

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

2SK2992

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE
APPLICATIONS

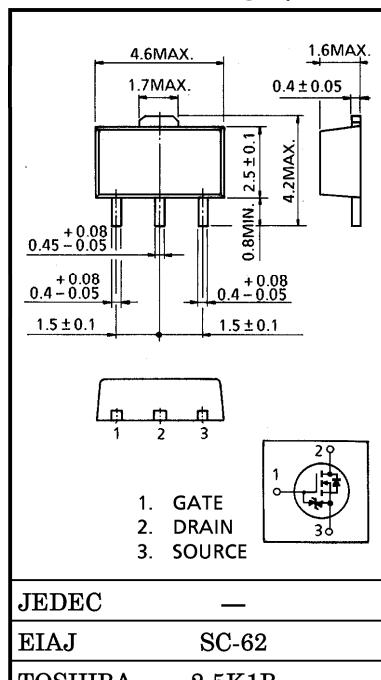
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 2.2\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 0.9S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100\mu A$ (Max.) ($V_{DS} = 200V$)
- Enhancement-Mode : $V_{th} = 2.0 \sim 3.5V$ ($V_{DS} = 10V$, $I_D = 1mA$)

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	200	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	200	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	DC	I_D	1
	Pulse	I_{DP}	3
Drain Power Dissipation***	P_D	1.5	W
Single Pulse Avalanche Energy**	E_{AS}	36	mJ
Avalanche Current	I_{AR}	1	A
Repetitive Avalanche Energy*	E_{AR}	0.15	mJ
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ C$

INDUSTRIAL APPLICATIONS

Unit in mm



JEDEC —

EIAJ SC-62

TOSHIBA 2-5K1B

Weight : 0.05g (Typ.)

MARKING



THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Ambient	$R_{th}(ch-a)$	250	$^\circ C / W$

Note :

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

** $V_{DD} = 50V$, Starting $T_{ch} = 25^\circ C$, $L = 56.7mH$, $R_G = 25\Omega$, $I_{AR} = 1A$ *** Mounted on ceramic substrate (1inch² × 0.8t)

This transistor is an electrostatic sensitive device.

Please handle with caution.

