

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

2SK944

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.
CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS.

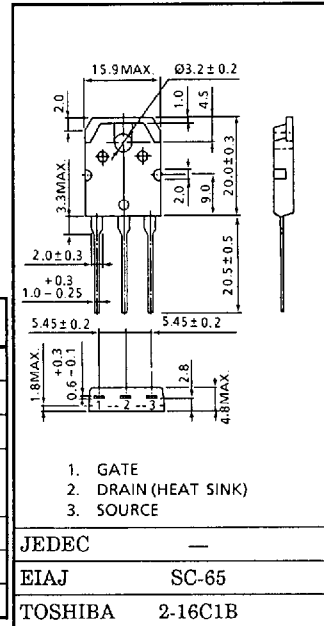
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.12\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 11S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 300\mu A$ (Max.) @ $V_{DS} = 250V$
- 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}	250	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	250	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	DC	I_D	22
	Pulse	I_{DP}	88
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	150	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ C$



Weight : 4.6g

THERMAL CHARACTERISTICS

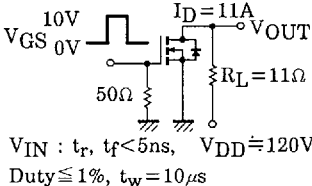
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	0.833	$^\circ C / W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	50	$^\circ C / W$

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}	$V_{GS} = \pm 20V, V_{DS} = 0V$	—	—	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 250V, V_{GS} = 0V$	—	—	300	μA
Drain-Source Breakdown Voltage		$V(BR)_{DSS}$	$I_D = 10mA, V_{GS} = 0V$	250	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 1mA$	1.5	—	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 11A, V_{DS} = 10V$	—	0.12	0.15	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 11A$	7.0	11	—	S
Input Capacitance		C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$	—	2400	3100	pF
Reverse Transfer Capacitance		C_{rss}		—	400	600	
Output Capacitance		C_{oss}		—	800	1200	
Switching Time	Rise Time	t_r		—	25	50	ns
	Turn-on Time	t_{on}		—	70	140	
	Fall Time	t_f		—	45	90	
	Turn-off Time	t_{off}		—	165	330	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 200V, V_{GS} = 10V, I_D = 22A$	—	95	140	nC
Gate-Source Charge		Q_{gs}		—	45	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	50	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	22	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	88	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 22A, V_{GS} = 0V$	—	—	-1.9	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 22A, V_{GS} = 0V$	—	420	—	ns
Reverse Recovered Charge	Q_{rr}	$dI_{DR} / dt = 50A / \mu s$	—	2.7	—	μC

