

TND027MP

ELECTRICAL CHARACTERISTICS at Ta = 25°C (Note 2, 3, 4)

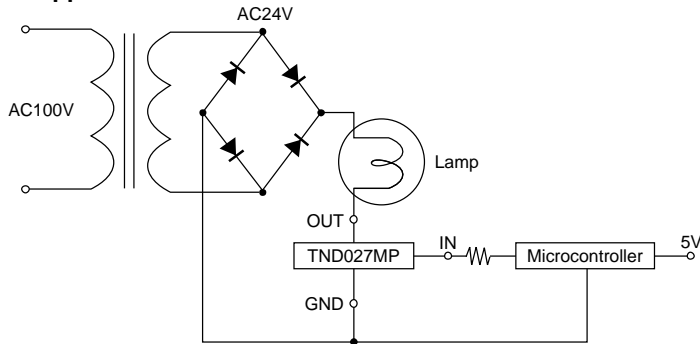
| Parameter | Symbol | Conditions | Value | | | Unit |
|--|------------------------|-------------------------|-------|-----|-----|-------------|
| | | | min | typ | max | |
| Drain to Source Clamp Voltage | $V_{DS, \text{clamp}}$ | $V_{IN}=0V, I_O=1mA$ | 60 | | | V |
| Output-OFF Current | $I_{DSS(1)}$ | $V_{IN}=0V, V_{DS}=50V$ | | | 10 | μA |
| | $I_{DSS(2)}$ | $V_{IN}=0V, V_{DS}=12V$ | | | 5 | μA |
| Input Threshold Voltage | $V_{IN(th)}$ | $V_{DS}=5V, I_O=1mA$ | 1.0 | 1.5 | 2.0 | V |
| Protection Circuit Operating Input Voltage | $V_{IN(opr)}$ | | 4 | | 10 | V |
| Drain to Source ON Resistance | $R_{DS(on)}$ | $V_{IN}=5V, I_O=1A$ | | 0.3 | 0.4 | Ω |
| Input Current (Output On) | I_{IN} | $V_{IN}=5V$ | | | 0.6 | mA |
| Over-Heat Detecting Temperature | $T_j(sd)$ | $V_{IN}=5V, I_O=1A$ | 120 | 150 | 190 | $^{\circ}C$ |
| Over-Curret Detecting Current | I_s | $V_{IN}=5V$ | 3.0 | 6.0 | 9.0 | A |
| Over-Curret Limit (Peak) | I_{LMT} | $V_{IN}=5V$ | 3.0 | 6.0 | 9.0 | A |
| Input Clamp Voltage | $V_{IN, \text{clamp}}$ | $I_{IN}=1mA$ | 10 | | | V |

Note 2 :Overcurrent protection circuit limits the output current to the range of overcurrent limit value.

