

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

2SK2746

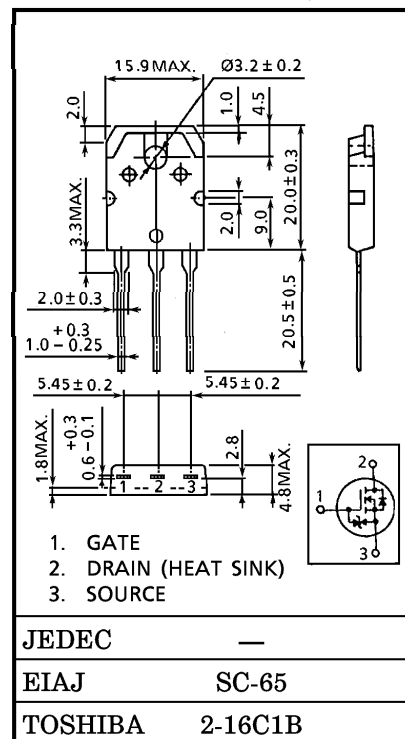
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS
Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)}=1.3\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}|=5.0S$ (Typ.)
- Low Leakage Current : $I_{DSS}=100\mu A$ (Max.) ($V_{DS}=640V$)
- 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}	800	V
Drain-Gate Voltage ($R_{GS}=20k\Omega$)		V_{DGR}	800	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	7	A
	Pulse	I_{DP}	21	A
Drain Power Dissipation ($T_c=25^\circ C$)		P_D	150	W
Single Pulse Avalanche Energy**		E_{AS}	673	mJ
Avalanche Current		I_{AR}	7	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

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.

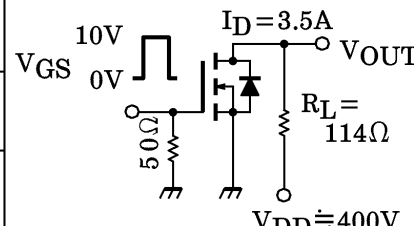
** $V_{DD}=90V$, Starting $T_{ch}=25^\circ C$, $L=24.9mH$, $R_G=25\Omega$, $I_{AR}=7A$

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

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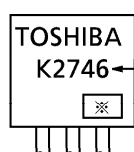
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GSS}	V _{GS} = ±30V, V _{DS} = 0V	—	—	±10	μA
Gate-Source Breakdown Voltage		V (BR) GSS	I _G = ±10μA, V _{DS} = 0V	±30	—	—	V
Drain Cut-off Current		I _{DSS}	V _{DS} = 640V, V _{GS} = 0V	—	—	100	μA
Drain-Source Breakdown Voltage		V (BR) DSS	I _D = 10mA, V _{GS} = 0V	800	—	—	V
Gate Threshold Voltage		V _{th}	V _{DS} = 10V, I _D = 1mA	2.0	—	4.0	V
Drain-Source ON Resistance		R _{DS (ON)}	V _{GS} = 10V, I _D = 3.5A	—	1.3	1.7	Ω
Forward Transfer Admittance		Y _{fs}	V _{DS} = 20V, I _D = 3.5A	1.25	5.0	—	S
Input Capacitance		C _{iss}	V _{DS} = 25V, V _{GS} = 0V f = 1MHz	—	1500	—	pF
Reverse Transfer Capacitance		C _{rss}		—	30	—	
Output Capacitance		C _{oss}		—	140	—	
Switching Time	Rise Time	t _r		—	35	—	ns
	Turn-on Time	t _{on}		—	80	—	
	Fall Time	t _f		—	50	—	
	Turn-off Time	t _{off}		V _{IN} : t _r , t _f < 5ns, Duty ≤ 1%, t _w = 10μs	—	220	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q _g	V _{DD} ≐ 400V, V _{GS} = 10V	—	55	—	nC
Gate-Source Charge		Q _{gs}	I _D = 7A	—	30	—	
Gate-Drain ("Miller") Charge		Q _{gd}		—	25	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	7	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	21	A
Diode Forward Voltage	V _{DSF}	I _{DR} = 7A, V _{GS} = 0V	—	—	-1.9	V
Reverse Recovery Time	t _{rr}	I _{DR} = 7A, V _{GS} = 0V	—	1300	—	ns
Reverse Recovery Charge	Q _{rr}	dI _{DR} / dt = 100A / μs	—	14	—	μC

