



General Description

SY7201 is a DC/DC step-up converter that delivers an accurate constant current for driving LEDs. Operation at a fixed switching frequency of 1MHz allows the device to be used with small value external ceramic capacitors and inductor. LEDs connected in series are driven with a regulated current set by the external resistor. The SY7201 is ideal for driving up to eight white LEDs in series or up to 30V.

Features

- Input voltage range 2.5 to 30V
- Switch current limit 2A
- Drives LED strings up to 30V
- 1MHz fixed frequency minimizes the external components
- Internal softstart limits the inrush current
- Open LED overvoltage protection
- RoHS Compliant and Halogen Free
- Compact package: SOT23-6 pin

Ordering Information

SY7201□(□□)□
 □ Temperature Code
 □ Package Code
 □ Optional Spec Code

Temperature Range: -40°C to 85°C

Ordering Number	Package type	Note
SY7201ABC	SOT23-6	2A

Applications

- GPS Navigation Systems
- Handheld Devices
- Portable Media Players

Typical Applications

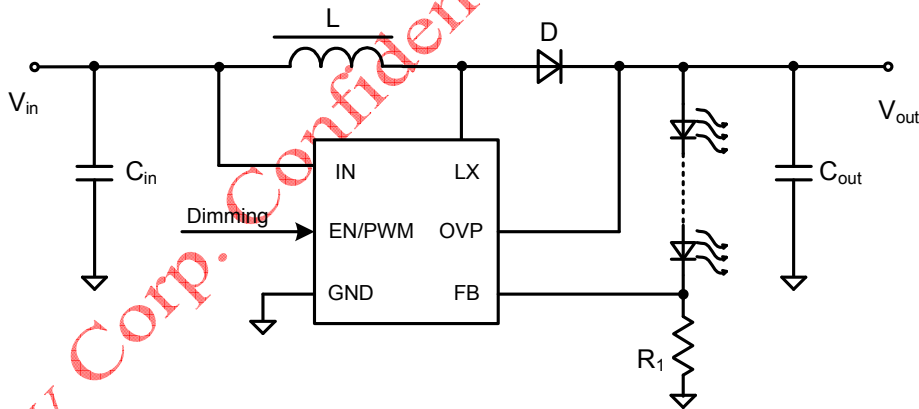
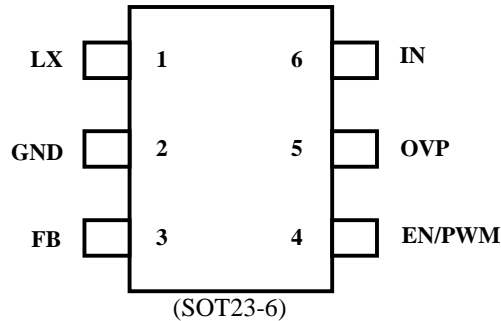


Figure 1. Schematic Diagram

Pinout (top view)


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

Pin Name	Pin Number	Pin Description
LX	1	Inductor node. Connect an inductor between IN pin and LX pin.
GND	2	Ground pin.
FB	3	Feedback pin. Connect a resistor R1 between FB and GND to program the output current: $I_{OUT}=0.2V/R_1$.
EN/PWM	4	Enable and dimming control. The recommended PWM frequency range should be higher than 20kHz.
OVP	5	Over voltage protection. The typical value is 30V.
IN	6	Input pin. Decouple this pin to GND pin with 1uF ceramic capacitor.

Absolute Maximum Ratings (Note 1)

IN,	32V
EN	4V
LX, OVP	36V
All other pins	4V
Power Dissipation, P_D @ $T_A = 25^\circ\text{C}$, SOT23-6	0.6W
Package Thermal Resistance (Note 2)	
SOT23-6, θ_{JA}	200°C/W
SOT23-6, θ_{JC}	130°C/W
Junction Temperature Range	150°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

Recommended Operating Conditions (Note 3)

Input Voltage Supply	2.5V to 30V
Junction Temperature Range	-40°C to 125°C
Ambient Temperature Range	-40°C to 85°C



Electrical Characteristics

($V_{IN} = 3.6V$, $T_A = 25^{\circ}C$, unless otherwise specified)

