

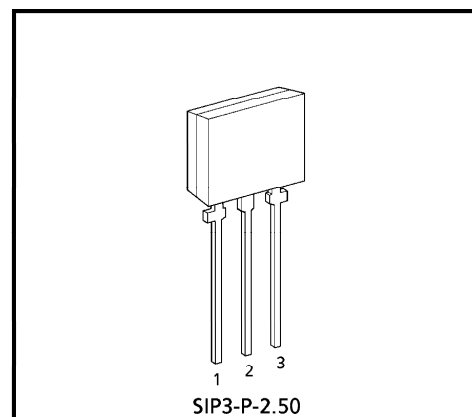
TPD1024AS

LOW-SIDE POWER SWITCH for MOTORS, SOLENOIDS, and LAMP DRIVERS

TPD1024AS is a monolithic power IC for low-side switches. The IC has a vertical MOS FET output which can be directly driven from a CMOS or TTL logic circuit (e.g., an MPU). The device offers intelligent self-protection function.

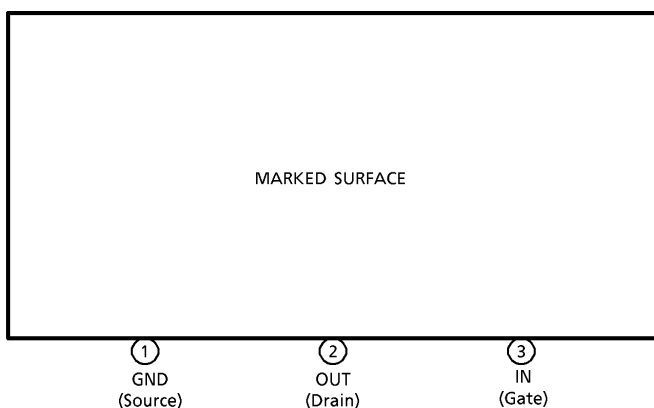
FEATURES

- A monolithic power IC with a new structure combining a control block and a vertical power MOS FET (π -MOS) on a single chip.
- Can directly drive a power load from a CMOS logic.
- Built-in protection against overvoltage, load short circuiting, and overheating.
- Low on resistance : $R_{DS(ON)} = 0.5 \Omega$ (Max), @ $V_{IN} = 5V$, $T_j = 25^\circ C$
- Package : TPS Can be packed in tape.



Weight : 0.54 g (Typ.)

PIN ASSIGNMENT

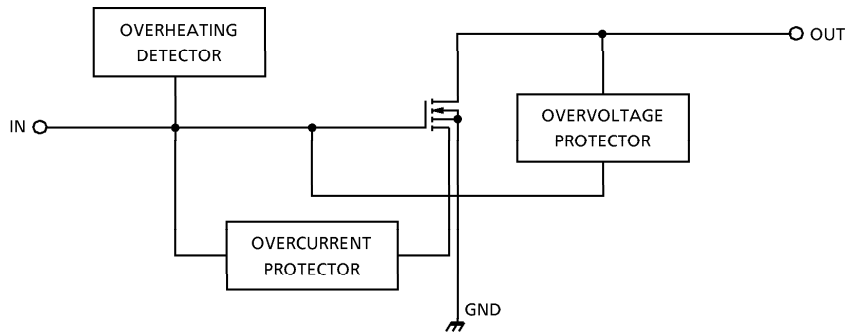


(Note) : That because of its MOS structure, this product is sensitive to static electricity.

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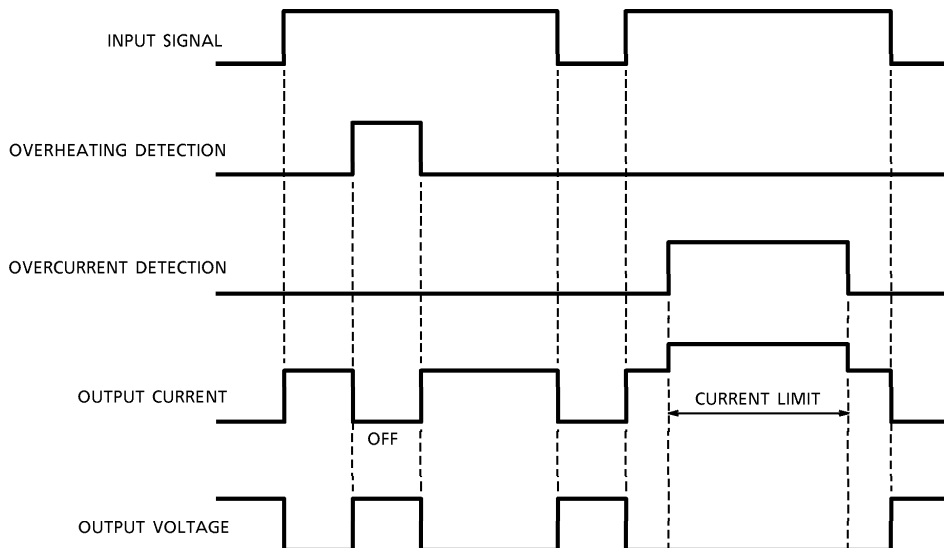
BLOCK DIAGRAM



