

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

# 2SK2232

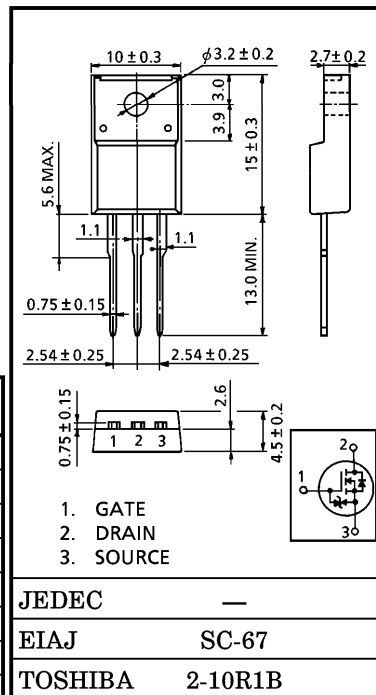
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS  
 CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS  
 Unit in mm

- 4V Gate Drive
- Low Drain-Source ON Resistance :  $R_{DS(ON)} = 36m\Omega$  (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}| = 16S$  (Typ.)
- Low Leakage Current :  $I_{DSS} = 100\mu A$  (Max.) ( $V_{DS} = 60V$ )
- Enhancement-Mode :  $V_{th} = 0.8 \sim 2.0V$  ( $V_{DS} = 10V, I_D = 1mA$ )

MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DSS}$	60	V
Drain-Gate Voltage ( $R_{GS} = 20k\Omega$ )	$V_{DGR}$	60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	DC	$I_D$	25 A
	Pulse	$I_{DP}$	100 A
Drain Power Dissipation ( $T_c = 25^\circ C$ )	$P_D$	35	W
Single Pulse Avalanche Energy**	$E_{AS}$	156	mJ
Avalanche Current	$I_{AR}$	25	A
Repetitive Avalanche Energy*	$E_{AR}$	3.5	mJ
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	$R_{th(ch-c)}$	3.57	$^\circ C / W$
Thermal Resistance, Channel To Ambient	$R_{th(ch-a)}$	62.5	$^\circ C / W$

Note ;

- \* Repetitive rating ; Pulse Width Limited by Max. junction temperature.
- \*\*  $V_{DD} = 25V$ , Starting  $T_{ch} = 25^\circ C$ ,  $L = 339\mu H$ ,  $R_G = 25\Omega$ ,  $I_{AR} = 25A$

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

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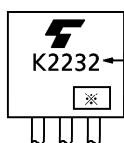
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	IGSS	VGS = ±16V, VDS = 0V	—	—	±10	μA	
Drain Cut-off Current	IDSS	VDS = 60V, VGS = 0V	—	—	100	μA	
Drain-Source Breakdown Voltage	V(BR) DSS	ID = 10mA, VGS = 0V	60	—	—	V	
Gate Threshold Voltage	Vth	VDS = 10V, ID = 1mA	0.8	—	2.0	V	
Drain-Source ON Resistance	RDS(ON)	VGS = 4V, ID = 12A	—	0.057	0.08	Ω	
		VGS = 10V, ID = 12A	—	0.036	0.046		
Forward Transfer Admittance	Yfs	VDS = 10V, ID = 12A	10	16	—	S	
Input Capacitance	Ciss	VDS = 10V, VGS = 0V f = 1MHz	—	1000	—	pF	
Reverse Transfer Capacitance	Crss		—	200	—		
Output Capacitance	Coss		—	550	—		
Switching Time	Rise Time	tr		—	20	—	ns
	Turn-on Time	ton		—	30	—	
	Fall Time	tf		—	55	—	
	Turn-off Time	toff		—	130	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Qg	VDD = 48V, VGS = 10V ID = 25A	—	38	—	nC	
Gate-Source Charge	Qgs		—	25	—		
Gate-Drain ("Miller") Charge	Qgd		—	13	—		

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	25	A
Pulse Drain Reverse Current	IDRP	—	—	—	100	A
Diode Forward Voltage	VDSF	IDR = 25A, VGS = 0V	—	—	-1.8	V
Reverse Recovery Time	trr	IDR = 25A, VGS = 0V	—	50	—	ns
Reverse Recovery Charge	Qrr	dIDR / dt = 50A / μs	—	35	—	nC

