

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (L²-π-MOSV)

2SK2883

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 : $R_{DS(ON)} = 3.0 \Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 2.6 S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100 \mu A$ (Max.)
($V_{DS} = 640 V$)
- 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}	800	V
Drain-Gate Voltage ($R_{GS} = 20 k\Omega$)	V_{DGR}	800	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	DC	I_D	3 A
	Pulse	I_{DP}	9 A
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	75	W
Single Pulse Avalanche Energy**	E_{AS}	300	mJ
Avalanche Current	I_{AR}	3	A
Repetitive Avalanche Energy*	E_{AR}	7.5	mJ
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55~150	$^\circ C$

THERMAL CHARACTERISTICS

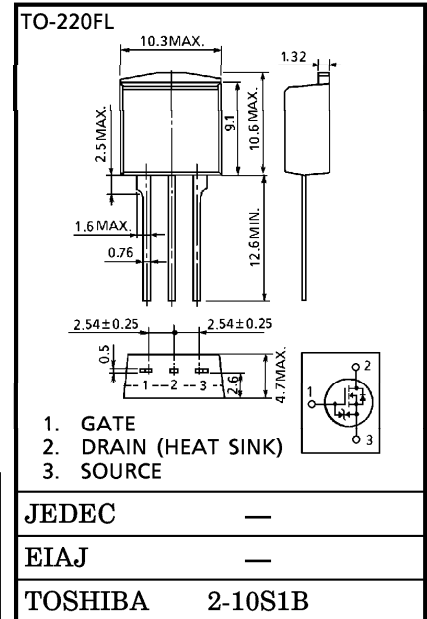
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	1.67	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	83.3	$^\circ C/W$

Note ;

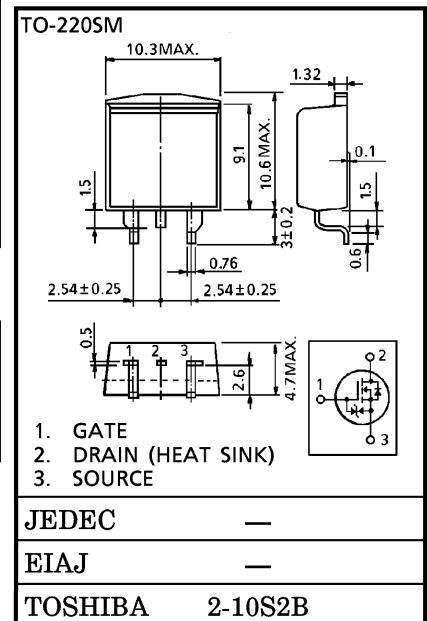
* Repetitive rating ; Pulse Width Limited by Max. junction temperature.

** $V_{DD} = 90 V, T_{ch} = 25^\circ C$ (initial), $L = 60.0 mH,$
 $R_G = 25 \Omega, I_{AR} = 3 A$

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



Weight : 1.5 g (Typ.)



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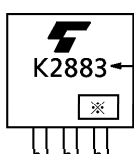
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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 = 640 V, VGS = 0 V	—	—	100	μA
Drain-Source Breakdown Voltage		V(BR)DSS	ID = 10 mA, VGS = 0 V	800	—	—	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 = 1.5 A	—	3.0	3.6	Ω
Forward Transfer Admittance		Yfs	VDS = 20 V, ID = 1.5 A	0.65	2.6	—	S
Input Capacitance		Ciss	VDS = 25 V, VGS = 0 V, f = 1 MHz	—	750	—	pF
Reverse Transfer Capacitance		Crss		—	10	—	
Output Capacitance		Coss		—	70	—	
Switching Time	Rise Time	tr	<p> $V_{GS} = 10\text{ V}$ $V_{GS} = 0\text{ V}$ $I_D = 1.5\text{ A}$ $R_L = 133\ \Omega$ $V_{DD} \cong 200\text{ V}$ </p>	—	15	—	ns
	Turn-On Time	ton		—	55	—	
	Fall Time	tf		—	30	—	
	Turn-Off Time	t _{off}		$V_{IN} : t_r, t_f < 5\text{ ns}$, $\text{Duty} \leq 1\%$, $t_w = 10\ \mu\text{s}$	—	110	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD ≅ 400 V, VGS = 10 V, ID = 3 A	—	25	—	nC
Gate-Source Charge		Qgs		—	13	—	
Gate-Drain (“Miller”) Charge		Qgd		—	12	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	3	A
Pulse Drain Reverse Current	IDRP	—	—	—	9	A
Diode Forward Voltage	VDSF	IDR = 3 A, VGS = 0 V	—	—	-1.9	V
Reverse Recovery Time	t _{rr}	IDR = 3 A, VGS = 0 V	—	900	—	ns
Reverse Recovery Charge	Q _{rr}	dIDR / dt = 100 A / μs	—	6	—	μC

