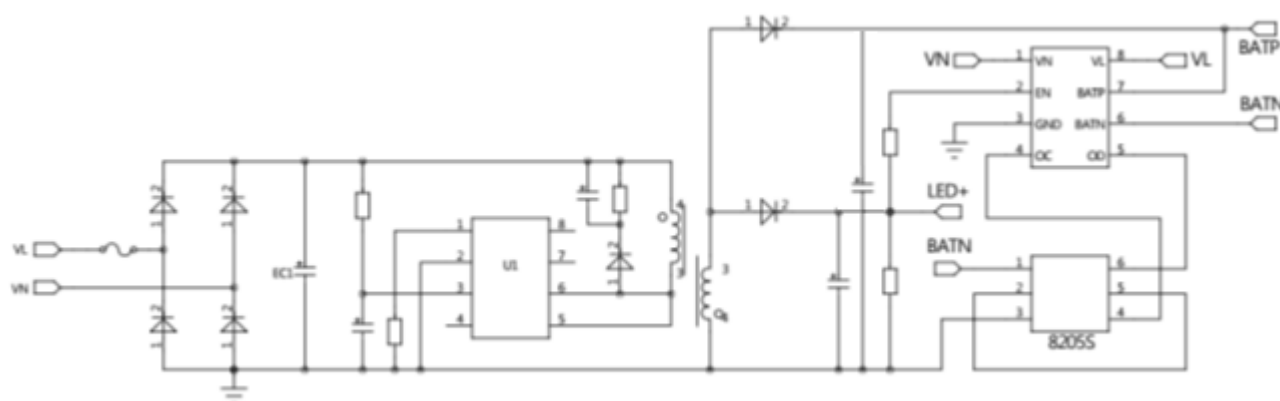


(Top View) SOP-8

Application

- Emergency lighting
- Stand-by Lighting

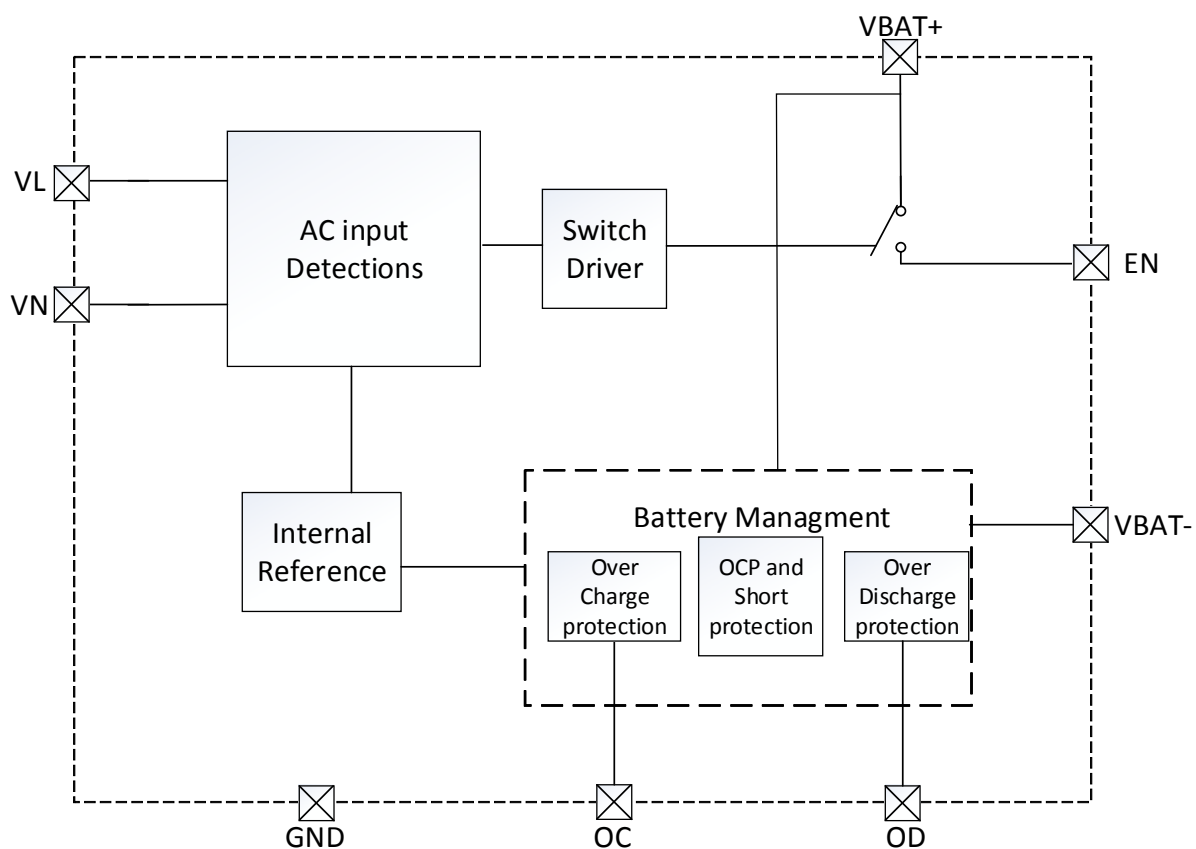
Typical Application



PIN FUNCTIONS

PIN#	PIN Name	Description
1	VN	Neutral Line
2	EN	Enable output
3	GND	GND PIN
4	OC	MOSFET gate connection pin for charge control
5	OD	MOSFET gate connection pin for discharge control
6	BATN	Battery negative
7	BATP	Battery positive
8	VL	Live Line

FUNCTION DIAGRAM





QW2880A

LED Emergency Lighting driver

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

Parameter	Symbol	Value	Units
V_BATP	V _{cc}	-0.3 to GND+7V	V
V_EN	VD	-0.3 to BATP +7V	V
V_OD,V_OC	V _{oc} , V _{od}	-0.3 to 20	V
VL, VN	VL, V _n	400V	V
Junction Temperature	TJ	+150	°C
Storage Temperature	TSTG	-65 to +150	°C
Thermal Resistance(Note 5)	θJA	66	°C/W
Lead Temperature (Soldering, 10sec)	TLEAD	+300	°C
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		50	–	uA
