

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

2SK1602

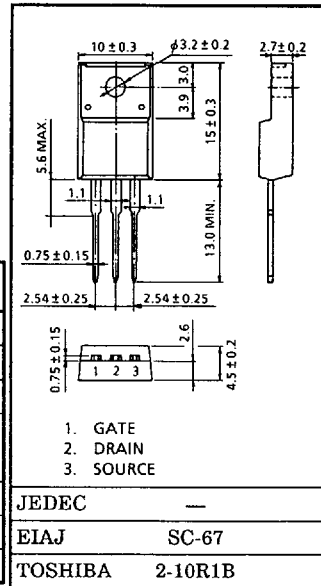
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.
DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS.

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_{DS}	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	2.8
	Pulse	I_{DP}	8.4
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	40	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ C$



Weight : 1.9g

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	3.125	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	$^\circ C/W$

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		IGSS	VGS = ±25V, VDS = 0V	—	—	±100	nA
Drain Cut-off Current		IDSS	VDS = 640V, VGS = 0V	—	—	100	μA
Drain-Source Breakdown Voltage		V(BR)DSS	ID = 10mA, VGS = 0V	800	—	—	V
Gate Threshold Voltage		Vth	VDS = 10V, ID = 1mA	1.5	—	3.5	V
Drain-Source ON Resistance		RDS(ON)	ID = 1.5A, VGS = 10V	—	4.3	5.0	Ω
Forward Transfer Admittance		Yfs	VDS = 20V, ID = 1.5A	1.0	1.7	—	S
Input Capacitance		Ciss	VDS = 25V, VGS = 0V, f = 1MHz	—	360	700	pF
Reverse Transfer Capacitance		Crss		—	30	50	
Output Capacitance		Coss		—	60	90	
Switching Time	Rise Time	tr	<p>VGS 10V, ID = 1.5A, VOUT, RL = 267Ω, 50Ω</p> <p>VIN : tr, tf < 5ns, VDD = 400V Duty ≤ 1%, tw = 10μs</p>	—	25	50	ns
	Turn-on Time	ton		—	40	60	
	Fall Time	tf		—	40	80	
	Turn-off Time	toff		—	150	300	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD = 400V, VGS = 10V, ID = 2.8A	—	26	50	nC
Gate-Source Charge		Qgs		—	16	—	
Gate-Drain ("Miller") Charge		Qgd		—	10	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	2.8	A
Pulse Drain Reverse Current	IDRP	—	—	—	8.4	A
Diode Forward Voltage	VDSF	IDR = 2.8A, VGS = 0V	—	—	-2.0	V
Reverse Recovery Time	trr	IDR = 2.8A, VGS = 0V	—	600	—	ns
Reverse Recovery Charge	Qrr	dIDR / dt = 100A / μs	—	12	—	μC

