

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

2SK2845

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

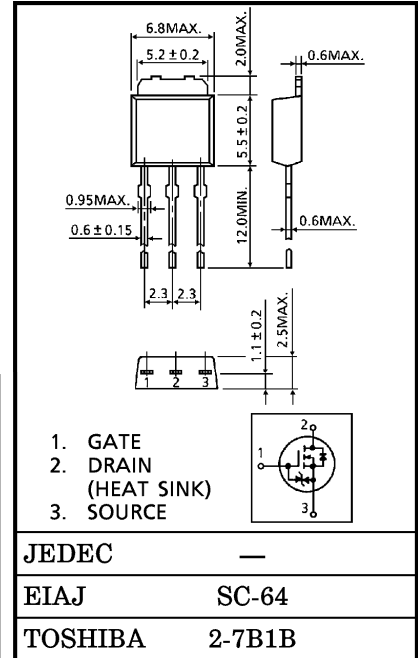
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 8.0 \Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 0.9 S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100 \mu A$ (Max.) ($V_{DS} = 720 V$)
- Enhancement-Mode : $V_{th} = 2.0 \sim 4.0 V$ ($V_{DS} = 10 V, I_D = 1 mA$)

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	I_D	1	A
	Pulse	I_{DP}	3	
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	40	W
Single Pulse Avalanche Energy**		E_{AS}	324	mJ
Avalanche Current		I_{AR}	1	A
Repetitive Avalanche Energy*		E_{AR}	4.0	mJ
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$



THERMAL CHARACTERISTICS

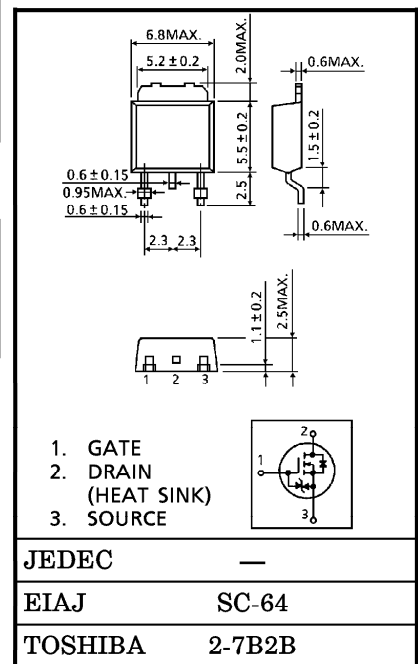
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	3.125	$^\circ C / W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	125	$^\circ C / W$

Note ;

* Repetitive rating ; Pulse Width Limited by Max. junction temperature.

** $V_{DD} = 90 V$, Starting $T_{ch} = 25^\circ C$, $L = 594 mH$, $R_G = 25 \Omega$, $I_{AR} = 1 A$

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



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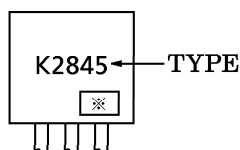
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGSS	VGS = ±30 V, VDS = 0 V	—	—	±10	μA
Gate-Source Breakdown Voltage		V(BR)GSS	IG = ±10 μA, VDS = 0 V	±30	—	—	V
Drain Cut-off Current		IDSS	VDS = 720 V, VGS = 0 V	—	—	100	μA
Drain-Source Breakdown Voltage		V(BR)DSS	ID = 10 mA, VGS = 0 V	900	—	—	V
Gate Threshold Voltage		Vth	VDS = 10 V, ID = 1 mA	2.0	—	4.0	V
Drain-Source ON Resistance		RDS(ON)	VGS = 10 V, ID = 0.5 A	—	8.0	9.0	Ω
Forward Transfer Admittance		Yfs	VDS = 20 V, ID = 0.5 A	0.45	0.9	—	S
Input Capacitance		Ciss	VDS = 25 V, VGS = 0 V, f = 1 MHz	—	350	—	pF
Reverse Transfer Capacitance		Crss		—	8	—	
Output Capacitance		Coss		—	40	—	
Switching Time	Rise Time	tr	<p>VGS 10 V, 0 V, ID = 0.5 A, VDD ≐ 200 V, RL = 400 Ω</p>	—	20	—	ns
	Turn-on Time	ton		—	70	—	
	Fall Time	tf		—	30	—	
	Turn-off Time	t _{off}		VIN: tr, tf < 5 ns, Duty ≦ 1%, tw = 10 μs	—	95	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD ≐ 400 V, VGS = 10 V, ID = 1 A	—	15	—	nC
Gate-Source Charge		Qgs		—	6	—	
Gate-Drain ("Miller") Charge		Qgd		—	9	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	1	A
Pulse Drain Reverse Current	IDRP	—	—	—	3	A
Diode Forward Voltage	VDSF	IDR = 1 A, VGS = 0 V	—	—	-1.9	V
Reverse Recovery Time	t _{rr}	IDR = 1 A, VGS = 0 V	—	750	—	ns
Reverse Recovery Charge	Q _{rr}	dIDR / dt = 100 A / μs	—	3	—	μC

