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MP4690

Smart Bypass For LED Open Protection

DESCRIPTION

The MP4690 is a MOSFET based smart bypass for LED open protection, which provides a current bypass in the case of a single LED fails and becomes an open circuit. When the LED heals itself or is replaced, the MP4690 automatically resets. This device features very low voltage drop so that the conduction loss is very small during the protection. It achieves excellent thermal performance and energy efficiency.

LED lighting requires high reliability, especially in applications, such as automobiles, aircrafts, and streetlights. The MP4690 is used in parallel with each LED so that when one LED fails, other LEDs in the same string can still function normally.

The usage of the MP4690 is not limited to just LED loads. It can also be used with other loads where open protection is required.

The MP4690 is typically used with 1W-2W LEDs. The device is available in a SOD123 package.

FEATURES

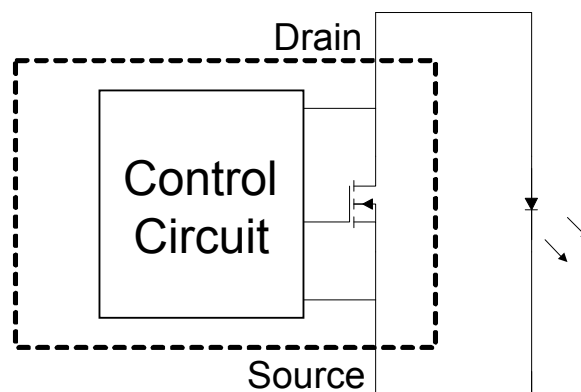
- Simple Two Terminal Device
- Automatic Reset if the LED Heals itself or is Replaced
- 0.22Ω Typical On-state Resistance
- Less than 1μA Off-state Current
- Available in SOD123 Package

APPLICATIONS

- LEDs where Preventive Maintenance is not Practical
- LED Headlights
- LEDs with high Reliability Requirements
- Crowbar Protection for Open Circuit Conditions
- Over-voltage Protection for Sensitive Circuits

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TYPICAL APPLICATION



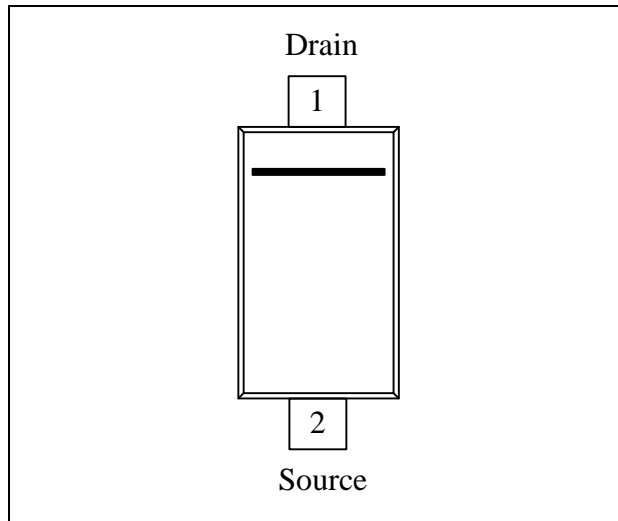
CODICO
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ORDERING INFORMATION

Part Number*	Package	Top Marking	Free Air Temperature (T _A)
MP4690GSD	SOD123	AAY	-40°C to +105°C

* For Tape & Reel, add suffix -Z (e.g. MP4690GSD-Z)
 For RoHS Compliant Packaging, add suffix -LF (e.g. MP4690GSD-LF-Z)

PACKAGE REFERENCE

ABSOLUTE MAXIMUM RATINGS ⁽¹⁾

Drain to Source Voltage.....	-0.3V to +7.5V
Continuous Power Dissipation (T _A =+25°C) ⁽²⁾	0.37W
Junction Temperature	150°C
Lead Temperature	260°C
Storage Temperature.....	-65°C to +150°C

Recommended Operating Conditions ⁽³⁾

Maximum On-state Current.....	0.7A
Maximum Junction Temp. (T _J)	+125°C

Thermal Resistance ⁽⁴⁾	θ_{JA}	θ_{JC}
SOD123	340	150 .. °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 operating conditions.
- 4) Measured on JESD51-7, 4-layer PCB.