

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

2SK2089

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.

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

- 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
	Pulse	I_{DP}	15
Drain Power Dissipation ($T_c=25^\circ C$)	P_D	100	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55\sim 150$	$^\circ C$

THERMAL CHARACTERISTICS

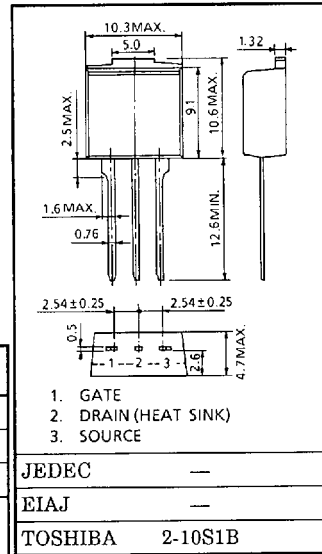
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	1.25	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	83.3	$^\circ C/W$

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

INDUSTRIAL APPLICATIONS

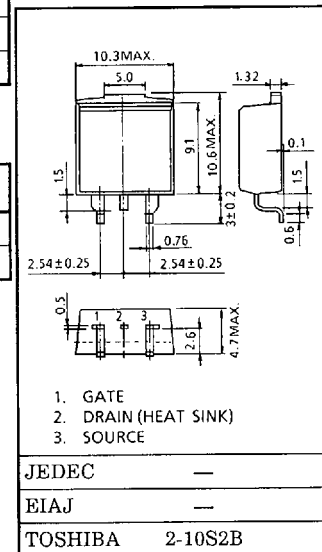
TO-220FL

Unit in mm



TO-220SM

Unit in mm



Weight : 1.5g

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGSS	VGS = ±30V, VDS = 0V	—	—	±100	nA
Drain Cut-off Current		IDSS	VDS = 640V, VGS = 0V	—	—	300	μA
Drain-Source Breakdown Voltage		V(BR)DSS	ID = 10mA, VGS = 0V	800	—	—	V
Gate Threshold Voltage		Vth	VDS = 10V, ID = 1mA	1.5	—	3.5	V
Drain-Source ON Resistance		RDS(ON)	VGS = 10V, ID = 3A	—	1.8	2.4	Ω
Forward Transfer Admittance		Yfs	VDS = 20V, ID = 3A	1.0	3.0	—	S
Input Capacitance		Ciss	VDS = 25V, VGS = 0V, f = 1MHz	—	610	—	pF
Reverse Transfer Capacitance		Crss		—	60	—	
Output Capacitance		Coss		—	110	—	
Switching Time	Rise Time	tr		—	30	—	ns
	Turn-on Time	ton		—	70	—	
	Fall Time	tf		—	35	—	
	Turn-off Time	t _{off}		—	165	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD ≐ 400V, VGS = 10V, ID = 5A	—	47	—	nC
Gate-Source Charge		Qgs		—	19	—	
Gate-Drain ("Miller") Charge		Qgd		—	28	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	5	A
Pulse Drain Reverse Current	IDRP	—	—	—	15	A
Diode Forward Voltage	VDSF	IDR = 5A, VGS = 0V	—	—	-1.9	V
Reverse Recovery Time	t _{rr}	IDR = 5A, VGS = 0V	—	1450	—	ns
Reverse Recovered Charge	Q _{rr}	dIDR / dt = 100A / μs	—	20	—	μC