MARKING

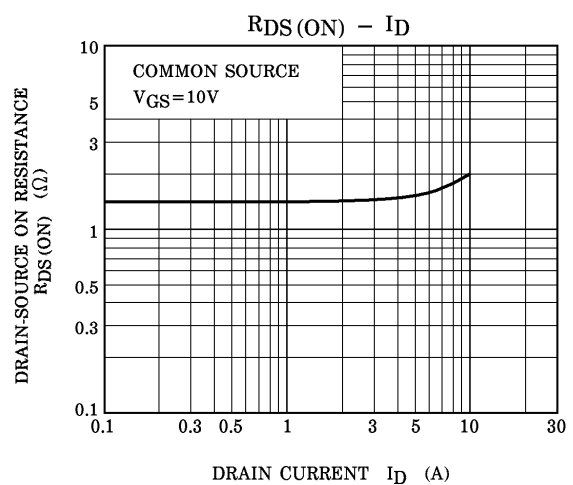
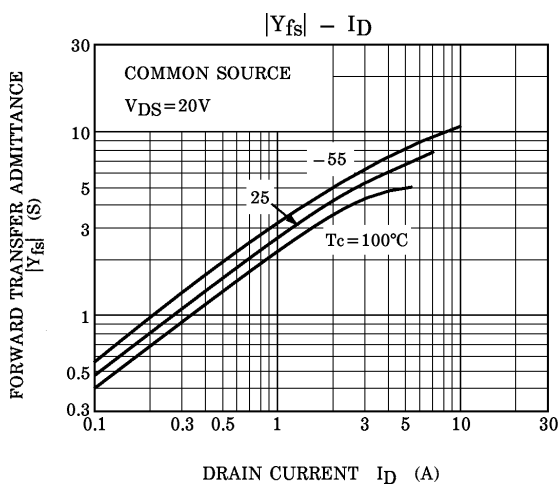
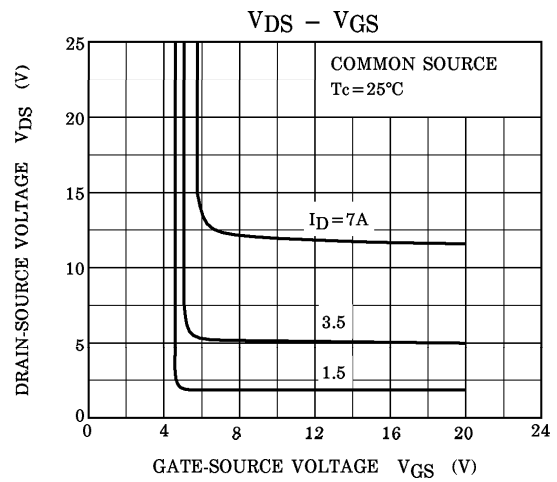
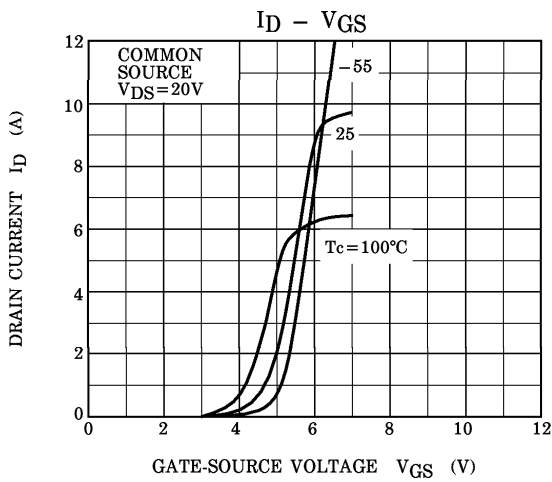
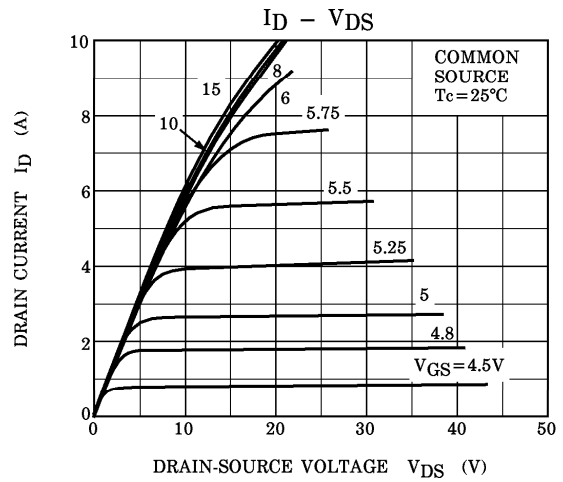
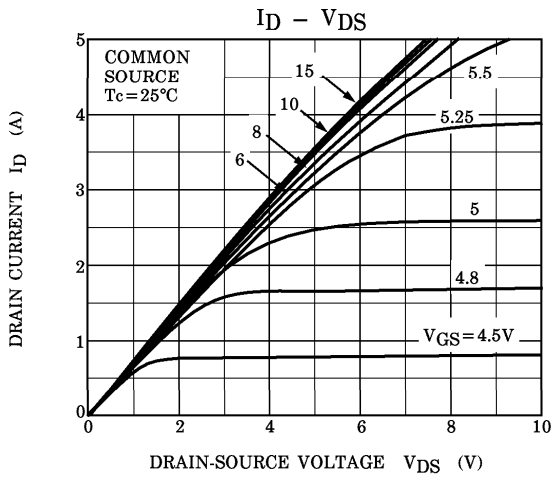


