

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (L<sup>2</sup>-π-MOS V)

# 2SK2882

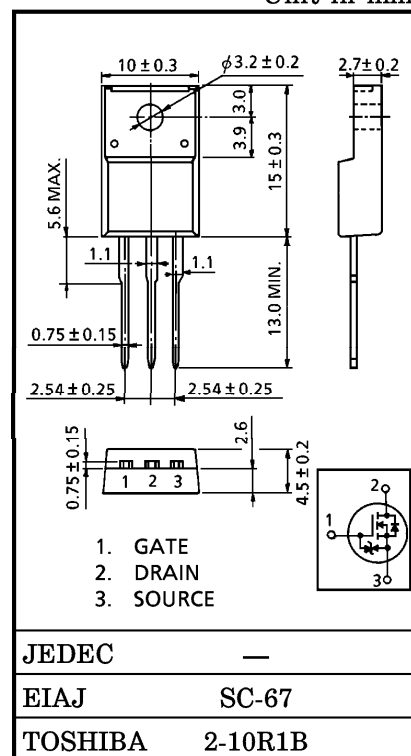
HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

- 4 V Gate Drive
- Low Drain-Source On Resistance :  $R_{DS(ON)} = 0.08 \Omega$  (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}| = 17 S$  (Typ.)
- Low Leakage Current :  $I_{DSS} = 100 \mu A$  (Max.) ( $V_{DS} = 150 V$ )
- Enhancement-Mode :  $V_{th} = 0.8 \sim 2.0 V$   
( $V_{DS} = 10 V, I_D = 1 mA$ )

INDUSTRIAL APPLICATIONS

Unit in mm



Weight : 1.9 g (Typ.)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		$V_{DSS}$	150	V
Drain-Gate Voltage ( $R_{GS} = 20 k\Omega$ )		$V_{DGR}$	150	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	DC	$I_D$	18	A
	Pulse	$I_{DP}$	54	A
Drain Power Dissipation ( $T_c = 25^\circ C$ )		$P_D$	45	W
Single Pulse Avalanche Energy**		$E_{AS}$	176	mJ
Avalanche Current		$I_{AR}$	18	A
Repetitive Avalanche Energy*		$E_{AR}$	4.5	mJ
Channel Temperature		$T_{ch}$	150	°C
Storage Temperature Range		$T_{stg}$	-55~150	°C

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## THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	2.78	°C / W
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	°C / W

Note ;

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

\*\*  $V_{DD} = 50\text{ V}$ ,  $T_{ch} = 25^{\circ}\text{C}$  (initial),  $L = 0.8\text{ mH}$ ,  $R_G = 25\ \Omega$ ,  $I_{AR} = 18\text{ A}$

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

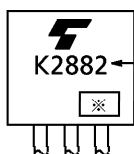
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGSS	VGS = ±16 V, VDS = 0 V	—	—	±10	μA
Drain Cut-off Current		IDSS	VDS = 150 V, VGS = 0 V	—	—	100	μA
Drain-Source Breakdown Voltage		V(BR)DSS	ID = 10 mA, VGS = 0 V	150	—	—	V
Gate Threshold Voltage		Vth	VDS = 10 V, ID = 1 mA	0.8	—	2.0	V
Drain-Source ON Resistance		RDS(ON)	VGS = 4 V, ID = 9 A	—	0.09	0.18	Ω
			VGS = 10 V, ID = 9 A	—	0.08	0.12	
Forward Transfer Admittance		Yfs	VDS = 10 V, ID = 9 A	10	17	—	S
Input Capacitance		Ciss	VDS = 10 V, VGS = 0 V, f = 1 MHz	—	1380	—	pF
Reverse Transfer Capacitance		Crss		—	200	—	
Output Capacitance		Coss		—	610	—	
Switching Time	Rise Time	tr		—	12	—	ns
	Turn-on Time	ton		—	24	—	
	Fall Time	tf		—	56	—	
	Turn-off Time	t <sub>off</sub>		VIN : tr, tf < 5 ns, Duty ≤ 1%, tw = 10 μs	—	130	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD ≐ 120 V, VGS = 10 V, ID = 18 A	—	57	—	nC
Gate-Source Charge		Qgs		—	43	—	
Gate-Drain ("Miller") Charge		Qgd		—	14	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse	IDR	—	—	—	18	A
Pulse Drain Reverse Current	IDRP	—	—	—	54	A
Diode Forward Voltage	VDSF	IDR = 18 A, VGS = 0 V	—	—	-1.7	V
Reverse Recovery Time	t <sub>rr</sub>	IDR = 18 A, VGS = 0 V	—	185	—	ns
Reverse Recovery Charge	Q <sub>rr</sub>	dIDR / dt = 100 A / μs	—	1.3	—	μC

