

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π -MOSII⁵)

2SK2319

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS.

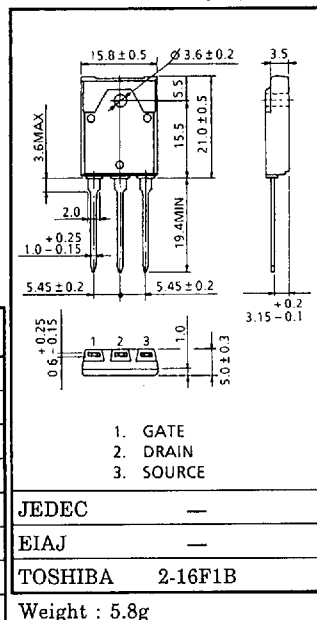
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 1.4\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 2.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 300\mu A$ (Max.) ($V_{DS} = 640V$)
- 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_{DS}	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
	Pulse	I_{DP}	21
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	80	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ C$



THERMAL CHARACTERISTICS

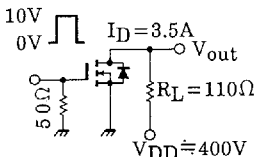
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel To Case	$R_{th(ch-c)}$	1.39	$^\circ C/W$
Thermal Resistance, Channel To Ambient	$R_{th(ch-a)}$	41.6	$^\circ C/W$