MARKING



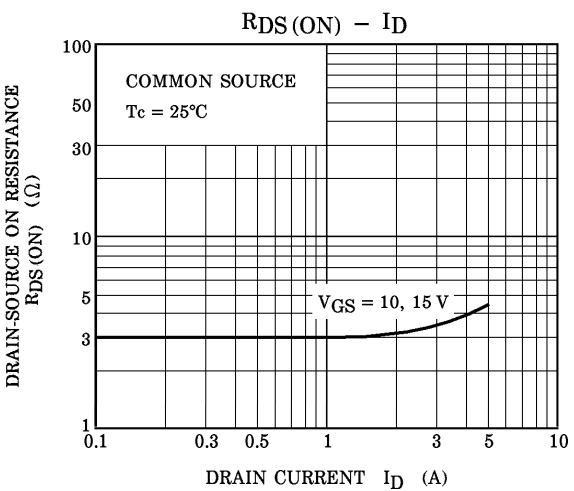
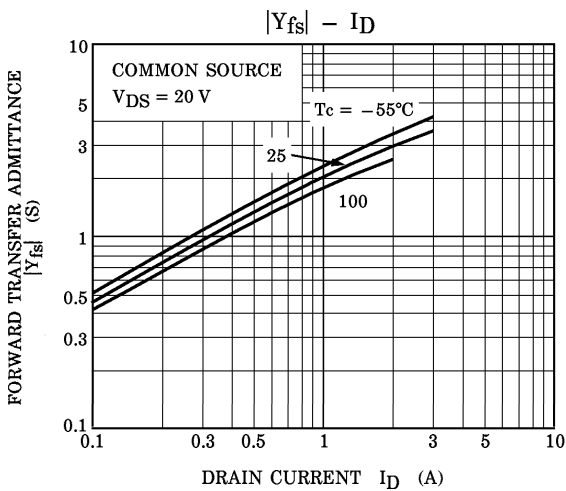
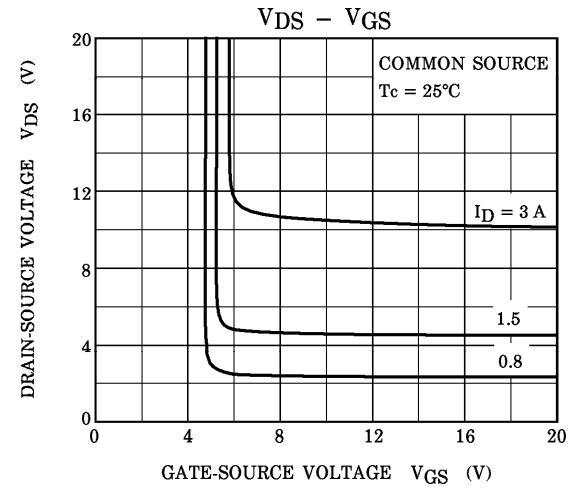
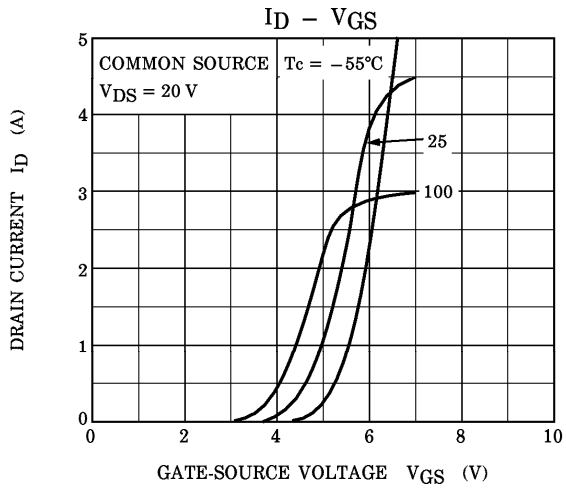
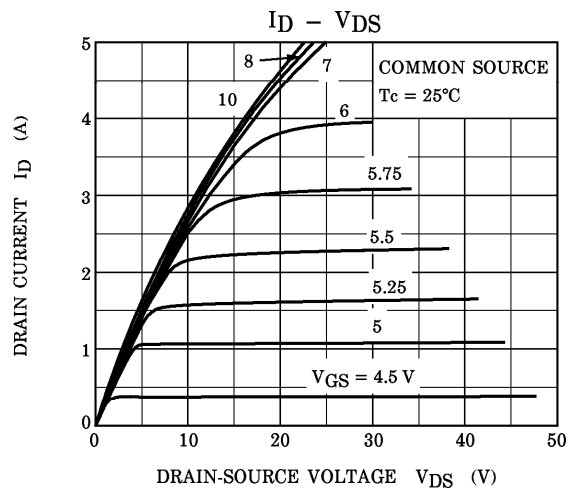
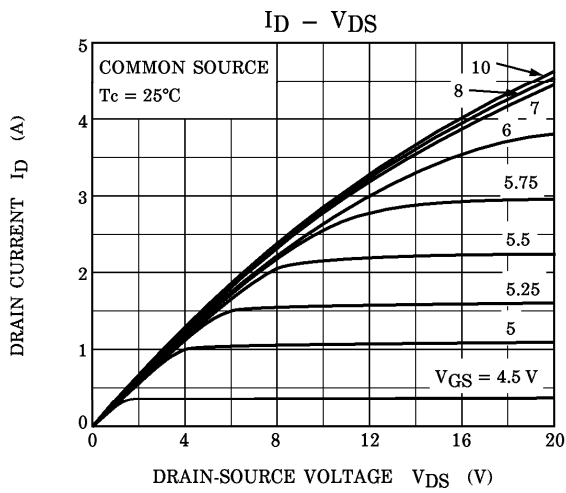