PIN DESCRIPTION

PIN No.	SYMBOL	FUNCTION
1	GND	Ground pin.
2	OUT	Output pin. When current in excess of the typical current (3.5 A) flows to the output pin, the current limiter operates to protect the IC.
3	IN	Input pin. Input is CMOS-compatible, with pull-down resistor connected. Even if the input is open, output will not accidentally turn on.

TIMING CHART



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-source Voltage	V _{DS} (DC)	40	V
Output Current	I _D	1.5	A
Input Voltage	V _{GS}	-0.5~6	V
Power Dissipation	P _D	1.2	W
Operating Temperature	T _{opr}	-40~85	°C
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55~150	°C

RECOMMENDABLE CONDITION

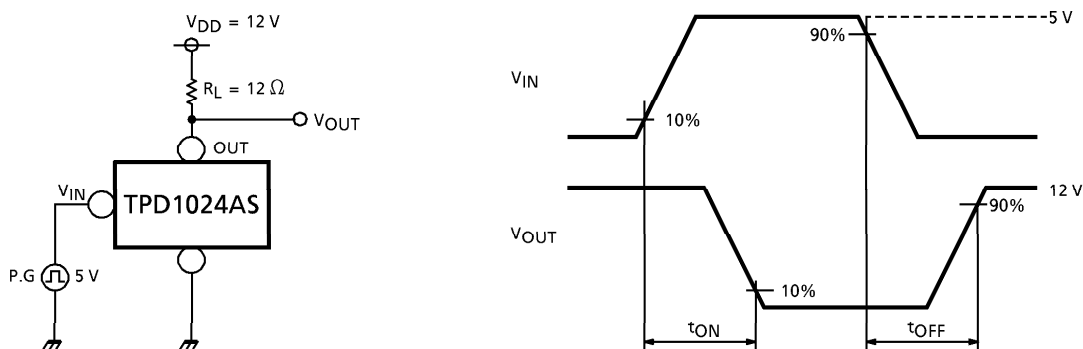
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Input Voltage	V _{IN}	—	4.5	5	6	V