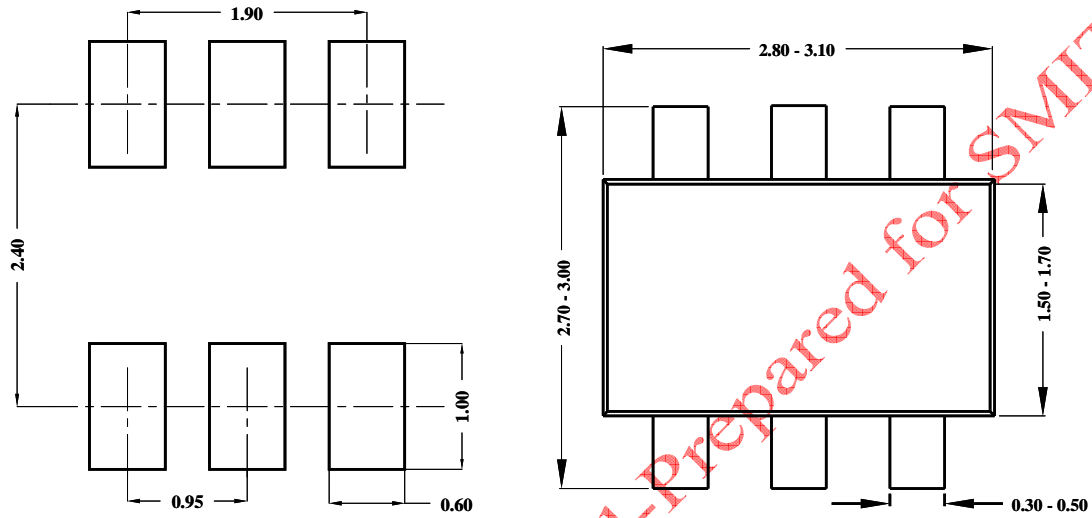
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Voltage Range	V_{IN}		2.5		30	V
Quiescent Current	I_Q	$V_{FB}=0.3V$		0.1	0.6	mA
Shutdown Current	I_{SHDN}	EN=0		10	15	uA
Feedback Reference Voltage	V_{REF}		196	200	204	mV
FB Input Current	I_{FB}	$V_{FB}=0.3V$			1	uA
Low Side Main FET RON	$R_{DS(ON)}$			200		mΩ
Main FET Current Limit	I_{LIM}		2			A
EN Rising Threshold	V_{ENH}		1.5			V
EN Falling Threshold	V_{ENL}				0.4	V
Input UVLO Threshold	V_{UVLO}				2.4	V
UVLO Hysteresis	V_{HYS}			0.1		V
Oscillator Frequency	F_{OSC}	$I_{OUT}=100mA$		1.0		MHz
Min On Time				100		ns
Max Duty Cycle				90		%
Thermal Shutdown	T_{SD}			150		$^{\circ}C$
Thermal Hysteresis	T_{HYST}			20		$^{\circ}C$
Output Clamp voltage	V_{OCL}	“Open LED”		30		V
PWM dimming frequency			20k			Hz

Note 1: Stresses listed as the above “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 for extended periods may remain possibility to affect device reliability.

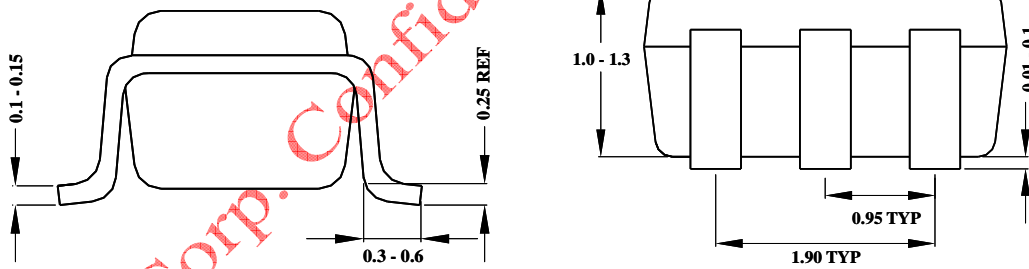
Note 2: θ_{JA} is measured in the natural convection at $T_A = 25^{\circ}C$ on a low effective single layer thermal conductivity test board of JEDEC 51-3 thermal measurement standard. Pin 2 of SOT23-6 packages is the case position for θ_{JC} measurement.

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

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.