TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π-MOSII^{-5})

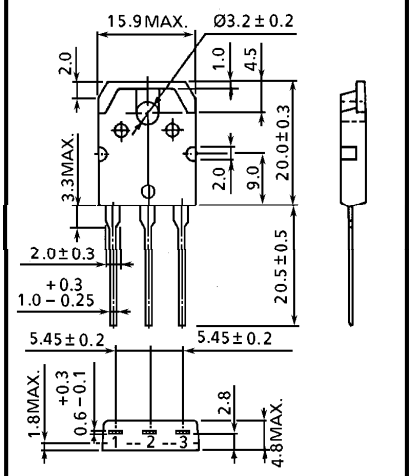
2SK1120

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

INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS\,(ON)}=1.5\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}|=4.0S$ (Typ.)
- Low Lekage Current : $I_{DSS}=300\mu A$ (Max.) ($V_{DS}=800V$)
- Enhancement-Mode : $V_{th}=1.5\sim3.5V$ ($V_{DS}=10V$, $I_D=1mA$)



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

JEDEC	—
EIAJ	SC-65
TOSHIBA	2-16C1B

Weight : 4.6g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	1000	V
Drain-Gate Voltage ($R_{GS}=20k\Omega$)		V_{DGR}	1000	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	DC	I_D	8	A
	Pulse	I_{DP}	24	
Drain Power Dissipation (Tc=25°C)		P_D	150	W
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

THERMAL CHARACTERISTICS

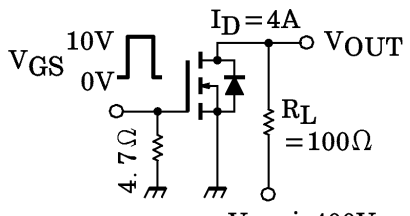
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th\,(ch-c)}$	0.833	°C / W
Thermal Resistance, Channel to Ambient	$R_{th\,(ch-a)}$	50	°C / W

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

961001EAA2

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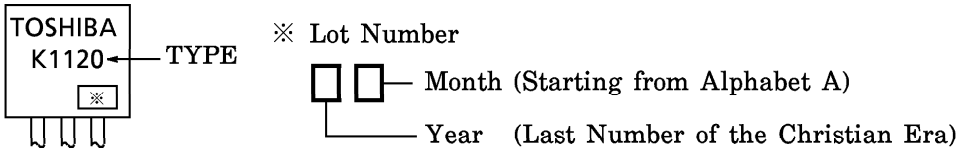
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS}=\pm20V$, $V_{DS}=0V$	—	—	±100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS}=800V$, $V_{GS}=0V$	—	—	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)\,DSS}$	$I_D=10mA$, $V_{GS}=0V$	1000	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS}=10V$, $I_D=1mA$	1.5	—	3.5	V
Drain-Source ON Resistance		$R_{DS\,(ON)}$	$V_{GS}=10V$, $I_D=4A$	—	1.5	1.8	Ω
Forward Transfer Admittance		$\|Y_{fs}\|$	$V_{DS}=20V$, $I_D=4A$	2.0	4.0	—	S
Input Capacitance		C_{iss}	$V_{DS}=25V$, $V_{GS}=0V$, f=1MHz	—	1300	—	pF
Reverse Transfer Capacitance		C_{rss}		—	100	—	
Output Capacitance		C_{oss}		—	180	—	
Switching Time	Rise Time	t_r	 V_{IN} : t_r, $t_f<5ns$, Duty ≦ 1%, $t_w=10\mu s$	—	25	—	ns
	Turn-on Time	t_{on}		—	40	—	
	Fall Time	t_f		—	20	—	
	Turn-off Time	t_{off}		—	100	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD}\fallingdotseq400V$, $V_{GS}=10V$, $I_D=8A$	—	120	—	nC
Gate-Source Charge		Q_{gs}		—	70	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	50	—	

