

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

2SK2968

HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS

DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS

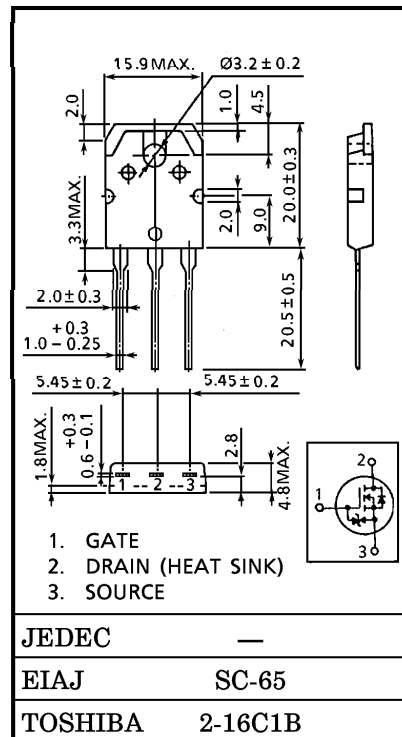
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)}=1.05\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}|=7.6S$ (Typ.)
- Low Leakage Current : $I_{DSS}=100\mu A$ (Max.) ($V_{DS}=720V$)
- 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}	900	V
Drain-Gate Voltage ($R_{GS}=20k\Omega$)		V_{DGR}	900	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	10	A
	Pulse	I_{DP}	30	A
Drain Power Dissipation ($T_c=25^\circ C$)		P_D	150	W
Single Pulse Avalanche Energy**		E_{AS}	810	mJ
Avalanche Current		I_{AR}	10	A
Repetitive Avalanche Energy*		E_{AR}	15	mJ
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55\sim 150$	$^\circ C$



Weight : 4.6g (Typ.)

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	0.833	$^\circ C / W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	50	$^\circ C / W$

Note ;

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

** $V_{DD}=90V$, Starting $T_{ch}=25^\circ C$, $L=14.9mH$, $R_G=25\Omega$, $I_{AR}=10A$

This transistor is an electrostatic sensitive device.

Please handle with caution.

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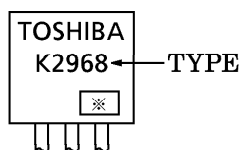
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGSS	VGS = ±30V, VDS = 0V	—	—	±10	μA
Gate-Source Breakdown Voltage		V (BR) GSS	IG = ±10μA, VDS = 0V	±30	—	—	V
Drain Cut-off Current		IDSS	VDS = 720V, VGS = 0V	—	—	100	μA
Drain-Source Breakdown Voltage		V (BR) DSS	ID = 10mA, VGS = 0V	900	—	—	V
Gate Threshold Voltage		Vth	VDS = 10V, ID = 1mA	2.0	—	4.0	V
Drain-Source ON Resistance		RDS (ON)	VGS = 10V, ID = 4A	—	1.05	1.25	Ω
Forward Transfer Admittance		Yfs	VDS = 15V, ID = 4A	3.5	7.6	—	S
Input Capacitance		Ciss	VDS = 25V, VGS = 0V f = 1MHz	—	2150	—	pF
Reverse Transfer Capacitance		Crss		—	35	—	
Output Capacitance		Coss		—	220	—	
Switching Time	Rise Time	tr	<p> $V_{GS} = 10V$ $I_D = 5A$ $R_L = 80\Omega$ $V_{DD} = 400V$ </p>	—	25	—	ns
	Turn-on Time	ton		—	60	—	
	Fall Time	tf		—	25	—	
	Turn-off Time	toff		$V_{IN} : t_r, t_f < 5ns,$ $Duty \leq 1\%, t_w = 10\mu s$	—	120	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD = 400V, VGS = 10V	—	70	—	nC
Gate-Source Charge		Qgs	ID = 10A	—	37	—	
Gate-Drain ("Miller") Charge		Qgd		—	33	—	