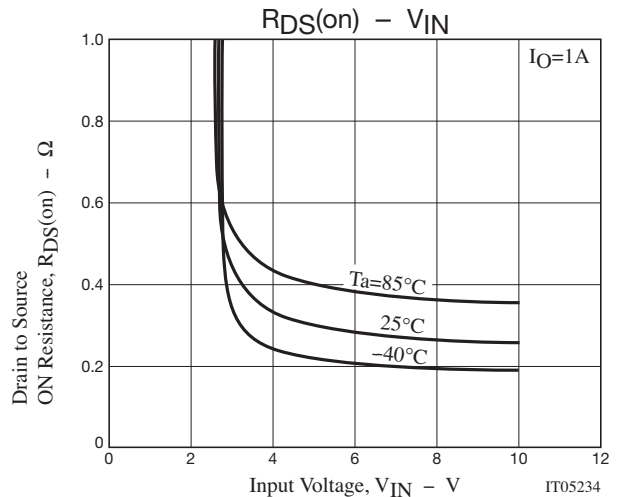
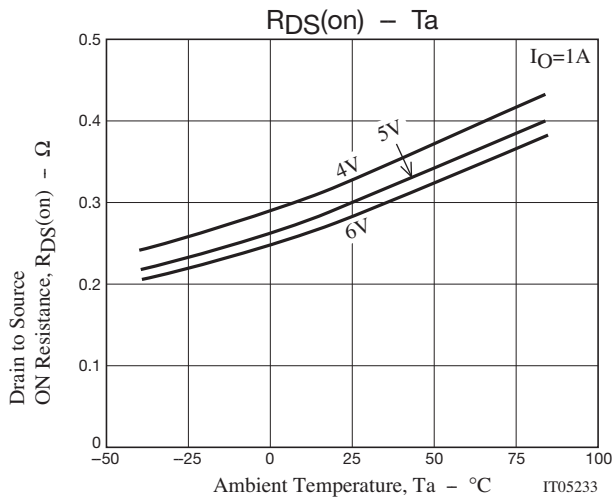
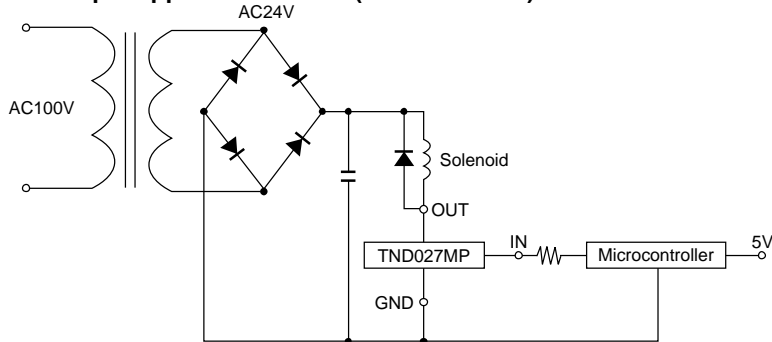
Note 3 :During overheat protecting operation, output current is turned off.

Note 4 : Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted.
Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

