

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

2SK1544

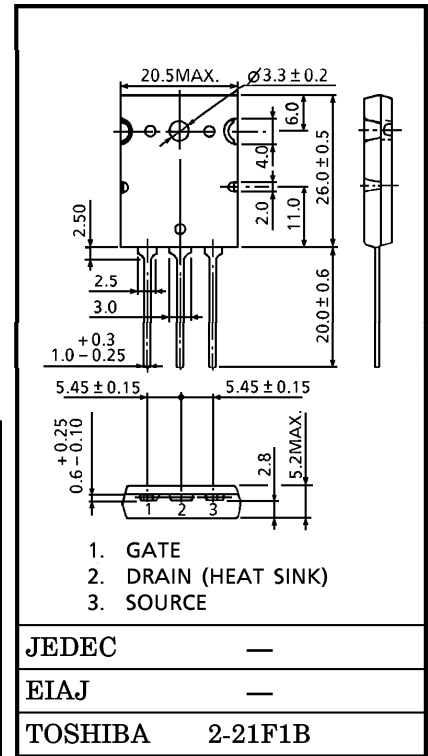
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.
DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS.

INDUSTRIAL APPLICATIONS
Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.15 \Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 21 \text{ S}$ (Typ.)
- Low Leakage Current : $I_{DSS} = 300 \mu\text{A}$ (Max.) ($V_{DS} = 500 \text{ V}$)
- Enhancement-Mode : $V_{th} = 1.5 \sim 3.5 \text{ V}$
($V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$)

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	RATING	
Drain-Source Voltage		V_{DSS}	500	V
Drain-Gate Voltage ($R_{GS} = 20 \text{ k}\Omega$)		V_{DGR}	500	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	25	A
	Pulse	I_{DP}	100	
Drain Power Dissipation ($T_c = 25^\circ\text{C}$)		P_D	200	W
Channel Temperature		T_{ch}	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ\text{C}$



JEDEC	—
EIAJ	—
TOSHIBA	2-21F1B

Weight : 9.75 g

HERMAL CHARACTERISTICS

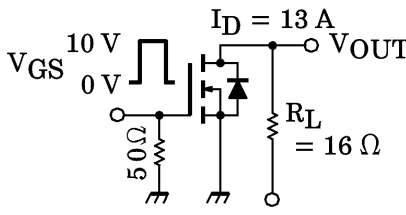
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	0.625	$^\circ\text{C/W}$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	35.7	$^\circ\text{C/W}$

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

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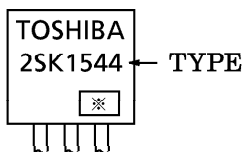
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 25\text{ V}, V_{DS} = 0\text{ V}$	—	—	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 500\text{ V}, V_{GS} = 0\text{ V}$	—	—	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10\text{ mA}, V_{GS} = 0\text{ V}$	500	—	—	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		$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 13\text{ A}$	—	0.15	0.20	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10\text{ V}, I_D = 13\text{ A}$	10	21	—	S
Input Capacitance		C_{iss}	$V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$	—	3700	—	pF
Reverse Transfer Capacitance		C_{rss}		—	400	—	
Output Capacitance		C_{oss}		—	920	—	
Switching Time	Rise Time	t_r	 <p>$I_D = 13\text{ A}$ $V_{GS} = 10\text{ V}$ $V_{DD} \doteq 200\text{ V}$ $R_L = 16\ \Omega$ $V_{IN} : t_r, t_f < 5\text{ ns},$ $Duty \leq 1\%, t_w = 10\ \mu\text{s}$</p>	—	185	—	ns
	Turn-on Time	t_{on}		—	240	—	
	Fall Time	t_f		—	250	—	
	Turn-off Time	t_{off}		—	590	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} \doteq 400\text{ V}, V_{GS} = 10\text{ V}, I_D = 25\text{ A}$	—	150	—	nC
Gate-Source Charge		Q_{gs}		—	70	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	80	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	25	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	100	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 25\text{ A}, V_{GS} = 0\text{ V}$	—	—	-1.6	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 25\text{ A}, V_{GS} = 0\text{ V}$	—	780	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = 100\text{ A} / \mu\text{s}$	—	9.8	—	μC

MARKING



※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)