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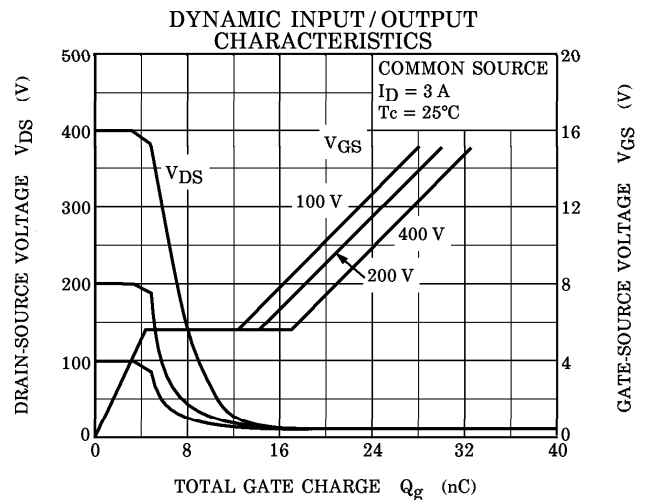
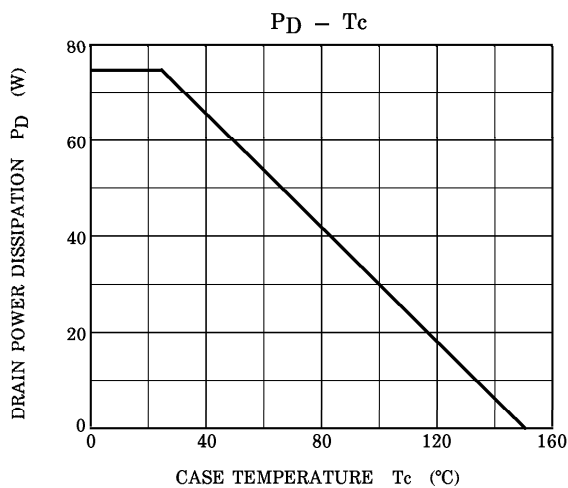
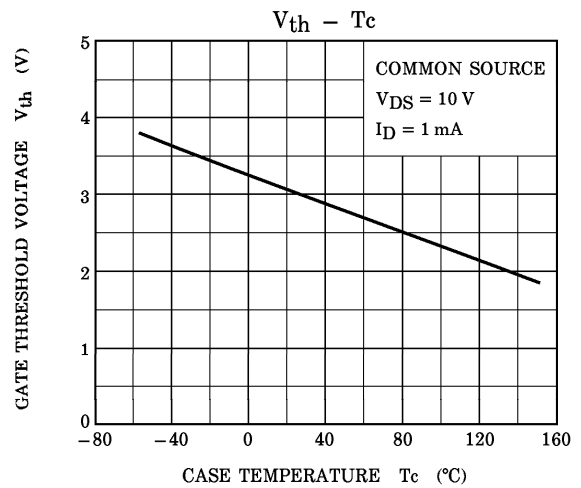
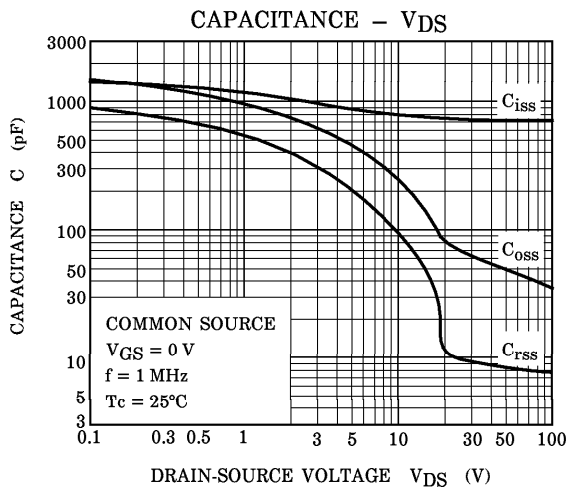
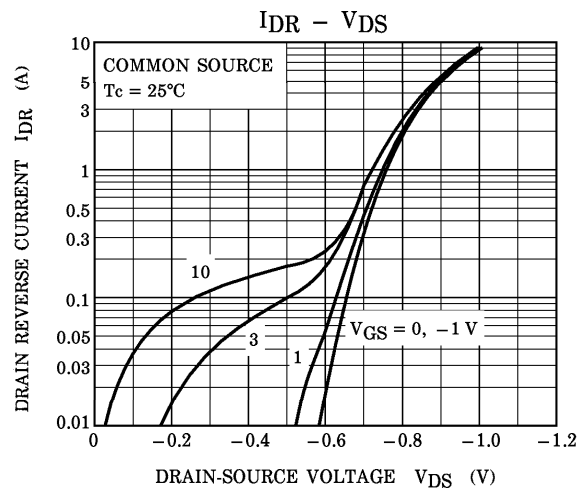