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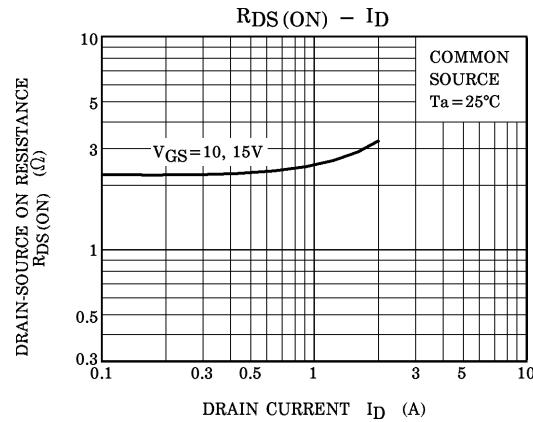
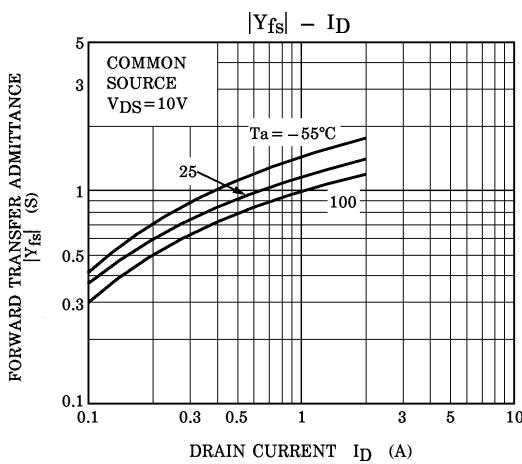
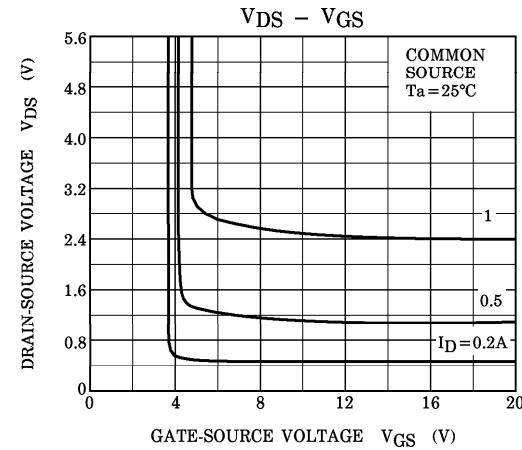
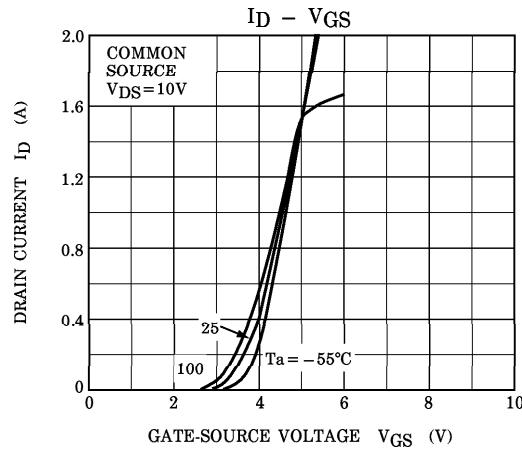
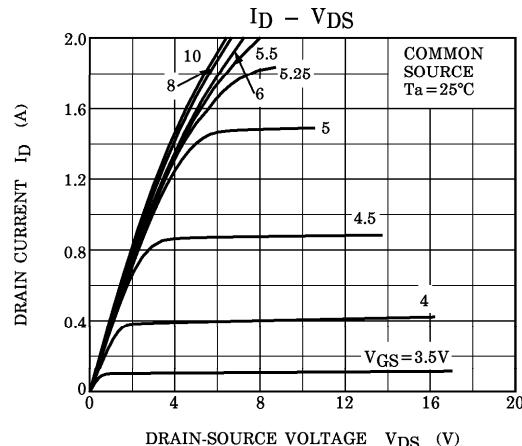
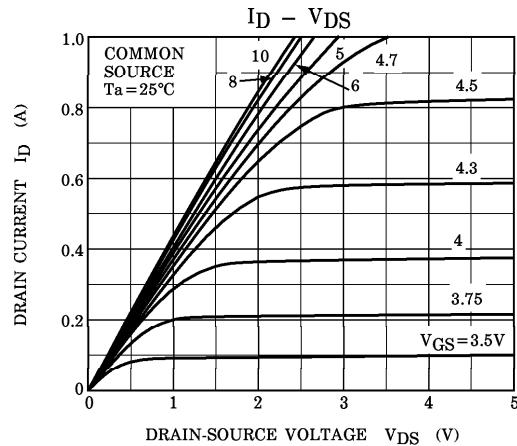
