Ordering number:ENN5827A

ExPD (Excellent Power Device)

TND011NM, TND011MP

Lamp Drive Applications

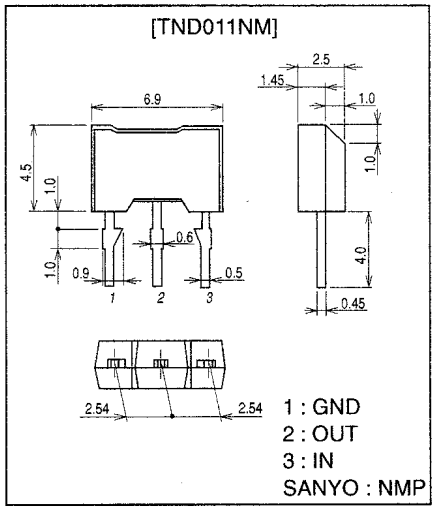
Features

- N-channel MOSFET built in.
- Overcurrent protection built in.
- Reset function built in.

Package Dimensions

Unit:mm

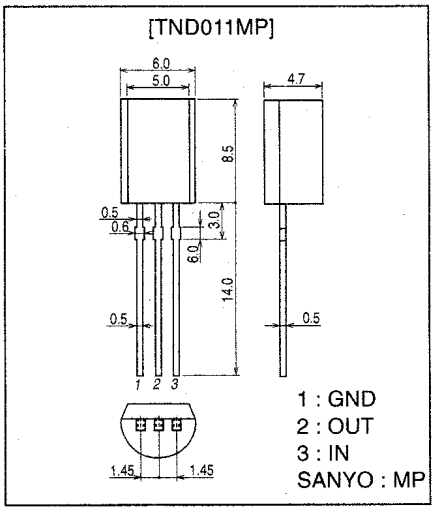
2135



Package Dimensions

Unit:mm

2145



Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}(DC)		60	V
Output Current (Average)	I_O(DC)		1.5	A
Peak Output Current	I_{OP}		5	A
Input Voltage	V_{IN}		–0.5 to +6	V
Input Current	I_{IN}		±10	mA
Allowable Power Dissipation	P_D		1	W
Operating Temperature	Topr		–40 to +85	°C
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		–55 to +150	°C

Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V_{DSS}	V_{IN}=0, I_O=4.5mA	60			V
Output-OFF Current	$I_{DSS}1$	V_{IN}=0, V_{DS}=60V			4.5	mA
	$I_{DSS}2$	V_{IN}=0, V_{DS}=25V			1.5	mA
Input Voltage	V_{IH}	V_{DD}=24V (AC), I_O=1.5A	4.5	5	6	V
Input Voltage	V_{IL}	V_{DD}=24V (AC), I_O=5mA			0.8	V