MARKING

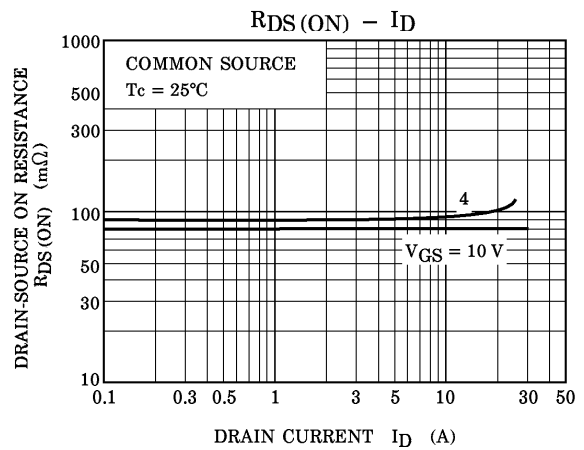
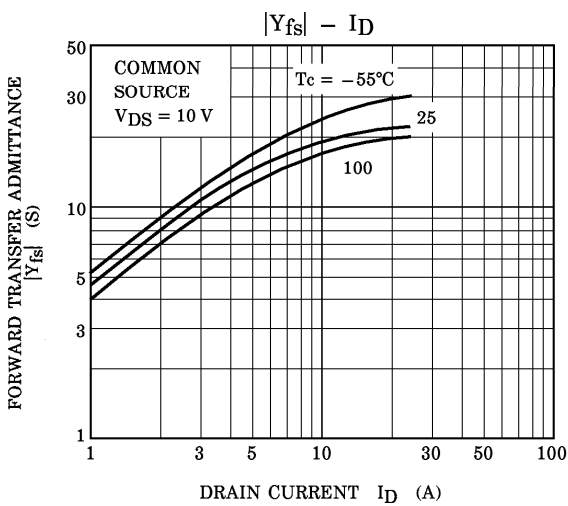
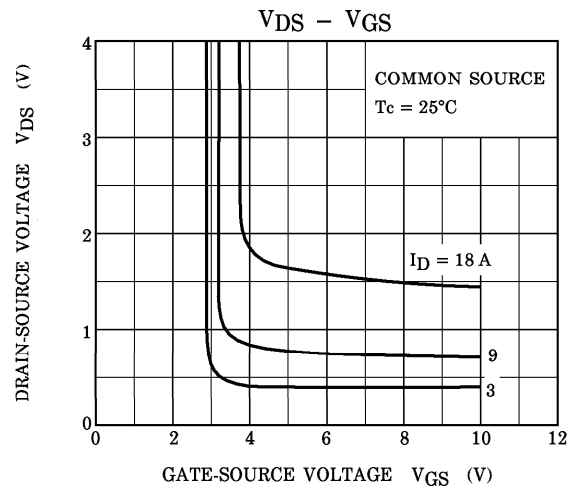
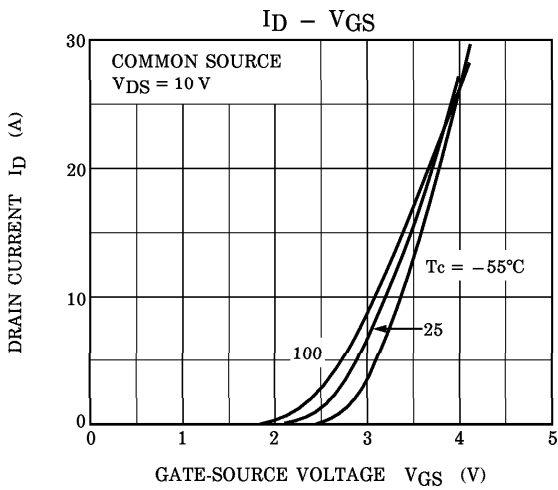
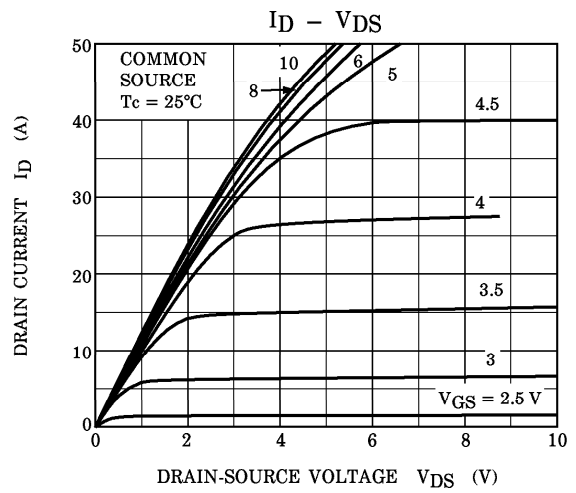
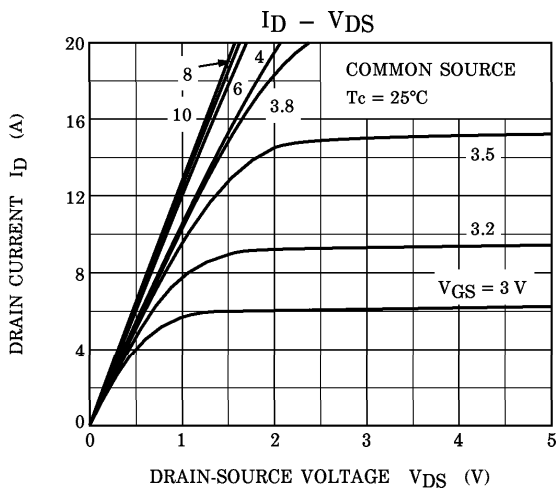


