

General Description

SY58237 is a single stage Flyback regulator targeting at LED lighting applications.

SY58237 integrates a 650V MOSFET to decrease physical volume. It adopts the proprietary control architecture to achieve an accurate regulation of LED current, Quasi-Resonant valley turn-on for high efficiency operation. Proprietary self-bias technique saves the bias supply and reduces the start up time.

SY58237 integrates open/short LED protection and eliminates the need for opto-coupler or auxiliary winding (in floating switch application), thus minimizing the component count and board size.

Features

- Integrated 650V MOSFET
- Quasi-Resonant (QR) Mode to Achieve Low Switching Losses
- No Opto-coupler or Auxiliary Winding for Feedback in the Proprietary Floating Switch Configuration.
- Reliable Short LED and Open LED Protection
- Thermal Foldback Function
- Compact Package: DIP8

Ordering Information

SY58237 □(□□)□
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 Temperature Code
 Package Code
 Optional Spec Code

Ordering Number	Package type	Note
SY58237AGC	DIP8	----

Applications

- LED Lighting

Typical Applications

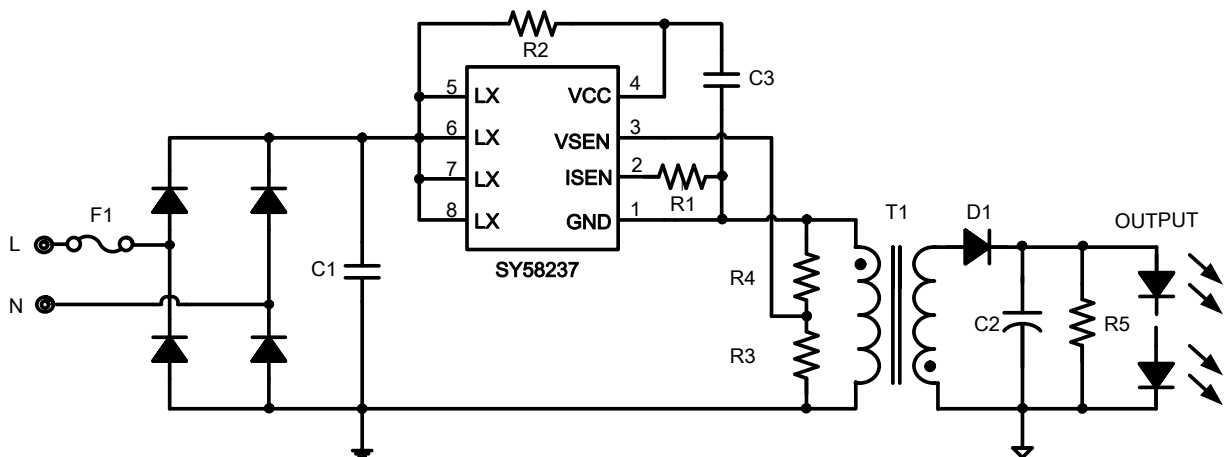
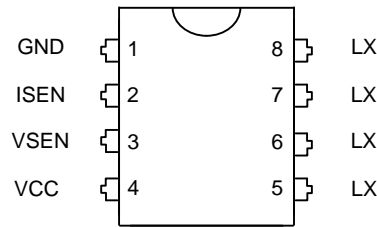


Fig.1 Schematic Diagram

Pinout (top view)



(DIP8)

Top Mark: BXUxyz (device code: BXU, *x*=year code, *y*=week code, *z*=lot number code)

Pin Name	Pin number	Pin Description
GND	1	Ground Pin.
ISEN	2	Current set pin. Connect a resistor to program the reference output current. $I_O = \frac{V_{REF} \times N_{PS}}{2 \times R_{ISEN}}$
VSEN	3	Voltage sense pin. Connect to a resistor divider of inductor or auxiliary winding to sense output voltage.
VCC	4	Power supply pin.
LX	5-8	Internal HV MOSFET drain pin.

Block Diagram

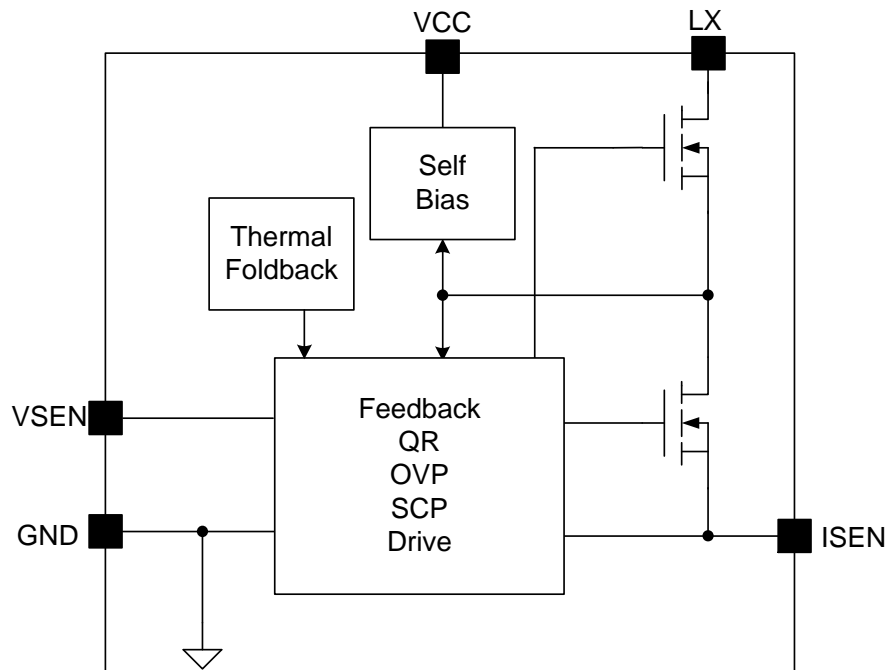


Fig.2 Simplified block diagram



Absolute Maximum Ratings (Note 1)