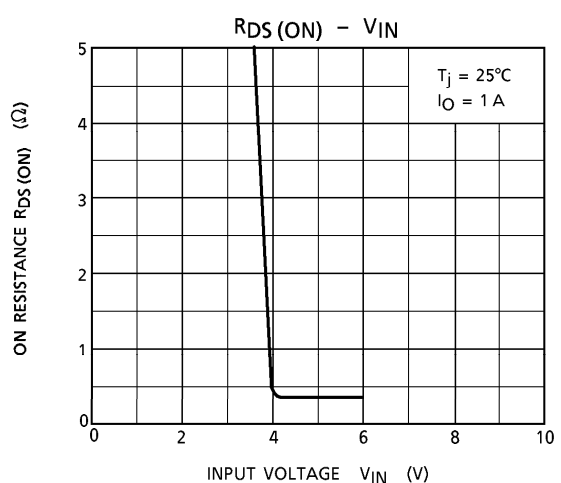
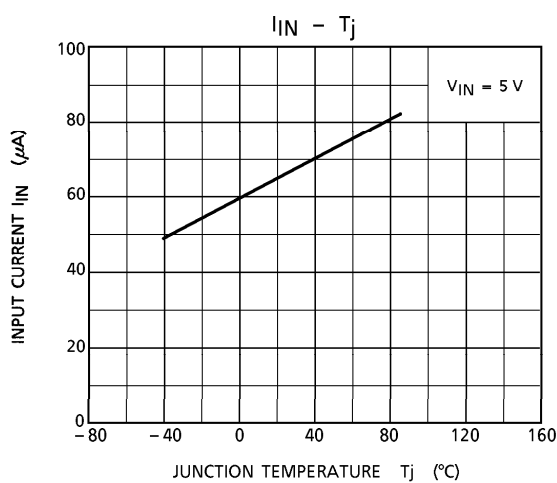
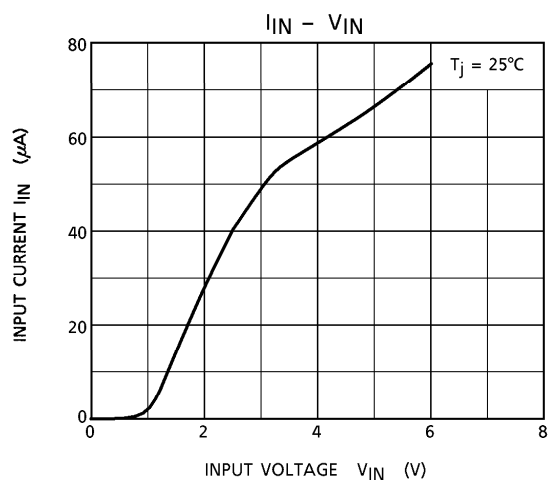
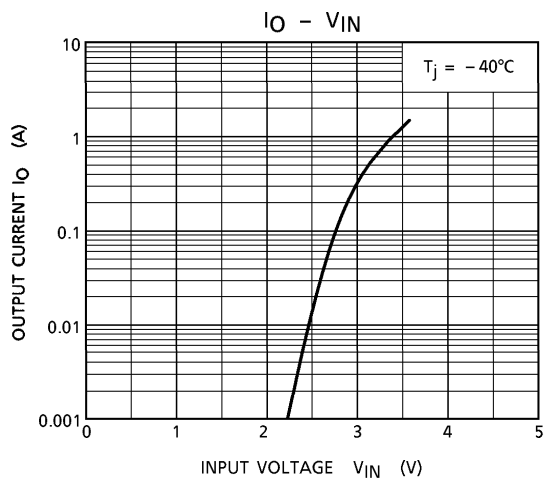
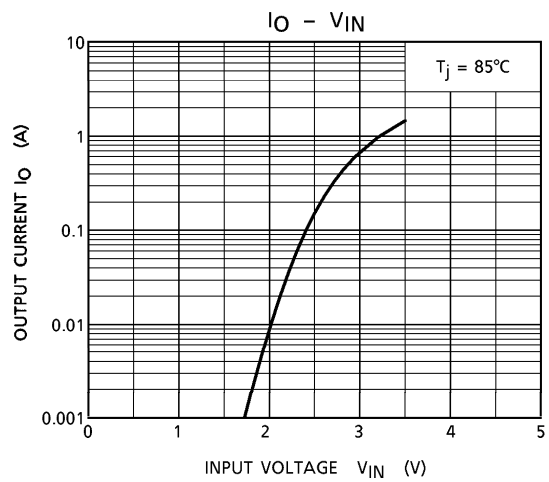
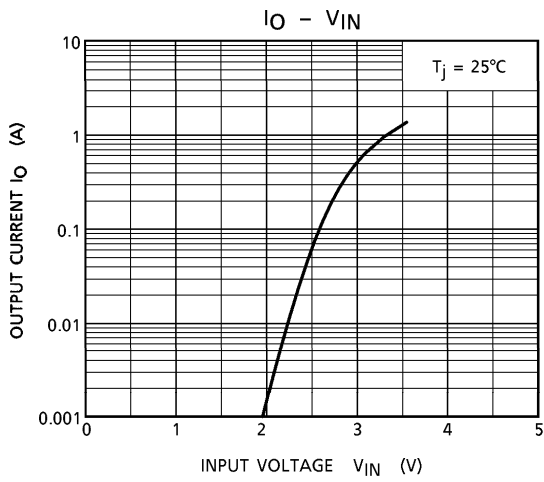
ELECTRICAL CHARACTERISTICS (Tj = 25°C)