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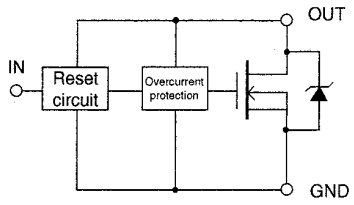
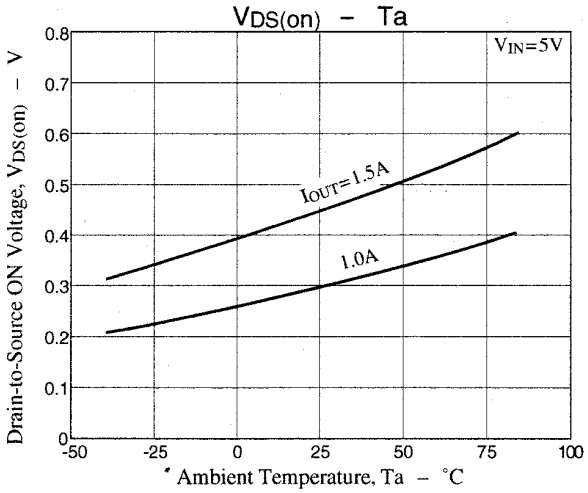
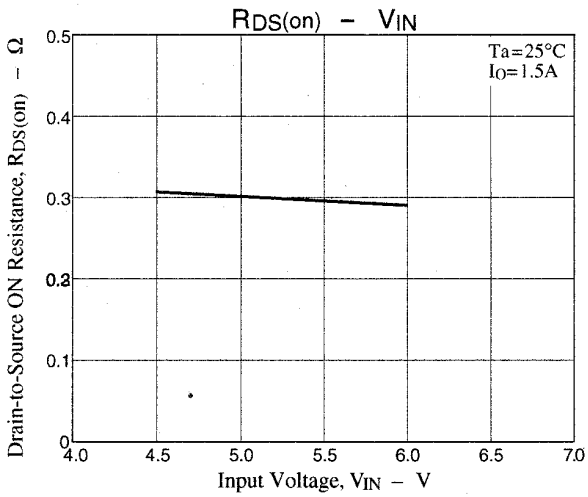
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source ON Voltage	$V_{DS(on)}$	V_{IN}=5V, I_O=1.5A		0.5	0.75	V
Drain-to-Source ON Resistance	$R_{DS(on)}$	V_{IN}=5V, I_O=1.5A			0.5	Ω
Overcurrent Detecting Current	Is	V_{IN}=5V		5		A
Input Current (Output ON)	I_{IN}	V_{IN}=5V, $V_{DS(ON)}$≤1V			1	mA
Reset voltage	V_{RESET}*	V_{IN}=5V		4.6		V

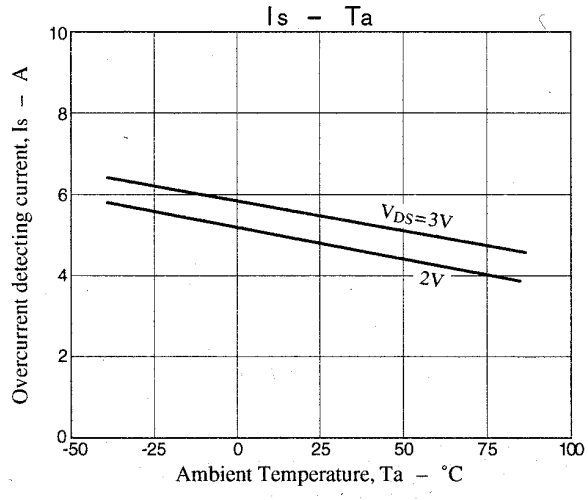
* : Output is turned off regardless of input when power supply voltage is higher than V_{RESET}.

