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MP24893

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

DESCRIPTION

The MP24893 is a high efficiency step-down converter designed in continuous current mode for driving the high brightness LEDs from wide input voltage of 6V to 36V.

The MP24893 employs hysteretic control architecture to regulate a highly accurate LED current, which is measured through an external high-side current-sense resistor. Moreover, this control scheme provides optimal circuit stabilization and a very quick response time without loop compensation. Its low 200mV average feedback voltage reduces power loss and improves the converter efficiency.

The MP24893 implements PWM and analog dimming together through the DIM pin.

The MP24893 includes under-voltage lockout, thermal overload protection to prevent damage in the event of an output overload.

The MP24893 is available in TSOT23-5 and QFN6 packages.

FEATURES

- Internal 36V MOSFET
- Wide 6V-to-36V Input Range
- 1A Output Current
- High Efficiency
- Hysteretic Control
- PWM and Analog Dimming
- 1000:1 PWM Dimming Resolution
- UVLO, Thermal Shutdown
- Available in TSOT23-5 and QFN6 Packages

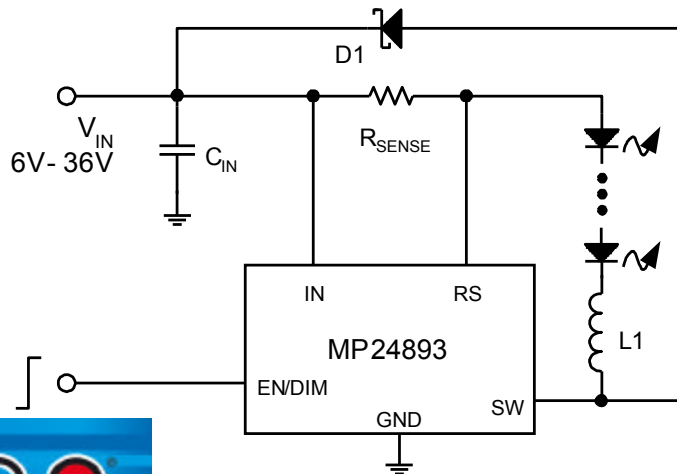
APPLICATIONS

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

All MPS parts are lead-free and adhere to the RoHS directive. For MPS green status, please visit MPS website under Products, Quality Assurance page.

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TYPICAL APPLICATION



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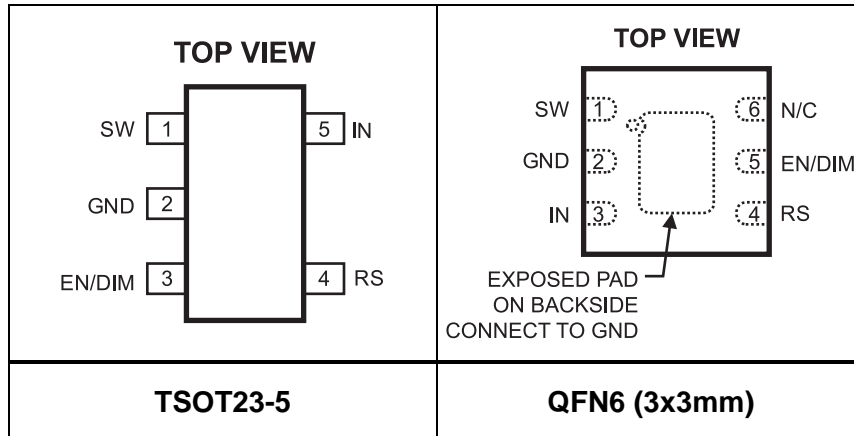
ORDERING INFORMATION

Part Number	Package	Top Marking
MP24893DJ*	TSOT23-5	24893
MP24893DQ**	QFN6 (3x3mm)	24893

* For Tape & Reel, add suffix -Z (e.g. MP24893DJ-Z);

**For Tape & Reel, add suffix -Z (e.g. MP24893DQ-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 ($T_A = +25^{\circ}C$) ⁽²⁾	
TSOT23-5	1.1W
QFN6 (3x3mm)	2.5W
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 Junction Temp. (T_J)	-40°C to +125°C

Thermal Resistance ⁽⁴⁾ θ_{JA} θ_{JC}

TSOT23-5	110	55	°C/W
QFN6 (3x3mm)	50	14	°C/W

Notes:

- Exceeding these ratings may damage the device.
- 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 $P_D(MAX) = (T_J(MAX) - T_A) / \theta_{JA}$. 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.
- The device is not guaranteed to function outside of its operation conditions.
- Measured on JESD51-7 4-layer board.