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	—	—	-1.9	V
Reverse Recovery Time	t _{rr}	IDR = 10A, VGS = 0V	—	1300	—	ns
Reverse Recovery Charge	Q _{rr}	dIDR / dt = 100A / μs	—	14.5	—	μC

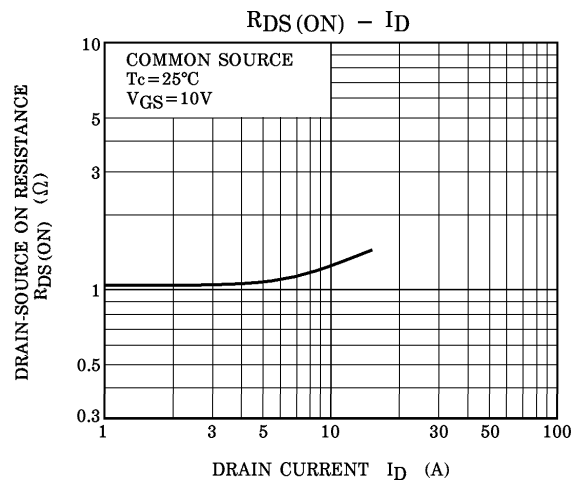
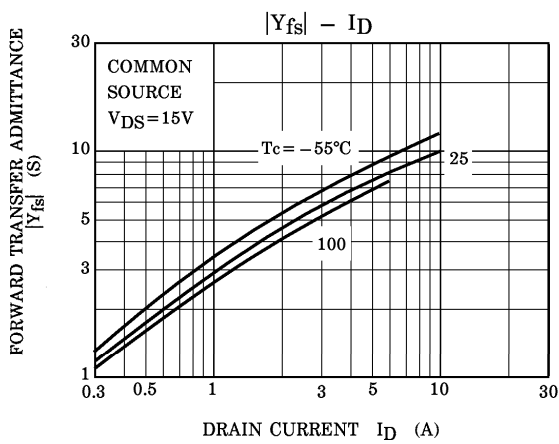
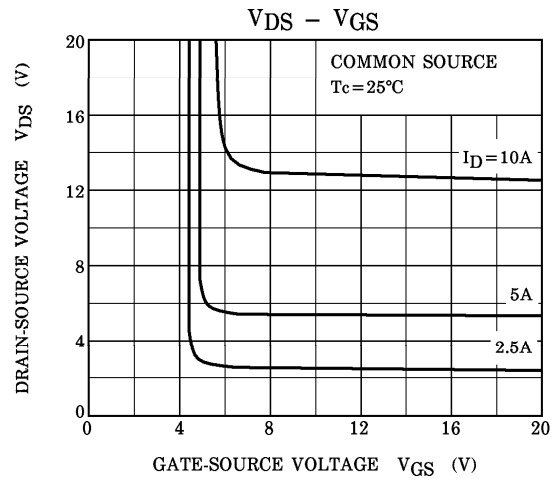
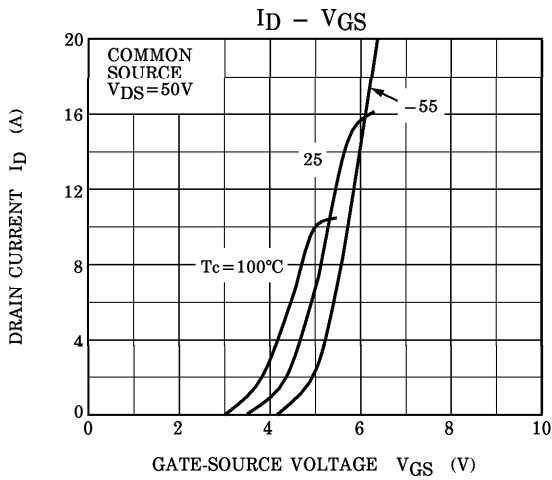
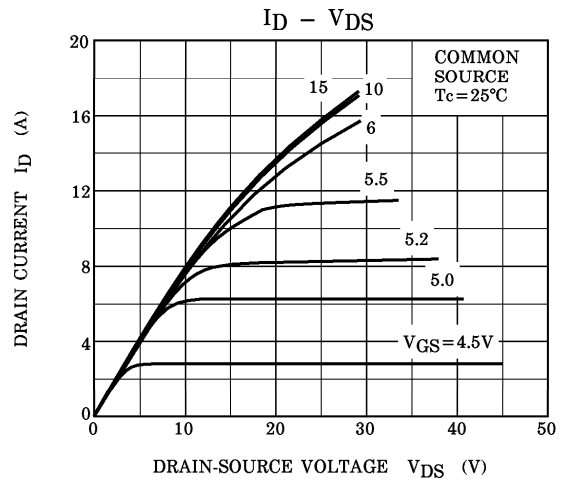
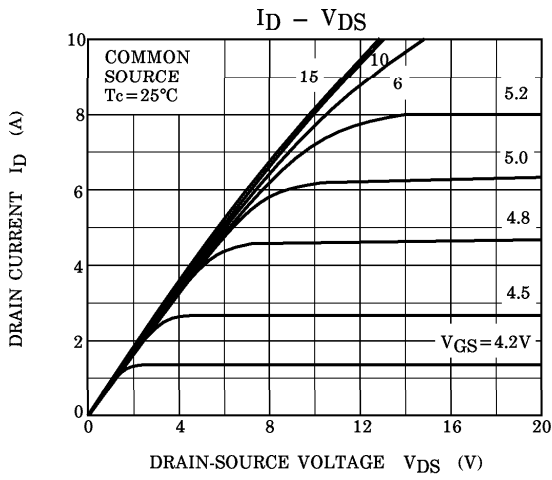
MARKING

