

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

# 2SK2962

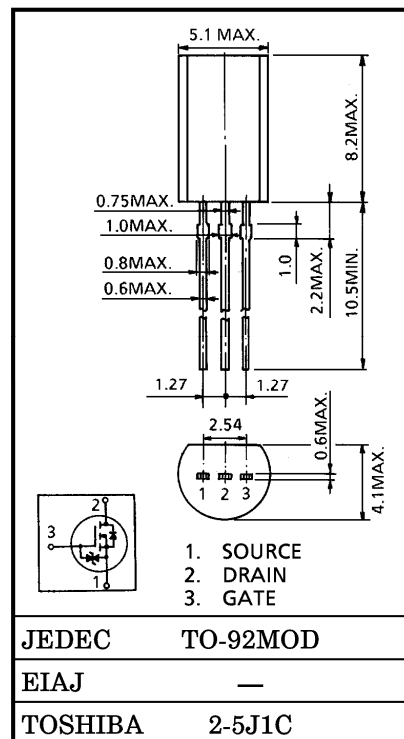
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS  
 CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS  
 Unit in mm

- 4V Gate Drive
- Low Drain-Source ON Resistance :  $R_{DS(ON)} = 0.5\Omega$  (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}| = 1.2S$  (Typ.)
- Low Leakage Current :  $I_{DSS} = 100\mu A$  (Max.) ( $V_{DS} = 100V$ )
- Enhancement-Mode :  $V_{th} = 0.8 \sim 2.0V$  ( $V_{DS} = 10V, I_D = 1mA$ )

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		$V_{DSS}$	100	V
Drain-Gate Voltage ( $R_{GS} = 20k\Omega$ )		$V_{DGR}$	100	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	DC	$I_D$	1	A
	Pulse	$I_{DP}$	3	A
Drain Power Dissipation (Ta = 25°C)		$P_D$	0.9	W
Single Pulse Avalanche Energy**		$E_{AS}$	137	mJ
Avalanche Current		$I_{AR}$	1	A
Repetitive Avalanche Energy*		$E_{AR}$	0.09	mJ
Channel Temperature		$T_{ch}$	150	°C
Storage Temperature Range		$T_{stg}$	-55~150	°C



Weight : 0.36g (Typ.)

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	138	°C/W

Note ;

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

\*\*  $V_{DD} = 25V$ , Starting  $T_{ch} = 25°C$ ,  $L = 221mH$ ,  $R_G = 25\Omega$ ,  $I_{AR} = 1A$

**This transistor is an electrostatic sensitive device.**

**Please handle with caution.**

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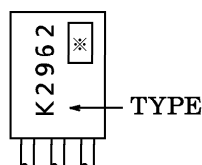
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	IGSS	VGS = ±16V, VDS = 0V	—	—	±10	μA	
Drain Cut-off Current	IDSS	VDS = 100V, VGS = 0V	—	—	100	μA	
Drain-Source Breakdown Voltage	V(BR) DSS	ID = 10mA, VGS = 0V	100	—	—	V	
Gate Threshold Voltage	Vth	VDS = 10V, ID = 1mA	0.8	—	2.0	V	
Drain-Source ON Resistance	RDS(ON)	VGS = 4V, ID = 0.5A	—	0.65	0.95	Ω	
		VGS = 10V, ID = 0.5A	—	0.5	0.7		
Forward Transfer Admittance	Yfs	VDS = 10V, ID = 0.5A	0.6	1.2	—	S	
Input Capacitance	Ciss	VDS = 10V, VGS = 0V, f = 1MHz	—	140	—	pF	
Reverse Transfer Capacitance	Crss		—	20	—		
Output Capacitance	Coss		—	45	—		
Switching Time	Rise Time	tr		—	8	—	ns
	Turn-on Time	ton		—	13	—	
	Fall Time	tf		—	45	—	
	Turn-off Time	t <sub>off</sub>		VIN : tr, tf < 5ns, Duty ≤ 1%, tw = 10μs	—	175	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Qg	VDD ≐ 80V, VGS = 10V, ID = 1A	—	6.3	—	nC	
Gate-Source Charge	Qgs		—	4.3	—		
Gate-Drain ("Miller") Charge	Qgd		—	2	—		

