

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

2SK2996

HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

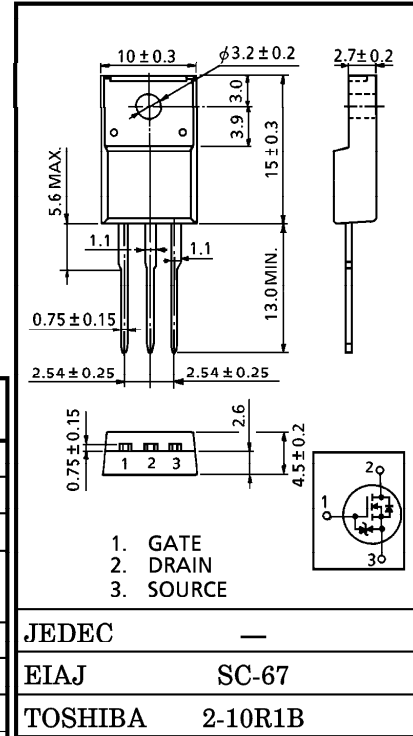
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.74\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 6.8S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100\mu A$ (Max.) ($V_{DS} = 600V$)
- Enhancement-Mode : $V_{th} = 2.0 \sim 4.0V$ ($V_{DS} = 10V, I_D = 1mA$)

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

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	600	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	600	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	10	A
	Pulse	I_{DP}	30	
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	45	W
Single Pulse Avalanche Energy**		E_{AS}	252	mJ
Avalanche Current		I_{AR}	10	A
Repetitive Avalanche Energy*		E_{AR}	4.5	mJ
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$



JEDEC	—
EIAJ	SC-67
TOSHIBA	2-10R1B

Weight : 1.9g

Thermal Characteristics

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

Note ;

- * Repetitive rating ; Pulse Width Limited by Max. junction temperature.
- ** $V_{DD} = 90V, T_{ch} = 25^\circ C, L = 4.41mH, R_G = 25\Omega, I_{AR} = 10A$

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

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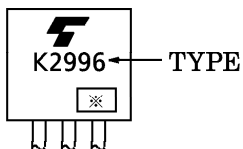
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	IGSS	VGS = ±25V, VDS = 0V	—	—	±10	μA	
Gate-Source Breakdown Voltage	V(BR)GSS	IG = ±10μA, VDS = 0V	±30	—	—	V	
Drain Cut-off Current	IDSS	VDS = 600V, VGS = 0V	—	—	100	μA	
Drain-Source Breakdown Voltage	V(BR)DSS	ID = 10mA, VGS = 0V	600	—	—	V	
Gate Threshold Voltage	Vth	VDS = 10V, ID = 1mA	2.0	—	4.0	V	
Drain-Source ON Resistance	RDS(ON)	VGS = 10V, ID = 5A	—	0.74	1.0	Ω	
Forward Transfer Admittance	Yfs	VDS = 10V, ID = 5A	3.4	6.8	—	S	
Input Capacitance	Ciss	VDS = 20V, VGS = 0V, f = 1MHz	—	1500	—	pF	
Reverse Transfer Capacitance	Crss		—	13	—		
Output Capacitance	Coss		—	140	—		
Switching Time	Rise Time	tr		—	15	—	ns
	Turn-on Time	ton		—	55	—	
	Fall Time	tf		—	27	—	
	Turn-off Time	t _{off}		VIN : tr, tf < 5ns, Duty ≤ 1%, tw = 10μs	—	145	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Qg	VDD ≐ 400V, VGS = 10V, ID = 10A	—	38	—	nC	
Gate-Source Charge	Qgs		—	21	—		
Gate-Drain ("Miller") Charge	Qgd		—	17	—		

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	10	A
Pulse Drain Reverse Current	IDRP	—	—	—	30	A
Diode Forward Voltage	VDSF	IDR = 10A, VGS = 0V	—	—	-1.7	V
Reverse Recovery Time	t _{rr}	IDR = 10A, VGS = 0V	—	380	—	ns
Reverse Recovery Charge	Q _{rr}	dIDR / dt = 100A / μs	—	3.6	—	μC

