

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π -MOS \bar{V})

2SK2549

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

INDUSTRIAL APPLICATIONS
Unit in mm

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

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

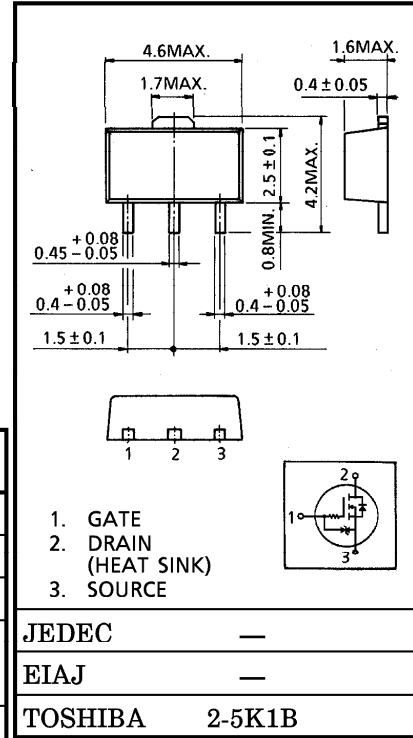
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	16	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	16	V
Gate-Source Voltage		V_{GSS}	± 8	V
Drain Current	DC	I_D	2	A
	Pulse	I_{DP}	6	
Drain Power Dissipation ($T_a = 25^\circ C$)		P_D	0.5	W
Drain Power Dissipation*		P_D	1.5	W
Channel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

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

THERMAL CHARACTERISTICS

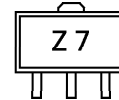
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	250	$^\circ C / W$

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



Weight : 0.05g (Typ.)

MARKING



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 6.5V, V_{DS} = 0V$	—	—	± 10	μA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 16V, V_{GS} = 0V$	—	—	100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0V$	16	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 200\mu A$	0.5	—	1.1	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = 2.5V, I_D = 0.5A$	—	0.29	0.38	Ω
			$V_{GS} = 4V, I_D = 1A$	—	0.22	0.29	
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 1A$	1.5	3.0	—	S
Input Capacitance		C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$	—	260	—	pF
Reverse Transfer Capacitance		C_{rss}		—	34	—	
Output Capacitance		C_{oss}		—	103	—	
Switching Time	Rise Time	t_r	<p>$I_D = 1A$ $V_{GS} = 5V, 0V$ 50Ω $R_L = 8\Omega$ $V_{DD} = 8V$</p>	—	200	—	ns
	Turn-on Time	t_{on}		—	250	—	
	Fall Time	t_f		—	300	—	
	Turn-off Time	t_{off}		$V_{IN} : t_r, t_f < 5ns,$ $Duty \leq 1\%, t_w = 10\mu s$	—	800	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 16V, V_{GS} = 5V, I_D = 2A$	—	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}	$I_{DR} = 2A, V_{GS} = 0V$	—	—	-1.7	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 2A, V_{GS} = 0V$	—	220	—	ns
Reverse Recovered Charge	Q_{rr}	$dI_{DR} / dt = 50A / \mu s$	—	0.32	—	μC