MOSFET Switch Section						
MOS On resistance	R _{DS(on)}	–	–	0.2	–	Ω
AC detect Section						
Enable threshold resistance			500	700	900	KΩ
Battery management Section						
Over Charge voltage		–	4.0	4.2	4.4	V
Over Charge Release voltage			3.8	4.0	4.2	V
Over Discharge voltage		–	2.4	2.6	2.8	V
Over Discharge Release voltage			2.8	3.0	3.2	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



QW2880A

LED Emergency Lighting driver

Operation

1、AC main line detection

QW2880A 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

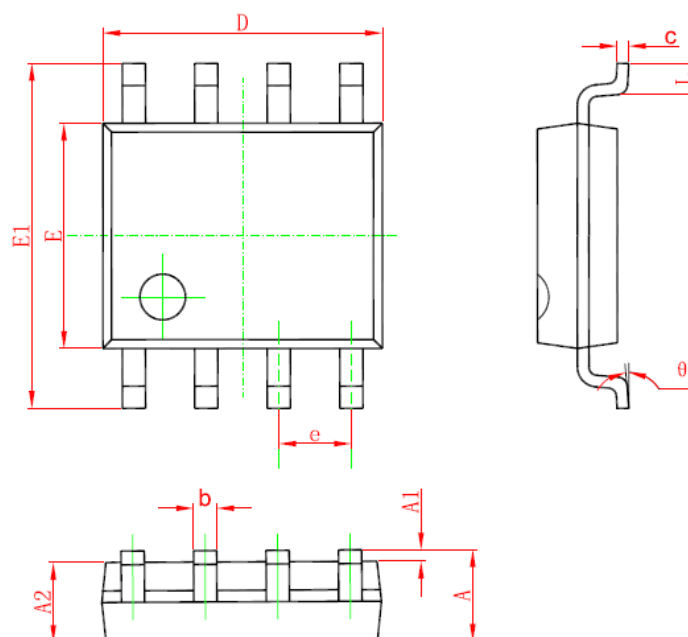
2、Battery Management

QW2880A integrates battery protection including to protect lithium-ion/polymer battery from damage or degrading the lifetime due to overcharge, over discharge, and/or overcurrent for one-cell lithium-ion/polymer battery.

3、Output current

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

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°