

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π -MOSII)**2SK1642**

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

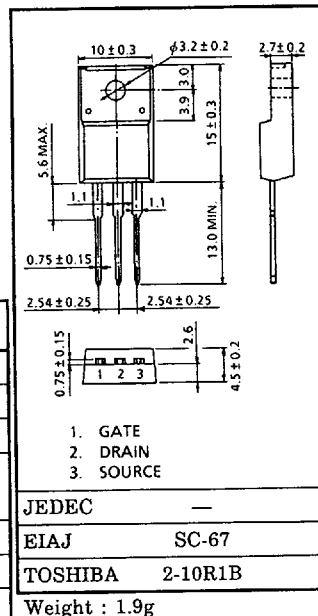
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.35\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 5.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 300\mu A$ (Max.) @ $V_{DS} = 400V$
- 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}	400	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	400	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	9	A
	Pulse	I_{DP}	36	
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	45	W
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$



THERMAL CHARACTERISTICS

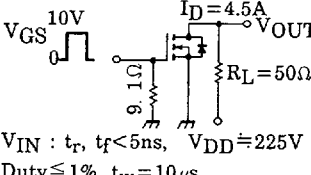
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	2.77	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	$^\circ C/W$

THIS TRANSISTOR IS AN ELECTROSTATIC SENSITIVE DEVICE. PLEASE HANDLE WITH CAUTION.

