

SEMICONDUCTOR
TOSHIBA
 TECHNICAL DATA

TOSHIBA FIELD EFFECT TRANSISTOR
2SK1120
 SILICON N CHANNEL MOS TYPE
 (π - MOS II · 5)

(2SK1120)

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

- 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 ($T_a = 25^\circ C$)

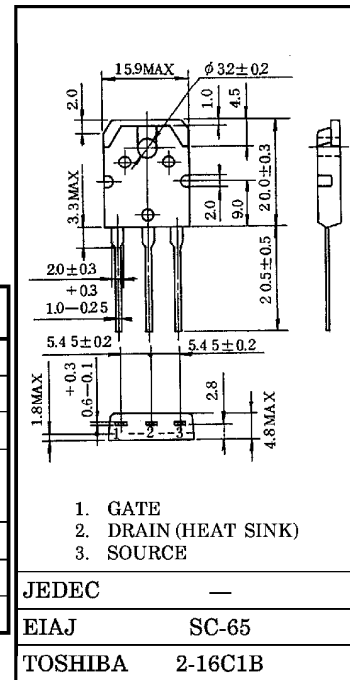
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	1000	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	1000	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	8	A
	Pulse	I_{DP}	24	
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	150	W
Channel Temperature		T_{ch}	150	$^\circ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

THEMAL 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.

INDUSTRIAL APPLICATIONS
 Unit in mm

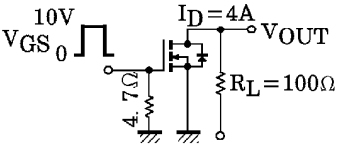


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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	—	—	± 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		$R_{DS(ON)}$	$I_D = 4A, V_{GS} = 10V$	—	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	1800	pF
Reverse Transfer Capacitance		C_{rss}		—	100	150	
Output Capacitance		C_{oss}		—	180	260	
Switching Time	Rise Time	t_r	 $V_{IN} : t_r, t_f < 5ns, V_{DD} = 400V$ Duty $\leq 1\%, t_w = 10\mu s$	—	25	50	ns
	Turn-on Time	t_{on}		—	40	80	
	Fall Time	t_f		—	20	40	
	Turn-off Time	t_{off}		—	100	200	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 400V, V_{GS} = 10V, I_D = 8A$	—	120	240	nC
Gate-Source Charge		Q_{gs}		—	70	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	50	—	

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

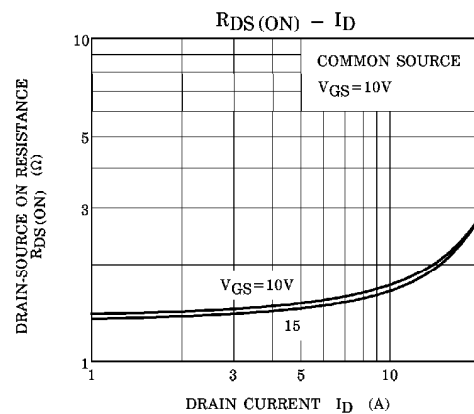
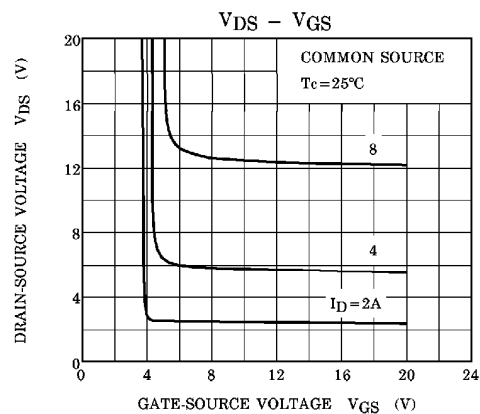
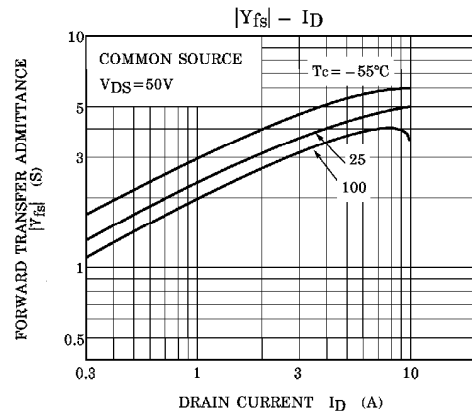
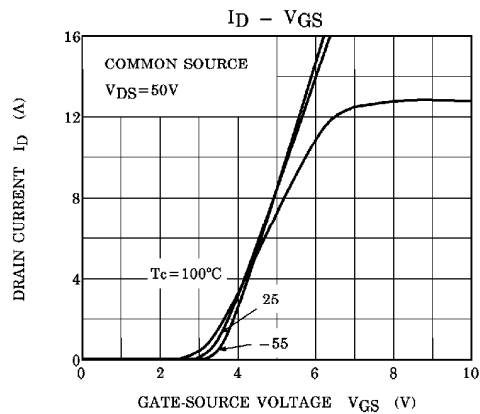
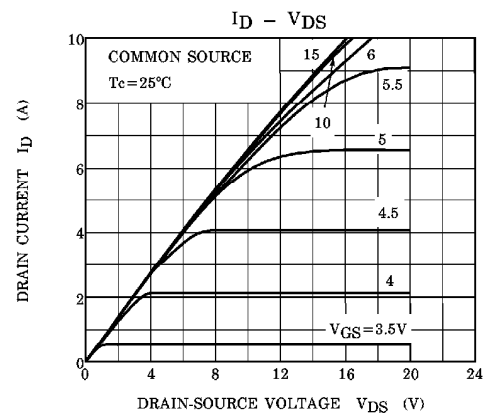
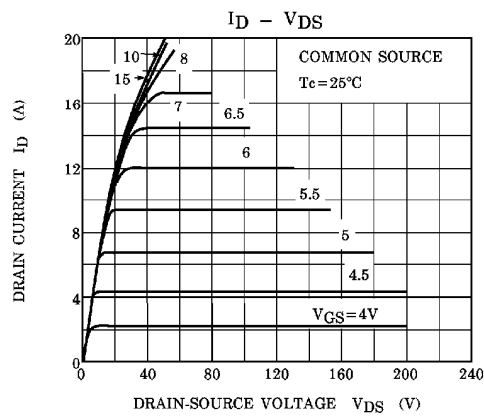
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	8	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	24	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 8A, V_{GS} = 0V$	—	—	—1.9	V