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 = 1A, VGS = 0V	—	—	-1.5	V
Reverse Recovery Time	trr	IDR = 1A, VGS = 0V	—	80	—	ns
Reverse Recovery Charge	Qrr	dIDR / dt = 50A / μs	—	140	—	nC

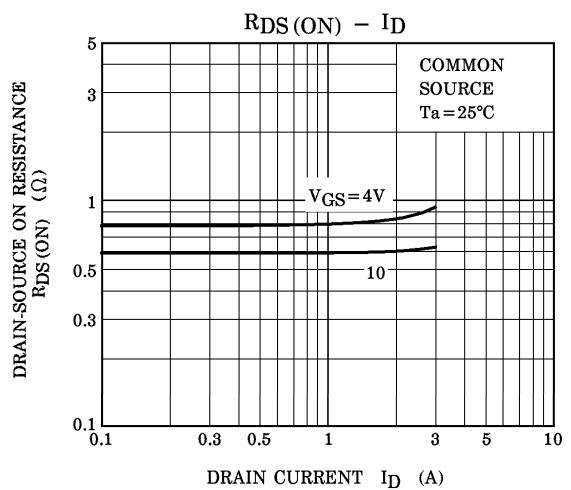
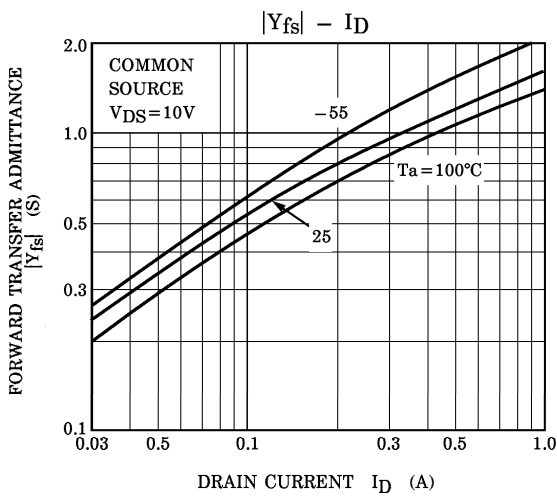
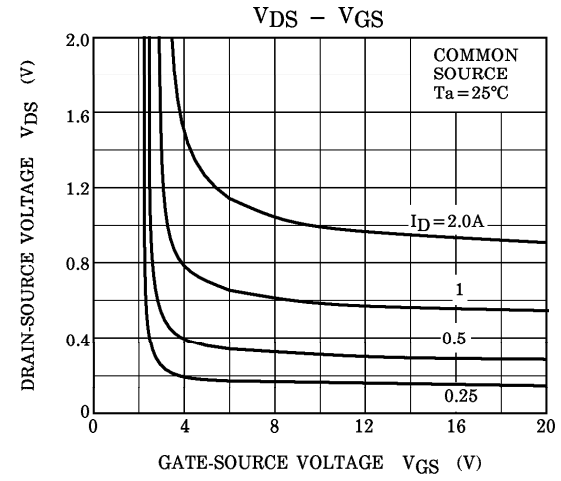
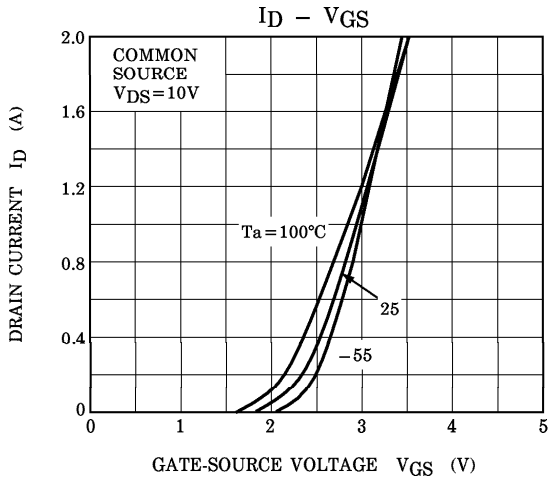
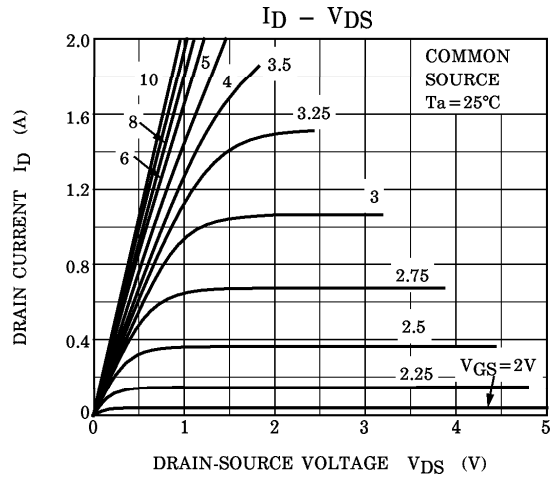
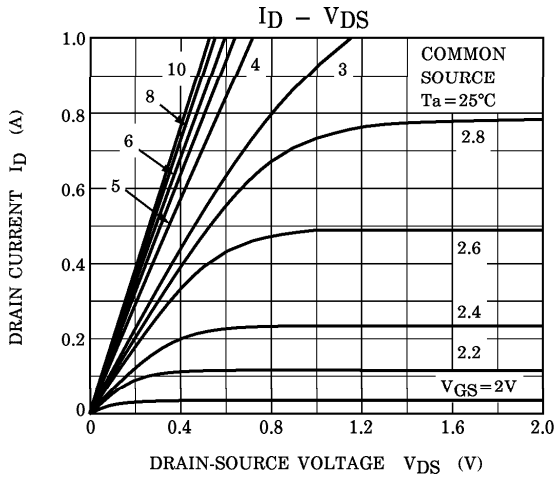
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