

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π -MOSII⁻⁵)**2SK2222**

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.

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

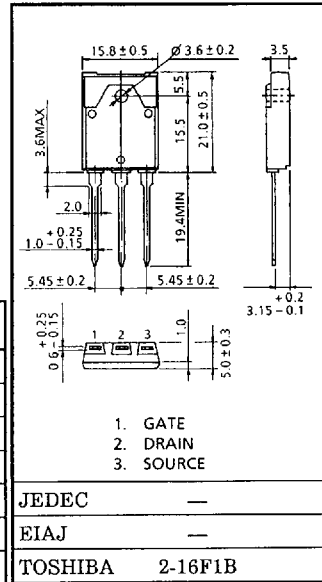
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 1.8\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 3.0S$ (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_{DSS}	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	5	A
	Pulse	I_{DP}	15	A
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

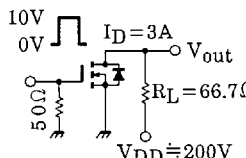
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel To Case	$R_{th(ch-c)}$	1.56	$^\circ C / W$
Thermal Resistance, Channel To Ambient	$R_{th(ch-a)}$	41.6	$^\circ C / W$

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

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ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 30\text{V}$, $V_{DS} = 0\text{V}$	—	—	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 640\text{V}$, $V_{GS} = 0\text{V}$	—	—	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10\text{mA}$, $V_{GS} = 0\text{V}$	800	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$	1.5	—	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = 10\text{V}$, $I_D = 3\text{A}$	—	1.8	2.2	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 20\text{V}$, $I_D = 3\text{A}$	1.0	3.0	—	S
Input Capacitance		C_{iss}	$V_{DS} = 25\text{V}$, $V_{GS} = 0\text{V}$ $f = 1\text{MHz}$	—	610	—	pF
Reverse Transfer Capacitance		C_{rss}		—	60	—	
Output Capacitance		C_{oss}		—	110	—	
Switching Time	Rise Time	t_r	 V_{GS} 10V 0V $I_D = 3\text{A}$ V_{out} 50Ω $R_L = 66.7\Omega$ $V_{DD} = 200\text{V}$	—	30	—	ns
	Turn-on Time	t_{on}		—	70	—	
	Fall Time	t_f		—	35	—	
	Turn-off Time	t_{off}		—	165	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 400\text{V}$, $V_{GS} = 10\text{V}$ $I_D = 5\text{A}$	—	47	—	nC
Gate-Source Charge		Q_{gs}		—	19	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	28	—	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	5	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	15	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 5\text{A}$, $V_{GS} = 0\text{V}$	—	—	-1.9	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 5\text{A}$, $V_{GS} = 0\text{V}$	—	1450	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR}/dt = 100\text{A}/\mu\text{s}$	—	20	—	μC