ISEN	-----	-0.3V~3.6V
VSEN	-----	-0.3V~16V
VCC	-----	-0.3V~20V
LX	-----	650V
Power Dissipation, @ TA = 25°C DIP8	-----	0.6W
Package Thermal Resistance (Note 2)		
DIP8, θ_{JA}	-----	68°C/W
DIP8, θ_{JC}	-----	55°C/W
Lead Temperature (Soldering, 10 sec.)	-----	260°C
Storage Temperature Range	-----	-65°C to 150°C

Electrical Characteristics

($V_{VCC}=12V$ (Note 3), $T_A=25^\circ C$ unless otherwise specified)

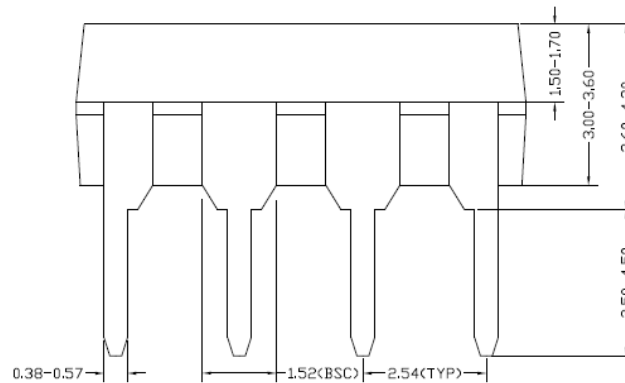
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Power Supply Section						
VCC Turn-on Threshold	V_{VCC_ON}			14		V
VCC Turn-off Threshold	V_{VCC_OFF}			7		V
Start up Current	I_{ST}	$V_{CC}=13V$		32		μA
Quiescent Current	I_Q	$V_{CC}=15V$		125		μA
Shunt Current	I_{Shunt}	$V_{CC}=V_{VCC_ON}+4V$		17		mA
VSEN Pin Section						
VSEN Pin Reference Voltage	V_{VSEN_OVP}			1.5		V
Driver Section						
Min ON Time	T_{ON_MIN}			450		ns
Max ON Time	T_{ON_MAX}			13		μs
Min OFF Time	T_{OFF_MIN}			1.7		μs
Max OFF Time	T_{OFF_MAX}			420		μs
Max Switching Frequency	F_{MAX}			150		kHz
ISEN Pin Section						
Current Limit Threshold Voltage	V_{ISEN_OCP}			485		mV
Current Reference	V_{ISEN}		294	300	306	mV
Integrated MOSFET Section						
BV of HV MOSFET	V_{BV}		650			V
Rdson of HV MOSFET	R_{DSON}				3.4	Ω
Thermal Section						
Thermal Foldback Temperature	T_{FB}			155		$^\circ C$

Note 1: Stresses beyond the “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

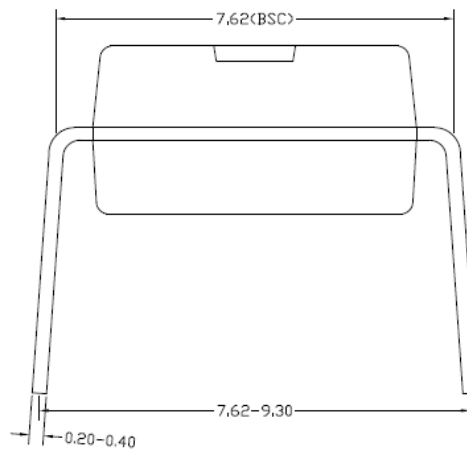
Note 2: θ_{JA} is measured in the natural convection at $T_A=25^\circ C$ on a low effective single layer thermal conductivity test board of JEDEC 51-3 thermal measurement standard. Test condition: Device mounted on 2” x 2” FR-4 substrate PCB, 2oz copper, with minimum recommended pad on top layer and thermal vias to bottom layer ground plane.

Note 3: Increase VCC pin voltage gradually higher than V_{VCC_ON} voltage then turn down to 12V.

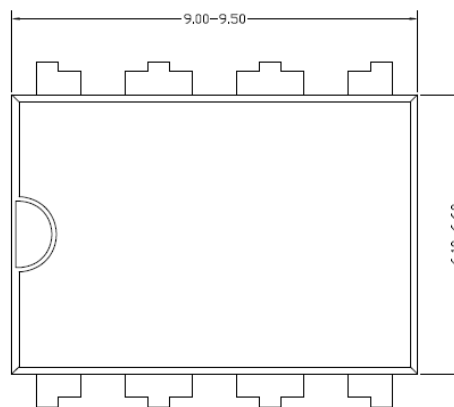
DIP8 Package Outline



Side view A



Side view B



Top view

Notes: All dimension in millimeters and exclude mold flash & metal burr