

TOSHIBA

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2SK1600

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π -MOS II · 5)

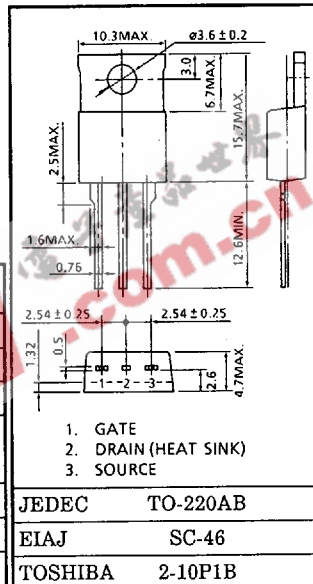
2SK1600

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.
DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS.INDUSTRIAL APPLICATIONS
Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 4.3\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 1.7S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100\mu A$ (Max.) @ $V_{DS} = 640V$
- Enhancement-Mode : $V_{th} = 1.5 \sim 3.5V$ @ $V_{DS} = 10V, I_D = 1mA$

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	800	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	800	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	DC	I_D	3
	Pulse	I_{DP}	9
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	75	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ C$



Weight : 2.0g

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	1.67	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	83.3	$^\circ C/W$

THIS TRANSISTOR IS AN ELECTROSTATIC SENSITIVE DEVICE. PLEASE HANDLE WITH CAUTION.

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 25V, V_{DS} = 0V$	—	—	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 640V, V_{GS} = 0V$	—	—	100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0V$	800	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 1mA$	1.5	—	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 1.5A, V_{GS} = 10V$	—	4.3	5.0	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 20V, I_D = 1.5A$	1.0	1.7	—	S
Input Capacitance		C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$	—	360	700	pF
Reverse Transfer Capacitance		C_{rss}		—	30	50	
Output Capacitance		C_{oss}		—	60	90	
Switching Time	Rise Time	t_r	<p>$V_{GS} = 10V, I_D = 1.5A, R_L = 267\Omega$</p> <p>$V_{IN} : t_r, t_f < 5ns, V_{DD} \approx 400V$ Duty $\leq 1\%, t_w = 10\mu s$</p>	—	25	50	ns
	Turn-on Time	t_{on}		—	40	60	
	Fall Time	t_f		—	40	80	
	Turn-off Time	t_{off}		—	150	300	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} \approx 400V, V_{GS} = 10V, I_D = 3A$	—	26	50	nC
Gate-Source Charge		Q_{gs}		—	16	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	10	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	3	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	9	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 3A, V_{GS} = 0V$	—	—	-2.0	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 3A, V_{GS} = 0V$	—	600	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = 100A / \mu s$	—	12	—	μC