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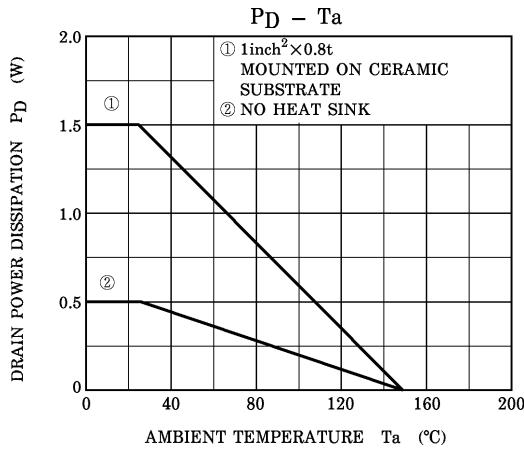
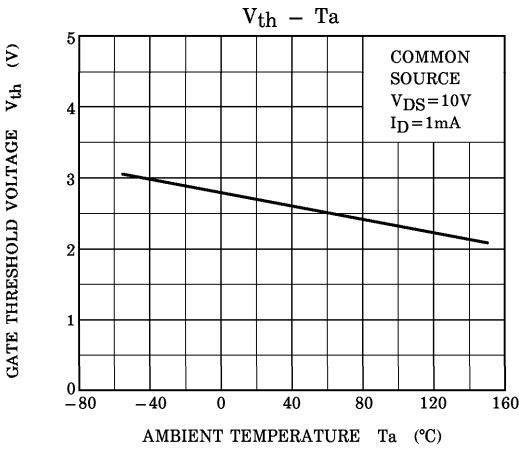
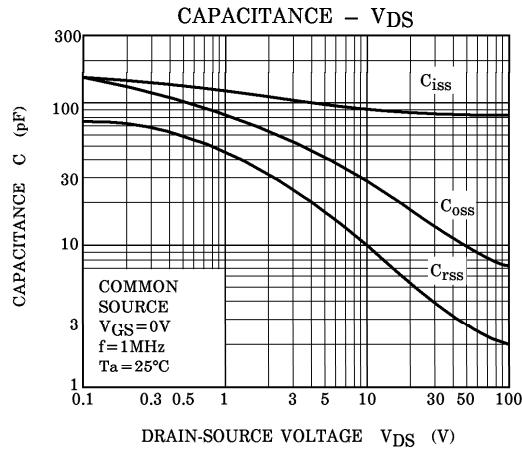
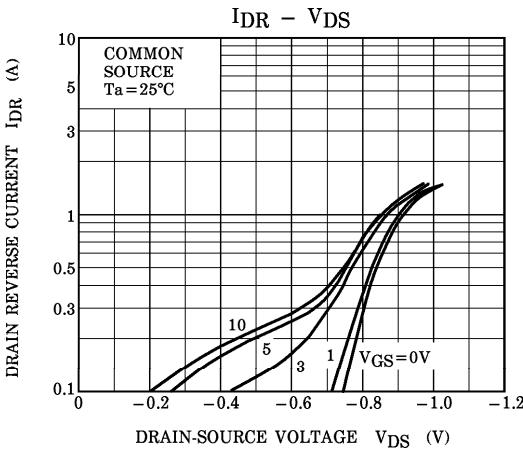
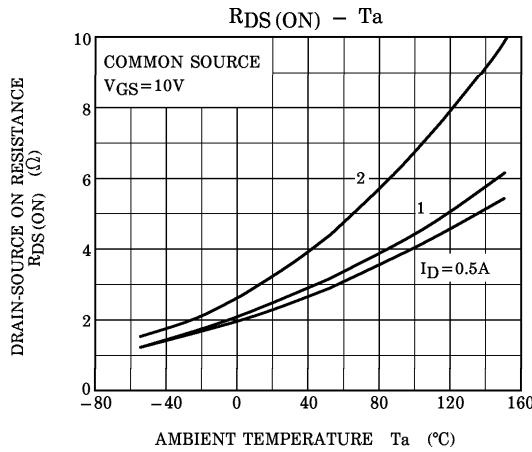
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