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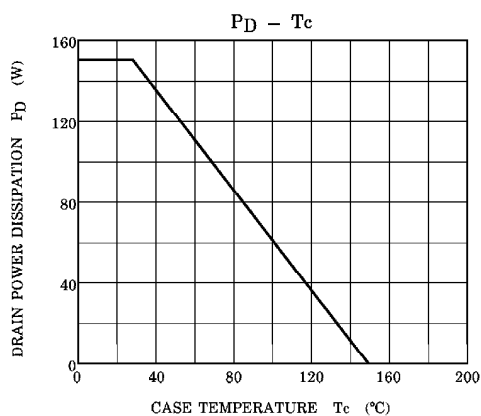
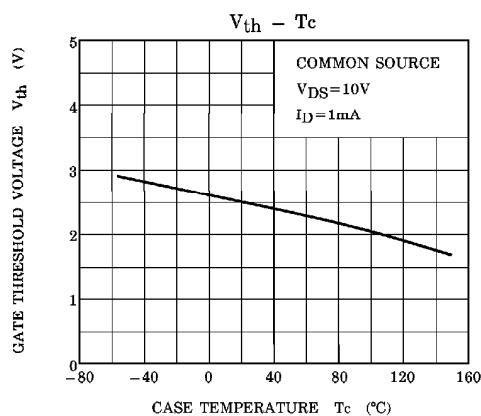
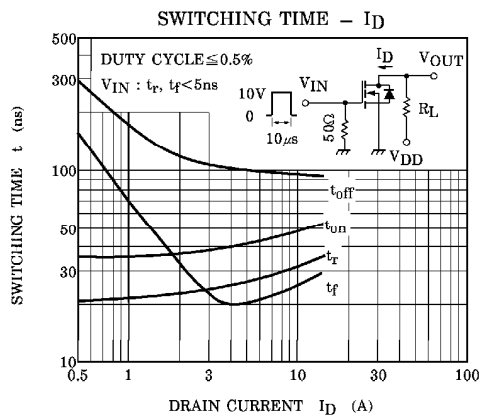
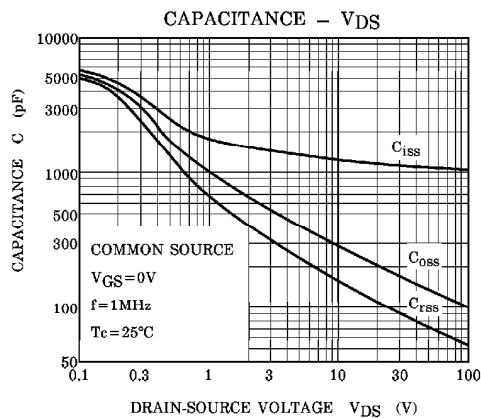
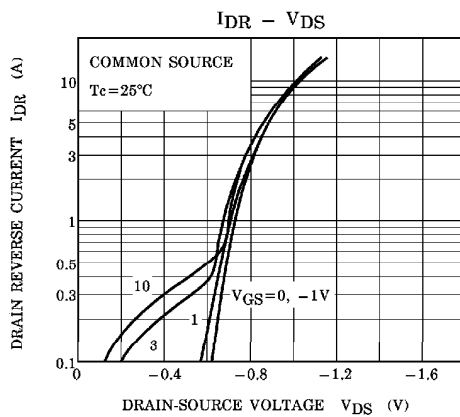