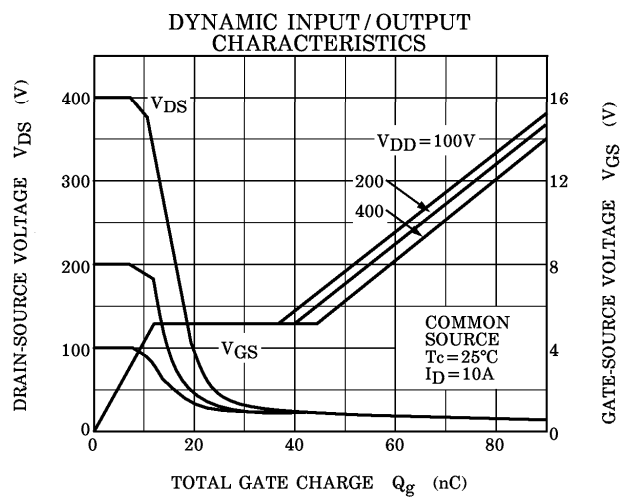
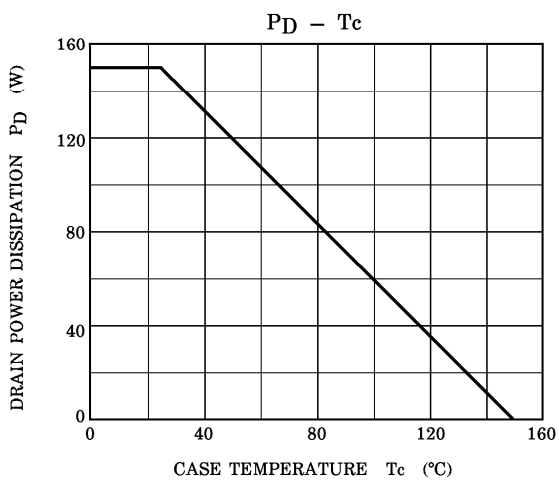
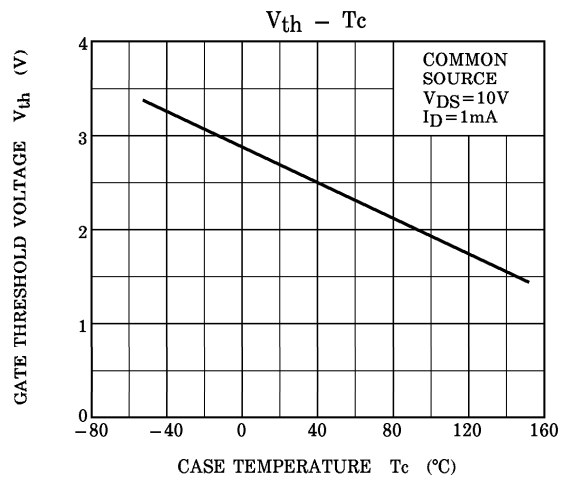
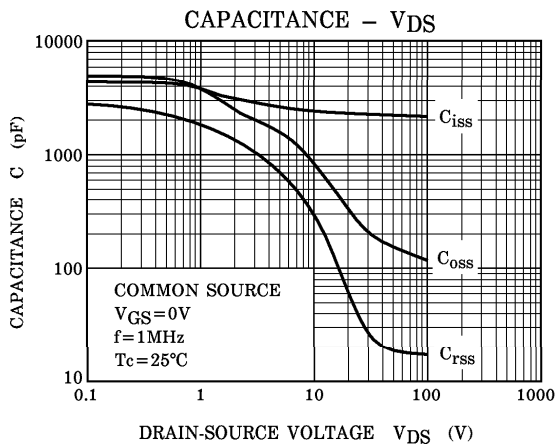
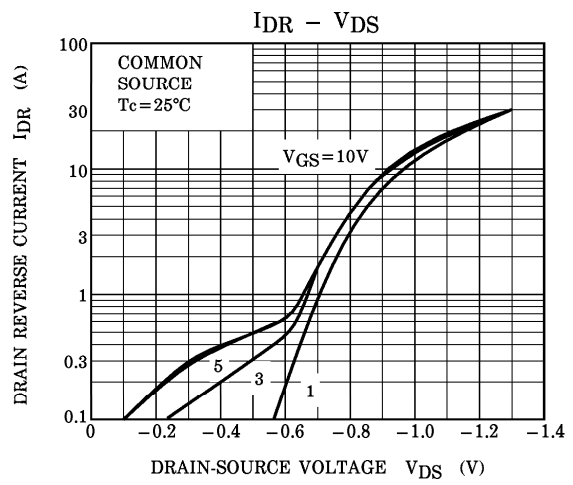
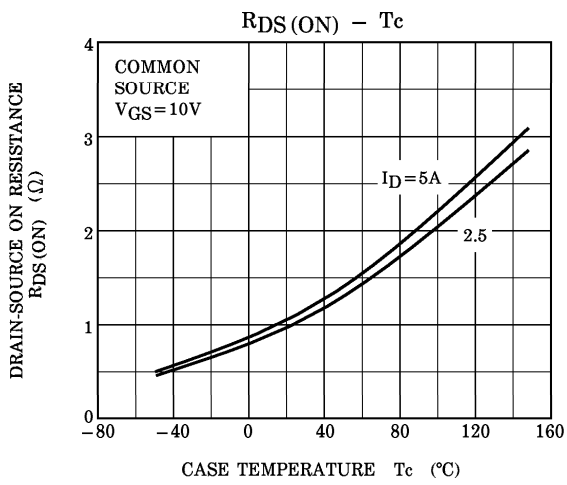