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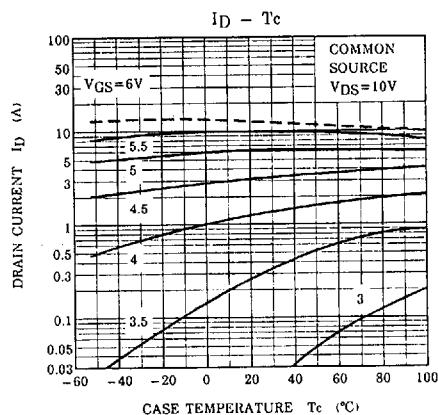
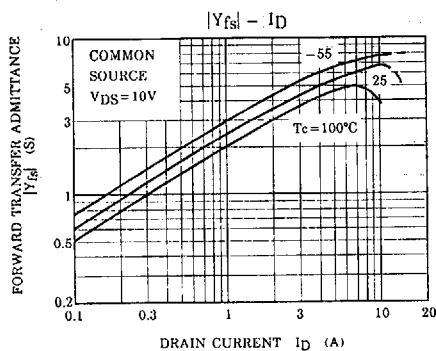
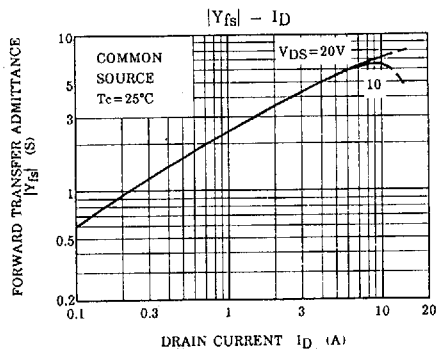
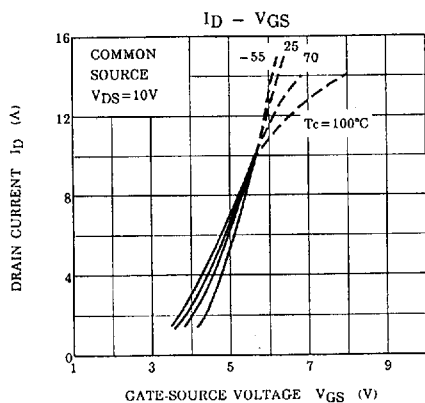
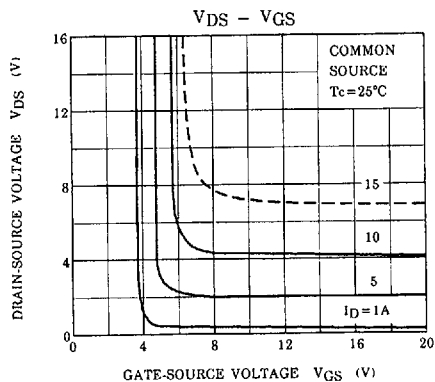
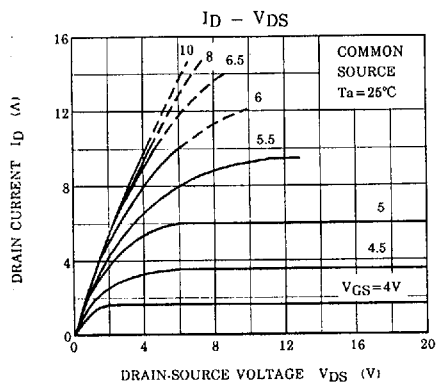
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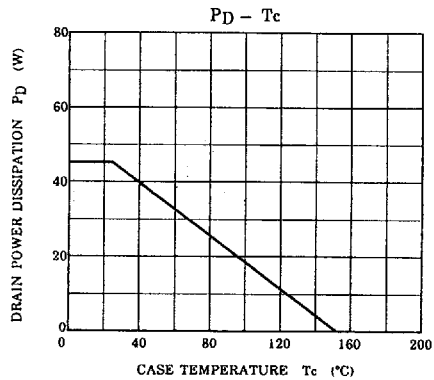
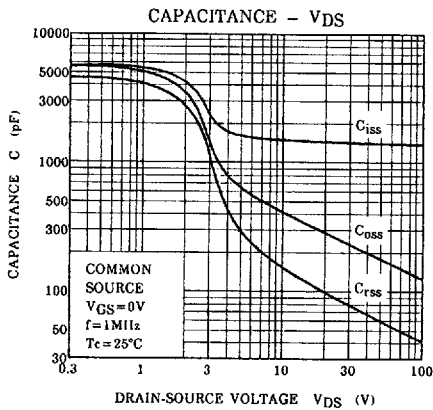
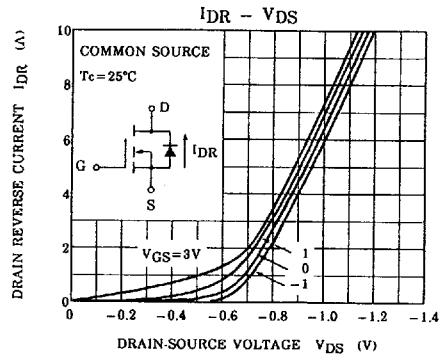
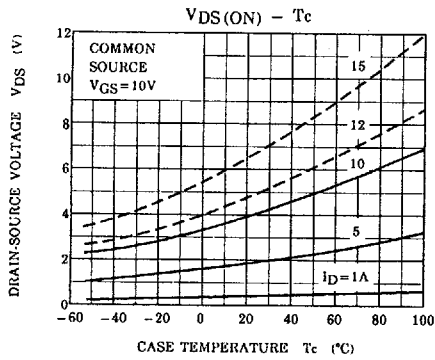
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