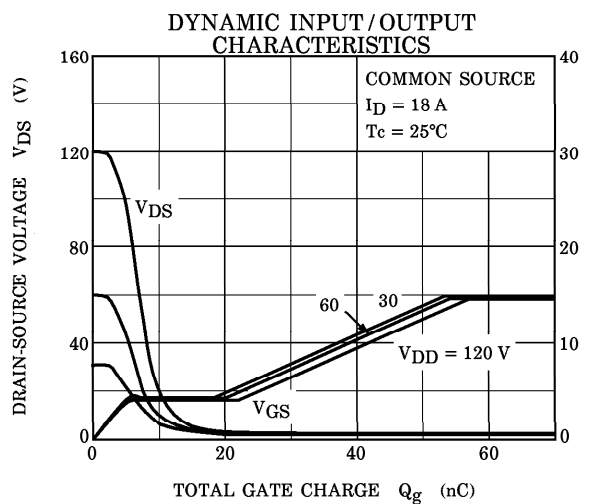
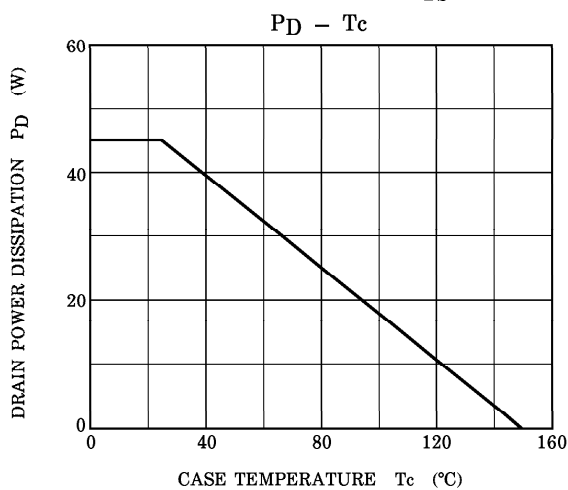
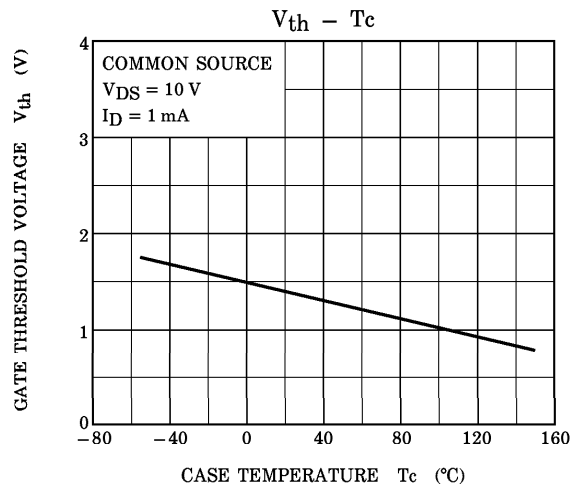
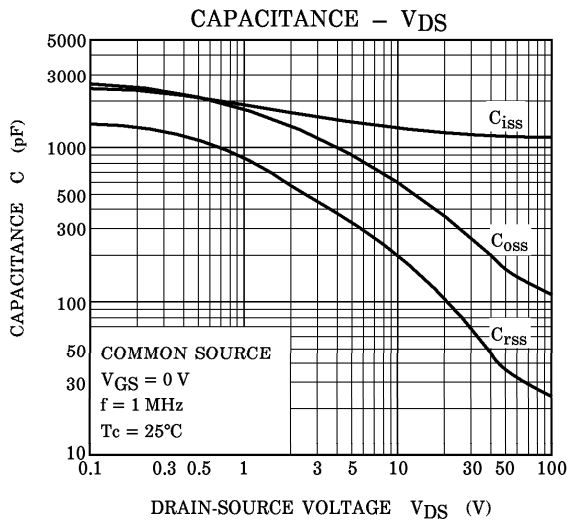
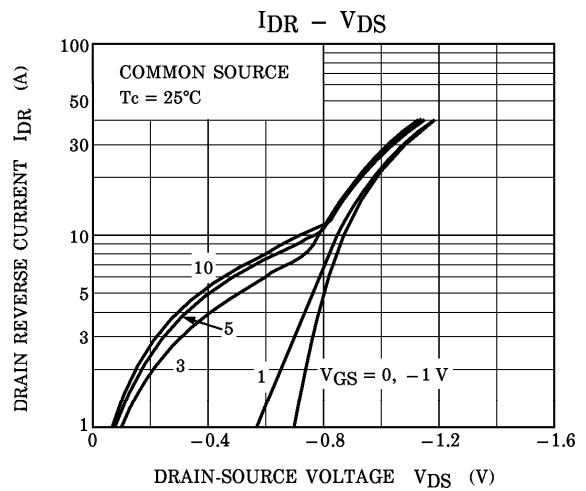