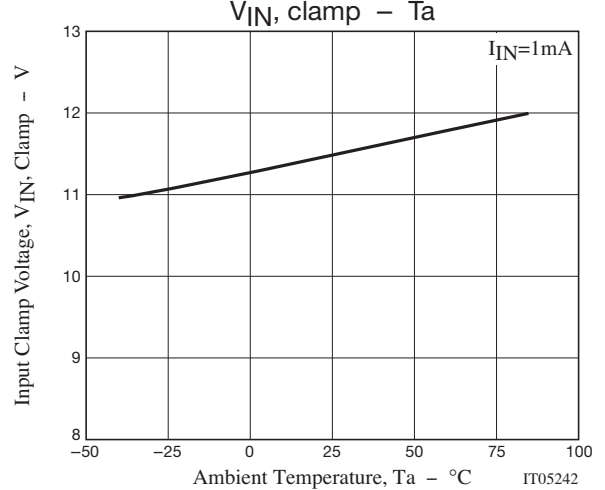
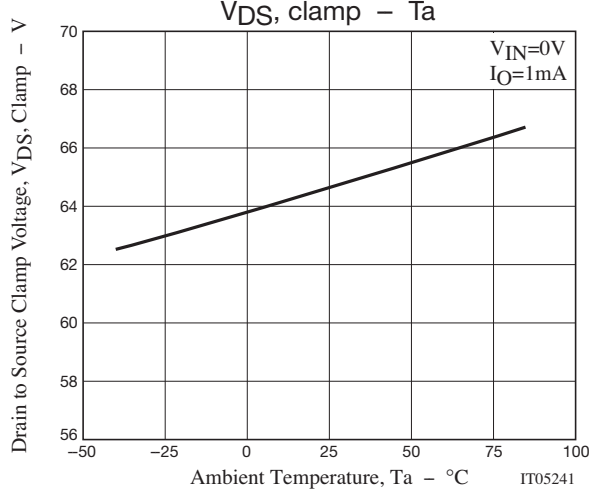
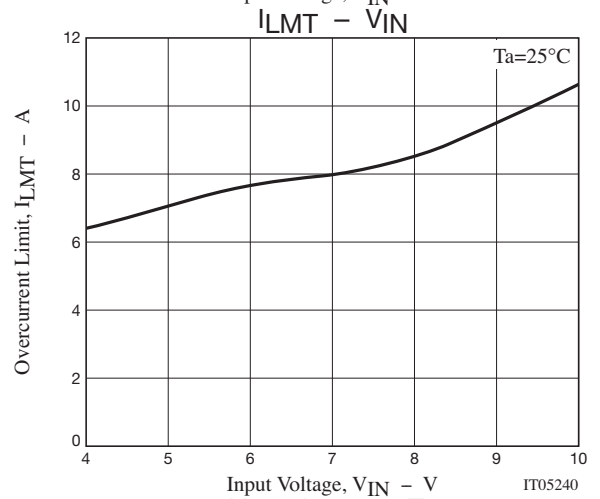
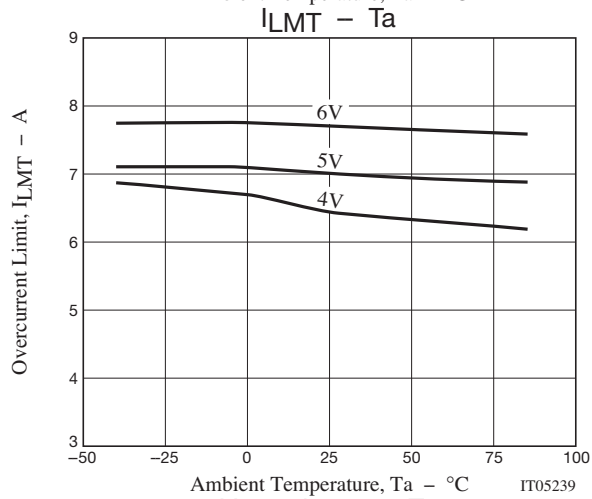
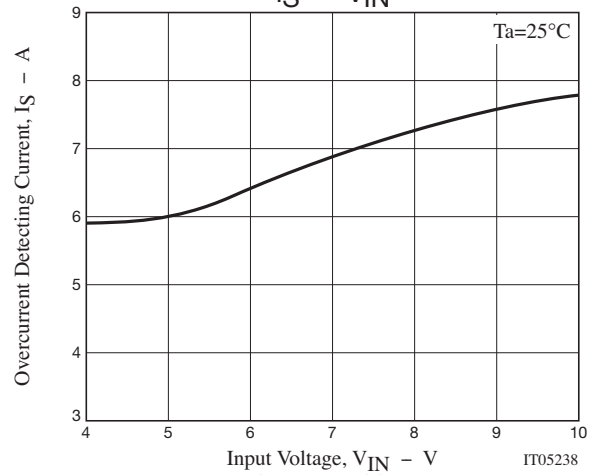
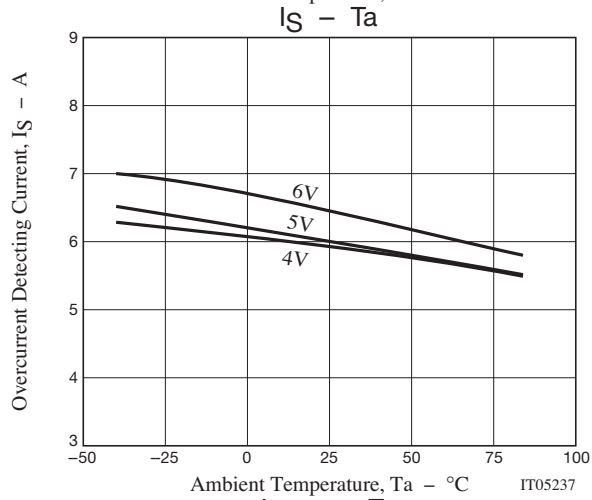
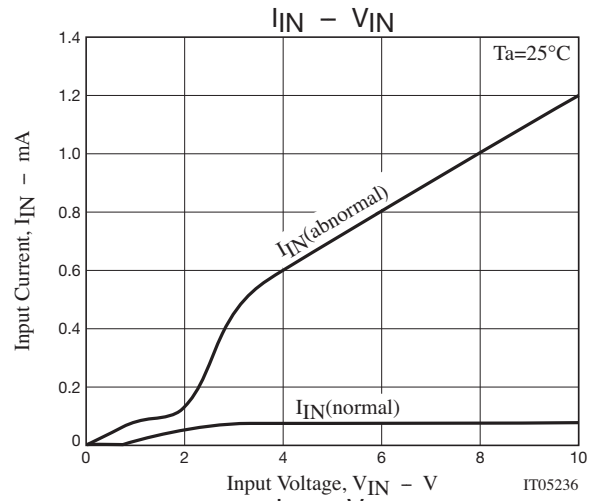
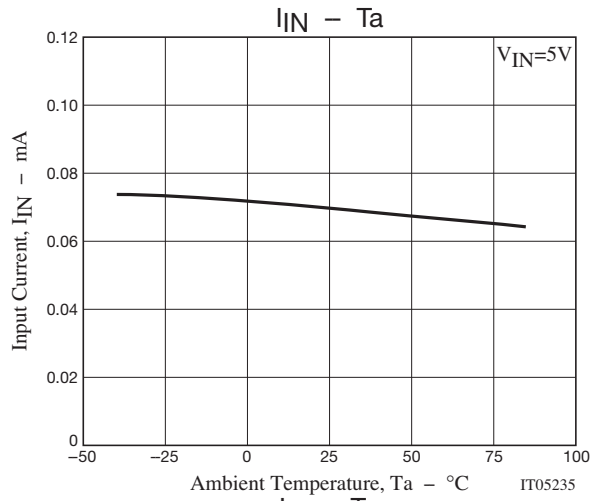
Sample Application Circuit