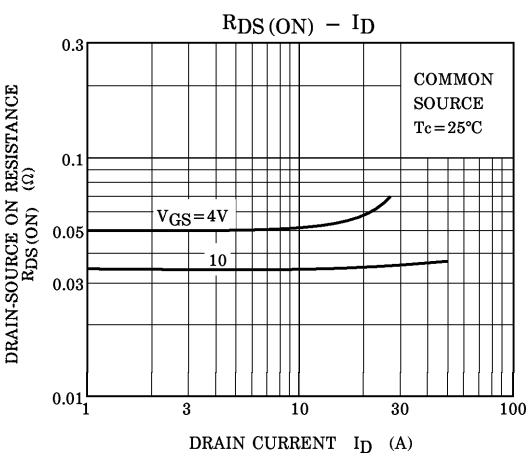
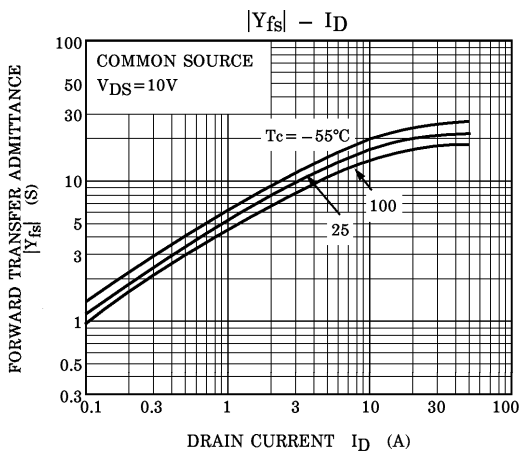
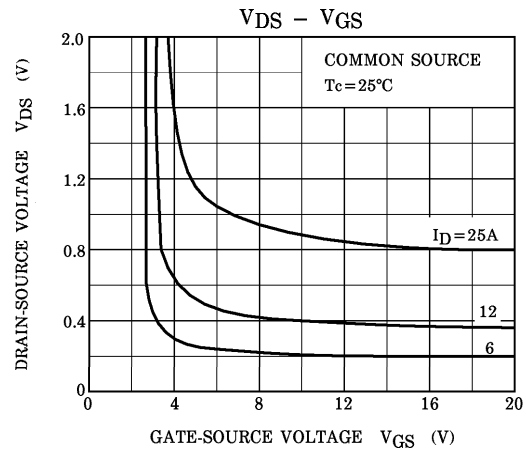
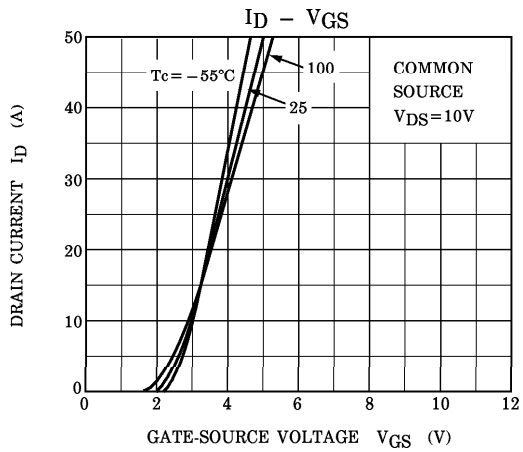
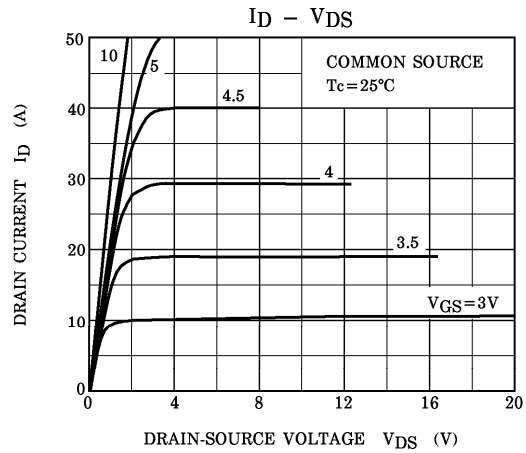
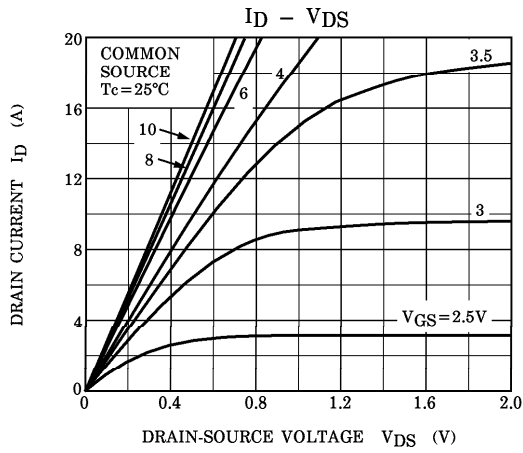
