

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π-MOSII^{·5})

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 : $|Y_{fs}| = 2.0\ S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 300\ \mu A$ (Max.) ($V_{DS} = 800\ V$)
- Enhancement-Mode : $V_{th} = 1.5\sim 3.5\ V$
($V_{DS} = 10\ V, I_D = 1\ mA$)

MAXIMUM RATINGS (Ta = 25°C)

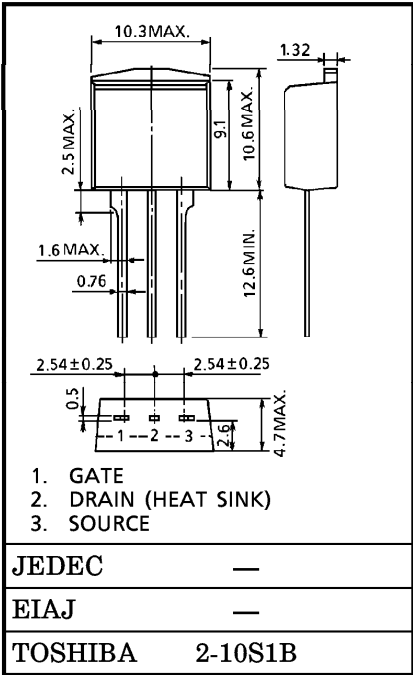
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	1000	V
Drain-Gate Voltage ($R_{GS} = 20\ k\Omega$)		V_{DGR}	1000	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	4	A
	Pulse	I_{DP}	12	
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	80	W
Channel Temperature		T_{ch}	150	°C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

THERMAL CHARACTERISTICS

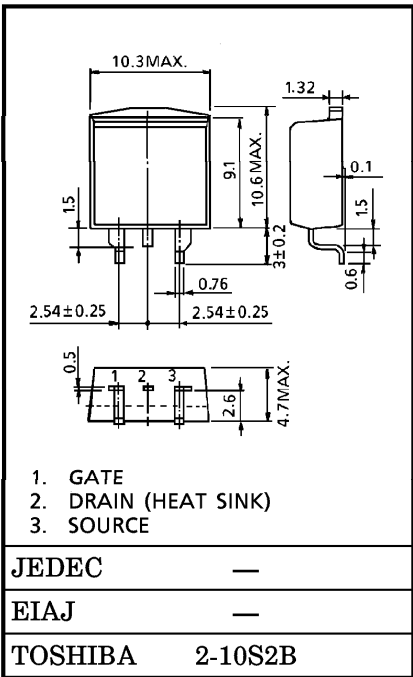
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	1.56	°C/W
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	83.3	°C/W

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

INDUSTRIAL APPLICATIONS
TO-220FL Unit in mm



TO-220SM



Weight : 1.5 g

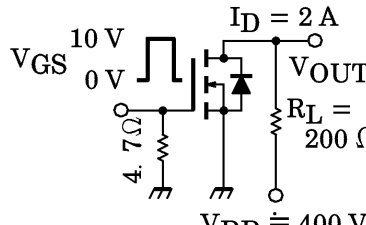
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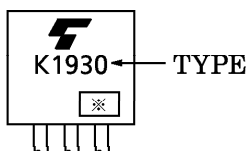
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0 \text{ V}$	—	—	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 800 \text{ V}, V_{GS} = 0 \text{ V}$	—	—	300	μA
Drain-Source Breakdown Voltage		$V_{(BR) DSS}$	$I_D = 10 \text{ mA}, V_{GS} = 0 \text{ V}$	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	Ω
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	 $V_{IN} : t_r, t_f < 5 \text{ ns},$ $\text{Duty} \leq 1\%, t_w = 10 \mu\text{s}$	—	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	$V_{DD} \doteq 400 \text{ V}, V_{GS} = 10 \text{ V},$ $I_D = 4 \text{ A}$	—	60	—	nC
Gate-Source Charge		Q_{gs}		—	35	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	25	—	

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



※ Lot Number



Month (Starting from Alphabet A)

Year (Last Number of the Christian Era)

