

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

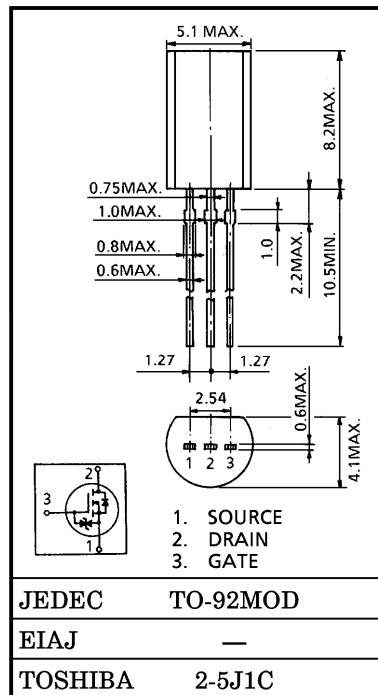
INDUSTRIAL APPLICATIONS

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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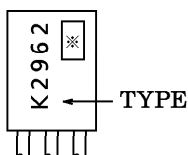
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		$I_{GSS}$	$V_{GS} = \pm 16V, V_{DS} = 0V$	—	—	$\pm 10$	$\mu A$
Drain Cut-off Current		$I_{DSS}$	$V_{DS} = 100V, V_{GS} = 0V$	—	—	100	$\mu A$
Drain-Source Breakdown Voltage		$V_{(BR) DSS}$	$I_D = 10mA, V_{GS} = 0V$	100	—	—	V
Gate Threshold Voltage		$V_{th}$	$V_{DS} = 10V, I_D = 1mA$	0.8	—	2.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = 4V, I_D = 0.5A$	—	0.65	0.95	$\Omega$
			$V_{GS} = 10V, I_D = 0.5A$	—	0.5	0.7	
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 0.5A$	0.6	1.2	—	S
Input Capacitance		$C_{iss}$	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$	—	140	—	pF
Reverse Transfer Capacitance		$C_{rss}$		—	20	—	
Output Capacitance		$C_{oss}$		—	45	—	
Switching Time	Rise Time	$t_r$		—	8	—	ns
	Turn-on Time	$t_{on}$		—	13	—	
	Fall Time	$t_f$		—	45	—	
	Turn-off Time	$t_{off}$		—	175	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		$Q_g$	$V_{DD} \doteq 80V, V_{GS} = 10V, I_D = 1A$	—	6.3	—	nC
Gate-Source Charge		$Q_{gs}$		—	4.3	—	
Gate-Drain ("Miller") Charge		$Q_{gd}$		—	2	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	$I_{DR}$	—	—	—	1	A
Pulse Drain Reverse Current	$I_{DRP}$	—	—	—	3	A
Diode Forward Voltage	$V_{DSF}$	$I_{DR} = 1A, V_{GS} = 0V$	—	—	-1.5	V
Reverse Recovery Time	$t_{rr}$	$I_{DR} = 1A, V_{GS} = 0V$	—	80	—	ns
Reverse Recovery Charge	$Q_{rr}$	$dI_{DR} / dt = 50A / \mu s$	—	140	—	nC

