

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE ( $\pi$ -MOSII<sup>-5</sup>)

2SK1930

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS  
CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

- Low Drain-Source ON Resistance :  $R_{DS(ON)}=3.0\Omega$  (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}|=2.0S$  (Typ.)
- Low Leakage Current :  $I_{DSS}=300\mu A$  (Max.) ( $V_{DS}=800V$ )
- Enhancement-Mode :  $V_{th}=1.5\sim 3.5V$  ( $V_{DS}=10V$ ,  $I_D=1mA$ )

MAXIMUM RATINGS (Ta = 25°C)

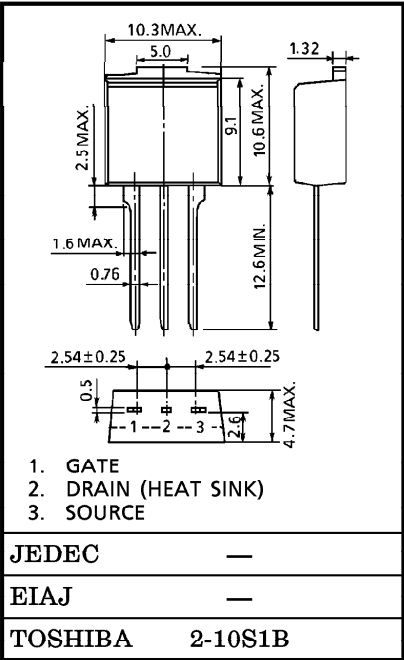
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		$V_{DSS}$	1000	V
Drain-Gate Voltage ( $R_{GS}=20k\Omega$ )		$V_{DGR}$	1000	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	DC	$I_D$	4	A
	Pulse	$I_{DP}$	12	
Drain Power Dissipation ( $T_c=25^\circ C$ )		$P_D$	80	W
Channel Temperature		$T_{ch}$	150	$^\circ C$
Storage Temperature Range		$T_{stg}$	$-55\sim 150$	$^\circ C$

THERMAL CHARACTERISTICS

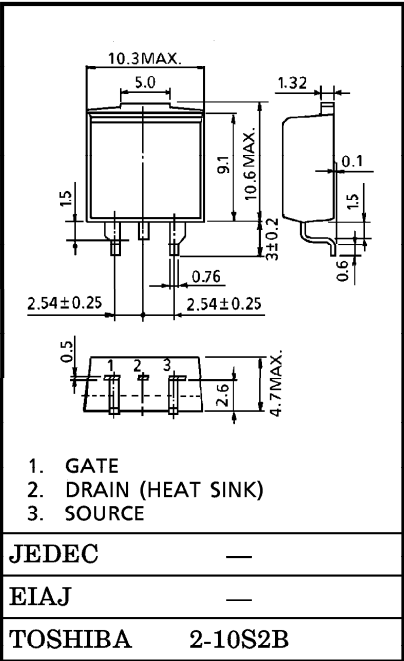
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	1.56	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	83.3	$^\circ C/W$

This transistor is an electrostatic sensitive device.  
Please handle with caution.

INDUSTRIAL APPLICATIONS  
TO-220FL Unit in mm



TO-220SM

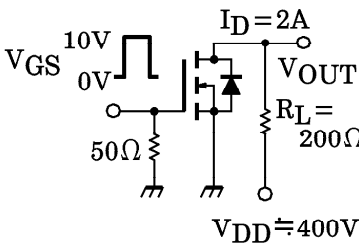


Weight : 1.5g

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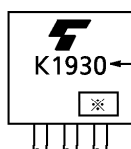
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		$I_{GSS}$	$V_{GS} = \pm 20\text{V}$ , $V_{DS} = 0\text{V}$	—	—	$\pm 100$	nA
Drain Cut-off Current		$I_{DSS}$	$V_{DS} = 800\text{V}$ , $V_{GS} = 0\text{V}$	—	—	300	$\mu\text{A}$
Drain-Source Breakdown Voltage		$V_{(BR) DSS}$	$I_D = 10\text{mA}$ , $V_{GS} = 0\text{V}$	1000	—	—	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		$R_{DS(ON)}$	$V_{GS} = 10\text{V}$ , $I_D = 2\text{A}$	—	3.0	3.8	$\Omega$
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 20\text{V}$ , $I_D = 2\text{A}$	1.0	2.0	—	S
Input Capacitance		$C_{iss}$	$V_{DS} = 25\text{V}$ , $V_{GS} = 0\text{V}$ , $f = 1\text{MHz}$	—	700	—	pF
Reverse Transfer Capacitance		$C_{rss}$		—	55	—	
Output Capacitance		$C_{oss}$		—	100	—	
Switching Time	Rise Time	$t_r$		—	18	—	ns
	Turn-on Time	$t_{on}$		—	30	—	
	Fall Time	$t_f$		—	12	—	
	Turn-off Time	$t_{off}$		—	70	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		$Q_g$	$V_{DD} \approx 400\text{V}$ , $V_{GS} = 10\text{V}$ , $I_D = 4\text{A}$	—	60	—	nC
Gate-Source Charge		$Q_{gs}$		—	35	—	
Gate-Drain ("Miller") Charge		$Q_{gd}$		—	25	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	$I_{DR}$	—	—	—	4	A
Pulse Drain Reverse Current	$I_{DRP}$	—	—	—	12	A
Diode Forward Voltage	$V_{DSF}$	$I_{DR} = 4\text{A}$ , $V_{GS} = 0\text{V}$	—	—	-1.9	V

## MARKING



TYPE

※ Lot Number



Month (Starting from Alphabet A)

Year (Last Number of the Christian Era)