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

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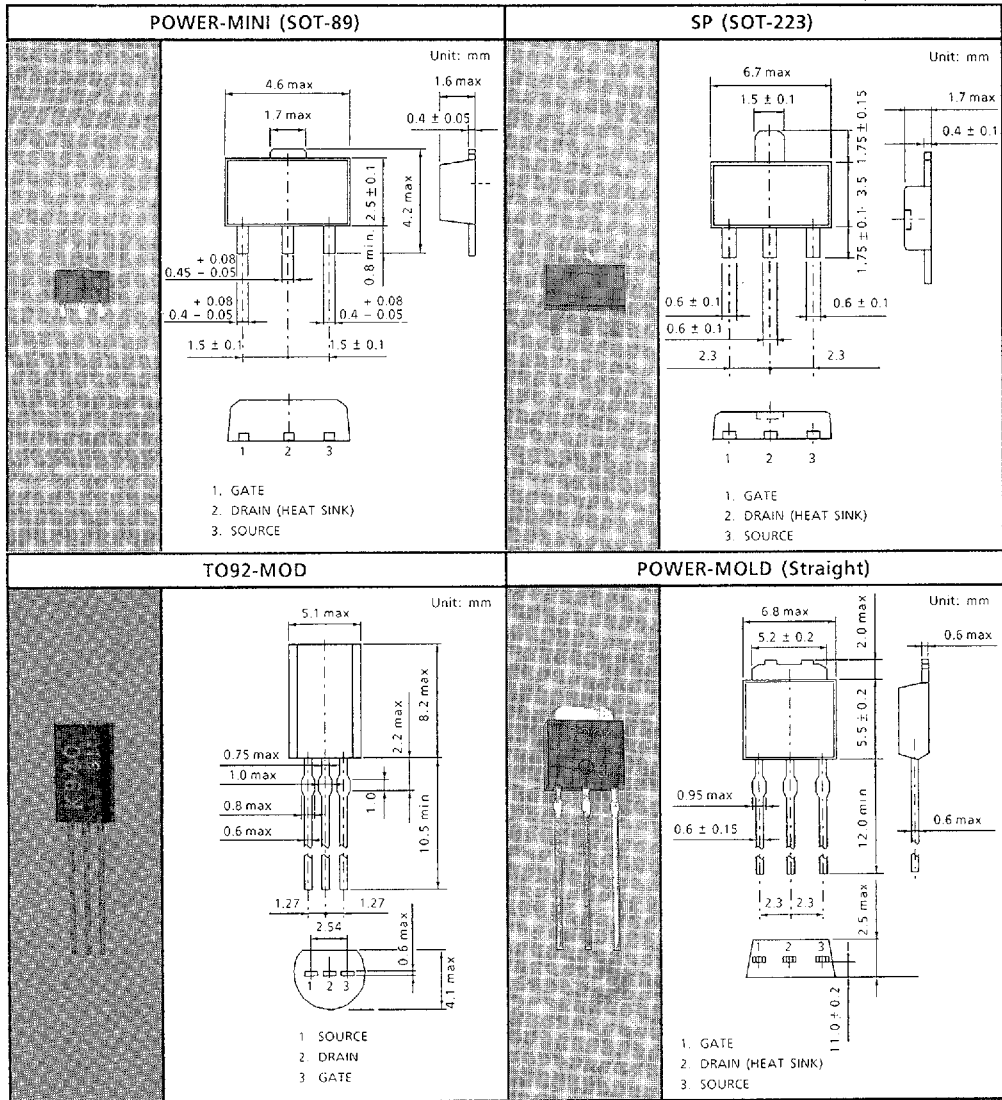
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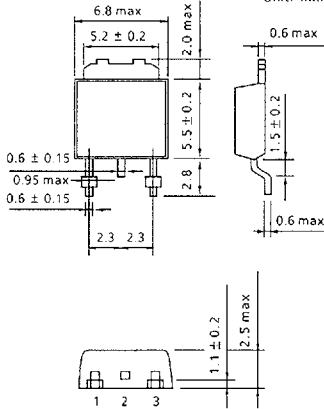
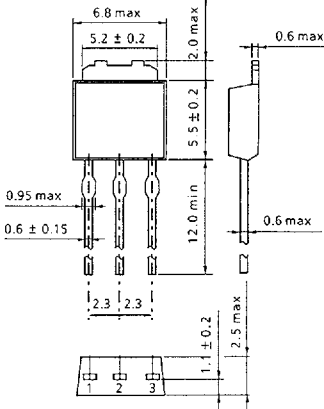
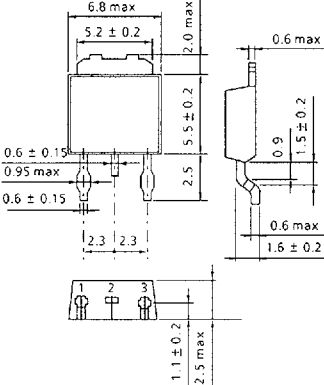
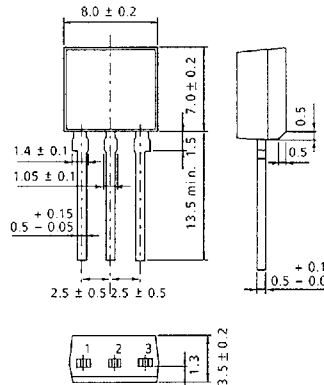
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$	—	—	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 640V, V_{GS} = 0V$	—	—	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0V$	800	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 1mA$	1.5	—	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 3.5A$	—	1.4	1.7	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 3.5A$	2.0	4.0	—	S
Input Capacitance		C_{iss}	$V_{DS} = 25V, V_{GS} = 0V$ $f = 1MHz$	—	810	—	pF
Reverse Transfer Capacitance		C_{rss}		—	100	—	
Output Capacitance		C_{oss}		—	160	—	
Switching Time	Rise Time	t_r		—	170	—	ns
	Turn-on Time	t_{on}		—	190	—	
	Fall Time	t_f		—	160	—	
	Turn-off Time	t_{off}		—	570	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 400V, V_{GS} = 10V$ $I_D = 7A$	—	70	—	nC
Gate-Source Charge		Q_{gs}		—	40	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	30	—	

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}	$I_{DR} = 7A, V_{GS} = 0V$	—	—	-2.0	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 7A, V_{GS} = 0V$	—	1500	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = 100A / \mu s$	—	39	—	μC



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	  Unit: mm 1. SOURCE 2. DRAIN 3. GATE

