

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

2SK2776

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

- Low Drain-Source ON Resistance : $R_{DS(ON)}=0.75\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}|=7.0S$ (Typ.)
- Low Leakage Current : $I_{DSS}=100\mu A$ (Max.) ($V_{DS}=500V$)
- 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}	500	V
Drain-Gate Voltage ($R_{GS}=20k\Omega$)		V_{DGR}	500	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	8	A
	Pulse	I_{DP}	32	A
Drain Power Dissipation ($T_c=25^\circ C$)		P_D	65	W
Single Pulse Avalanche Energy**		E_{AS}	312	mJ
Avalanche Current		I_{AR}	8	A
Repetitive Avalanche Energy*		E_{AR}	6.5	mJ
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55\sim 150$	$^\circ C$

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	1.92	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	83.3	$^\circ C/W$

Note ;

- * Repetitive rating ; Pulse Width Limited by Max. junction temperature.
- ** $V_{DD}=90V, T_{ch}=25^\circ C, L=8.3mH$
 $R_G=25\Omega, I_{AR}=8A$

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

INDUSTRIAL APPLICATIONS

TO-220FL Unit in mm

1. GATE
 2. DRAIN (HEAT SINK)
 3. SOURCE

JEDEC —
 EIAJ —
 TOSHIBA 2-10S1B

TO-220SM Unit in mm

1. GATE
 2. DRAIN (HEAT SINK)
 3. SOURCE

JEDEC —
 EIAJ —
 TOSHIBA 2-10S2B

Weight : 1.5g

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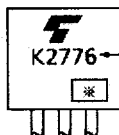
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	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 = 500V, VGS = 0V	—	—	100	μA
Drain-Source Breakdown Voltage	V(BR)DSS	ID = 10mA, VGS = 0V	500	—	—	V
Gate Threshold Voltage	Vth	VDS = 10V, ID = 1mA	2.0	—	4.0	V
Drain-Source ON Resistance	RDS(ON)	VGS = 10V, ID = 4A	—	0.75	0.85	Ω
Forward Transfer Admittance	Yfs	VDS = 10V, ID = 4A	3.5	7.0	—	S
Input Capacitance	Ciss	VDS = 10V, VGS = 0V, f = 1MHz	—	1300	—	pF
Reverse Transfer Capacitance	Crss		—	130	—	
Output Capacitance	Coss		—	400	—	
Switching Time	Rise Time	t _r		—	26	ns
	Turn-on Time	t _{on}		—	45	
	Fall Time	t _f		—	40	
	Turn-off Time	t _{off}		VIN : t _r , t _f < 5ns, Duty ≤ 1%, t _w = 10μs	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q _g	VDD = 400V, VGS = 10V, ID = 8A	—	30	—	nC
Gate-Source Charge	Q _{gs}		—	17	—	
Gate-Drain ("Miller") Charge	Q _{gd}		—	13	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	8	A
Pulse Drain Reverse Current	IDRP	—	—	—	32	A
Diode Forward Voltage	VDSF	IDR = 8A, VGS = 0V	—	—	-1.7	V
Reverse Recovery Time	t _{rr}	IDR = 8A, VGS = 0V	—	1200	—	ns
Reverse Recovery Charge	Q _{rr}	dIDR / dt = 100A / μs	—	10	—	μC