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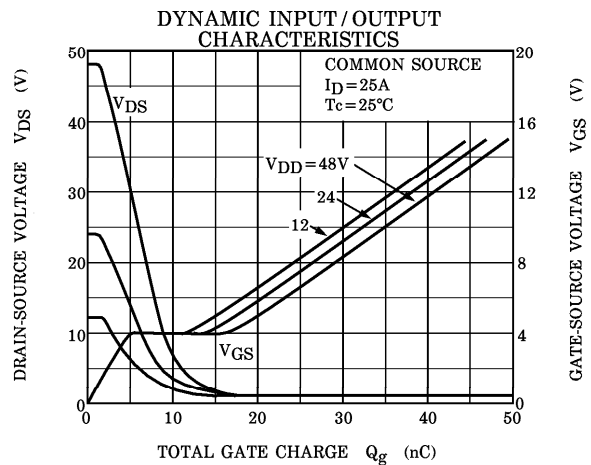
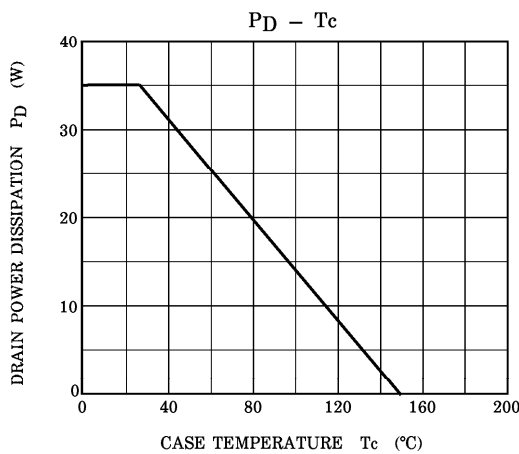
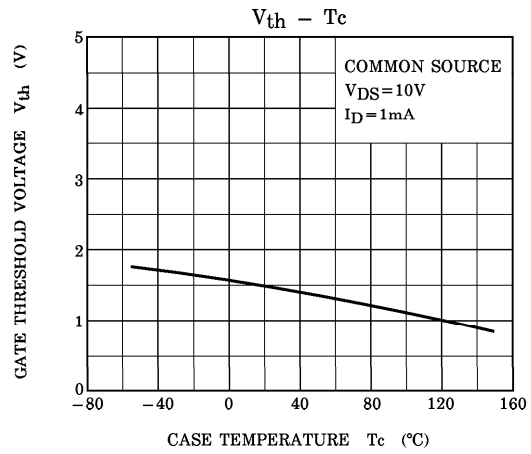
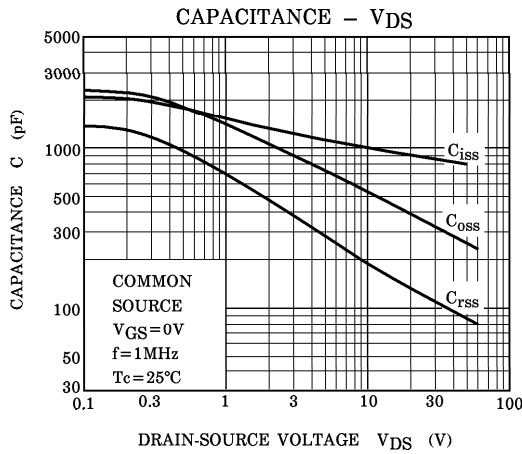
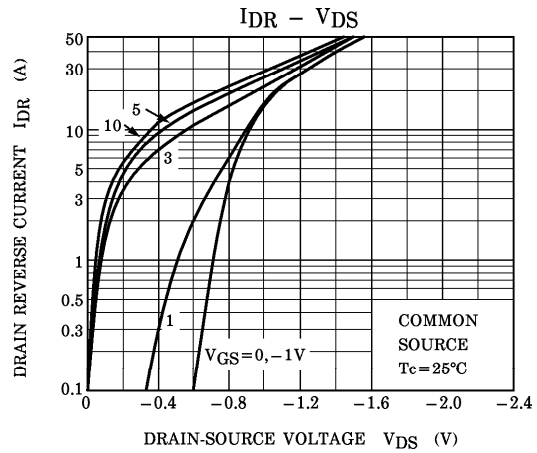
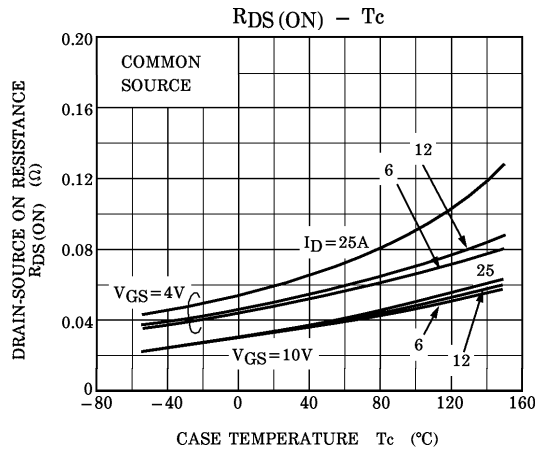


