SY7152

High Efficiency 1MHz, 2A Step Up Regulator

Preliminary Specification

General Description

The SY7152 is a high efficiency boost regulator targeted for general step-up applications.

Ordering Information

SY7152 □(□□)□

- Temperature Code
- Package Code
- Optional Spec Code

Temperature Range: -40°C to 85°C

Ordering Number	Package type	Note
SY7152ABC	SOT23-6	2A

Features

- Wide input range: 3-8V bias input, 16Vout max
- 1MHz switching frequency
- Minimum on time: 100ns typical
- Minimum off time: 100ns typical
- Low $R_{DS(ON)}$: 150mΩ
- RoHS Compliant and Halogen Free
- Accurate Reference: 0.6V_{REF}
- Compact package: SOT23-6

Applications

- WLED Drivers
- Networking cards powered from PCI or PCI-express slots

Typical Applications

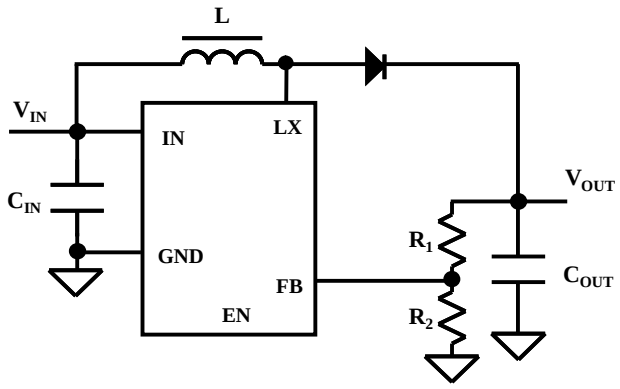


Figure 1. Schematic Diagram

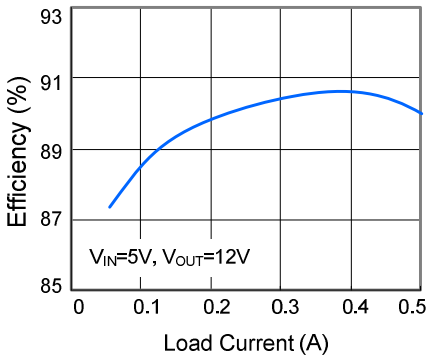
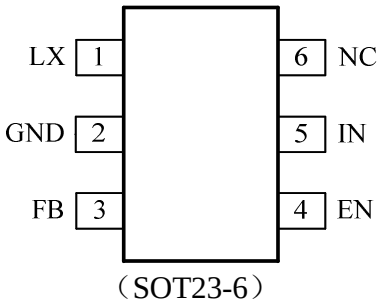


Figure 2. Efficiency vs Load Current

Pinout (top view)



（SOT23-6）

Top Mark: LE*xyz* **(**Device code: LE, ***x=year code, y=week code, z= lot number code*****)**

Pin Name	Pin Number	Pin Description
IN	5	Input pin. Decouple this pin to GND pin with 1uF ceramic cap.
GND	2	Ground pin
LX	1	Inductor node. Connect an inductor between IN pin and LX pin.
FB	3	Feedback pin. Connect a resistor R1 between V_{OUT} and FB, and a resistor R2 between FB and GND to program the output voltage: V_{OUT}=0.6V*(R1/R2+1).
EN	4	Enable control. High to turn on the part. Don't leave it floated.
NC	6	No connection.

Absolute Maximum Ratings (Note 1)

LX, IN, EN ---------- 18V
All other pins---------- ---------- 4V
Power Dissipation, P_D @ T_A = 25°C SOT23-6 ---------- 0.6W
Package Thermal Resistance (Note 2)
θ_{JA} ---------- 161°C/W
θ_{JC} ---------- 130°C/W
Junction Temperature Range ---------- 125°C
Lead Temperature (Soldering, 10 sec.) ---------- 260°C
Storage Temperature Range ---------- -65°C to 150°C
ESD Susceptibility (Note 2)
HBM (Human Body Mode) ----------2kV
MM (Machine Mode) ---------- 200V
Dynamic LX voltage in 50ns duration ---------- IN+3V to GND-4V

Recommended Operating Conditions (Note 3)

Input Voltage Supply---------- 3V to 8V
Junction Temperature Range ---------- -40°C to 125°C
Ambient Temperature Range ---------- -40°C to 85°C