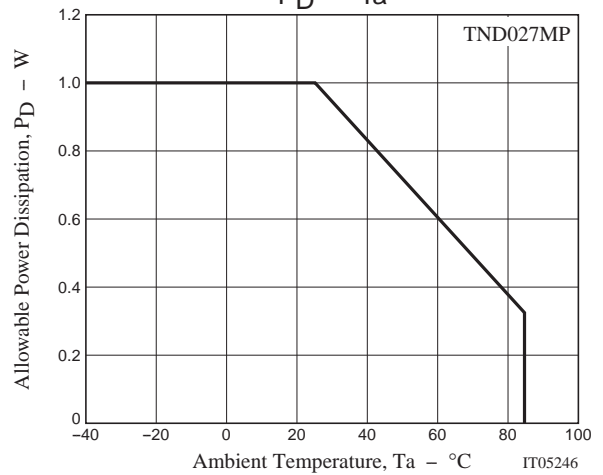
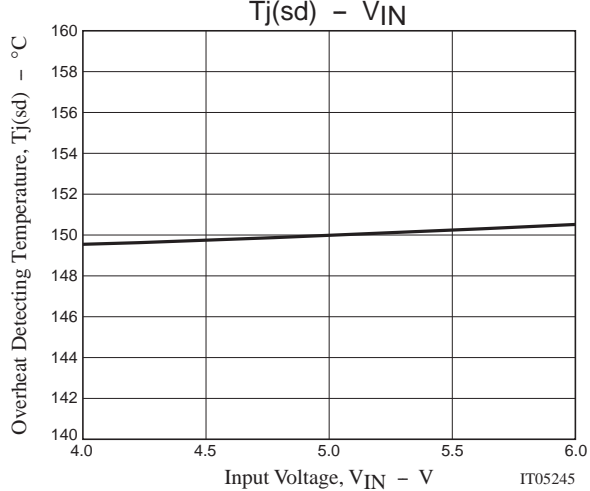
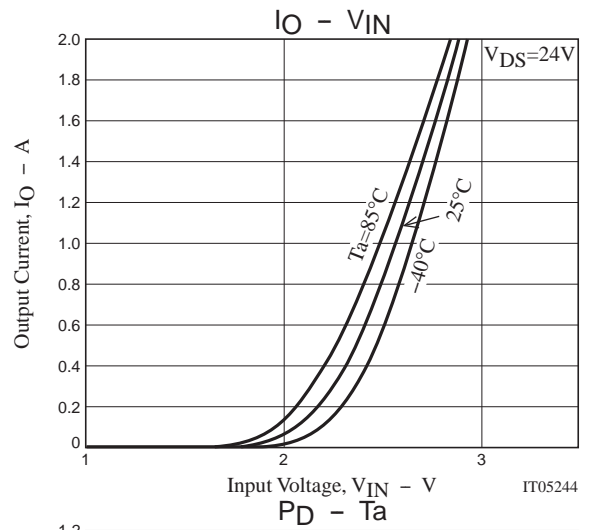
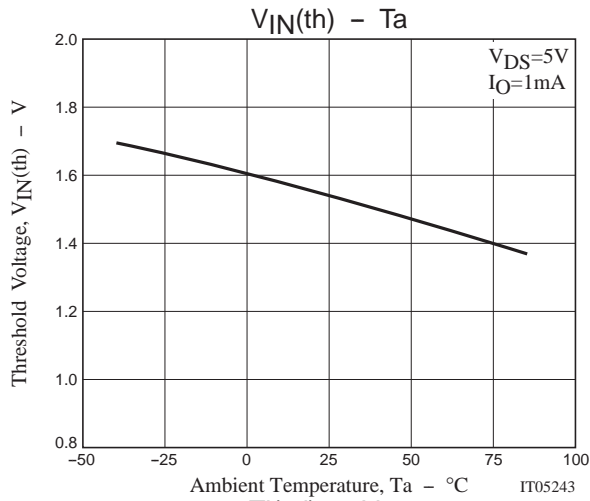
Another Sample Application Circuit (Solenoid drive)