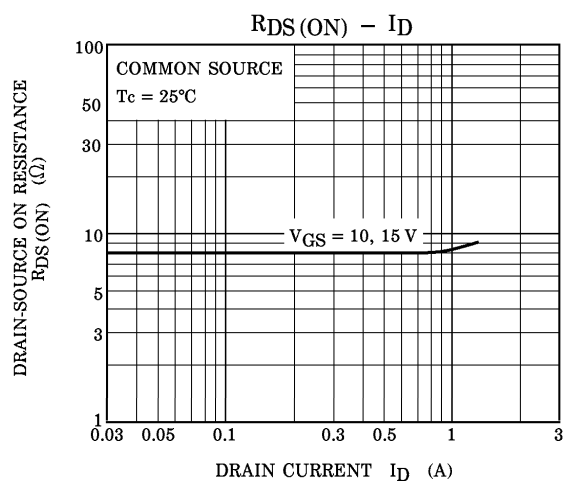
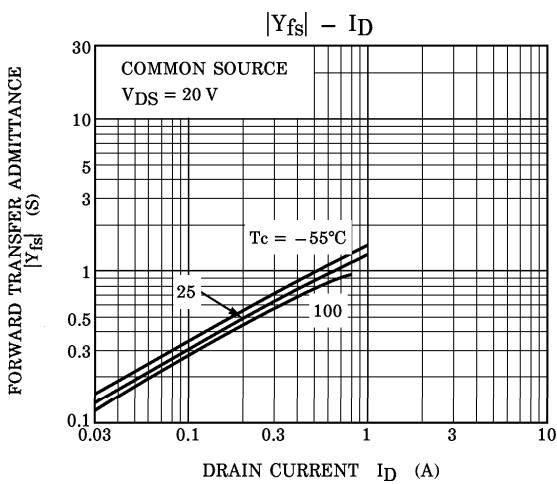
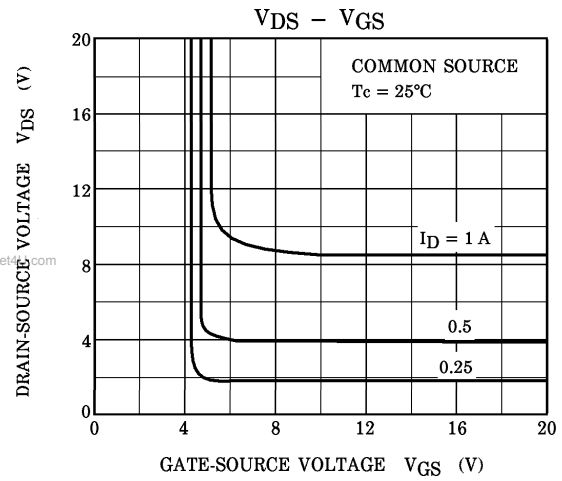
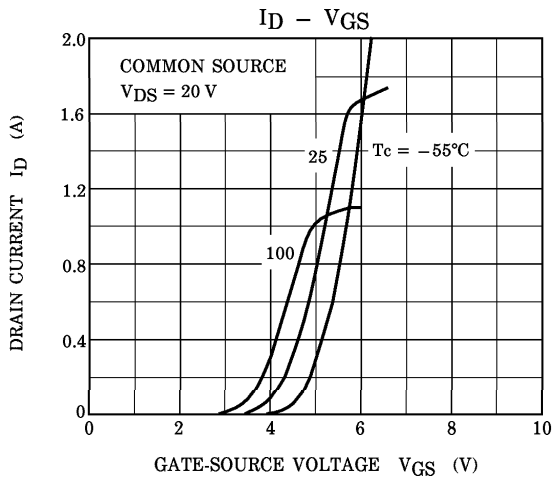
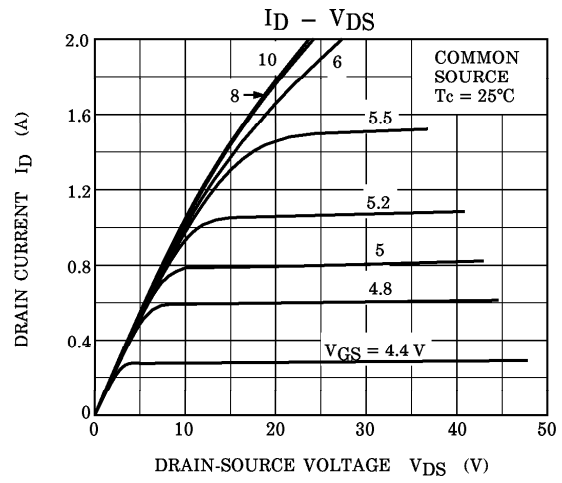
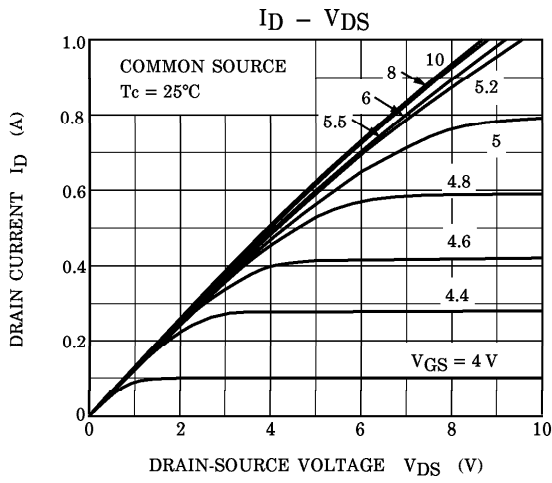
MARKING