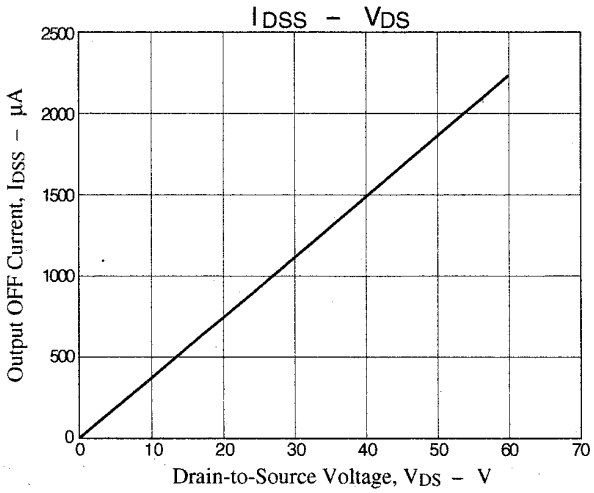
Block Diagram

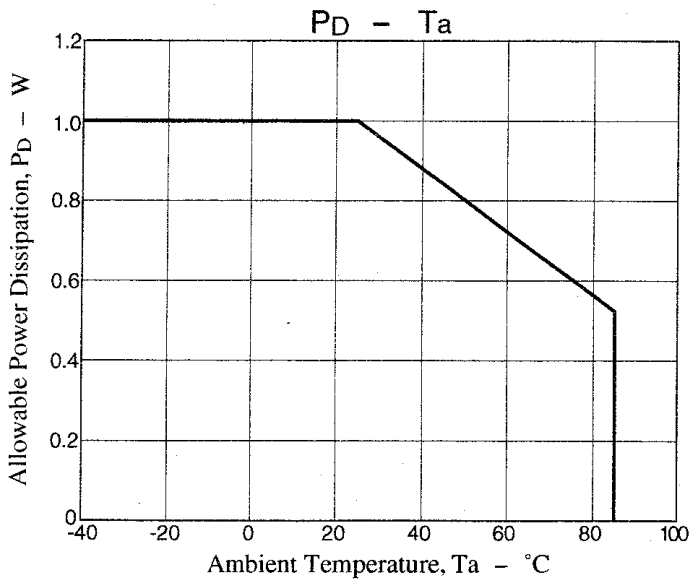




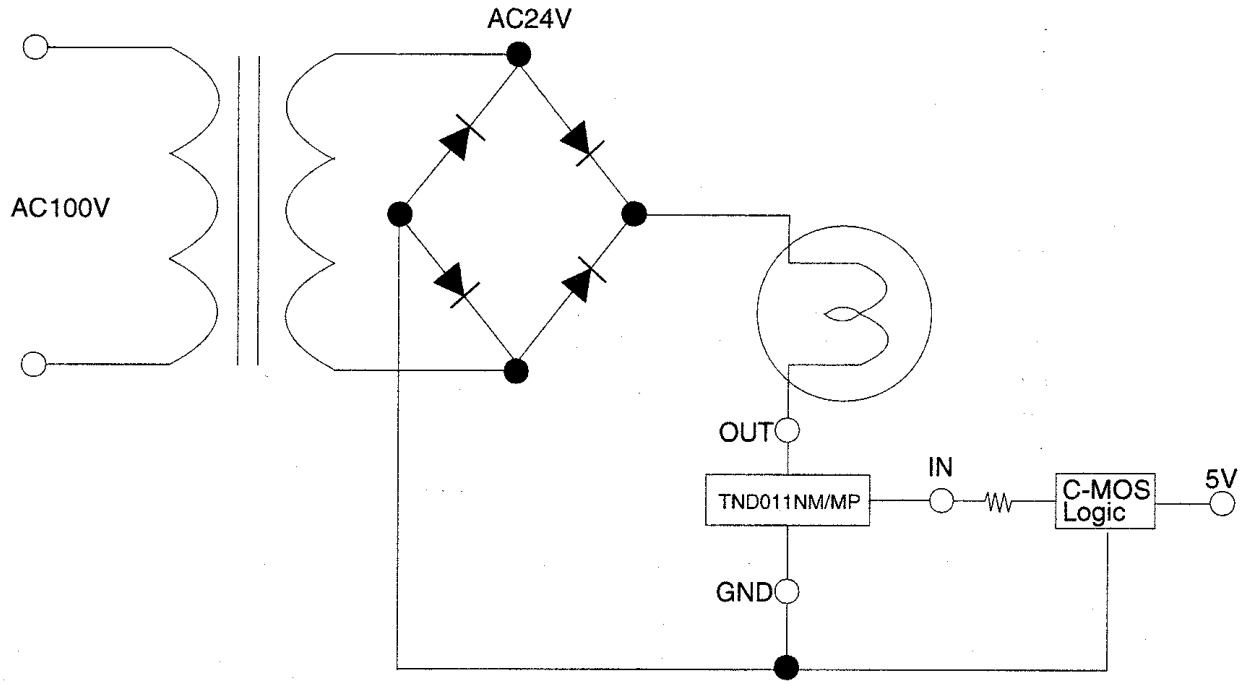








Sample Application Circuit



Operation Description

- When the input voltage exceeds 4.5V, the output power MOSFET is turned on to cause current to flow through the lamp and turn it on. At this time, if a rush current flows through the lamp, the current will be limited to about 5A by the built-in overcurrent protection circuit. When the input voltage drops below 0.8V, the output power MOSFET is turned off and the lamp is turned off.
- When the lamp load is short-circuited, output voltage becomes equal to the power supply voltage. Therefore, the reset circuit operates to turn off the output power MOSFET, protecting the power switch from destruction.