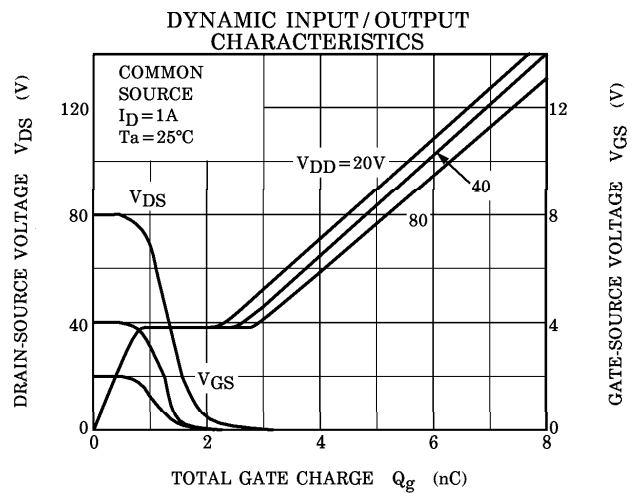
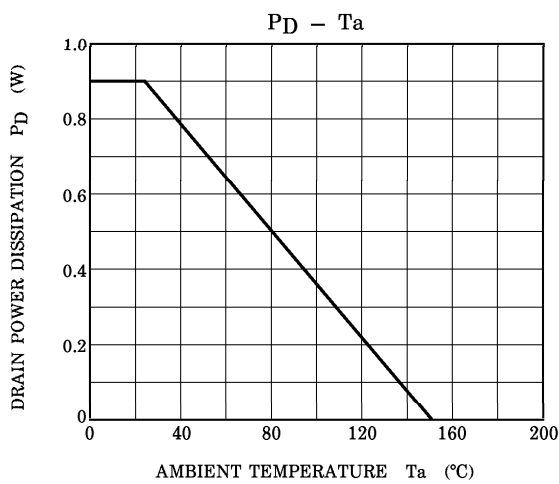
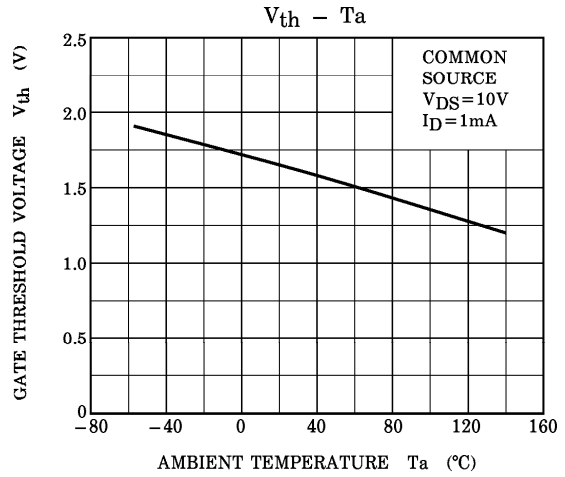
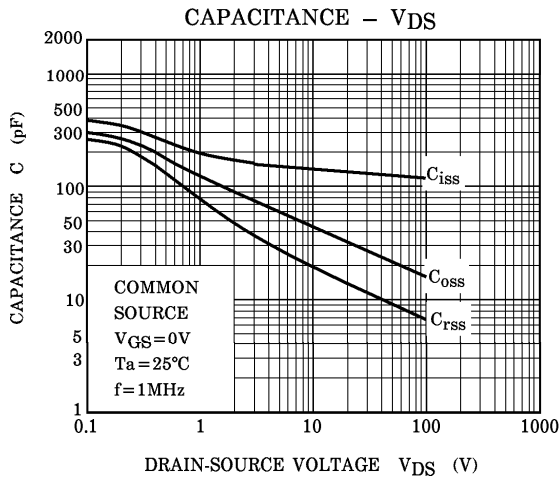
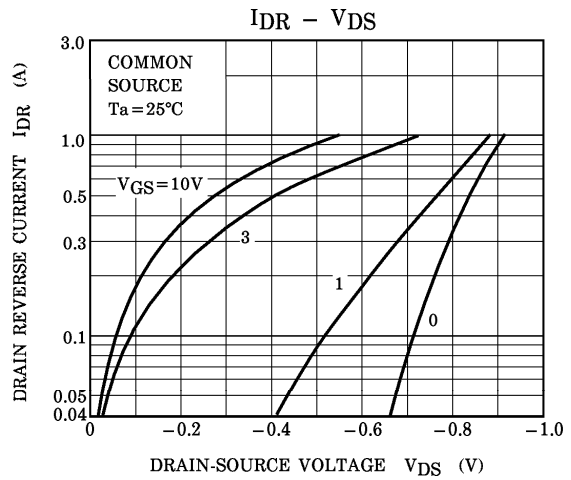
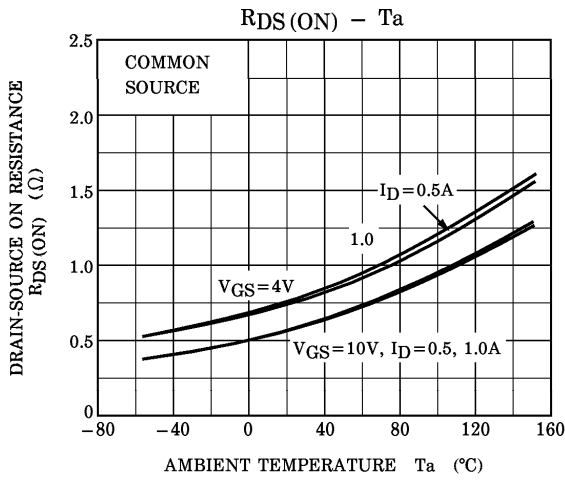