MARKING

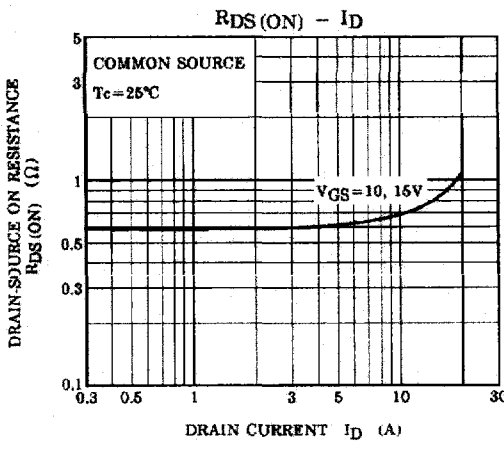
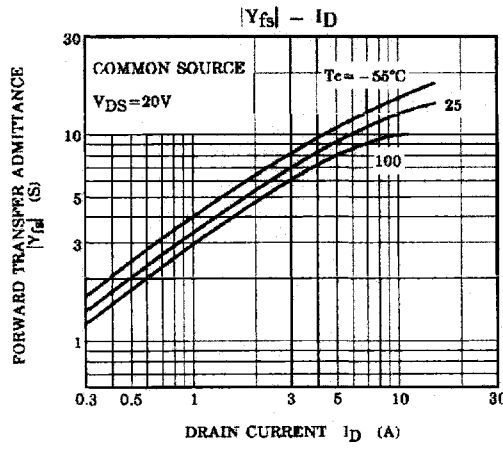
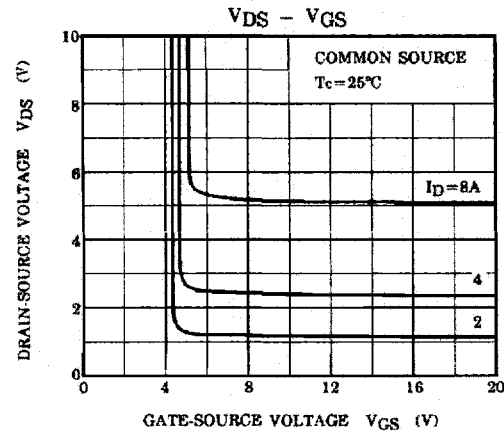
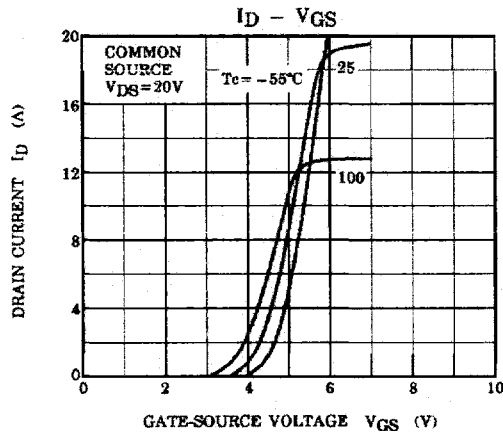
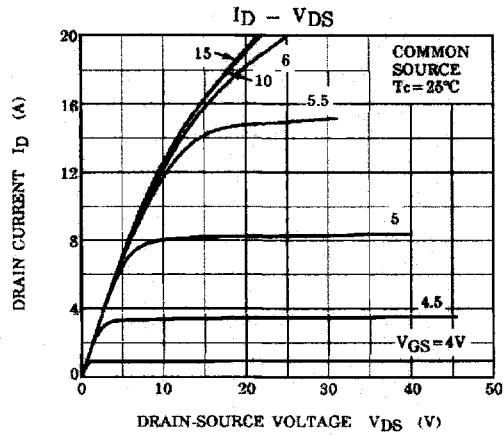
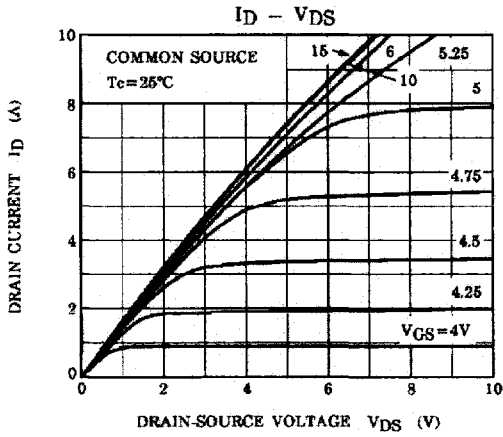