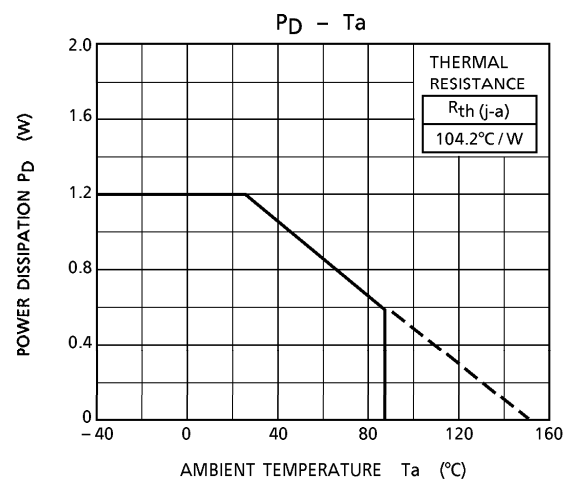
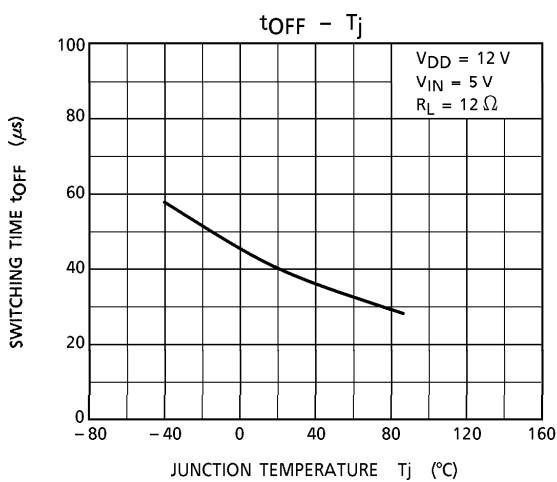
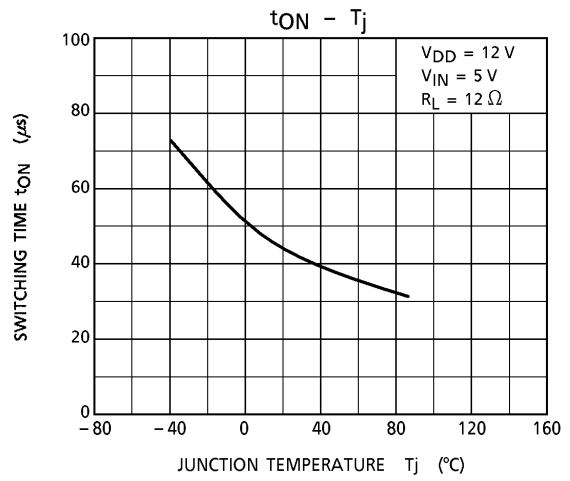
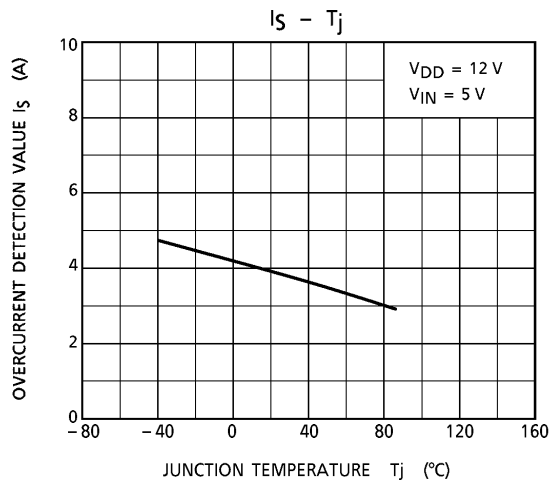
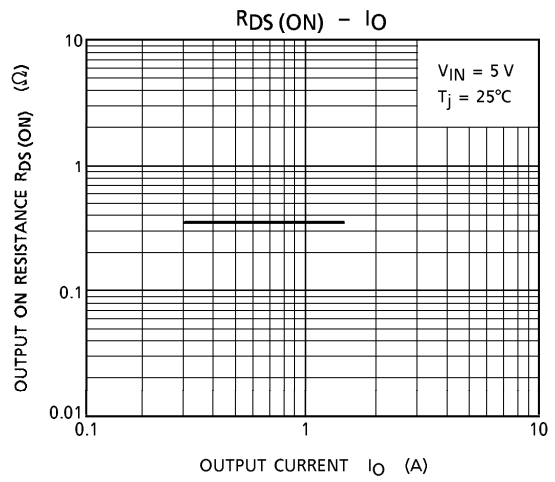
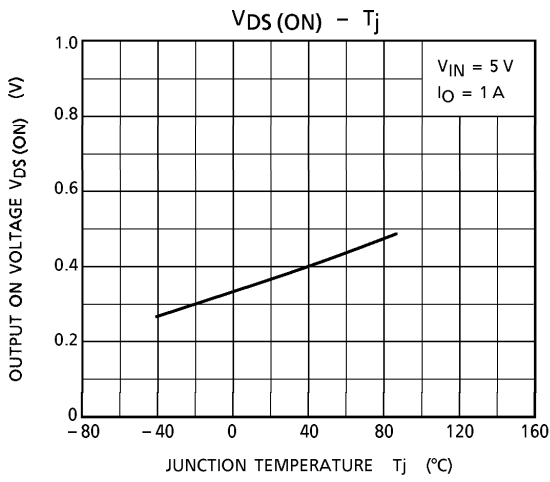
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Drain-source Breakdown Voltage	V (BR) DSS	—	V _{GS} = 0, I _D = 10 mA	40	—	—	V
Operating Supply Voltage	V _{DD} (OPR)	—	—	—	—	18	V
Current at Output Off	I _{DSS} (1)	—	V _{GS} = 0, V _{DS} = 40 V	—	—	3	mA
	I _{DSS} (2)	—	V _{GS} = 0, V _{DS} = 24 V	—	—	100	μA
Input Threshold Voltage	V _{th}	—	V _{DS} = 10 V, I _D = 1 mA	0.8	—	2.5	V
Input Current	I _{GSS}	—	V _{GS} = 5 V, at normal operation	—	—	300	μA
On Resistance	R _{DS} (ON)	—	V _{GS} = 5 V, I _D = 1 A	—	—	0.5	Ω
Overheating Protection	T _S	—	—	—	160	—	°C
Overcurrent Protection	I _S	—	V _{DS} = 12 V, V _{GS} = 5 V	—	3.5	—	A
Switching Time	t _{ON}	1	V _{DS} = 12 V, V _{GS} = 5 V, R _L = 12 Ω	—	50	—	μs
	t _{OFF}			—	10	—	μs
Diode Forward Voltage Between Drain and Source	V _{DSF}	—	I _F = 1.5 A	—	0.9	1.8	V
Avalanche Energy Rating	E _A	—	L = 10 mH, Single-shot pulse	30	—	—	mJ

