

MIP508

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

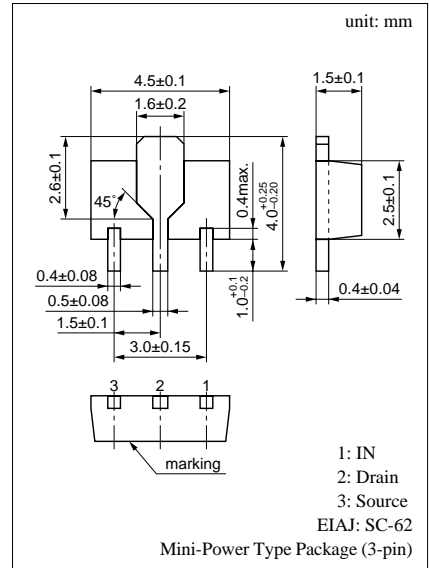
- For lamp and solenoid drive

■ Absolute Maximum Ratings (Ta = 25°C)

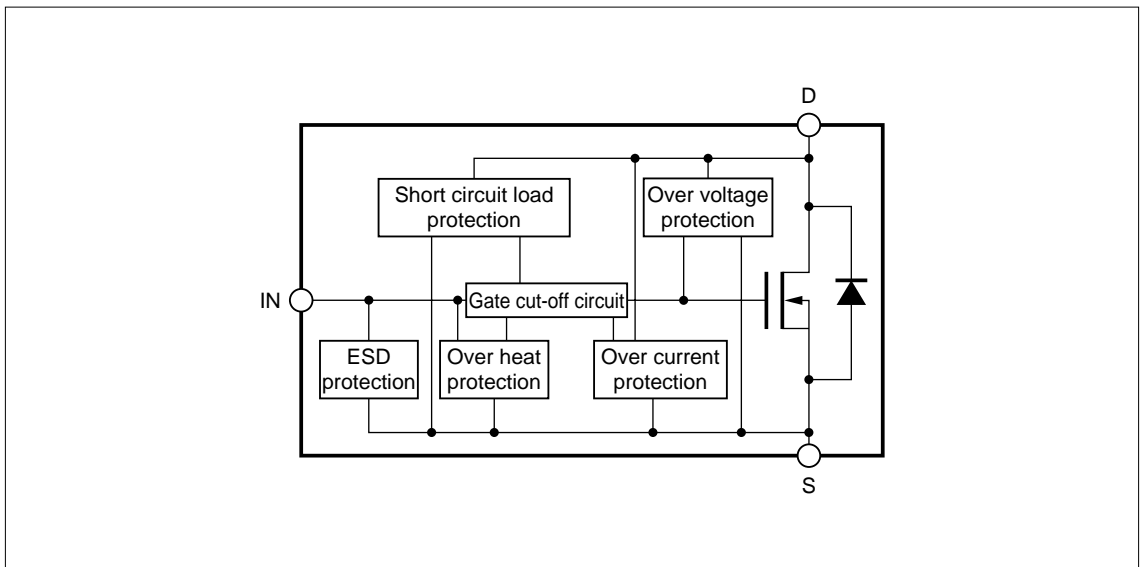
Parameter	Symbol	Ratings	Unit
Output voltage	V_{DS}	40	V
Output peak current	I_{OP}	± 3	A
Output current	I_O	$T_C = 25^\circ C$	1
		$T_C = 85^\circ C$	1
Input voltage	V_{IN}	-0.5 to 6	V
Input current	I_{IN}	± 5	mA
Drain clamp energy	E_{CLP}	24* ¹	mJ
Allowable power dissipation	P_D	$T_C = 25^\circ C$	2
		$T_a = 25^\circ C$	1* ²
		$T_a = 85^\circ C$	0.52* ²
Channel temperature	T_{ch}	-40 to +150	°C
Storage temperature	T_{stg}	-55 to +150	°C

*¹ L = 10mH, $V_{DD} = 20V$, $I_L = 2.19A$, $T_C = 25^\circ C$, 1pulse

*² Mounting on the PCB (the copper foil of the drain portion should have a area of 100mm² or more and the board thickness should be 1.7mm.)



■ Block Diagram



■ Electrical Characteristics ($T_C = 25 \pm 3^\circ\text{C}$)

Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source ON-resistance	$R_{DS(on)}$	$V_{IN} = 5V, I_{DS} = 1A$		0.5	1.1	Ω
Drain to Source ON-voltage	$V_{DS(on)}$	$V_{IN} = 5V, I_{DS} = 1A$		0.5	1.1	V
Drain clamp voltage	$V_{DS(CLIP)}$	$V_{IN} = 0, I_{DS} = 3mA$	40	49	58	V
Drain OFF current (1)	$I_{DS(off)1}$	$V_{IN} = 0, V_{DS} = 12V$		50	120	μA
Drain OFF current (2)	$I_{DS(off)2}$	$V_{IN} = 0, V_{DS} = 16V$		70	180	μA
Input voltage (High)	$V_{IN(H)}$	$I_{DS} = 1A$	4			V
Input voltage (Low)	$V_{IN(L)}$	$I_{DS} = 1mA$			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}	$V_{IN} = 5V$	2	3		A
Short circuit load protection limit	$V_{DS(SHT)}$	$V_{IN} = 5V$	2	4	10	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 ($T_C = 25 \pm 3^\circ\text{C}$)

Parameter	Symbol	Conditions	min	typ	max	Unit
Over heat protection temperature	T_{SHD}	$V_{IN} = 5V$	160	190		$^\circ\text{C}$

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.

■ Timing Chart