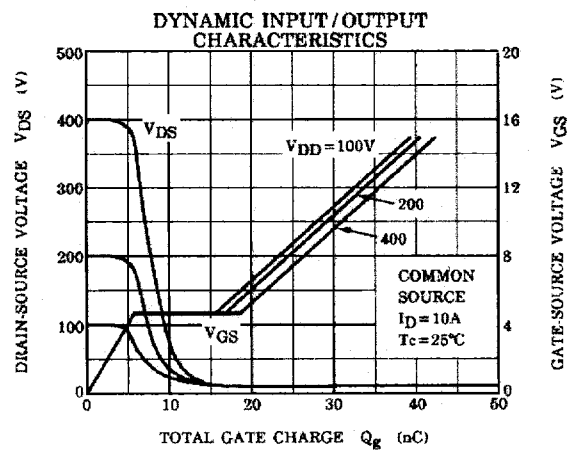
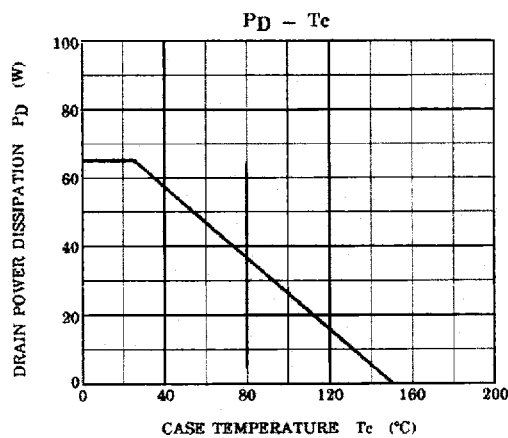
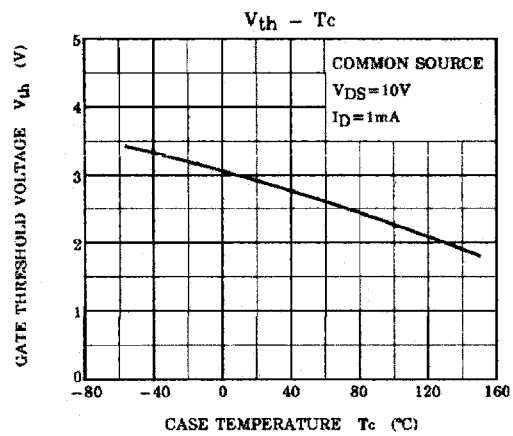
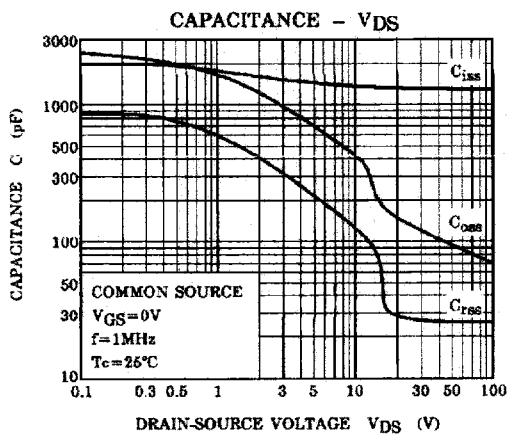
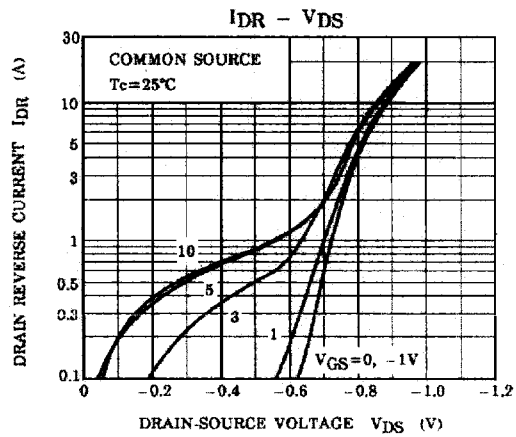
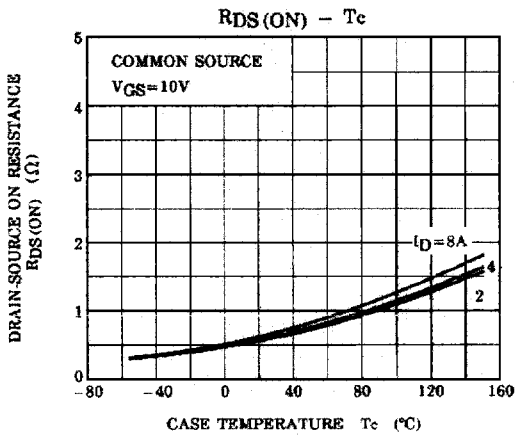
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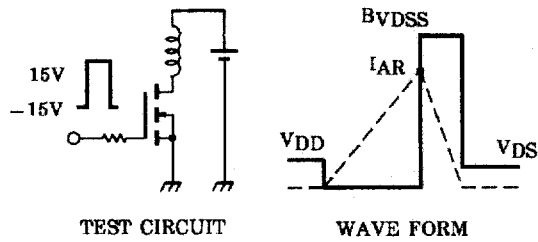