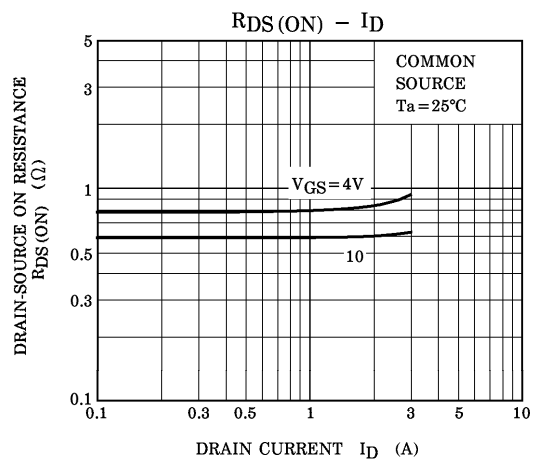
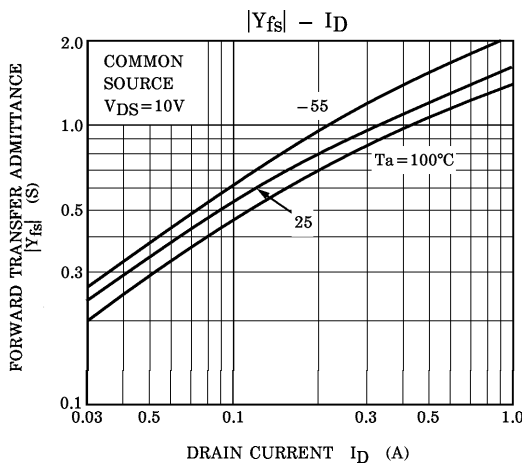
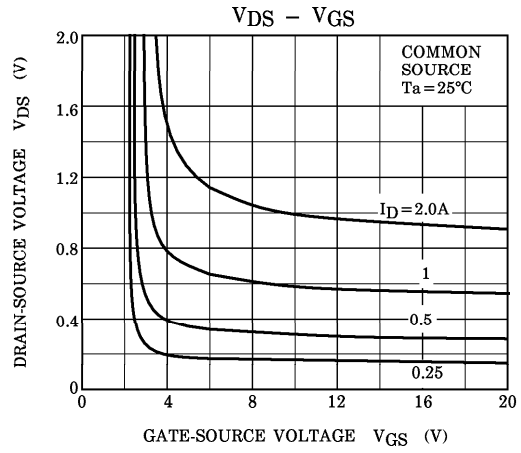
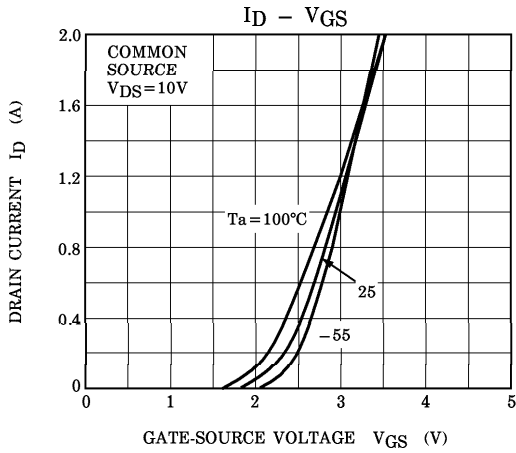
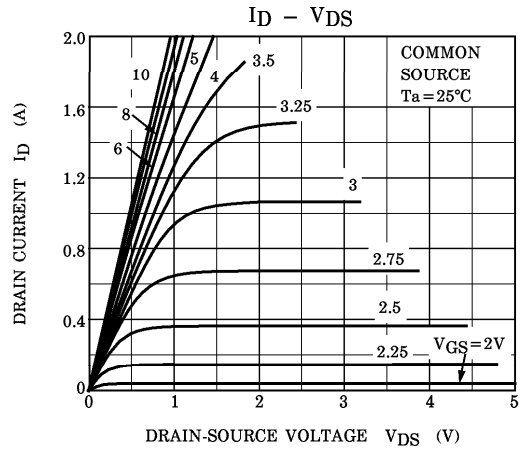
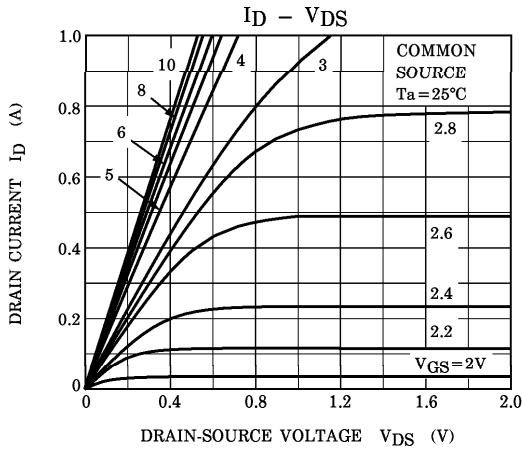