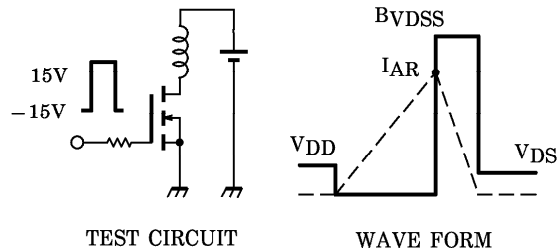
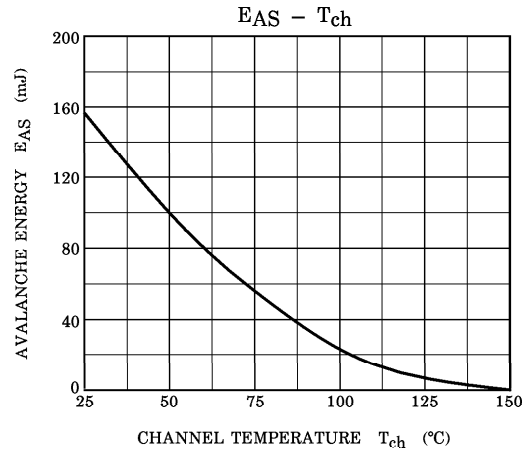
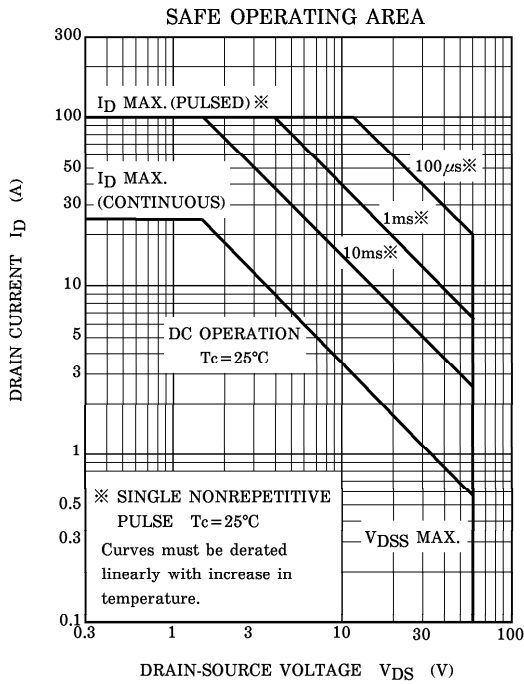
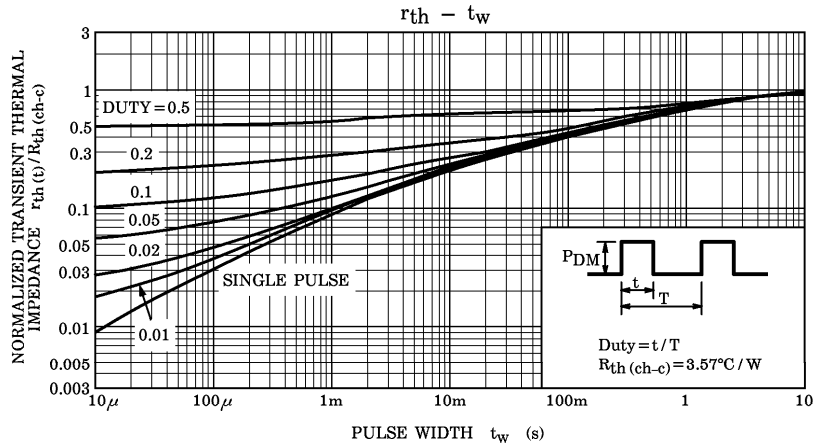
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak  $I_{AR} = 25\text{A}$ ,  $R_G = 25\Omega$   
 $V_{DD} = 25\text{V}$ ,  $L = 339\mu\text{H}$

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