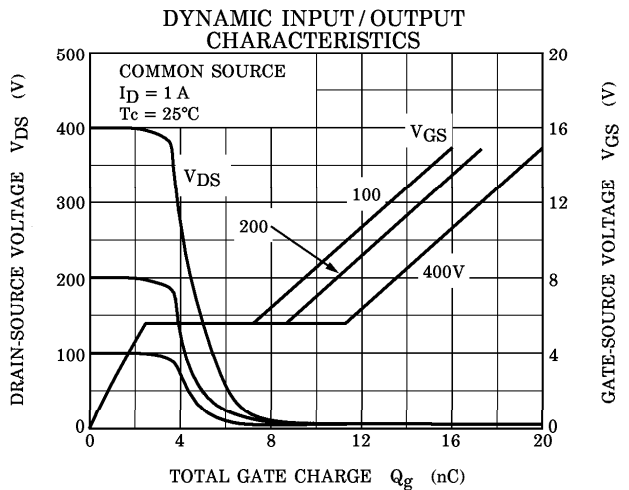
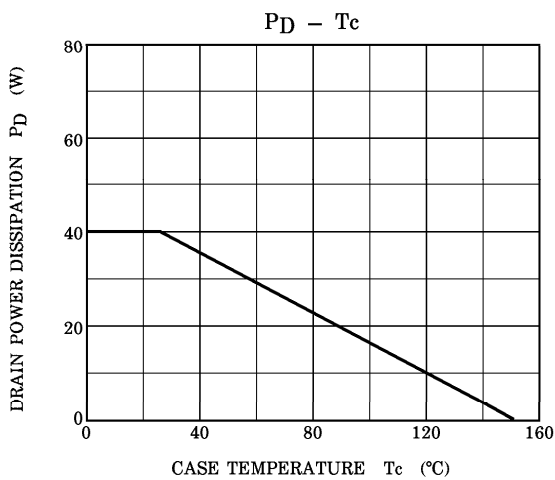
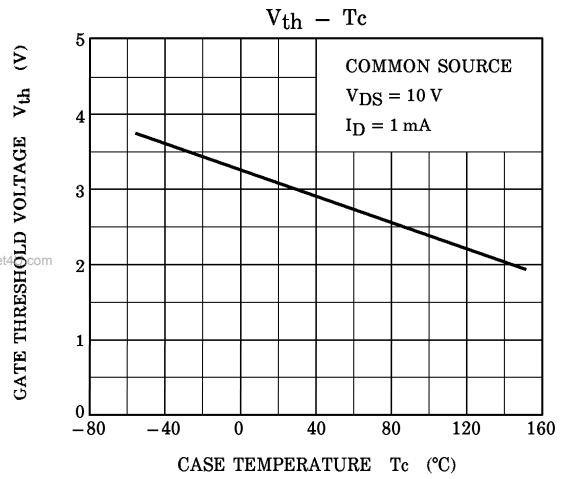