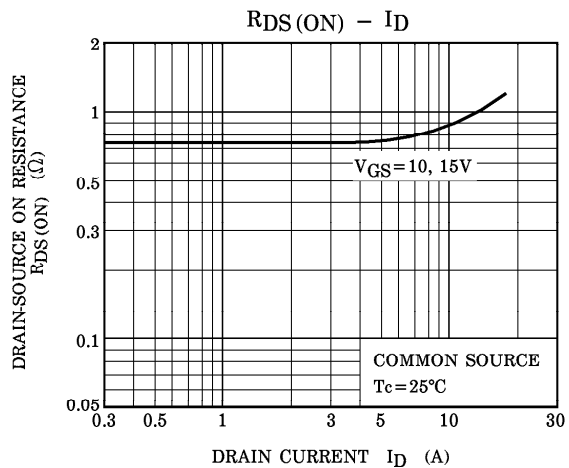
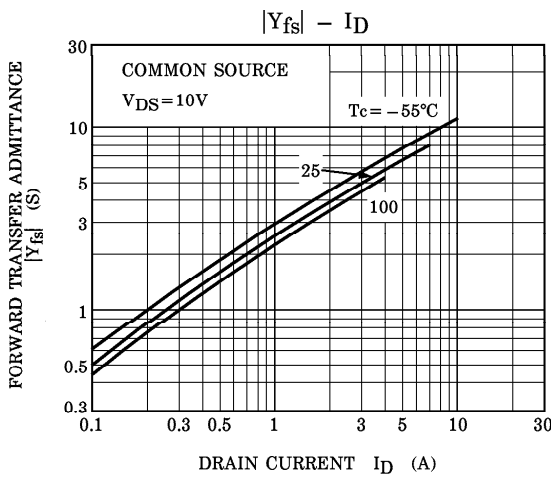
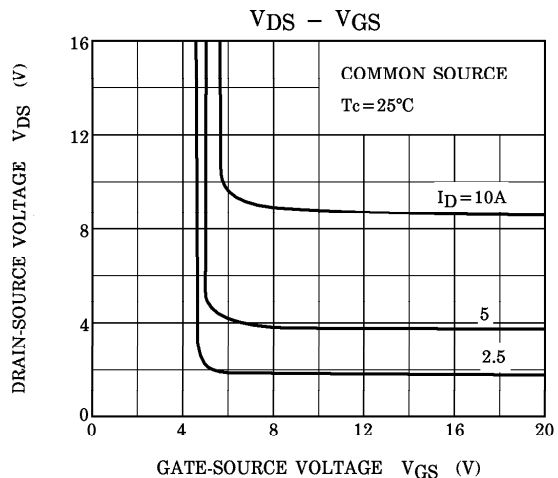
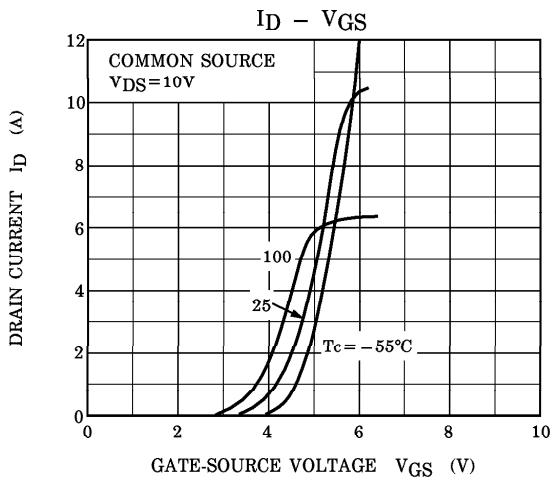
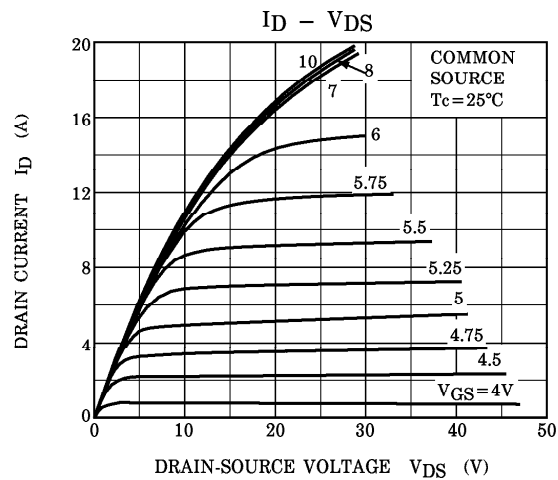
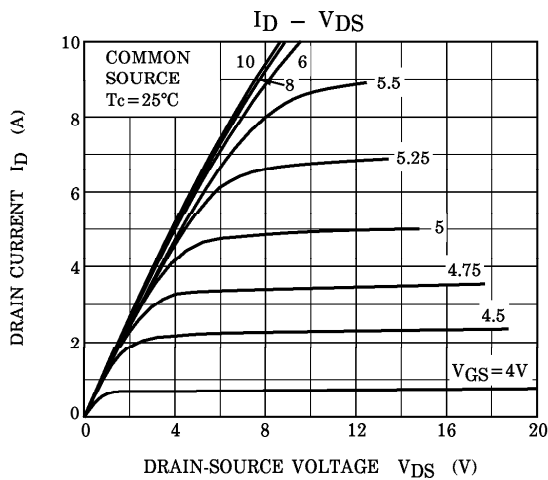
MARKING