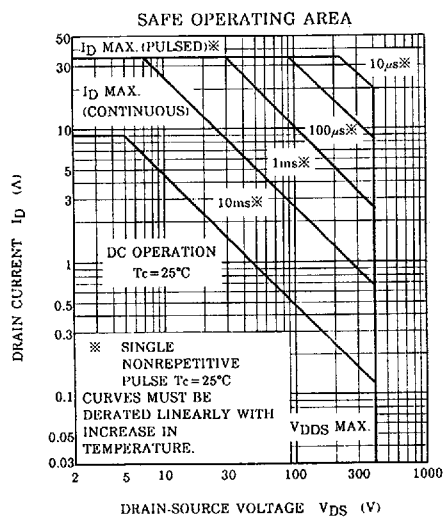
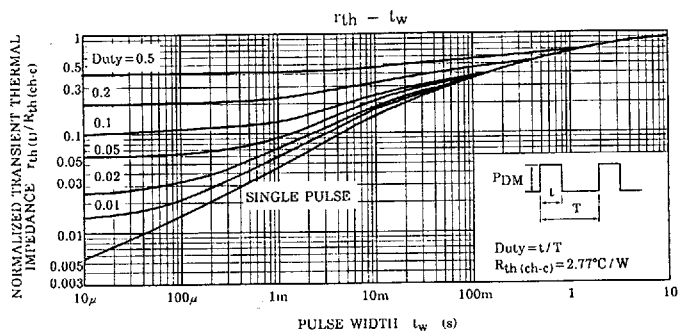
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 25V, V_{DS} = 0V$	—	—	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 400V, V_{GS} = 0V$	—	—	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0V$	400	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 1mA$	2.0	—	4.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 5A$	—	0.35	0.55	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 5A$	3.0	5.0	—	S
Input Capacitance		C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$	—	1250	—	pF
Reverse Transfer Capacitance		C_{rss}		—	55	—	
Output Capacitance		C_{oss}		—	170	—	
Switching Time	Rise Time	t_r	 $V_{IN} : t_r, t_f < 5ns, V_{DD} = 225V$ Duty $\leq 1\%, t_w = 10\mu s$	—	25	—	ns
	Turn-on Time	t_{on}		—	40	—	
	Fall Time	t_f		—	32	—	
	Turn-off Time	t_{off}		—	100	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 320V, V_{GS} = 10V, I_D = 9A$	—	55	—	nC
Gate-Source Charge		Q_{gs}		—	32	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	23	—	

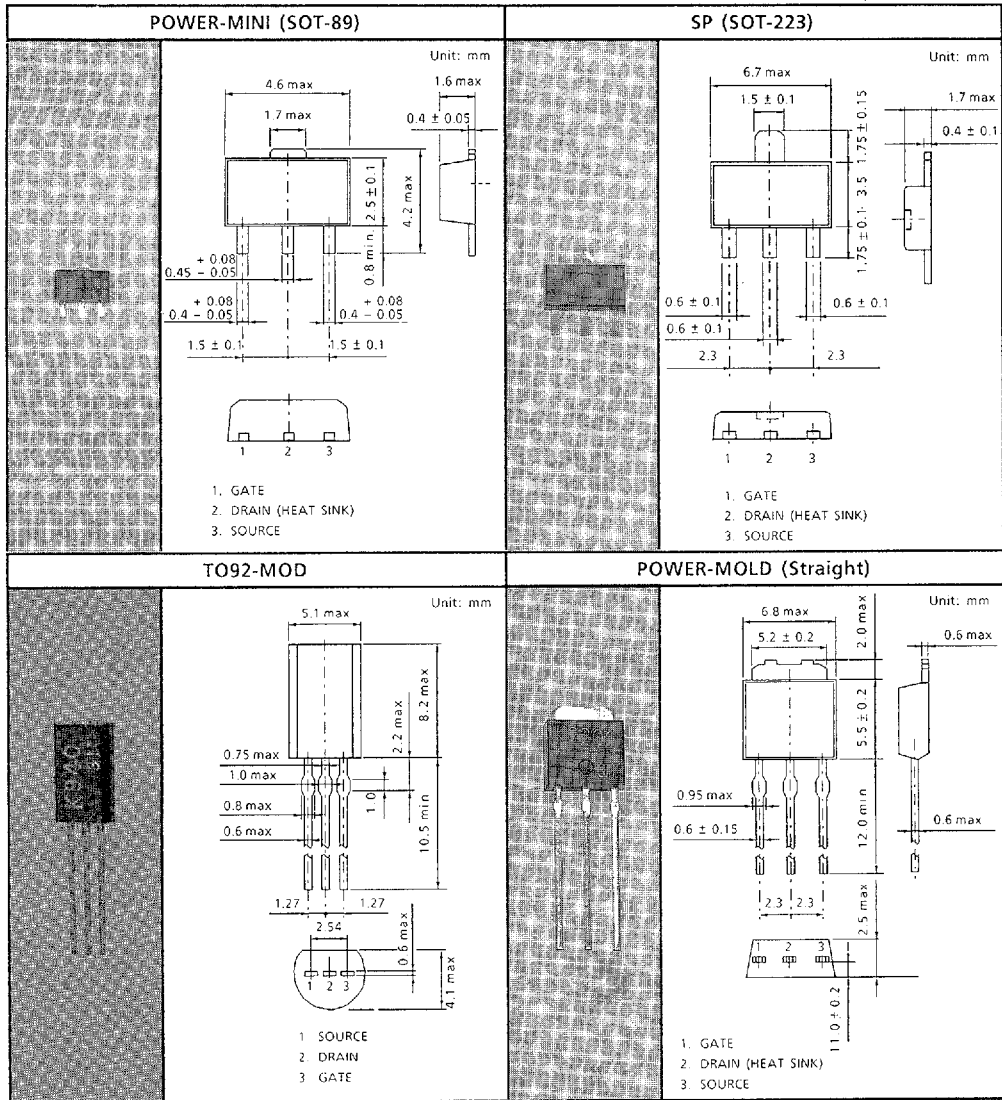
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