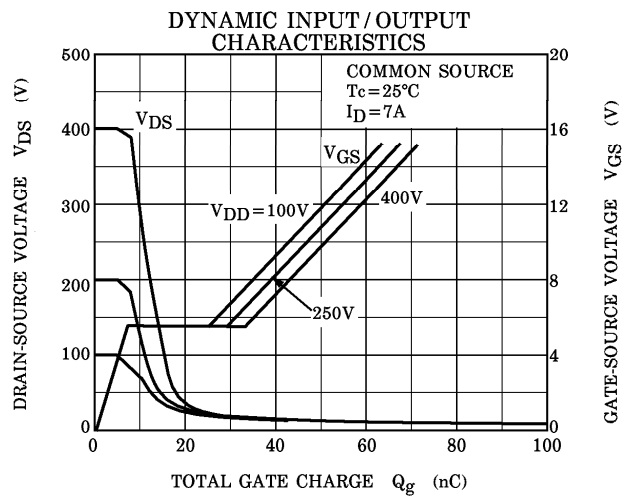
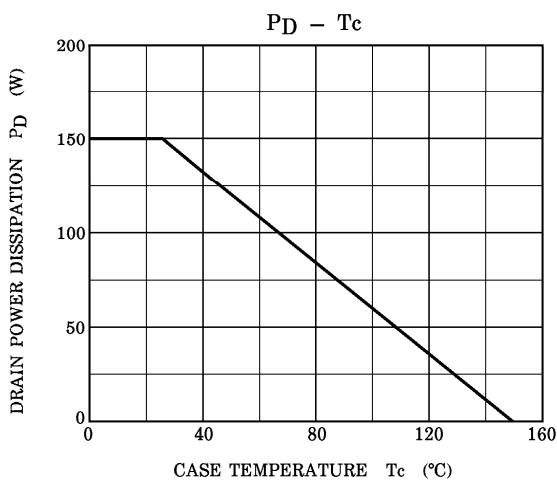
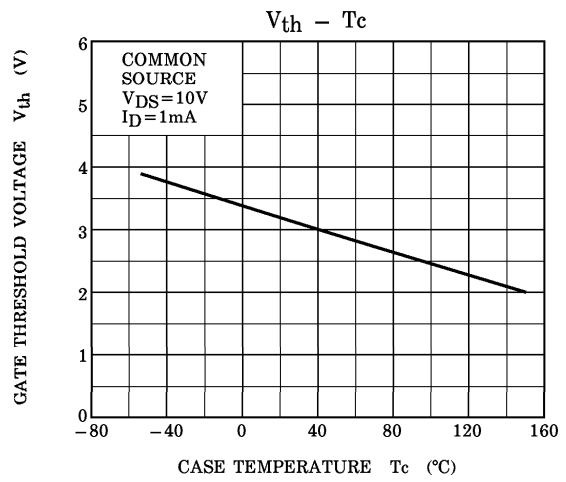
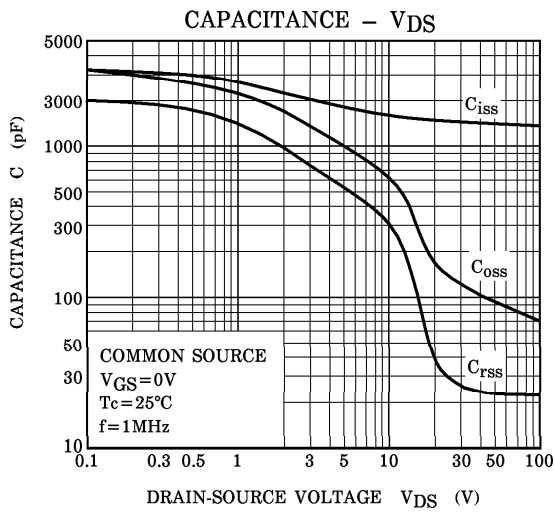
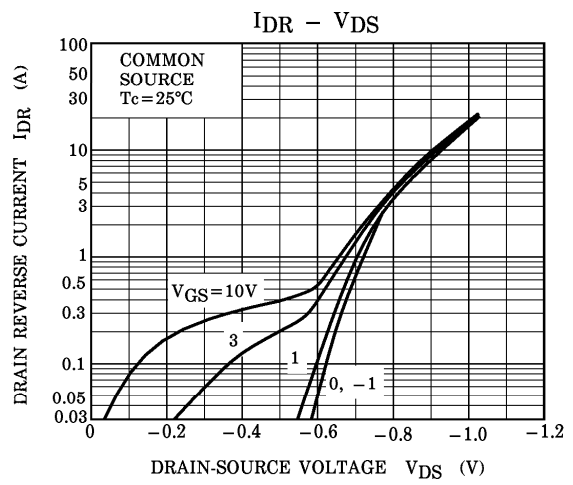
