

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.

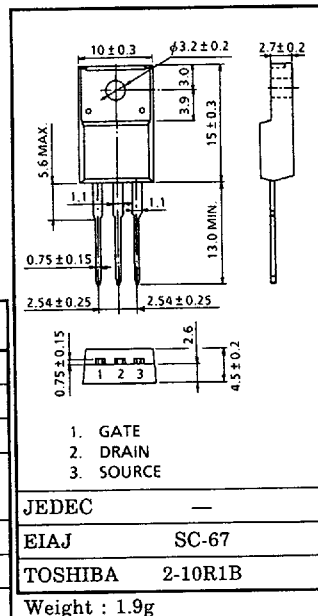
INDUSTRIAL APPLICATIONS

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

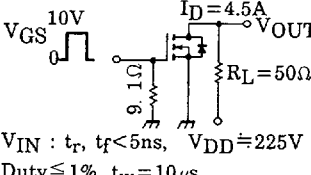
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	2.77	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	$^\circ C/W$

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

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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	 $V_{GS} = 10V, I_D = 4.5A, V_{OUT}$ $V_{IN} : t_r, t_f < 5ns, V_{DD} = 225V$ 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