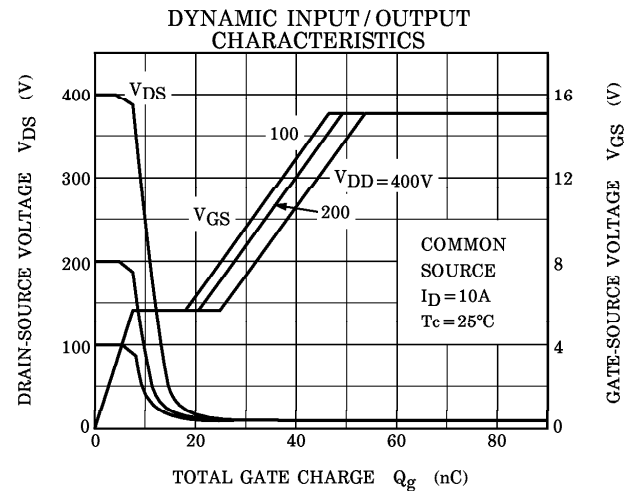
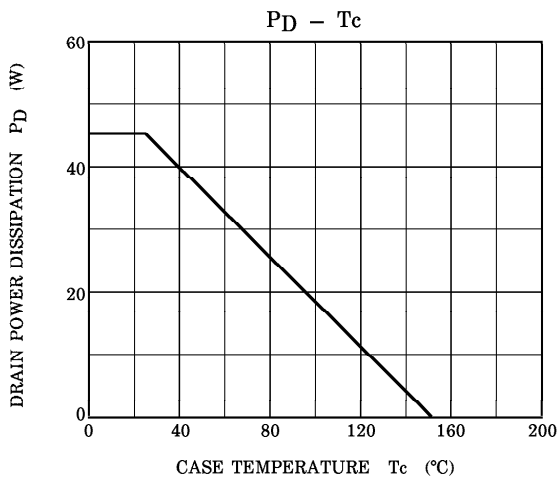
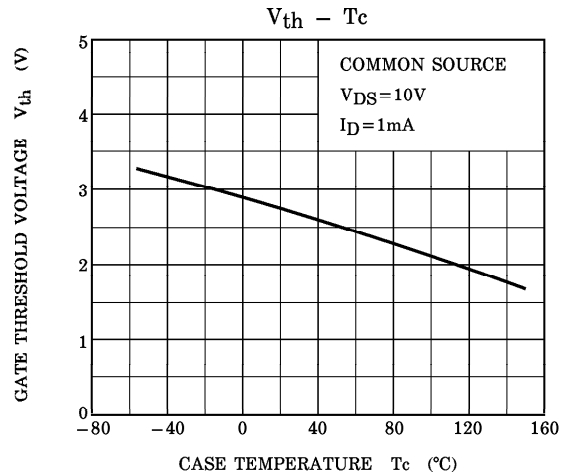