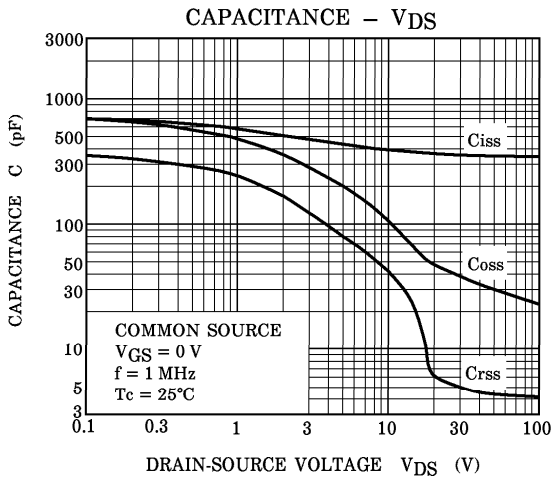
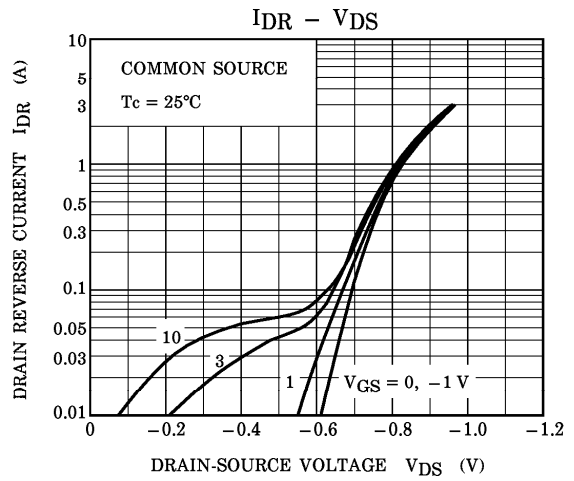
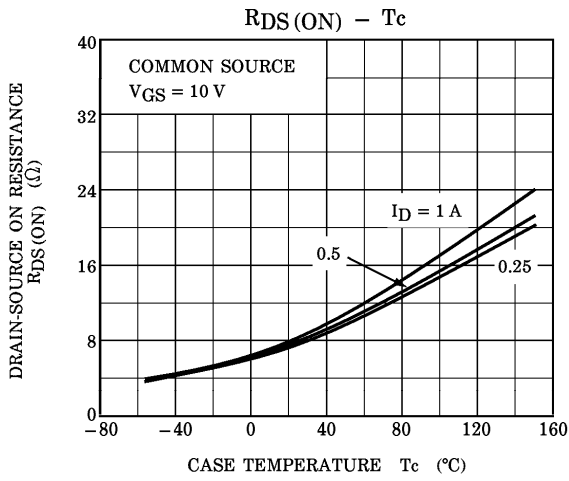