TEST CIRCUIT 1

Switching Time

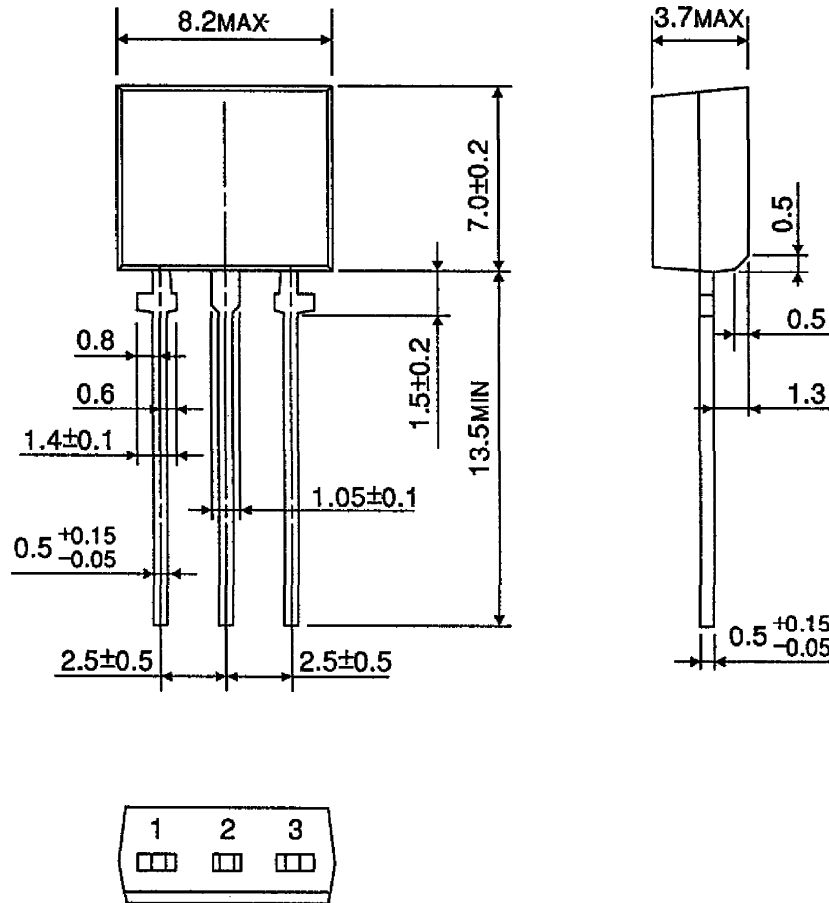






OUTLINE DRAWING
SIP3-P-2.50

Unit : mm



Weight : 0.54 g (Typ.)