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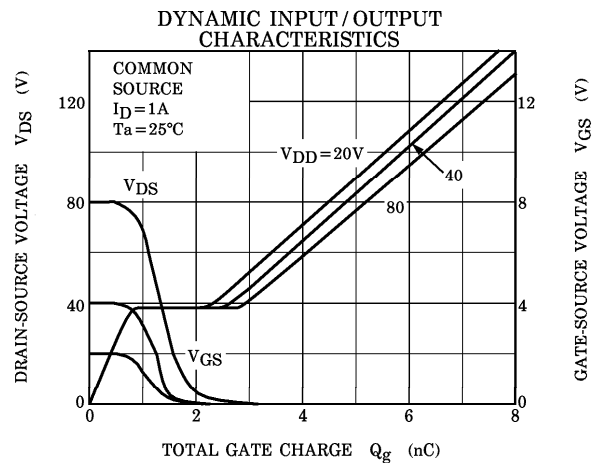
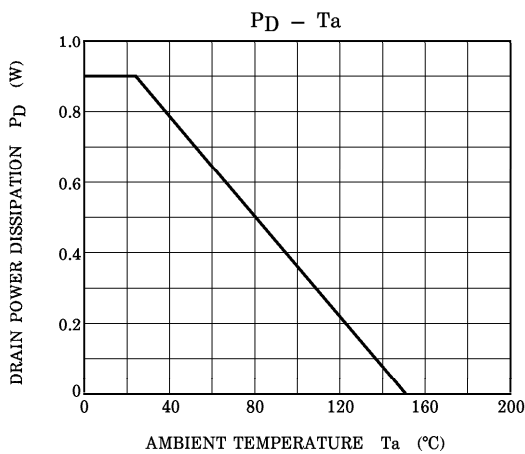
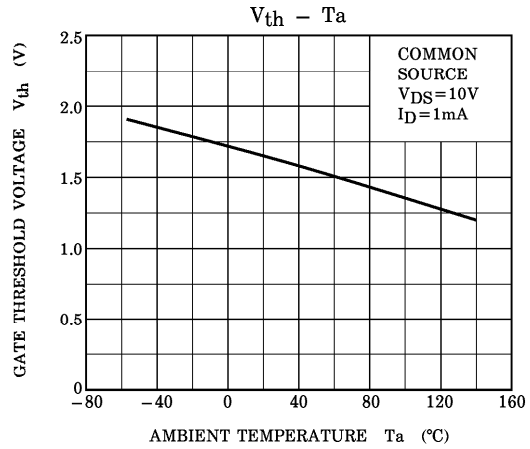
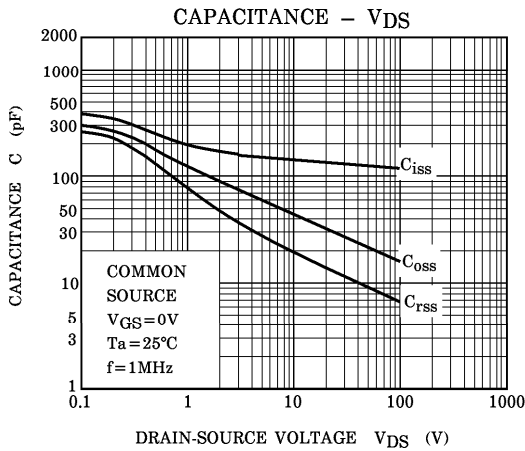
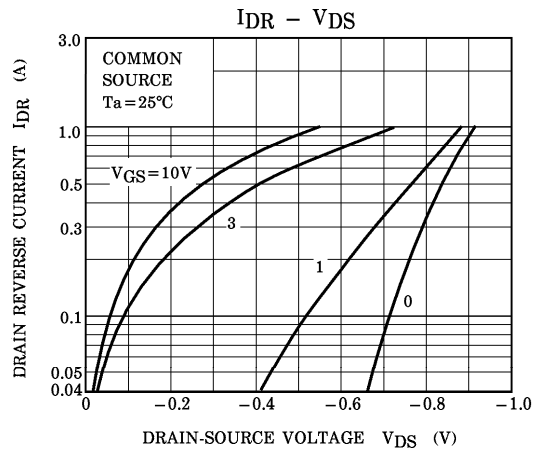
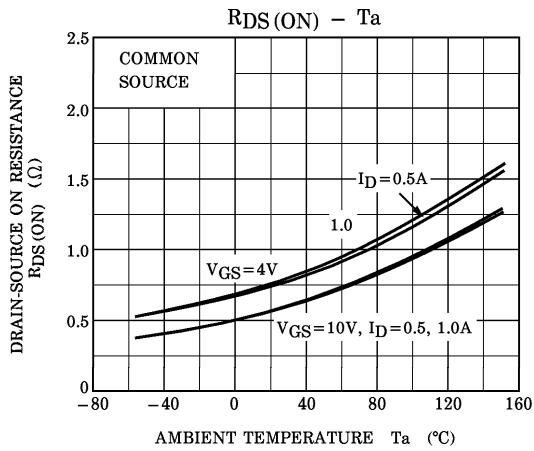


