

60V N-CHANNEL SELF PROTECTED ENHANCEMENT MODE INTELLIFET MOSFET WITH PROGRAMMABLE CURRENT LIMIT

Product Summary

- Continuous Drain Source Voltage $V_{DS} = 60V$
- On-State Resistance: 500m Ω
- Nominal Load Current ($V_{IN} = 5V$): 1.4A
- Clamping Energy: 550mJ

Description

The ZXMS6003G is a self-protected low-side IntelliFET™ MOSFET. It features monolithic overtemperature, overcurrent, overvoltage (active clamp), and ESD protected logic level functionality. It is intended as a general purpose switch with status indication and programmable current limit.

Applications

- Especially Suited for Loads with a High In-Rush Current Such as Lamps and Motors
- All Types of Resistive, Inductive, and Capacitive Loads in Switching Applications
- μC Compatible Power Switch for 12V and 24V DC Applications
- Replaces Electromechanical Relays and Discrete Circuits
- Linear Mode Capability - The current-limiting protection circuitry is designed to deactivate at low V_{DS} in order not to compromise the load current during normal operation. The design max. DC operating current is therefore determined by the thermal capability of the package/board combination rather than by the protection circuitry.
Note: This does not compromise the product's ability to self-protect during short-circuit load conditions.
- Current Limit is Programmable via an External Resistor R_{PROG} Connected Between Status and IN pins
- Status Pin Voltage Reflects the Gate Drive Applied Internally to the Power MOSFET
- With $V_{IN} = 5V$ and $R_{PROG} = 24k\Omega$:
 - Status Voltage: 5V Indicates Normal Operation
 - Status Voltage: 2V to 3V Indicates the Device is in Current-Limiting Mode
 - Status Voltage $<1V$ Indicates the Device is in Thermal Shutdown

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain $<900ppm$ bromine, $<900ppm$ chlorine ($<1500ppm$ total Br + Cl) and $<1000ppm$ antimony compounds.

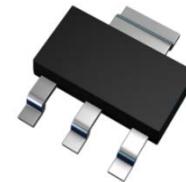
Features and Benefits

- Current Limit Programmable via External Resistor
- Status Pin (Analog Status Indication)
- Logic Level Input
- Short-Circuit Protection with Auto Restart
- Overvoltage Protection (Active Clamp)
- Thermal Shutdown with Auto Restart
- Overcurrent Protection
- Input Protection (ESD)
- Load Dump Protection (Actively Protects Load)
- High Continuous Current Rating
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

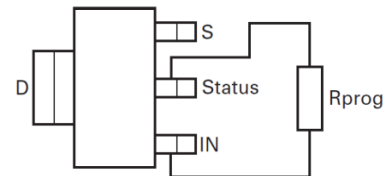
- Case: SOT223 (Type DN)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish (e3)
- Weight: 0.112 grams (Approximate)

SOT223 (Type DN)



Top View

Note: R_{PROG} must be connected between the Status and IN pins.



Top view