TND027MP



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OPERATION DESCRIPTION

- The output power MOSFET will be turned on when the input voltage exceeds the input threshold voltage(4 to 6V is recommended), and then the lamp will be turned on by the current flowing to the lamp. Conversely, the output power MOSFET will be turned off when the input voltage goes below the input threshold voltage, and the lamp will be turned off.
- The inrush current that occurs during normal lamp operation is limited to a preset value by the built-in overcurrent protecting circuit, which makes the lamp life longer.
- The internal overcurrent protection function limits the current of output power MOSFET when output current of at least the overcurrent detecting current value flows at load short. Besides, if the device temperature exceeds the allowable power dissipation, overheat protection function protects the power switch from being broken down by turning off the current of output power MOSFET when T_j comes to 150°C(typical).
- As an example of application circuit, DC voltage can also be controlled as a solenoid drive.

ADDITION

- The diode between OUT and GND in the block diagram is parasitic diode of the MOSFET.
- Not apply a voltage on IN terminal during the period when OUT voltage is lower than GND voltage when driving a solenoid or a motor.
- Be sure connect a diode between OUT terminal and GND terminal when you want to apply a voltage on IN terminal under the above-stated state (that is, OUT Voltage < GND Voltage).

PACKAGE DIMENSIONS

TO-92 3 8.5x6.0 / MP-WA
CASE 135AG
ISSUE O



| Device | Marking | Package | Shipping (Qty / Packing) |
|-------------|---------|--------------------------------------|--------------------------|
| TND027MP-AZ | TND027 | TO-92 3 8.5X6.0 / MP-WA (Pb-Free) | 1,000 / Tape & Reel |

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