

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

2SK1643

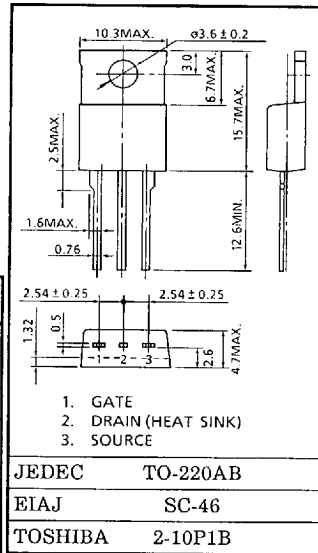
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.
DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS.

INDUSTRIAL APPLICATIONS
Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 2.5\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 2.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 300\mu A$ (Max.) @ $V_{DS} = 720V$
- 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}	900	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	900	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	DC	5	A
	Pulse	15	
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	125	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ C$



Weight : 2.0g

THERMAL CHARACTERISTICS

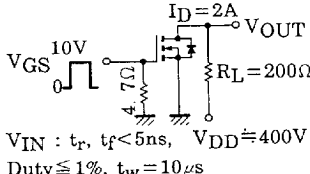
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	1.0	$^\circ C / W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	83.3	$^\circ C / W$

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

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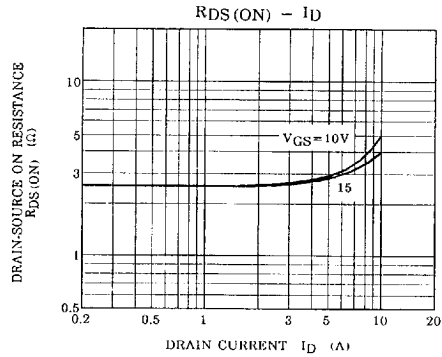
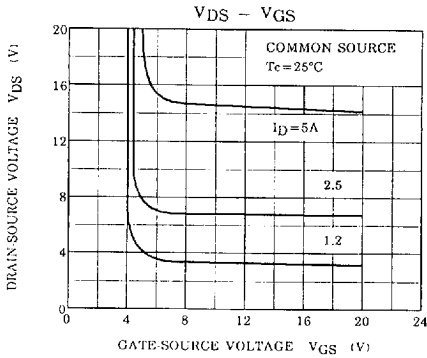
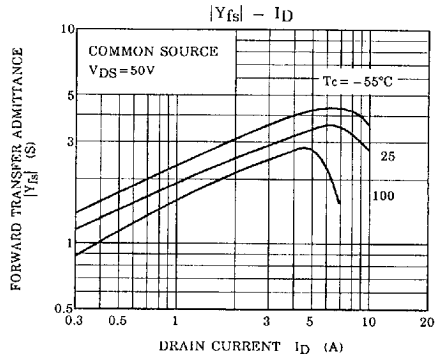
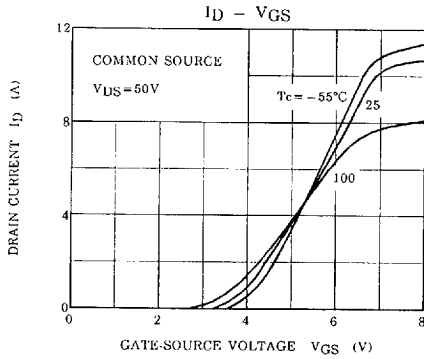
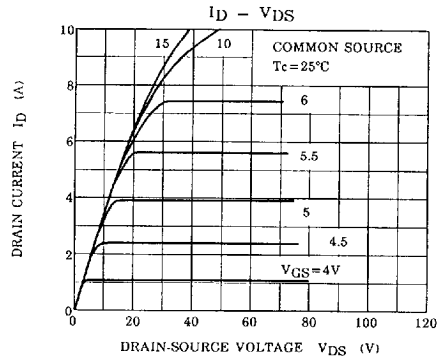
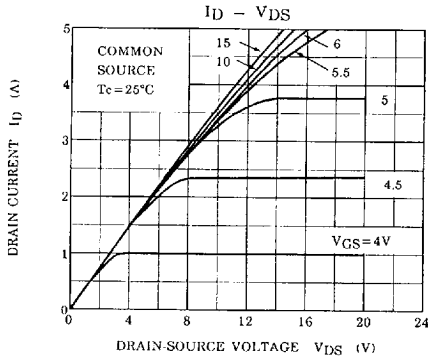
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGSS	VGS = ±25V, VDS = 0V	—	—	±100	nA
Drain Cut-off Current		IDSS	VDS = 720V, VGS = 0V	—	—	300	μA
Drain-Source Breakdown Voltage		V(BR)DSS	ID = 10mA, VGS = 0V	900	—	—	V
Gate Threshold Voltage		Vth	VDS = 10V, ID = 1mA	1.5	—	3.5	V
Drain-Source ON Resistance		RDS(ON)	VGS = 10V, ID = 2A	—	2.5	2.8	Ω
Forward Transfer Admittance		Yfs	VDS = 20V, ID = 2A	1.0	2.0	—	S
Input Capacitance		Ciss	VDS = 25V, VGS = 0V, f = 1MHz	—	700	1000	pF
Reverse Transfer Capacitance		Crss		—	55	90	
Output Capacitance		Coss		—	100	150	
Switching Time	Rise Time	tr	 <p> $I_D = 2A$ $V_{GS} = 10V$ $R_L = 200\Omega$ $V_{DD} = 400V$ $V_{IN} : t_r, t_f < 5ns, V_{DD} = 400V$ Duty $\leq 1\%$, $t_w = 10\mu s$ </p>	—	18	35	ns
	Turn-on Time	ton		—	30	60	
	Fall Time	tf		—	12	25	
	Turn-off Time	toff		—	70	140	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD = 400V, VGS = 10V, ID = 4A	—	60	120	nC
Gate-Source Charge		Qgs		—	35	—	
Gate-Drain ("Miller") Charge		Qgd		—	25	—	

