MIP504

Silicon MOS IC

■ Features
- 3-pin intelligent power device
- Five protective functions (over-current, over-voltage, short circuit load, over heat, ESD) are integrated
- Acceptable both AC and DC power supply
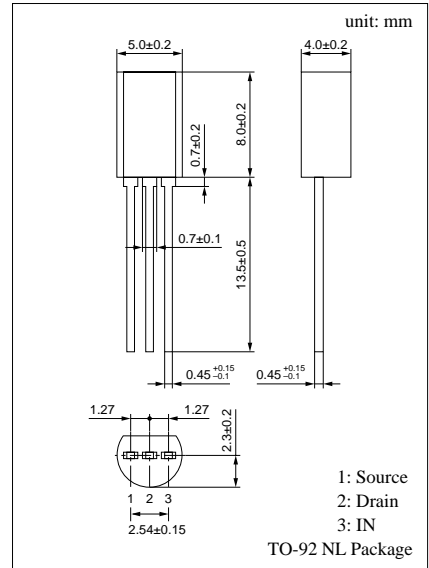
■ Applications
- Lamp drive

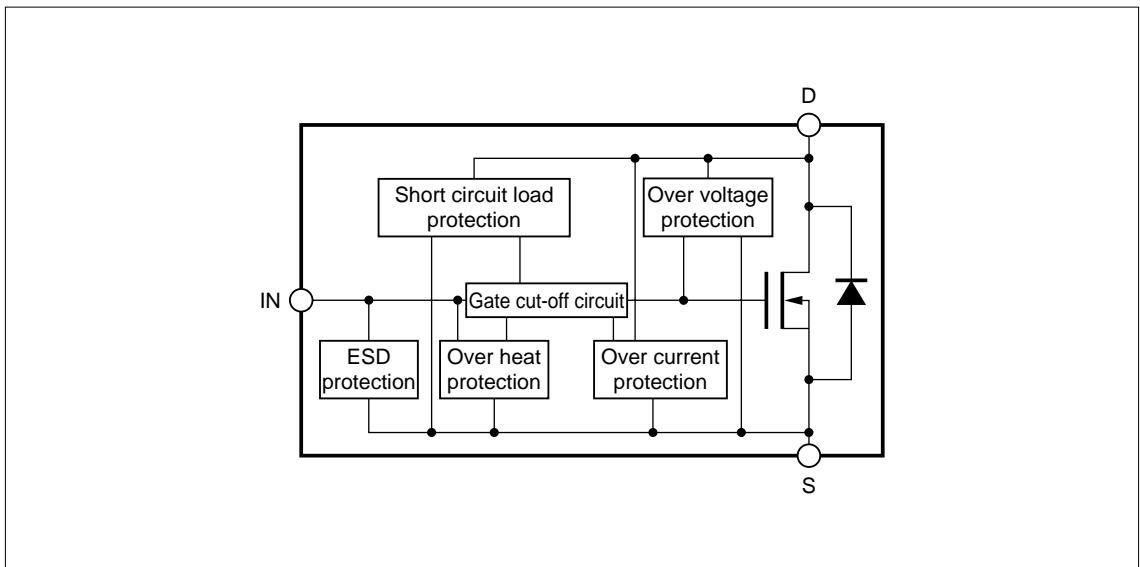### ■ Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Drain to Source voltage	V_{DS}	60	V
Output peak current	I_{OP}	±5	A
Output current	I_O	−1 to 2[*1]	A
Input voltage	V_{IN}	− 0.5 to 6	V
Input current	I_{IN}	±10	mA
Allowable power dissipation	P_D	1[*2]	W
Operating ambient temperature	T_{opr}	−40 to +85	°C
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

[*1] Maximum load current, not the average current.

[*2] Mounting on the PCB (Glass epoxy board, the size of 100mm × 100mm). (Ta = 25°C)

unit: mm

5.0±0.2   4.0±0.2
0.7±0.2   8.0±0.2
0.7±0.1   13.5±0.5
0.45 +0.15 −0.1   0.45 +0.15 −0.1
1.27   1.27   2.3±0.2
1 2 3
2.54±0.15

1: Source
2: Drain
3: IN
TO-92 NL Package

■ Block Diagram

■ Electrical Characteristics $(T_C = 25 \pm 2°C)$

Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source ON-resistance	$R_{DS(on)}$	$V_{IN} = 5V$, $I_{DS} = 1.5A$		0.38	0.5	Ω
Drain to Source ON-voltage	$V_{DS(on)}$	$V_{IN} = 5V$, $I_{DS} = 1.5A$		0.57	0.75	V
Drain clamp voltage	$V_{DS(CLP)}$	$V_{IN} = 0$, $I_{DS} = 3mA$	60	70		V
Drain OFF current (1)	$I_{DS(off)1}$	$V_{IN} = 0$, $V_{DS} = 12V$		50	80	μA
Drain OFF current (2)	$I_{DS(off)2}$	$V_{IN} = 0$, $V_{DS} = 25V$		0.1	0.16	mA
Drain OFF current (3)	$I_{DS(off)3}$	$V_{IN} = 0$, $V_{DS} = 40V$		0.16	0.26	mA
Input voltage (High)	$V_{IN(H)}$	$I_{DS} = 1.5A$	4			V
Input voltage (Low)	$V_{IN(L)}$	$I_{DS} = 0.1mA$			0.8	V
Input current	$I_{IN(on)}$	$V_{IN} = 5V$, $V_{DS} = 0$		0.15	0.5	mA
Over current protection limit	I_{OCP}	$V_{IN} = 5V$, $V_{DS} = 3V$	3.8	5		A
Short circuit load protection limit	$V_{DS(SHT)}$	$V_{IN} = 5V$	3			V

Note: The oscillation of the output current is caused when the drain voltage exceeds the short circuit load detection voltage under the ON state of output.

■ Electrical Characteristics $(T_C = 25 \pm 2°C)$

Parameter	Symbol	Conditions	min	typ	max	Unit
Over heat protection temperature	T_{SHD}	$V_{IN} = 5V$		140		°C

Note 1: The above values of characteristics are not guaranteed values and are only references for designing.

Note 2: If the chip temperature exceeds the "Over Heat Protection Temperature", output current is shut down.