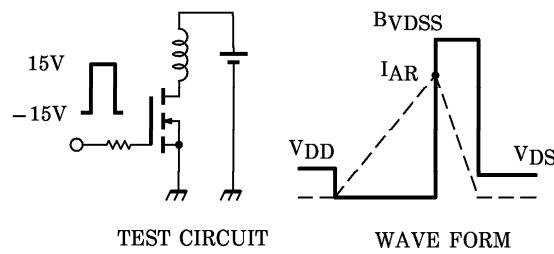
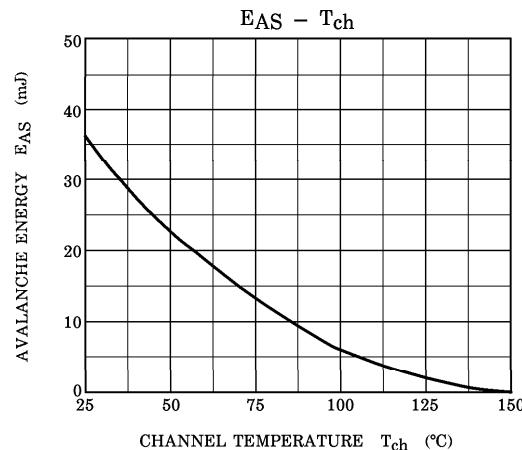
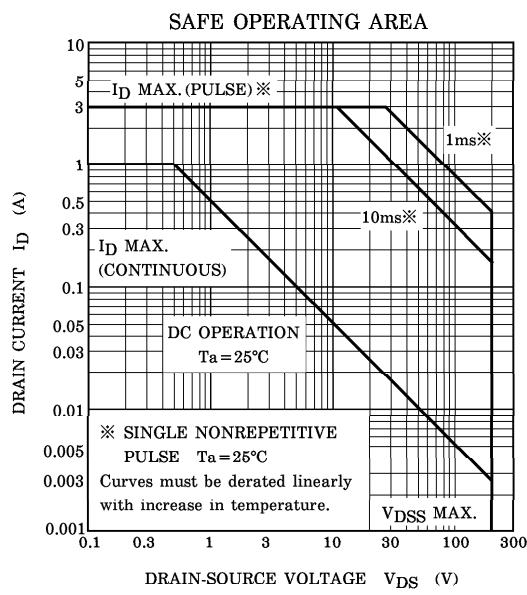
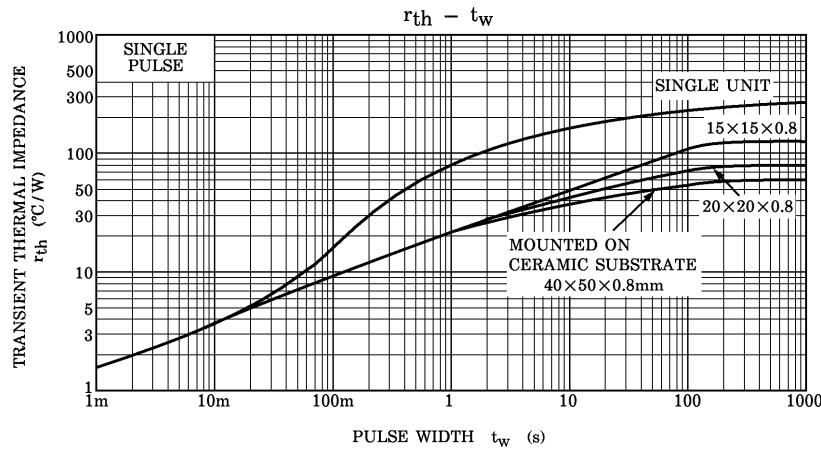
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 16V, V_{DS} = 0V$	—	—	± 10	μA	
Drain Cut-off Current	I_{DSS}	$V_{DS} = 200V, V_{GS} = 0V$	—	—	100	μA	
Drain-Source Breakdown Voltage	$V_{(BR) DSS}$	$I_D = 10mA, V_{GS} = 0V$	200	—	—	V	
Gate Threshold Voltage	V_{th}	$V_{DS} = 10V, I_D = 1mA$	2.0	—	3.5	V	
Drain-Source ON Resistance	$R_{DS (ON)}$	$V_{GS} = 10V, I_D = 0.5A$	—	2.2	3.5	Ω	
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 10V, I_D = 0.5A$	0.5	0.9	—	S	
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V$ $f = 1MHz$	—	90	—	pF	
Reverse Transfer Capacitance	C_{rss}		—	10	—		
Output Capacitance	C_{oss}		—	30	—		
Switching Time	Rise Time	t_r	 V_{GS} 10V $0V$ t_r t_{on} t_f t_{off} $I_D = 0.5A$ $V_{DD} = 100V$ $V_{IN} : t_r, t_f < 5ns,$ $Duty \leq 1\%, t_w = 10\mu s$	—	9	—	ns
	Turn-on Time	t_{on}		—	17	—	
	Fall Time	t_f		—	16	—	
	Turn-off Time	t_{off}		—	45	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	$V_{DD} = 160V, V_{GS} = 10V$ $I_D = 1A$	—	3.0	—	nC	
Gate-Source Charge	Q_{gs}		—	1.8	—		
Gate-Drain ("Miller") Charge	Q_{gd}		—	1.2	—		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_a = 25^\circ C$)

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}	$I_{DR} = 1A, V_{GS} = 0V$	—	85	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = 100A / \mu s$	—	190	—	nC







Peak $I_{AR} = 1\text{A}$, $R_G = 25\Omega$ $E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{B_{VDSS}}{B_{VDSS} - V_{DD}} \right)$