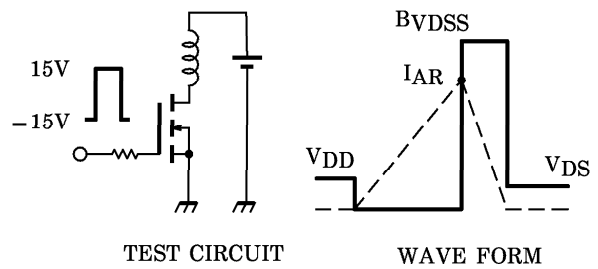
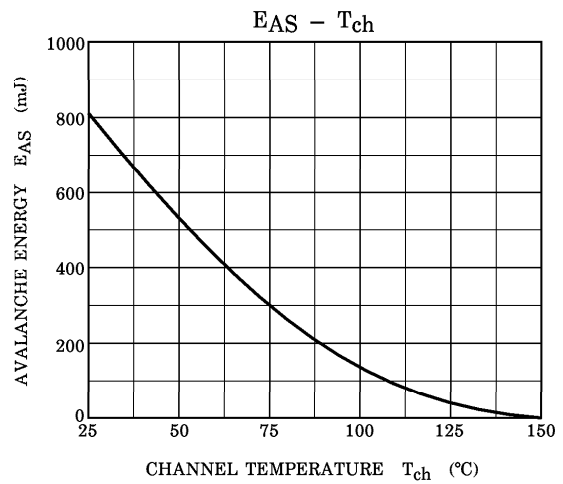
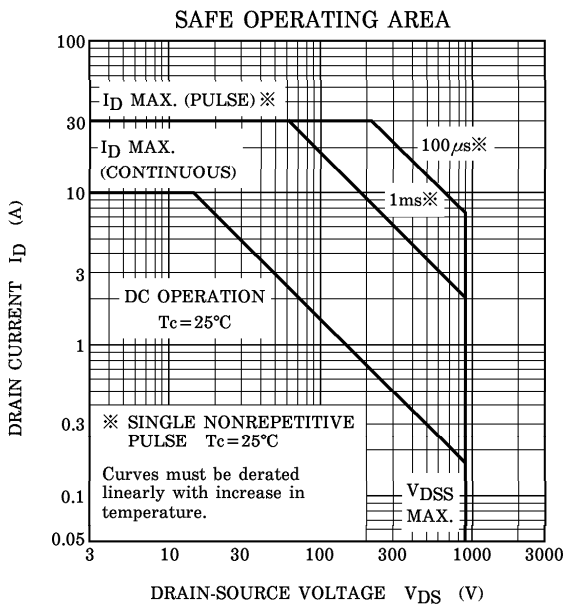
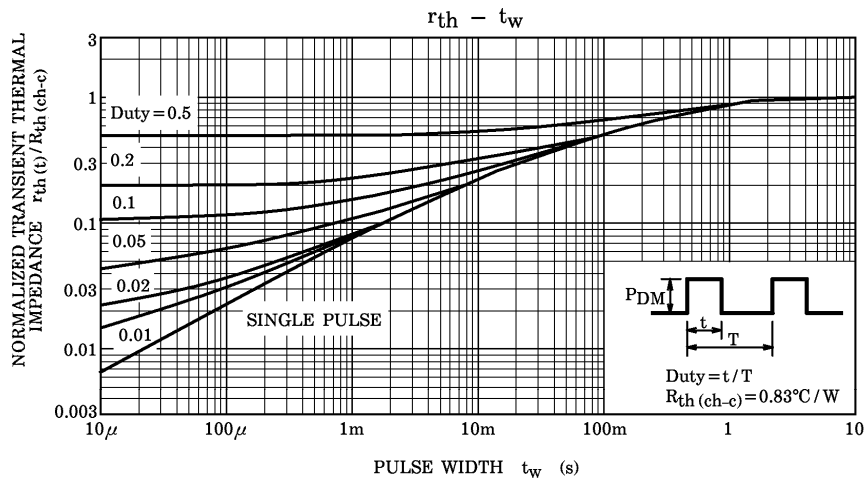
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak $I_{AR} = 10A$, $R_G = 25\Omega$
 $V_{DD} = 90V$, $L = 14.9mH$

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