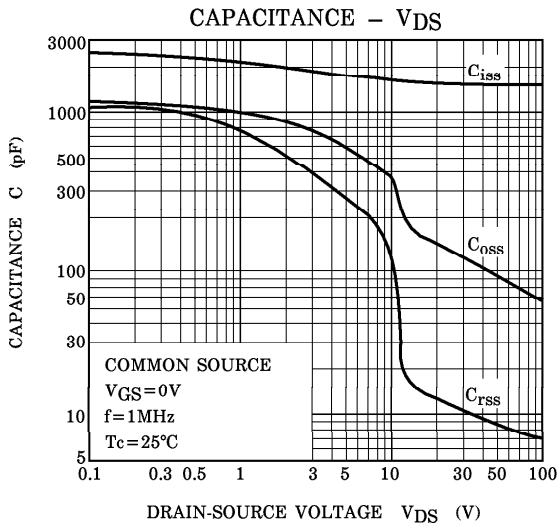
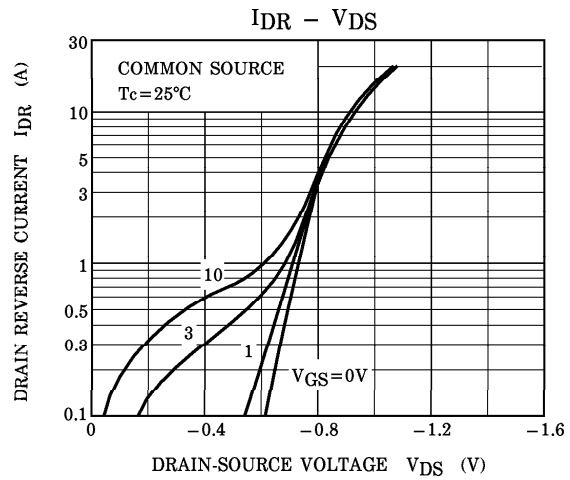
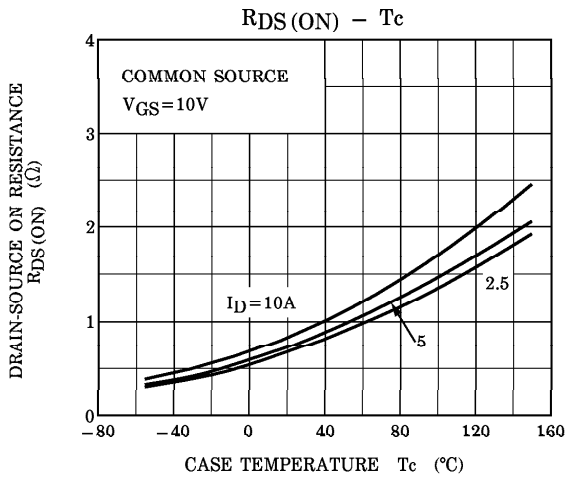