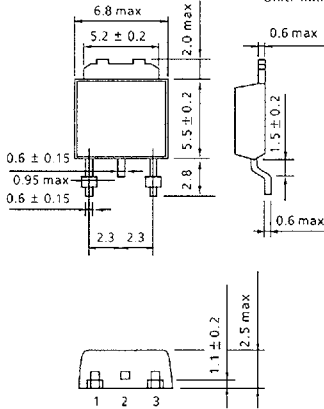
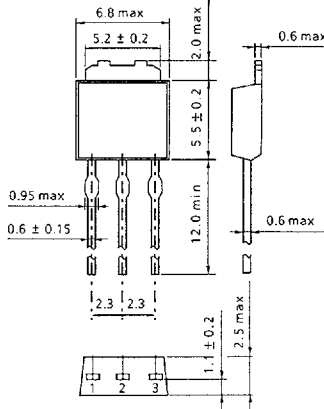
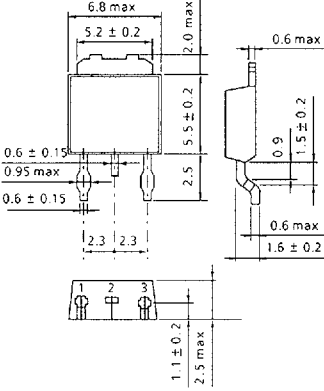
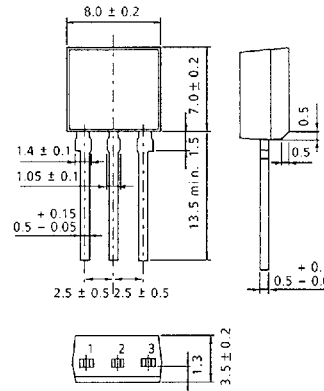
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	9	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	36	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 9A, V_{GS} = 0V$	—	-1.2	-2.0	V









POWER-MOLD (Lead Formed)	DP (Straight)
  Unit: mm 1. GATE 2. DRAIN (HEAT SINK) 3. SOURCE	  1. GATE 2. DRAIN (HEAT SINK) 3. SOURCE
DP (Lead Forming)	TPS
  1. GATE 2. DRAIN (HEAT SINK) 3. SOURCE	  1. SOURCE 2. DRAIN 3. GATE