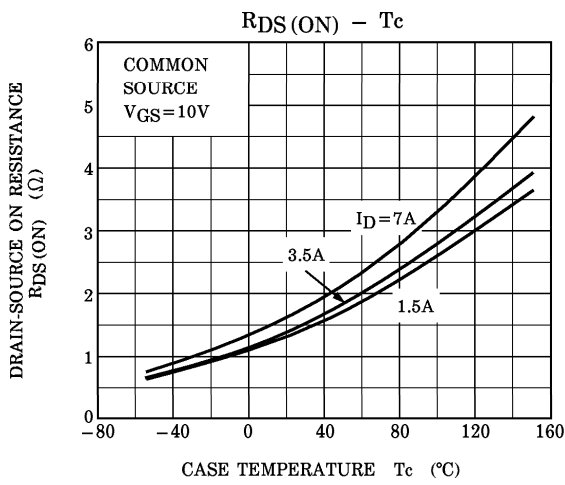
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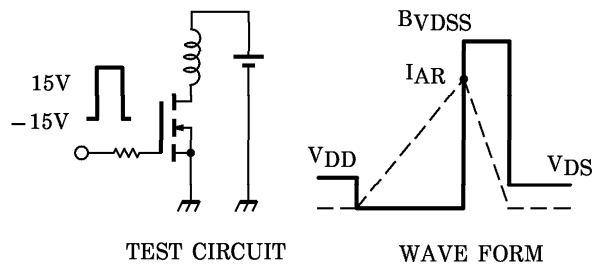
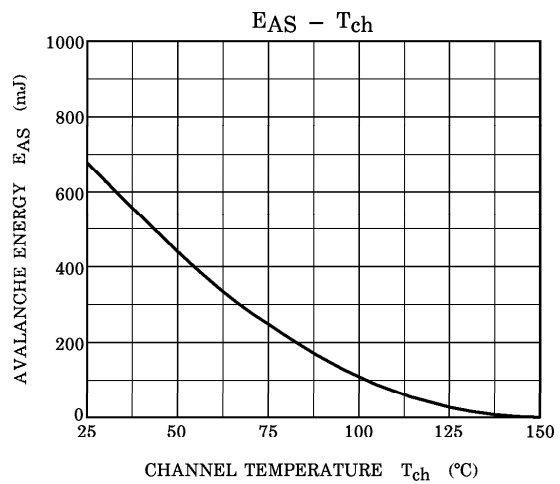
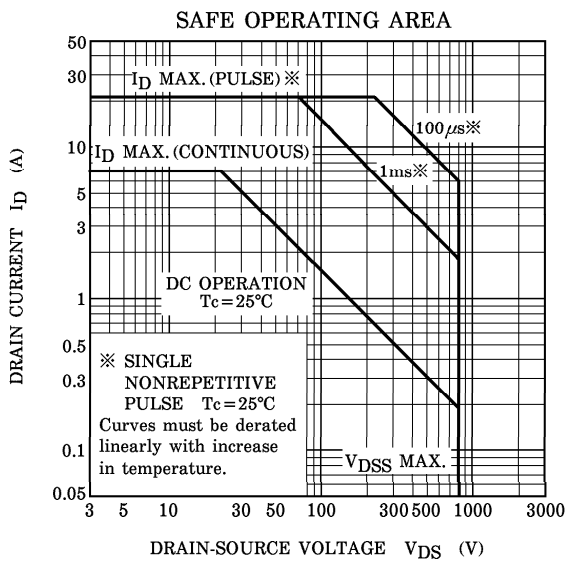