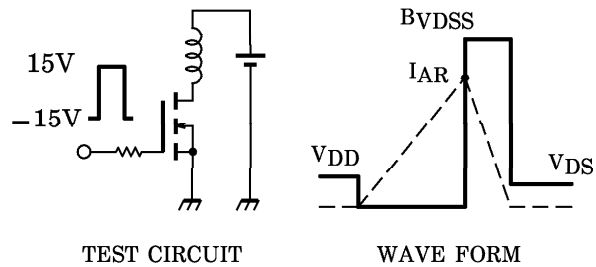
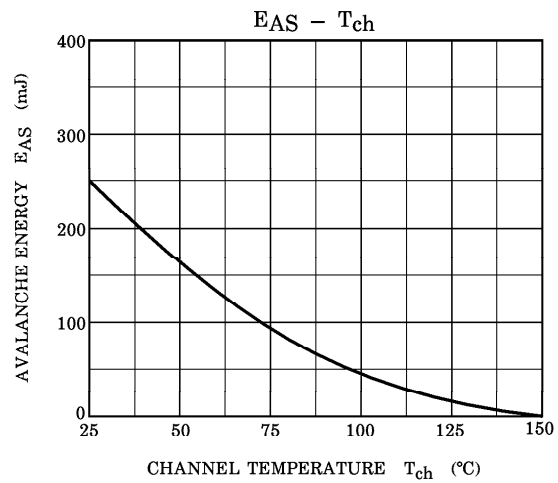
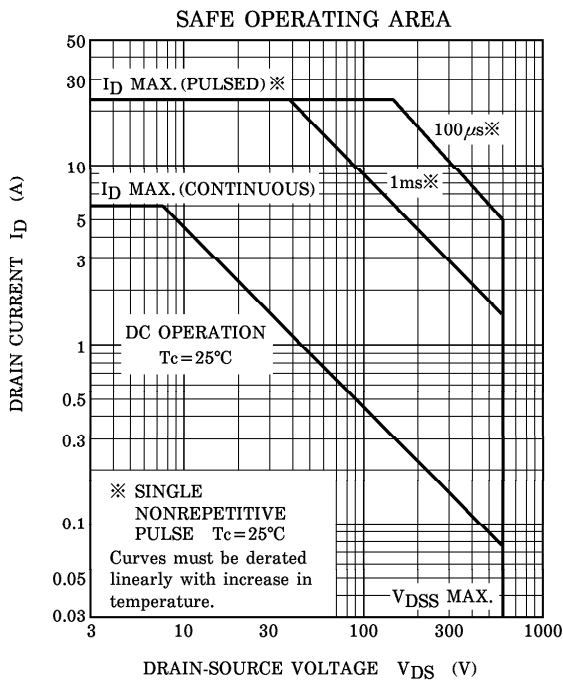
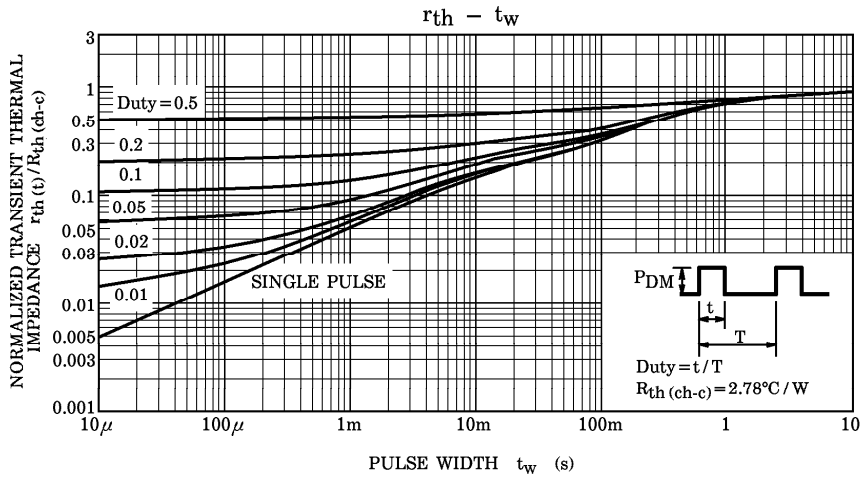
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak $I_{AR} = 10A$, $R_G = 25\Omega$ $E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{BVDSS}{BVDSS - V_{DD}} \right)$
 $V_{DD} = 90V$, $L = 4.41mH$