

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π -MOSIII.5)

2SK2230

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

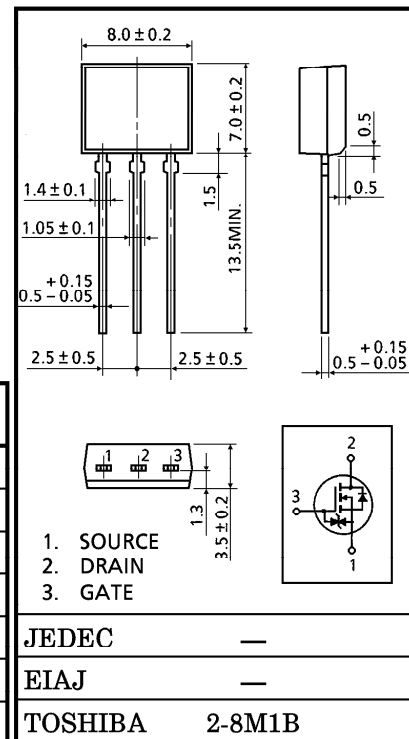
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)}=1.2\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}|=1.4S$ (Typ.)
- Low Leakage Current : $I_{DSS}=300\mu A$ (Max.) ($V_{DS}=250V$)
- 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}	250	V
Drain-Gate Voltage ($R_{GS}=20k\Omega$)		V_{DGR}	250	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	2	A
	Pulse ($t=1ms$)	I_{DP}	5	A
	Pulse ($t=100\mu s$)	I_{DP}	12	A
Drain Power Dissipation ($T_a=25^\circ C$)		P_D	1.3	W
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55\sim 150$	$^\circ C$



JEDEC	—
EIAJ	—
TOSHIBA	2-8M1B

Weight : 0.55g

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel To Ambient	$R_{th(ch-a)}$	96.1	$^\circ C / W$

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}	$V_{GS} = \pm 30V, V_{DS} = 0V$	—	—	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 250V, V_{GS} = 0V$	—	—	300	μA
Drain-Source Breakdown Voltage		$V_{(BR) DSS}$	$I_D = 10mA, V_{GS} = 0V$	250	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 1mA$	2.0	—	4.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = 10A, I_D = 1A$	—	1.2	2.0	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 1A$	0.5	1.1	—	S
Input Capacitance		C_{iss}	$V_{DS} = 10V, V_{GS} = 0V$ $f = 1MHz$	—	220	—	pF
Reverse Transfer Capacitance		C_{rss}		—	35	—	
Output Capacitance		C_{oss}		—	80	—	
Switching Time	Rise Time	t_r	<p>$V_{GS} = 10V, 0V$ pulse $I_D = 1A$ $R_L = 50\Omega$ $V_{DD} \approx 50V$</p>	—	25	—	ns
	Turn-on Time	t_{on}		—	30	—	
	Fall Time	t_f		—	30	—	
	Turn-off Time	t_{off}		$V_{IN} : t_r, t_f < 5ns$ $Duty \leq 1\%, t_w = 10\mu s$	—	85	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} \approx 200V, V_{GS} = 10V$ $I_D = 2A$	—	7.5	—	nC
Gate-Source Charge		Q_{gs}		—	4.0	—	
Gate-Drain (“Miller”) Charge		Q_{gd}		—	3.5	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	2	A
Pulse Drain Reverse Current	I_{DRP}	$t = 1ms$	—	—	5	A
		$t = 100\mu s$	—	—	12	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 2A, V_{GS} = 0V$	—	—	-1.5	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 2A, V_{GS} = 0V$	—	180	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = 100A / \mu s$	—	0.61	—	μC

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