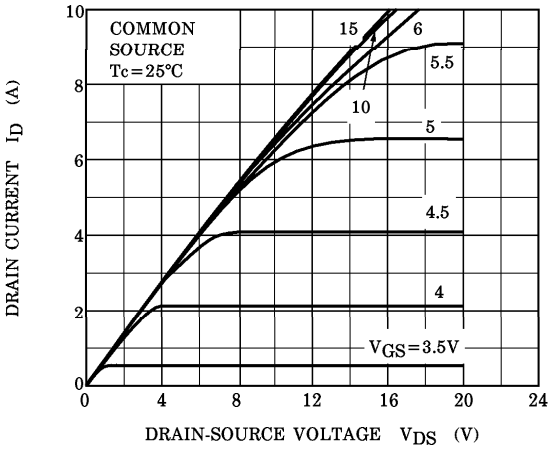
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	8	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	24	A
Diode Forward Voltage	V_{DSF}	$I_{DR}=8A$, $V_{GS}=0V$	—	—	−1.9	V

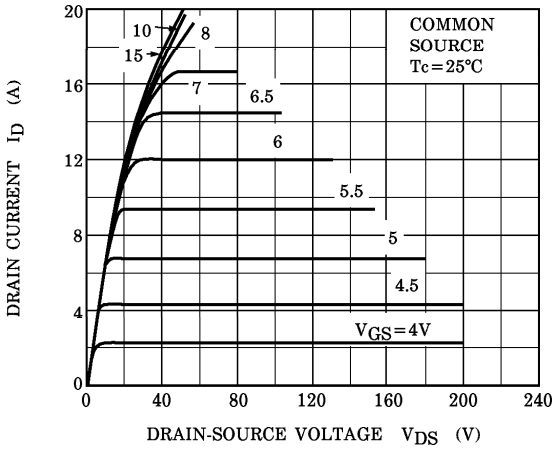
MARKING



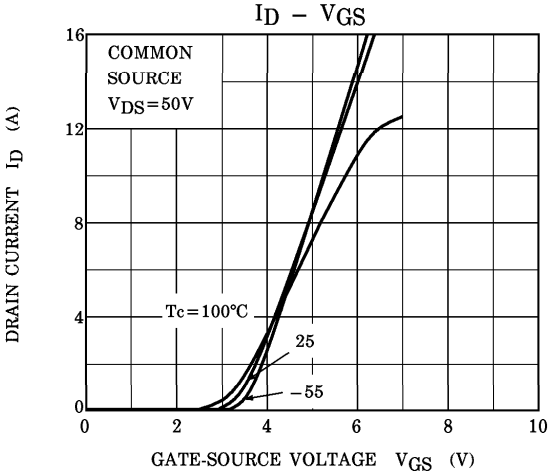
$I_D - V_{DS}$



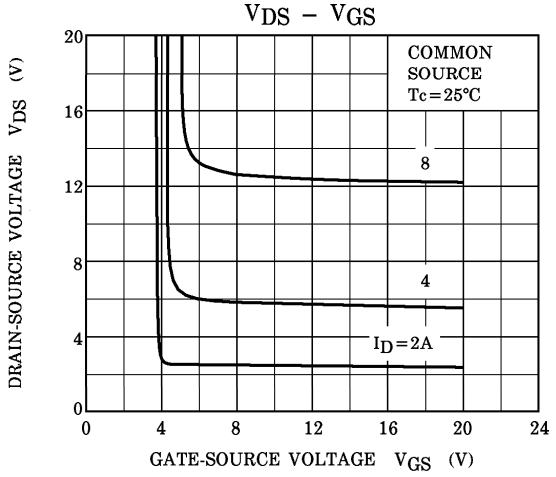