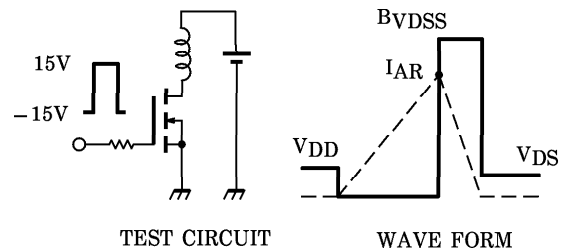
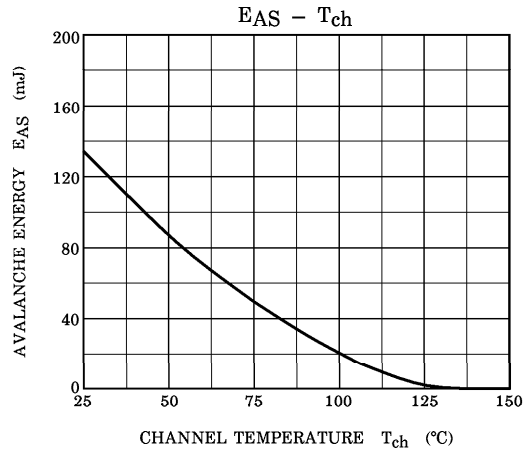
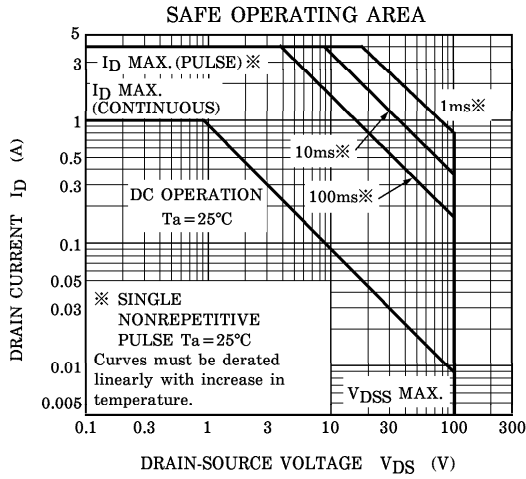
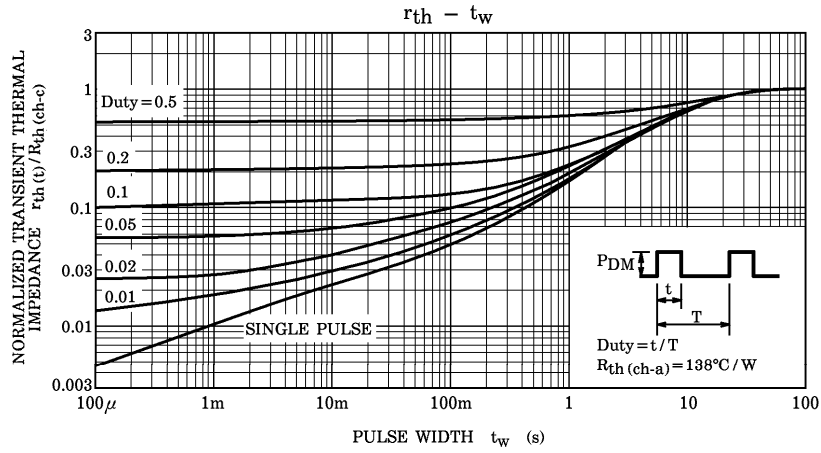
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







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

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