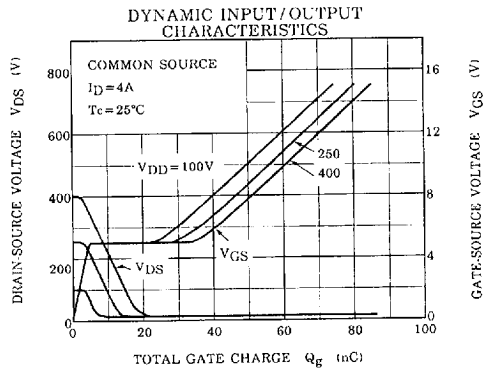
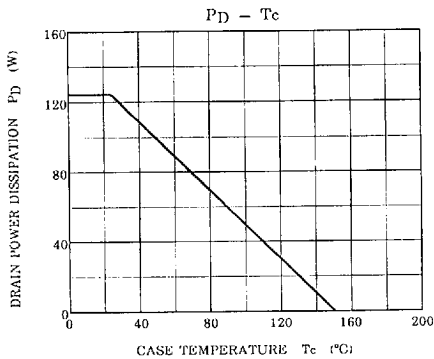
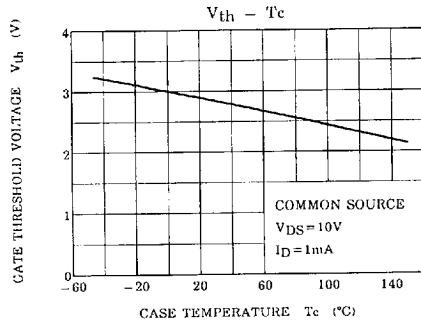
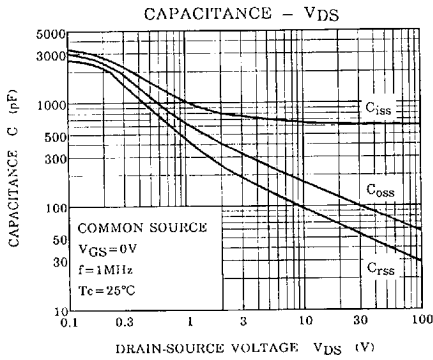
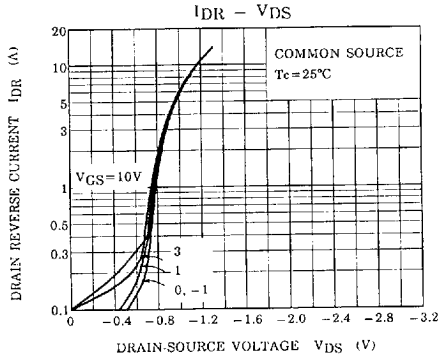
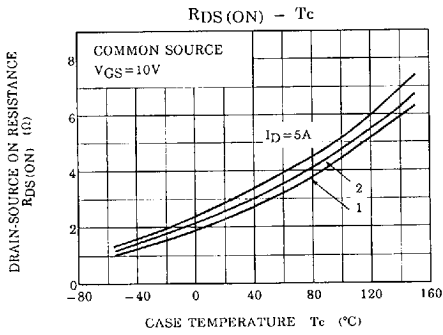
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	5	A
Pulse Drain Reverse Current	IDRP	—	—	—	15	A
Diode Forward Voltage	VDSF	IDR = 4A, VGS = 0V	—	—	-1.9	V
Reverse Recovery Time	trr	IDR = 4A, VGS = 0V	—	1000	—	ns
Reverse Recovered Charge	Qrr	dIDR / dt = 100A / μs	—	0.13	—	μC

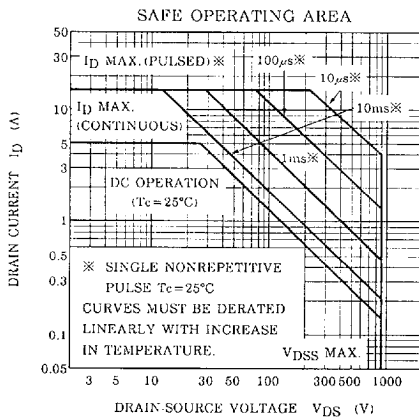
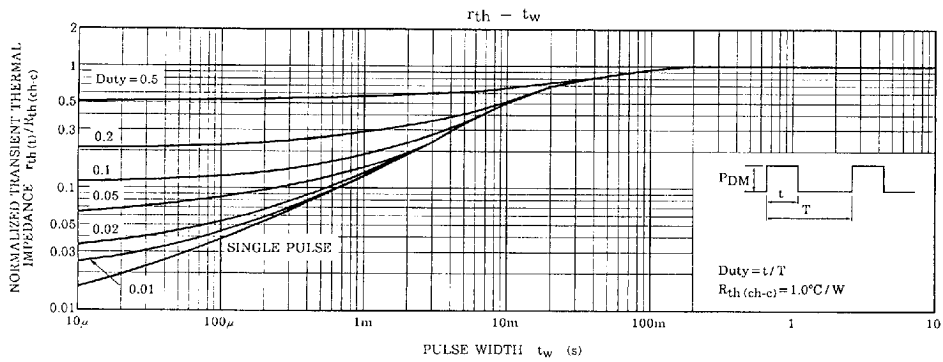
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