Electrical Characteristics

(V_{IN} = 5V, V_{OUT}=12V, I_{OUT}=100mA, T_A = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage Range	V_{IN}		3		8	V
Quiescent Current	I_Q	V_{FB}=0.66V		100		μA
Shutdown Current	I_{SHDN}	EN=0			15	μA
Low Side Main FET RON	Rds(on)			150		mΩ
Main FET Current Limit	I_{LIM1}		2			A
Switching Frequency	Fsw		0.8	1	1.2	MHz
Feedback Reference Voltage	V_{REF}		0.588	0.6	0.612	V
IN UVLO Rising Threshold	$V_{IN,UVLO}$				2.7	V
UVLO Hysteresis	$U_{VLO,HYS}$			0.1		V
Thermal Shutdown Temperature	T_{SD}			150		°C
EN Rising Threshold	V_{ENH}		2			V
EN Falling Threshold	V_{ENL}				0.4	V
EN Pin Input Current	I_{EN}		0		100	nA
Max Duty Cycle				90		%

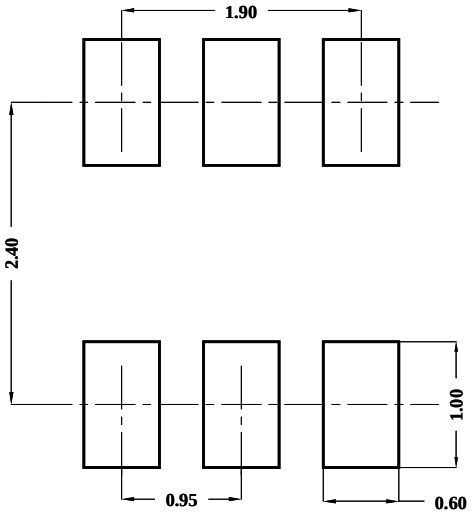
Note 1: Stresses listed beyond the "Absolute Maximum Ratings" may cause permanent damage to the device. These are for stress ratings. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to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

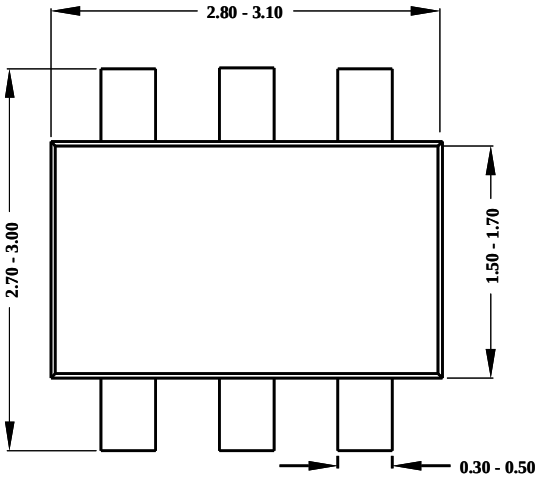
Note 2: θJA is measured in the natural convection at T_A = 25°C on a low effective single layer thermal conductivity test board of JEDEC 51-3 thermal measurement standard. Test condition: Device mounted on 2" x 2" FR-4 substrate PCB, 2oz copper, with minimum recommended pad on top layer and thermal vias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

Note 3: The device is not guaranteed to function outside its operating conditions.

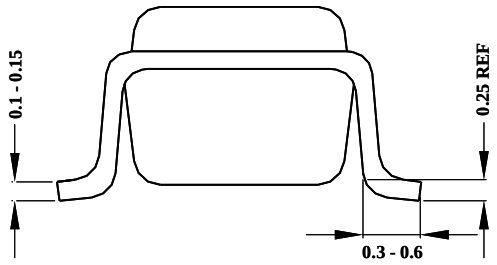
Note 4: IC could be start up in 2.7V.

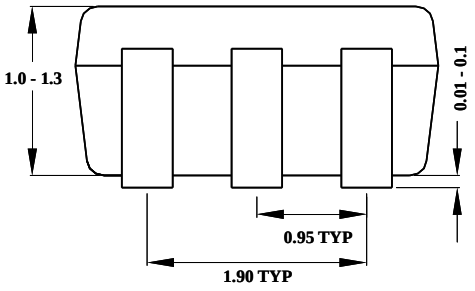
SOT23-6 Package outline & PCB layout design





Recommended Pad Layout





Notes: All dimensions are in millimeters.
All dimensions don't include mold flash & metal burr.