

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE ( $\pi$ -MOSII·5)

# 2SK1120

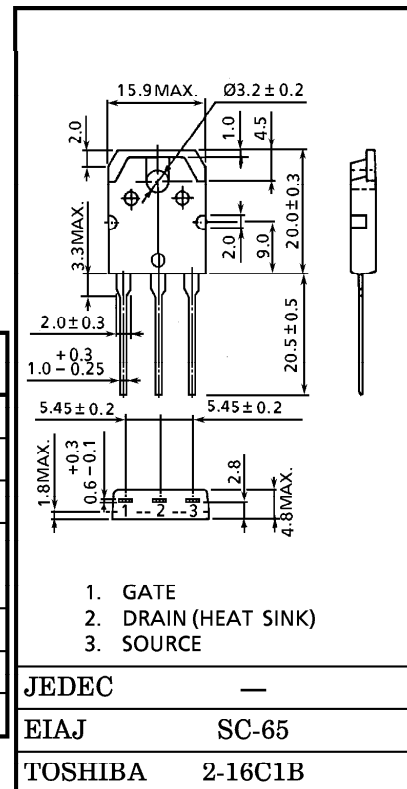
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS  
DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

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 Leakage Current :  $I_{DSS} = 300\mu A$  (Max.) @  $V_{DS} = 800V$
- Enhancement-Mode :  $V_{th} = 1.5\sim 3.5V$  @  $V_{DS} = 10V, I_D = 1mA$

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

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		$V_{GSS}$	$\pm 20$	V
Drain Current	DC	$I_D$	8	A
	Pulse	$I_{DP}$	24	
Drain Power Dissipation ( $T_c = 25^\circ C$ )		$P_D$	150	W
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	$^\circ C / W$

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

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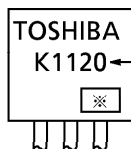
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGSS	VGS = ±20V, VDS = 0V	—	—	±100	nA
Drain Cut-off Current		IDSS	VDS = 800V, VGS = 0V	—	—	300	μA
Drain-Source Breakdown Voltage		V(BR)DSS	ID = 10mA, VGS = 0V	1000	—	—	V
Gate Threshold Voltage		Vth	VDS = 10V, ID = 1mA	1.5	—	3.5	V
Drain-Source ON Resistance		RDS(ON)	ID = 4A, VGS = 10V	—	1.5	1.8	Ω
Forward Transfer Admittance		Yfs	VDS = 20V, ID = 4A	2.0	4.0	—	S
Input Capacitance		Ciss	VDS = 25V, VGS = 0V, f = 1MHz	—	1300	1800	pF
Reverse Transfer Capacitance		Crss		—	100	150	
Output Capacitance		Coss		—	180	260	
Switching Time	Rise Time	tr	<p> <math>V_{GS} = 10V</math>  <math>I_D = 4A</math>  <math>R_L = 100\Omega</math>  <math>V_{IN} : t_r, t_f &lt; 5ns, V_{DD} \approx 400V</math>                      Duty <math>\leq 1\%</math>, <math>t_w = 10\mu s</math> </p>	—	25	50	ns
	Turn-on Time	t <sub>on</sub>		—	40	80	
	Fall Time	t <sub>f</sub>		—	20	40	
	Turn-off Time	t <sub>off</sub>		—	100	200	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD ≈ 400V, VGS = 10V, ID = 8A	—	120	240	nC
Gate-Source Charge		Qgs		—	70	—	
Gate-Drain ("Miller") Charge		Qgd		—	50	—	

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	—	—	—	24	A
Diode Forward Voltage	VDSF	IDR = 8A, VGS = 0V	—	—	-1.9	V

MARKING



TYPE

※ Lot Number



Month (Starting from Alphabet A)

Year (Last Number of the Christian Era)