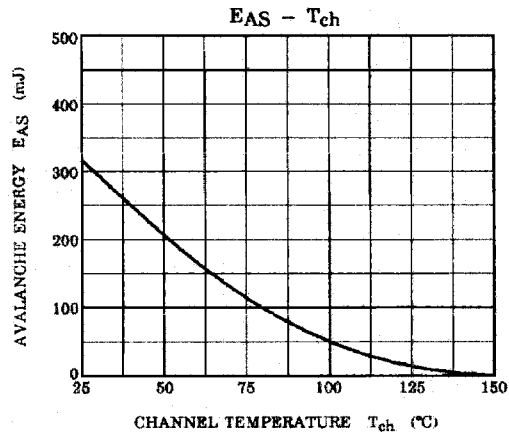
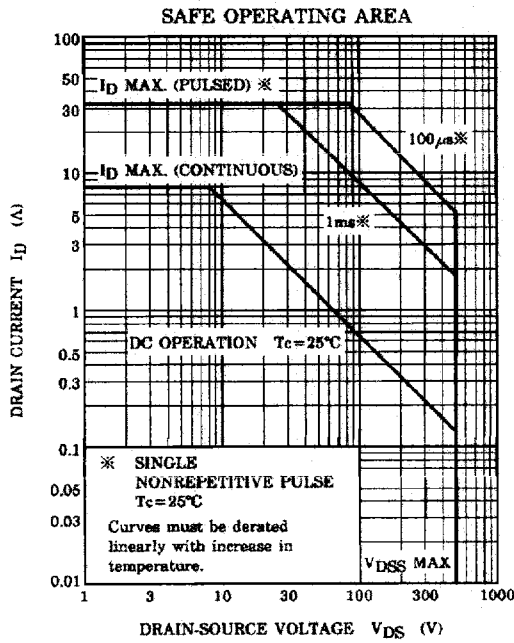
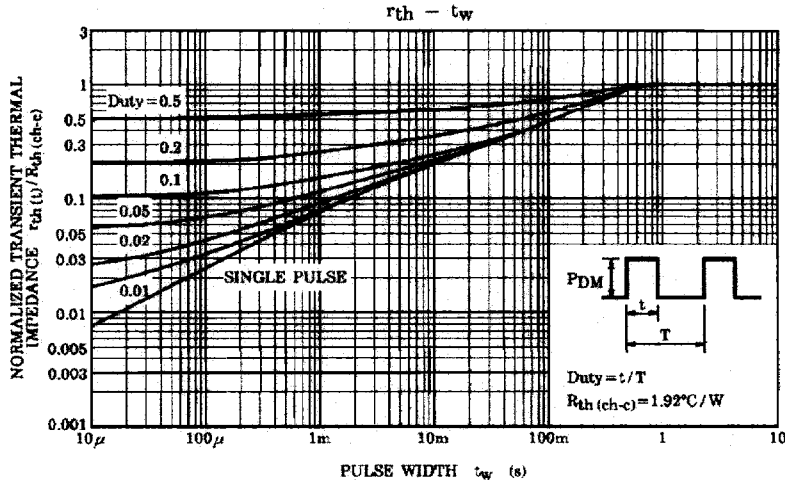


Month (Starting from Alphabet A)

Year (Last Number of the Christian Era)







Peak $I_{AR} = 8A$, $R_G = 25\Omega$
 $V_{DD} = 90V$, $L = 8.3mH$

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