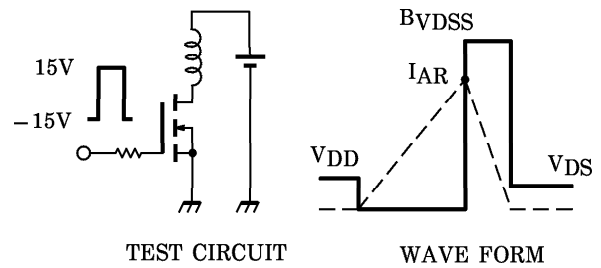
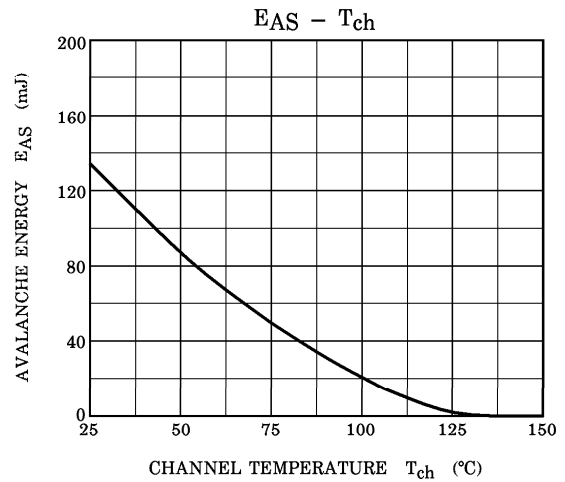
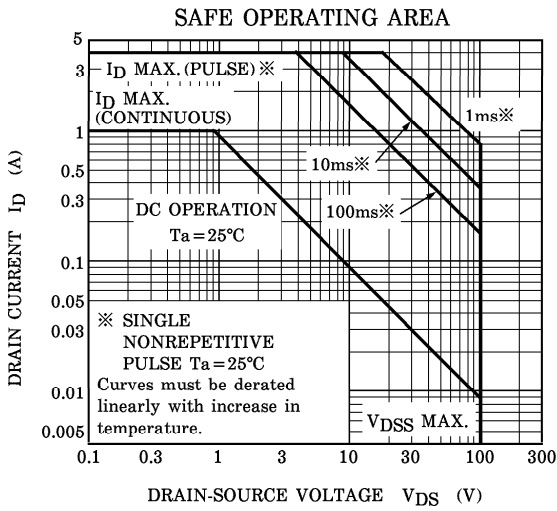
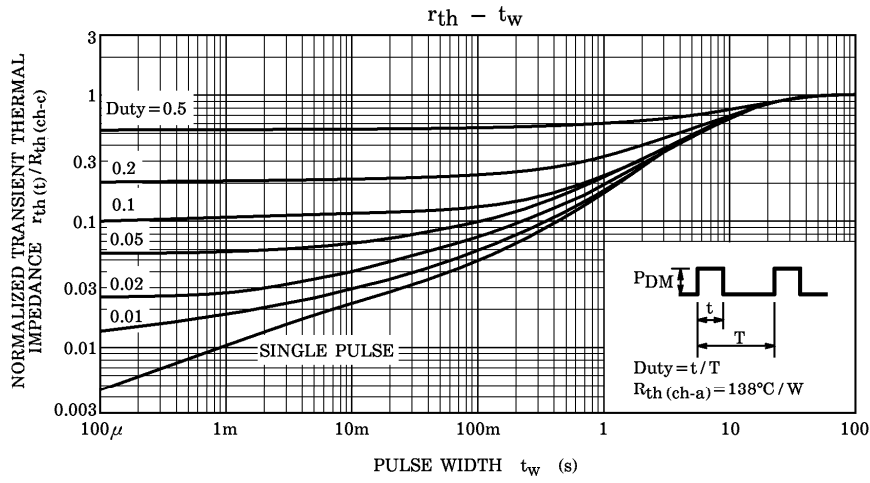
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak  $I_{AR} = 1A$ ,  $R_G = 25\Omega$   
 $V_{DD} = 25V$ ,  $L = 221mH$

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