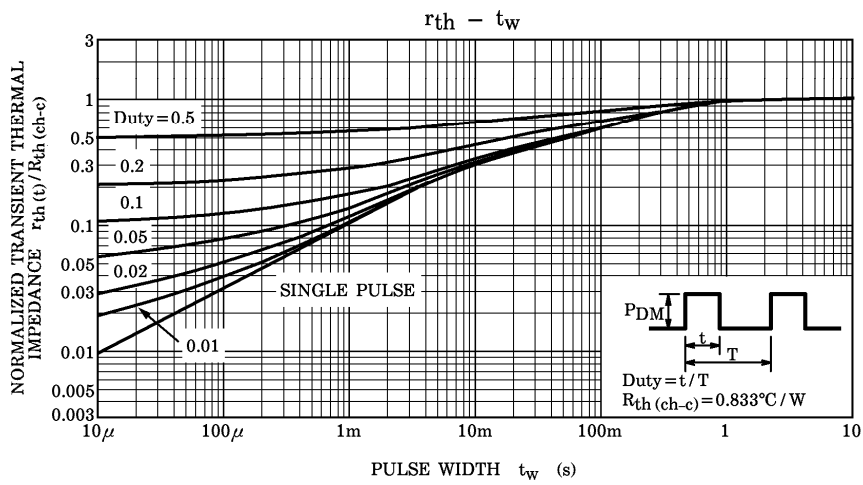
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak $I_{AR} = 7\text{A}$, $R_G = 25\Omega$
 $V_{DD} = 90\text{V}$, $L = 24.9\text{mH}$

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