



MP4030

TRIAC-Dimmable, Primary-Side-Control Offline LED Controller with Active PFC

The Future of Analog IC Technology[®]

MPS CONFIDENTIAL AND PROPRIETARY INFORMATION– INTERNAL USE ONLY

DESCRIPTION

The MP4030 is a TRIAC-dimmable, primary-side-control, offline LED lighting controller with active PFC. It can output an accurate LED current for an isolated lighting application with a single-stage converter. The proprietary real-current-control method can accurately control the LED current using primary-side information. It can significantly simplify LED lighting system design by eliminating secondary-side feedback components and the optocoupler.

The MP4030 implements power-factor correction and works in boundary-conduction mode to reduce MOSFET switching losses.

The MP4030 has an integrated charging circuit at the supply pin for fast start-up without a perceptible delay.

The proprietary dimming control expands the TRIAC-based dimming range.

The MP4030 has multiple protections that greatly enhance system reliability and safety, and include over-voltage protection, short-circuit protection, programmable primary-side over-current protection, supply-pin under-voltage lockout, and over-temperature protection.

All fault protections feature auto-restart.

The MP4030 is available in an 8-pin SOIC package.

FEATURES

- Primary-Side-Control without Requiring a Secondary-Side Feedback Circuit
- Internal Charging Circuit at the Supply Pin for Fast Start-Up
- Accurate Line Regulation
- High Power Factor
- Flicker-Free, Phase-Controlled TRIAC Dimming with Expanded Dimming Range.
- Operates in Boundary Conduction Mode
- Cycle-by-Cycle Current Limit
- Programmable Primary-Side Over-Current Protection
- Over-Voltage Protection
- Short-Circuit Protection
- Over-Temperature Protection
- Available in an 8-Pin SOIC Package

APPLICATIONS

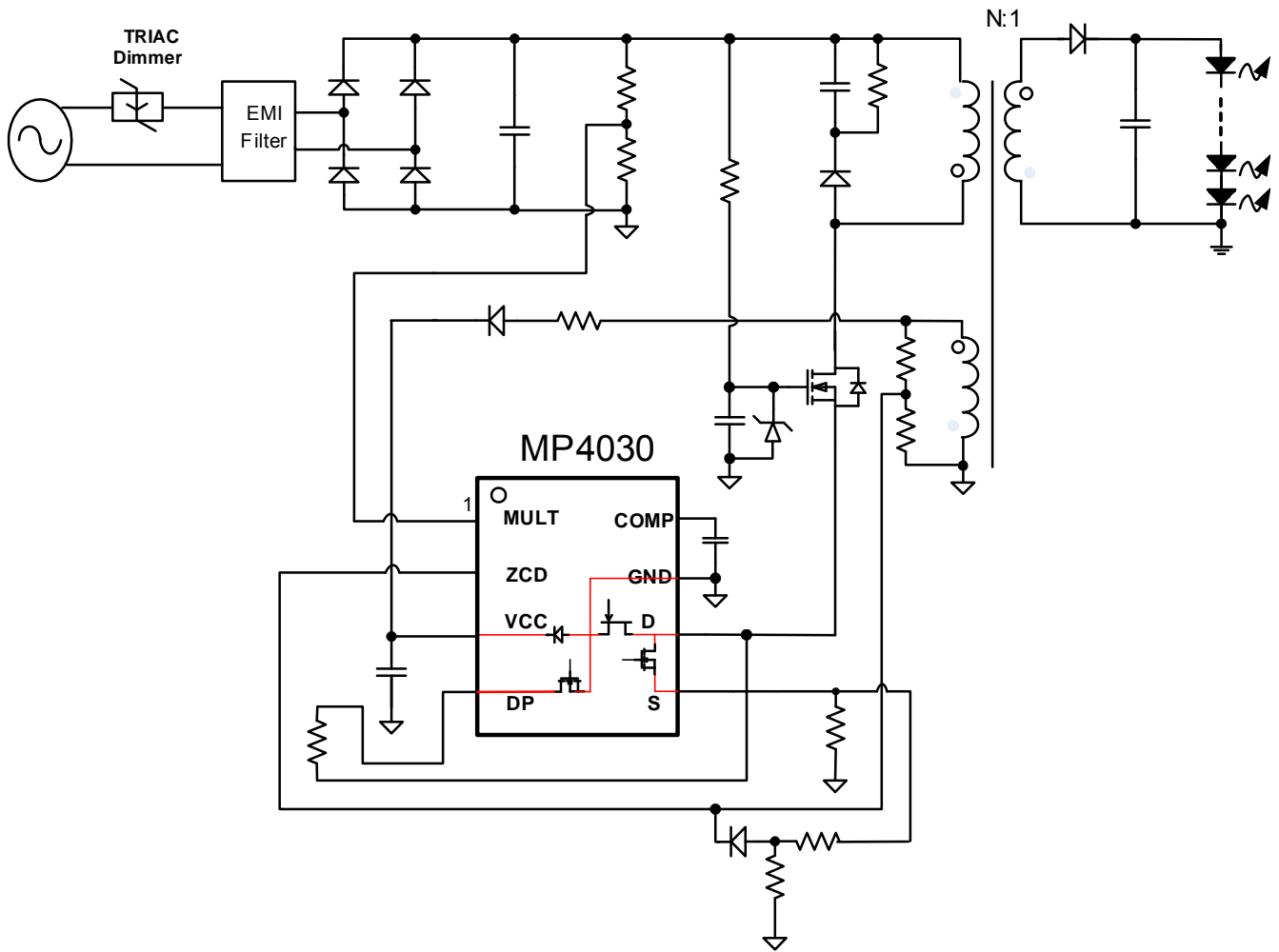
- Solid-State Lighting, including:
- Industrial and Commercial Lighting
- Residential Lighting

