

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π -MOSV)

2SK2549

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS
Unit in mm

- 2.5 V Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.29 \Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 3.0 S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100 \mu A$ (Max.) ($V_{DS} = 16 V$)
- Enhancement-Mode : $V_{th} = 0.5 \sim 1.1 V$
($V_{DS} = 10 V, I_D = 200 \mu A$)

MAXIMUM RATINGS ($T_a = 25^\circ C$)

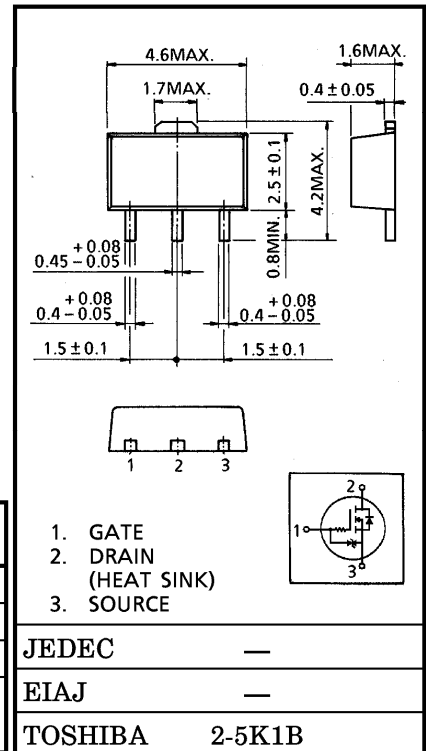
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	16	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	16	V
Gate-Source Voltage		V_{GSS}	± 8	V
Drain Current	DC	I_D	2	A
	Pulse	I_{DP}	6	
Drain Power Dissipation ($T_a = 25^\circ C$)		P_D	0.5	W
Drain Power Dissipation*		P_D	1.5	W
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$

* : Mounted on ceramic substrate ($600 mm^2 \times 0.8 t$)

THERMAL CHARACTERISTICS

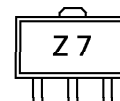
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	250	$^\circ C/W$

**This transistor is an electrostatic sensitive device.
Please handle with caution.**



Weight : 0.05 g (Typ.)

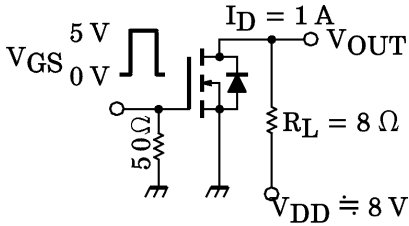
MARKING



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	I _{GSS}	V _{GS} = ±6.5 V, V _{DS} = 0 V	—	—	±10	μA	
Drain Cut-off Current	I _{DSS}	V _{DS} = 16 V, V _{GS} = 0 V	—	—	100	μA	
Drain-Source Breakdown Voltage	V _{(BR)DSS}	I _D = 10 mA, V _{GS} = 0 V	16	—	—	V	
Gate Threshold Voltage	V _{th}	V _{DS} = 10 V, I _D = 200 μA	0.5	—	1.1	V	
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} = 2.5 V, I _D = 0.5 A	—	0.29	0.38	Ω	
		V _{GS} = 4 V, I _D = 1 A	—	0.22	0.29		
Forward Transfer Admittance	Y _{fs}	V _{DS} = 10 V, I _D = 1 A	1.5	3.0	—	S	
Input Capacitance	C _{iss}	V _{DS} = 10 V, V _{GS} = 0 V, f = 1 MHz	—	260	—	pF	
Reverse Transfer Capacitance	C _{rss}		—	34	—		
Output Capacitance	C _{oss}		—	103	—		
Switching Time	Rise Time	t _r		—	200	—	ns
	Turn-on Time	t _{on}		—	250	—	
	Fall Time	t _f		—	300	—	
	Turn-off Time	t _{off}		V _{IN} : t _r , t _f < 5 ns, Duty ≤ 1%, t _w = 10 μs	—	800	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q _g	V _{DD} = 16 V, V _{GS} = 5 V, I _D = 2 A	—	5.0	—	nC	
Gate-Source Charge	Q _{gs}		—	3.2	—		
Gate-Drain ("Miller") Charge	Q _{gd}		—	1.8	—		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	2	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	6	A
Diode Forward Voltage	V _{DSF}	I _{DR} = 2 A, V _{GS} = 0 V	—	—	-1.7	V
Reverse Recovery Time	t _{rr}	I _{DR} = 2 A, V _{GS} = 0 V	—	220	—	ns
Reverse Recovered Charge	Q _{rr}	dI _{DR} /dt = 50 A/μs	—	0.32	—	μC