$I_D - V_{DS}$



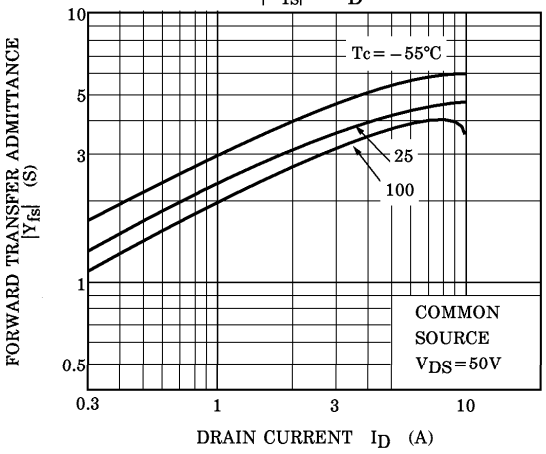
$I_D - V_{GS}$



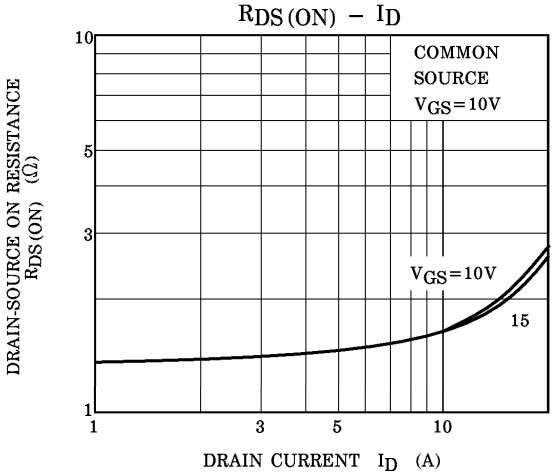
$V_{DS} - V_{GS}$



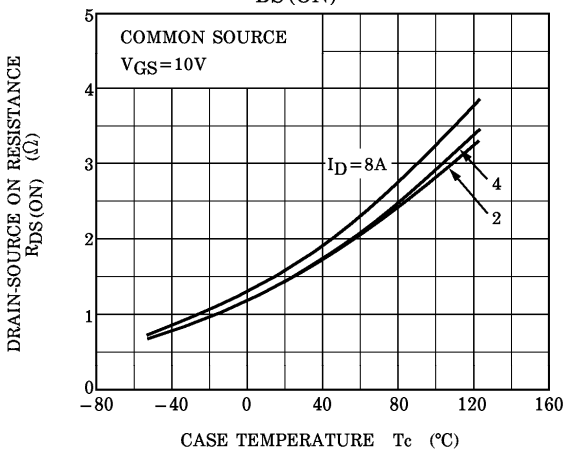
$|Y_{fs}| - I_D$



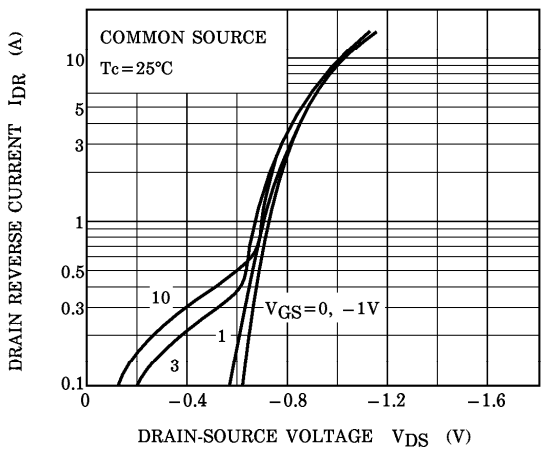
$R_{DS(ON)} - I_D$



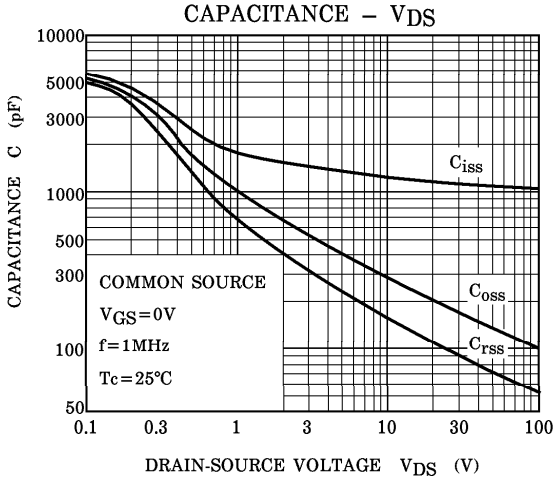
$R_{DS(ON)}$ – Tc