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

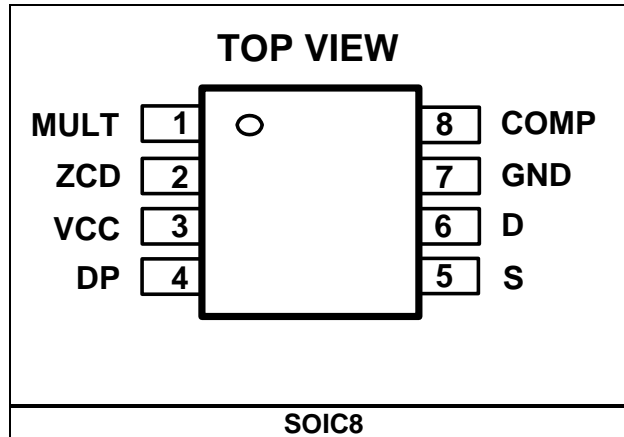


ORDERING INFORMATION

Part Number*	Package	Top Marking
MP4030GS	SOIC8	MP4030

* For Tape & Reel, add suffix -Z (e.g. MP4030GS-Z);

PACKAGE REFERENCE



ABSOLUTE MAXIMUM RATINGS ⁽¹⁾

Input Voltage VCC	-0.3V to +30V
Low-Side MOSFET Drain Voltage	-0.7V to +30V
ZCD Pin Voltage	-8V to +7V
Other Analog Inputs and Outputs	-0.3V to 7V
ZCD Pin Current	-5mA to +5mA
Continuous Power Dissipation (T _A = +25°C) ⁽²⁾	
SOIC8	1.3W
Junction Temperature	150°C
Lead Temperature	260°C
Storage Temperature	-65°C to +150°C

Recommended Operating Conditions ⁽³⁾

Supply Voltage VCC	11V to 27V
Operating Junction Temp (T _J) ..	-40°C to +125°C

Thermal Resistance ⁽⁴⁾

	θ_{JA}	θ_{JC}
SOIC8	96	45

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)/ 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.
- The device is not guaranteed to function outside of its operation conditions.
- Measured on JESD51-7 4-layer board.