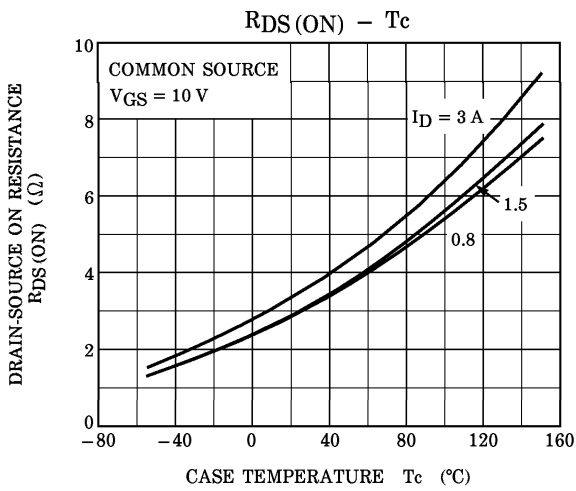
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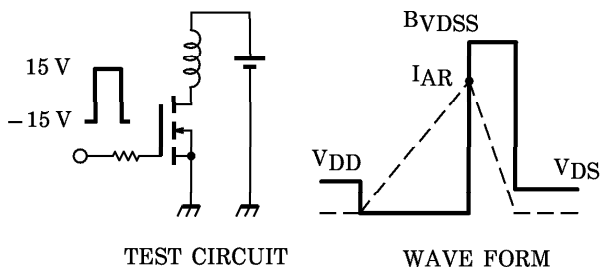
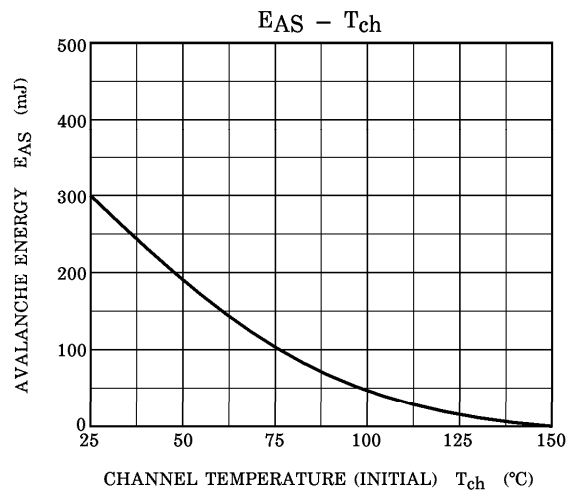
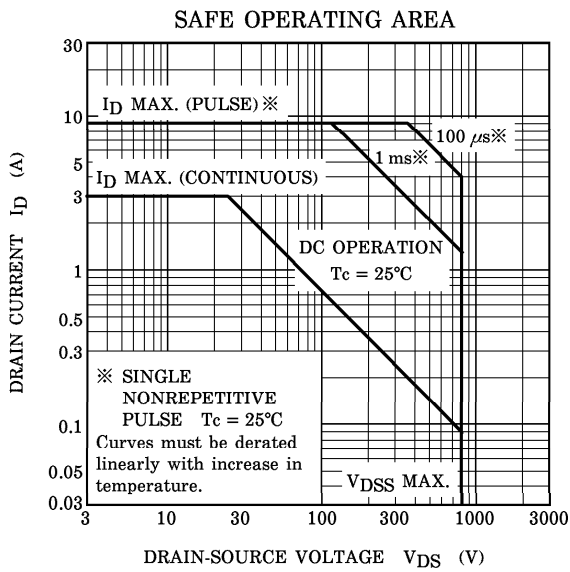
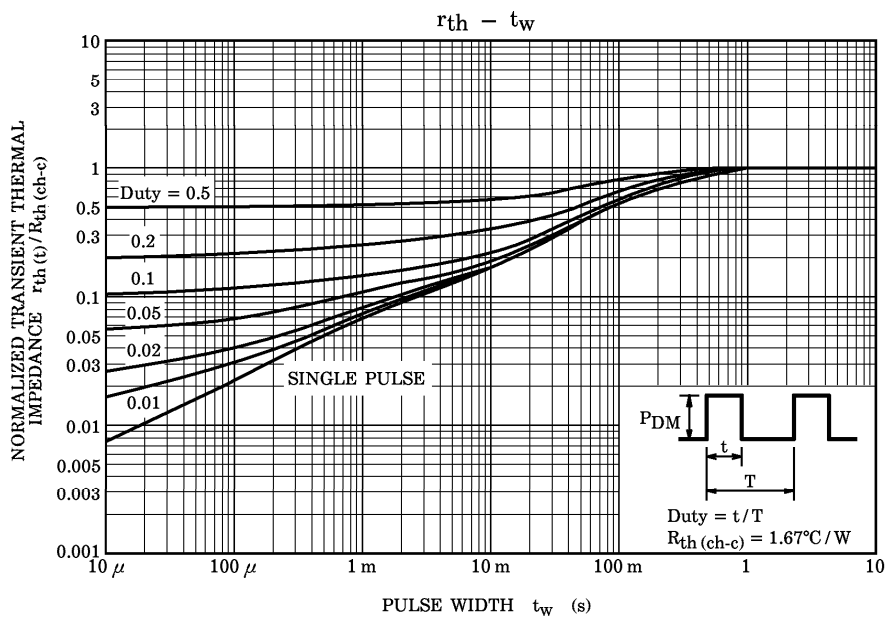


Month (Starting from Alphabet A)

Year (Last Number of the Christian Era)







Peak $I_{AR} = 3 \text{ A}$, $R_G = 25 \Omega$ $E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{BVDSS}{BVDSS - V_{DD}} \right)$
 $V_{DD} = 90 \text{ V}$, $L = 60 \text{ mH}$