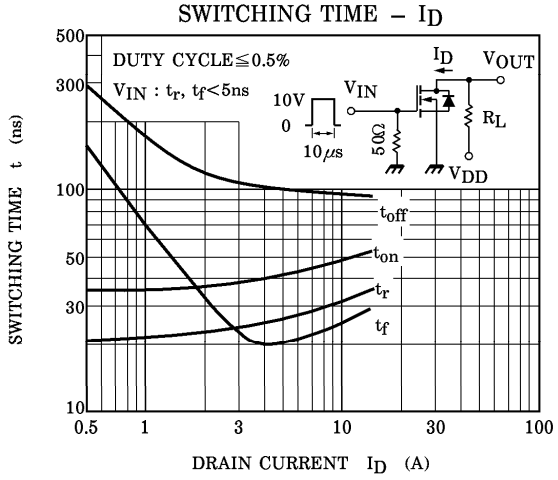
I_{DR} – V_{DS}



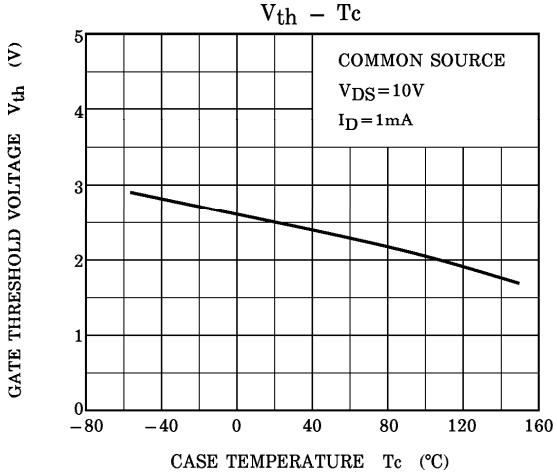
CAPACITANCE – V_{DS}



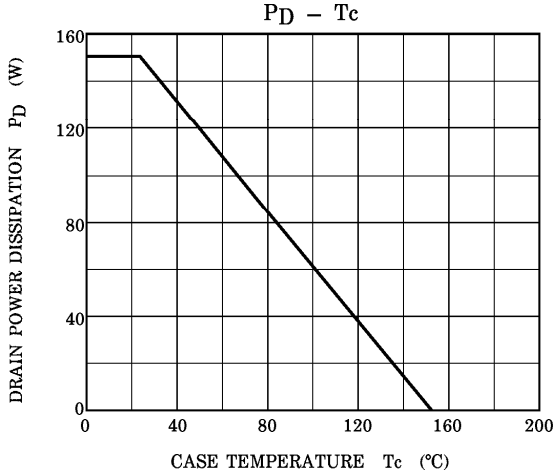
SWITCHING TIME – I_D



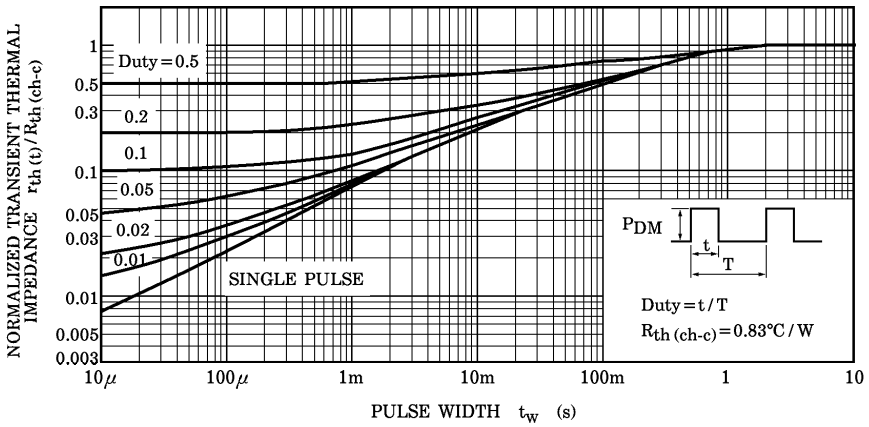
V_{th} – Tc



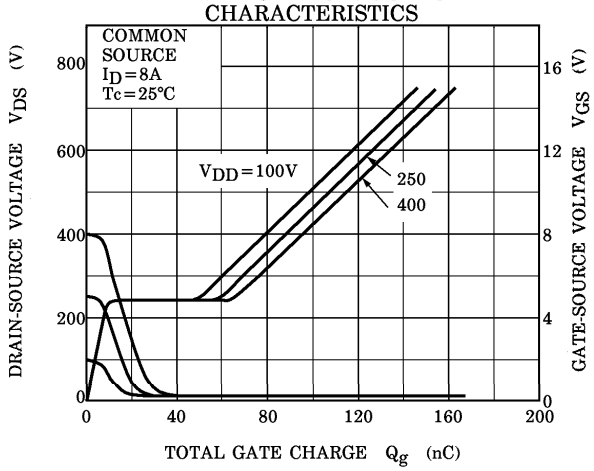
P_D – Tc



r_{th} – t_w



DYNAMIC INPUT/OUTPUT CHARACTERISTICS



SAFE OPERATING AREA

