

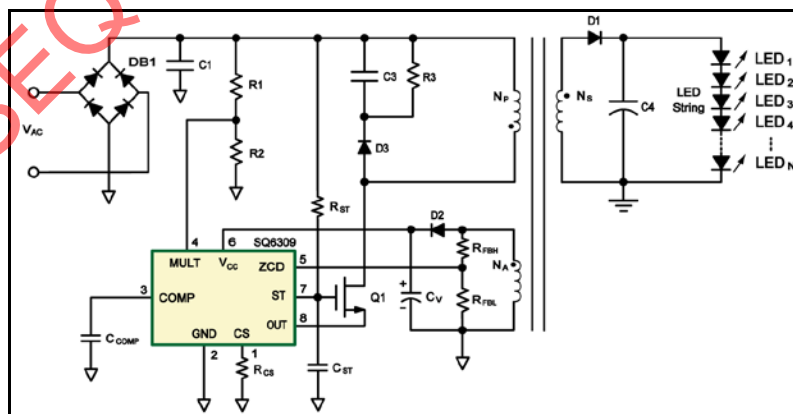
Features

- Single-stage cascade, active Power Factor Correction (PFC), high PF value, low Total Harmonic Distortion (THD)
- Constant output current with primary side control
- Short start up time (< 200ms @85V_{AC})
- ±3% output LED current accuracy
- Operating in the boundary conduction mode (BCM)
- Natural jittering operating frequency
- Excellent line regulation
- Low start up current (< 20μA)
- Low operating current (< 600μA)
- Powered from auxiliary side for lower power consumption
- LED short circuit/open loop protection (SCP/OLP)
- Primary side cycle-by-cycle current limiting
- No input electrolytic capacitor
- Over/Under voltage protection (OVP/UVLO)
- Available in SOP-8 package
- RoHS compliant and Pb free

Typical Applications

- GU10/E26/E27 LED bulb lamps
- LED PAR30/PAR38 lamps
- T5/T8 LED light tubes
- External power supply for LED lights

Typical Application Circuit



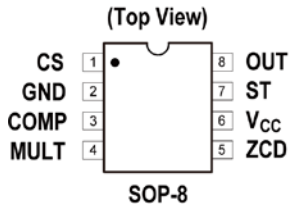
Product Description

The SQ6309 is a single-stage fly-back type constant current PWM controller with active high power factor correction and high-precision primary side regulation (PSR) feedback for full range input voltage from 85V_{AC} ~ 265V_{AC}. The SQ6309 detects the zero current in the secondary side and operates in boundary conduction mode. The SQ6309 provides the most cost effective solution in isolated topology without input electrolytic capacitor or optical feedback circuit from the output at the secondary side. The external high voltage MOSFET is normally in conducting condition, therefore, its switching loss can be greatly reduced. An internal cascaded low R_{DS(ON)} MOSFET is used as PWM switch to control the duty cycle.

The SQ6309 uses a unique current control method by sensing peak current from the primary side on CS pin and uses the primary and secondary winding ratio together with duty cycle to calculate the average current on the output at secondary side to achieve high precision constant output current without secondary feedback circuit; thus it saves the cost and space.

The SQ6309 uses the input line voltage and load voltage compensation technique to achieve high line voltage and load voltage regulations. The input line voltage compensation can be adjusted externally on ZCD pin. The SQ6309 has multiple-protections including open loop protection, short circuit protection, over voltage protection, under voltage protection, cycle-by-cycle current limiting. All protections have the automatic restart mechanisms. The SQ6309 is available in SOP-8 package.

Pin Assignments and Ordering Information



Device	Packaging	Quantity of Tape & Reel
SQ6309 MST	SOP-8	3000

Pin Descriptions

Pin No.	Pin Name	Function
1	CS	Current sense pin
		Senses primary side current and uses it to set LED output current on the secondary side. Also used to generate high PFC input current.
2	GND	Ground pin
		Device ground.
3	COMP	Loop compensation pin
		A compensation capacitor is placed between this pin and GND to achieve stability of the voltage control loop.
4	MULT	Linear voltage input pin
		The voltage is used as the current reference for the PFC control.
5	ZCD	Zero current detection (ZCD) from auxiliary winding
		The voltage on this pin is used to detect the zero diode current on the secondary side. This pin is used for AC line regulation compensation. Also used for OVP and SCP detection.
6	V _{CC}	IC power input pin
		Supply voltage for the IC.
7	ST	Start up input pin
		Connects through a resistor to HV input for fast IC power up and also connects to external MOSFET gate to conducting mode.
8	OUT	Internal drain pin
		Connects to external MOSFET source and the internal MOSFET drain.