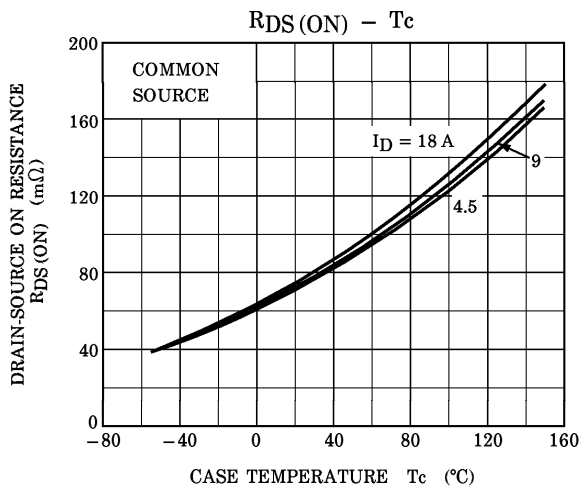
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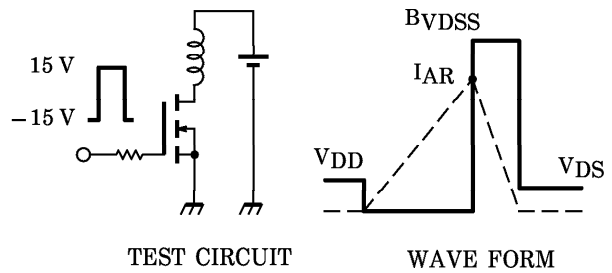
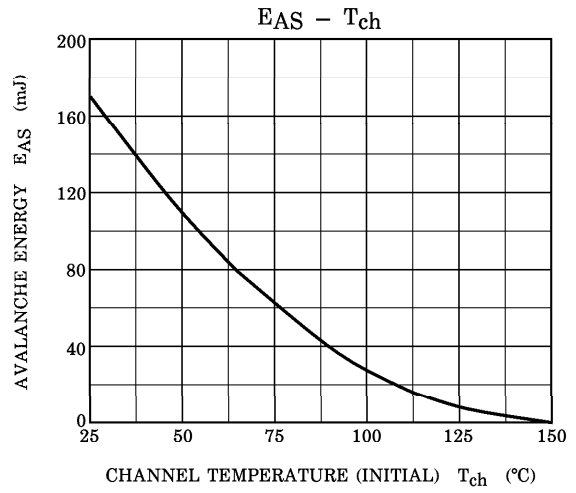
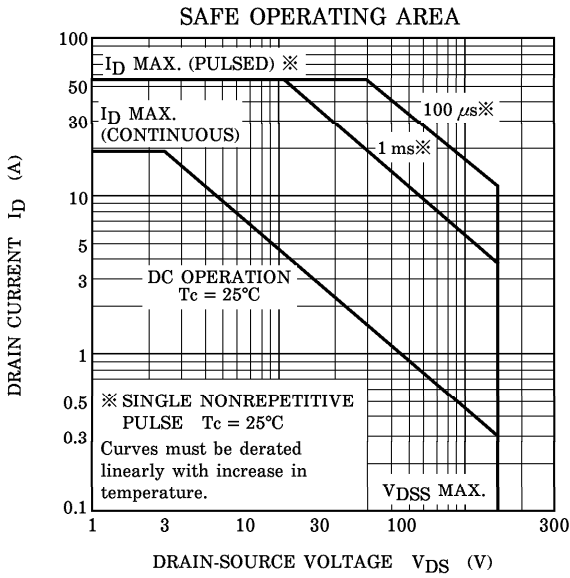
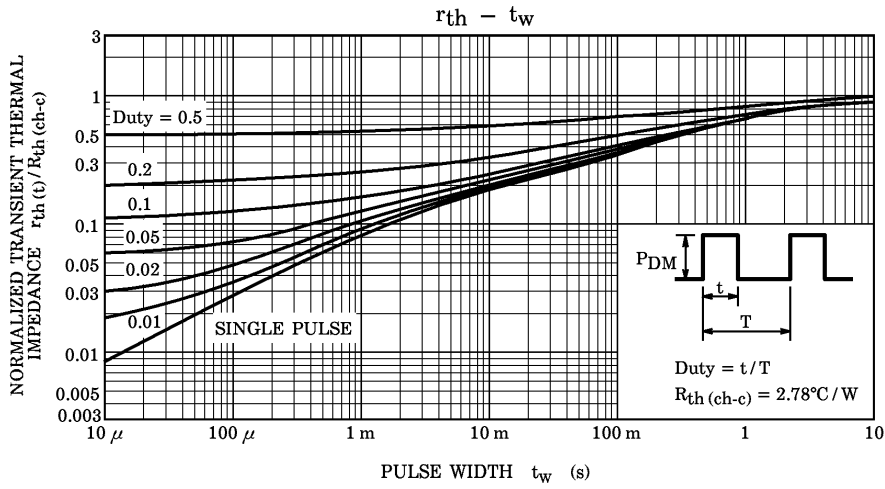
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak  $I_{AR} = 18 \text{ A}$ ,  $R_G = 25 \Omega$ ,  $V_{DD} = 50 \text{ V}$ ,  $L = 0.8 \text{ mH}$

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