



The Future of Analog IC Technology®

MP4021

Primary Side Control Offline LED Controller

PRELIMINARY SPECIFICATIONS SUBJECT TO CHANGE

MPS CONFIDENTIAL AND PROPRIETARY INFORMATION- 3CEMS USE ONLY

DESCRIPTION

The MP4021 is a primary-side-control offline LED lighting controller which can achieve high power factor and accurate LED current for an isolate lighting application in a single stage converter. The proprietary real current control method can control the LED current accurately from the primary side information. It can significantly simplify the LED lighting system design by eliminating the secondary side feedback components and the optocoupler.

The MP4021 integrates power factor correction function and works in boundary conduction mode for reducing the MOSFET switching losses.

The extremely low start up current and the quiescent current can reduce the power consumption thus lead to an excellent efficiency performance.

The multi-protection function of MP4021 can greatly enhance the system reliability and safety. The MP4021 features over-voltage protection, short-circuit protection, cycle-by-cycle current limit, VCC UVLO and auto-restart over-temperature protection.

The MP4021 is available in small 8-pin SOIC and PDIP packages.

FEATURES

- Real Current Control Without Secondary-feedback Circuit
- High Current Accuracy Of Line Regulation
- High Power Factor
- Boundary Conduction Mode Operation
- Ultra-low (10µA) Start Up Current
- Low (1mA) Quiescent Current
- Input UVLO
- Cycle-by-cycle Current Limit
- Over-voltage Protection
- Short-circuit Protection
- Over-temperature Protection
- Available in 8 Pin SOIC and PDIP Packages

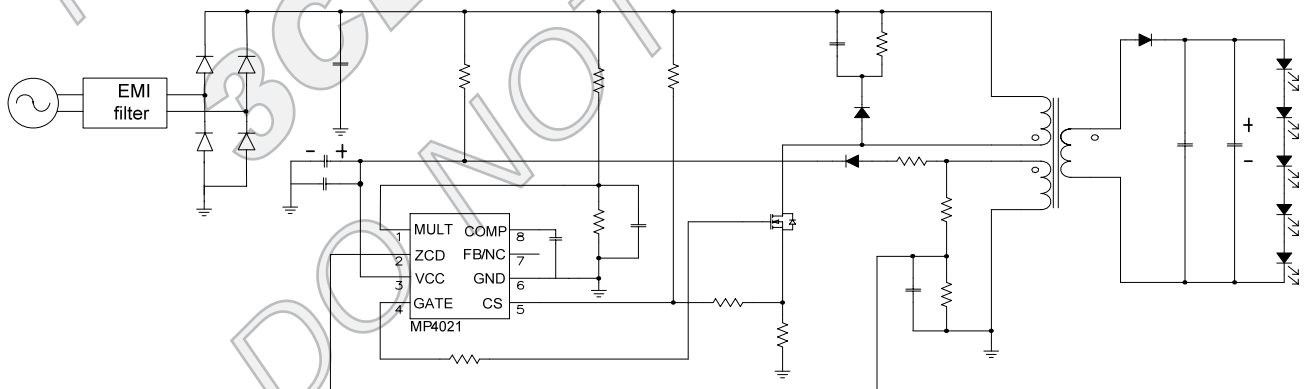
APPLICATIONS

- Solid State Lighting
- Industrial and Commercial Lighting
- Residential Lighting

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The MP4021 is under patent pending.

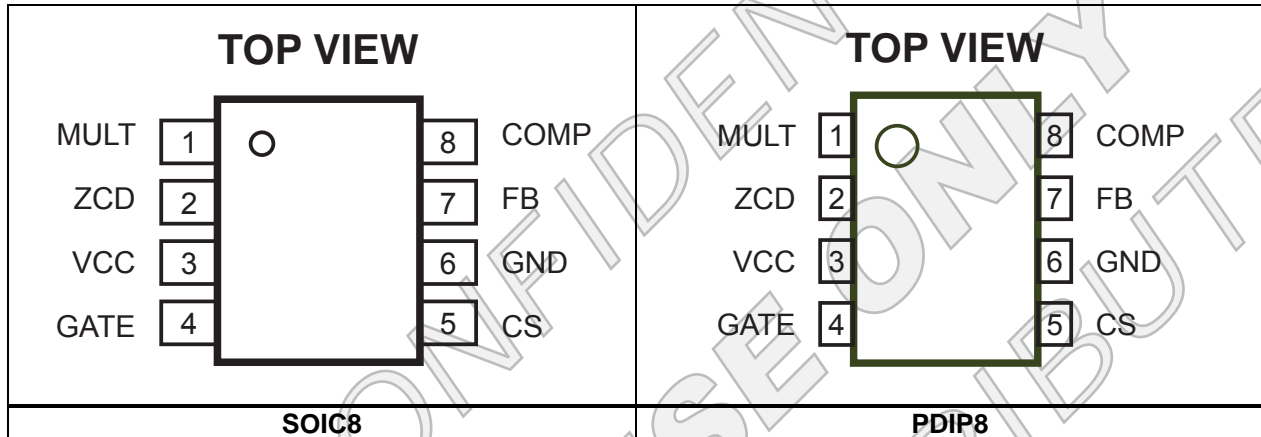
TYPICAL APPLICATION



ORDERING INFORMATION

Part Number*	Package	Top Marking	Free Air Temperature (T _A)
MP4021DS	SOIC8		-40°C to +85°C
MP4021DP	PDIP8		-40°C to +85°C

* For Tape & Reel, add suffix -Z (e.g. MP4021DX-Z);
 For RoHS Compliant Packaging, add suffix -LF (e.g. MP4021DX-LF-Z)

PACKAGE REFERENCE

ABSOLUTE MAXIMUM RATINGS ⁽¹⁾

Input Voltage V _{CC}	-0.3V to +30V
Analog Inputs and Outputs.....	-0.3V to 8V
ZCD Pin Maximum Current.....	-50mA~10mA
Max. Gate Current.....	±1.2A
Continuous Power Dissipation (T _A = +25°C) ⁽²⁾	
SOIC8.....	TBDW
PDIP8.....	TBDW
Junction Temperature.....	150°C
Lead Temperature.....	260°C
Storage Temperature.....	-65°C to +150°C

Recommended Operating Conditions ⁽³⁾

Supply Voltage V _{CC}	10.3V to 23V
Operating Junct. Temp (T _J).....	-40°C to +125°C

Thermal Resistance ⁽⁴⁾ θ_{JA} θ_{JC}

SOIC8.....	TBD... TBD .°C/W
PDIP8.....	TBD... TBD .°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 P₀(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.