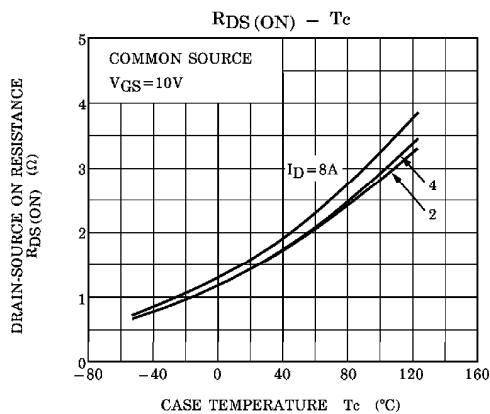
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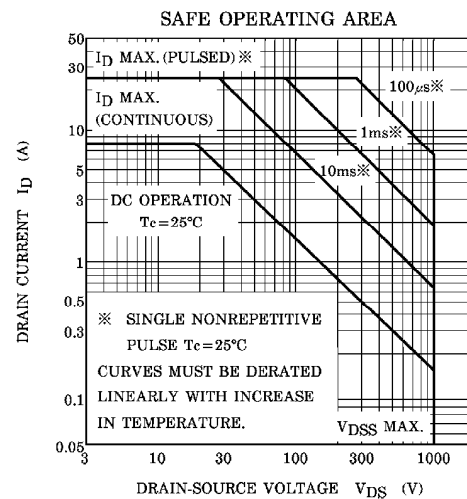
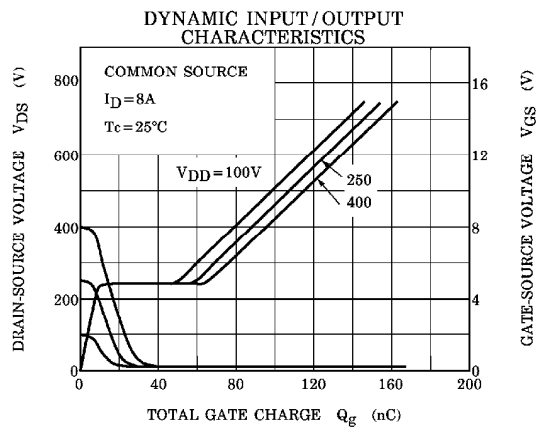
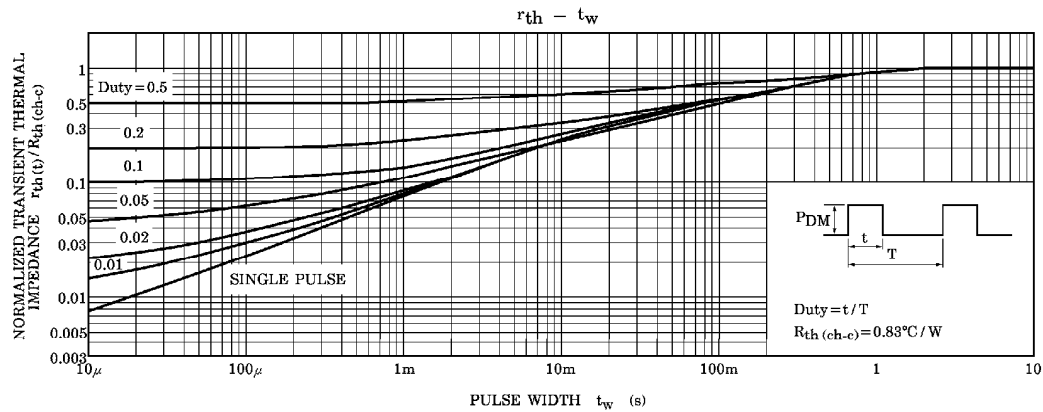
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