MP24892

Step Down White LED Driver with Wide 6V–36V Input Voltage

The Future of Analog IC Technology

PRELIMINARY SPECIFICATIONS SUBJECT TO CHANGE

MPS CONFIDENTIAL AND PROPRIETARY INFORMATION– BEAUTIFUL LIGHT USE ONLY

DESCRIPTION

The MP24892 is a high efficiency step-down converter designed in continuous current mode for driving the high brightness Light Emitting Diodes (LED) from wide input voltage 6V–36V.

The MP24892 employs hysteretic control architecture to regulate a high accuracy LED current, which is measured through an external high-side current sensing resistor. Moreover, this control scheme provides optimized circuit stabilization and very quick response time without the loop compensation. Its low 202mV average feedback voltage reduces power loss and improves the converter efficiency.

The MP24892 implements PWM and analog dimming together with DIM pin.

The MP24892 includes thermal overload protection preventing damage in the event of an output overload.

The MP24892 is available in a small TSOT23-5 package.

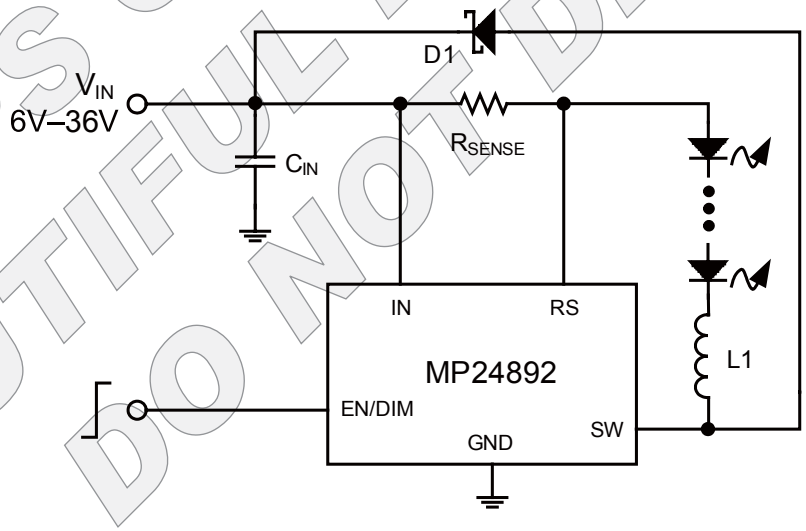
FEATURES

- Internal 40V MOSFET
- Wide 6V to 36V Input Range
- 1A Output Current
- High Efficiency (>95%)
- Hysteresis Control
- PWM & Analog Dimming
- 1000:1 PWM Dimming Resolution
- Thermal Shutdown
- Inherent Open LED Protection
- Short LED Protection
- Available in a TSOT23-5 Package

APPLICATIONS

- Low Voltage Halogen Replacement
- Low Voltage General Illumination
- Automotive/Decorative LED Lighting
- Signs/Emergency Lighting
- LED Backlighting

TYPICAL APPLICATION

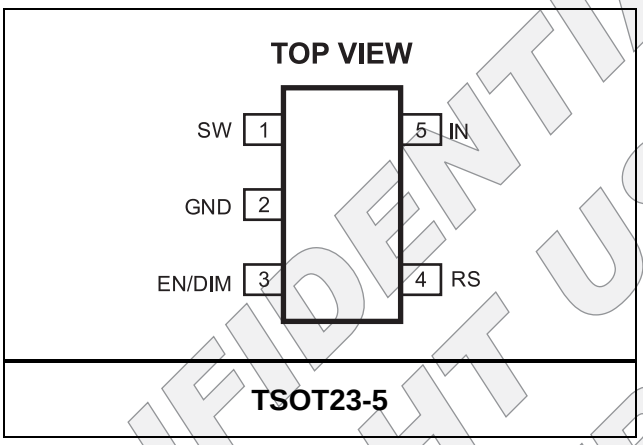


ORDERING INFORMATION

Part Number	Package	Top Marking	Free Air Temperature (T_A)
MP24892DJ*	TSOT23-5	TBD	-40°C to +85°C

* For Tape & Reel, add suffix –Z (e.g. MP24892DJ–Z);
For RoHS Compliant Packaging, add suffix –LF (e.g. MP24892DJ–LF–Z)

PACKAGE REFERENCE



ABSOLUTE MAXIMUM RATINGS (1)

V_{IN}, V_{SW} .....-0.3V to +40V
V_{RS} .....V_{IN}-5V to V_{IN}
All Other Pins.....-0.3V to +6.3V
Continuous Power Dissipation (T_A = +25°C) (2)
TSOT23-5 ..... 0.57W
Junction Temperature.....150°C
Lead Temperature .....260°C
Storage Temperature..... -65°C to +150°C

Recommended Operating Conditions (3)

Supply Voltage V_{IN} .....6V to 36V
Operating Junct. Temp (T_J)..... -40°C to +125°C

Thermal Resistance (4) θ_{JA} θ_{JC}

TSOT23-5 .....220 .... 110 .. °C/W

Notes:
1) Exceeding these ratings may damage the device.
2) The maximum allowable power dissipation is a function of the maximum junction temperature T_J(MAX), the junction-to-ambient thermal resistance θ_{JA}, and the ambient temperature T_A. The maximum allowable continuous power dissipation at any ambient temperature is calculated by P_D(MAX)=(T_J(MAX)-T_A)/ θ_{JA}. Exceeding the maximum allowable power dissipation will cause excessive die temperature, and the regulator will go into thermal shutdown. Internal thermal shutdown circuitry protects the device from permanent damage.
3) The device is not guaranteed to function outside of its operation conditions.
4) Measured on JESD51-7, 4-layer PCB.