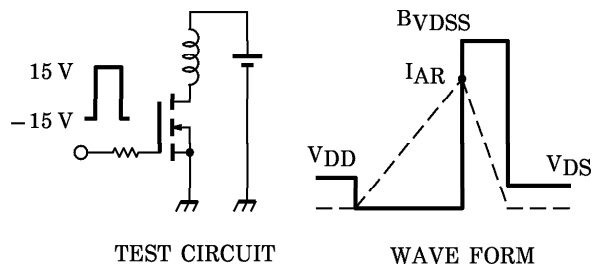
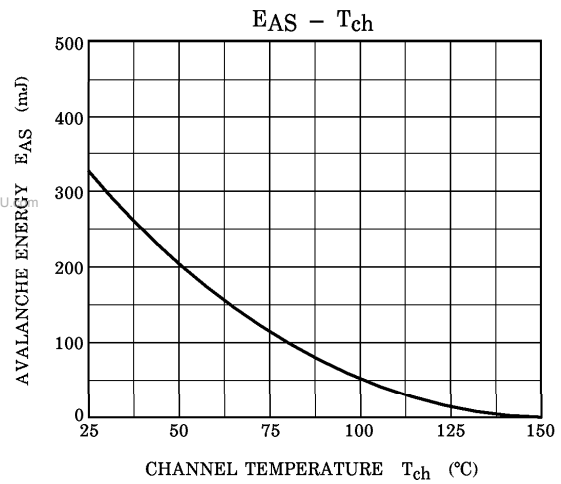
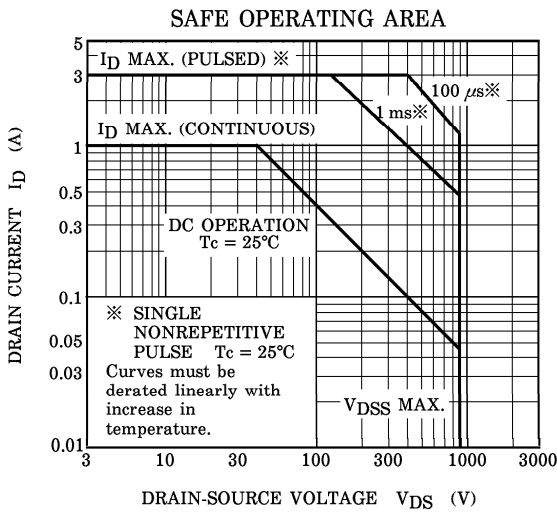
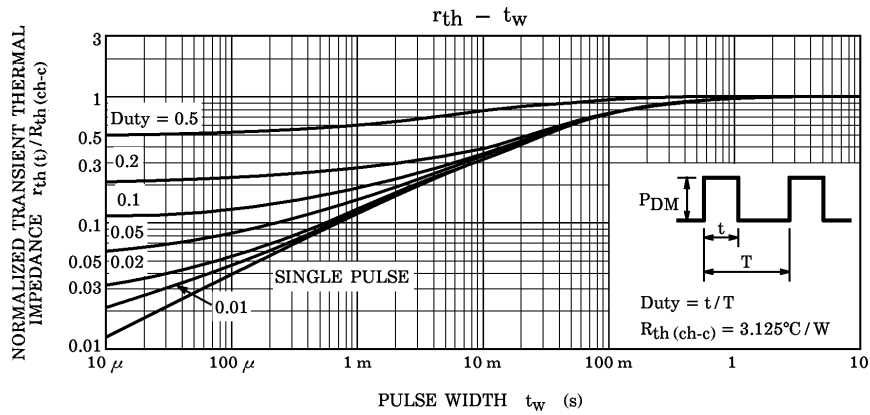
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak $I_{AR} = 1$ A, $R_G = 25 \Omega$
 $V_{DD} = 90$ V, $L = 594$ mH

$$E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{B_{VDSS}}{B_{VDSS} - V_{DD}} \right)$$