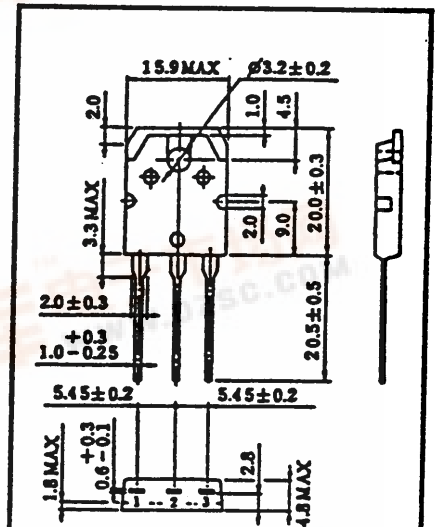


**TOSHIBA FIELD EFFECT TRANSISTOR**  
**2SK2150**  
**SILICON N CHANNEL MOS TYPE**  
**( $\pi$  - MOS IV)**

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 :  $R_{DS(ON)} = 0.29\Omega$  (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}| = 14\text{ S}$  (Typ.)
- Low Leakage Current :  $I_{DSS} = 100\mu\text{A}$  (Max.) ( $V_{DS} = 500\text{V}$ )
- Enhancement-Mode :  $V_{th} = 2.0 \sim 4.0\text{V}$  ( $V_{DS} = 10\text{V}$ ,  $I_D = 1\text{mA}$ )



JEDEC	—
EIAJ	SC-65
TOSHIBA	2-16C1B

Weight : 4.6g

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DSS}$	500	V
Drain-Gate Voltage ( $R_{GS} = 20\text{K}\Omega$ )	$V_{DGR}$	500	V
Gate-Source Voltage	$V_{GSS}$	$\pm 30$	V
Drain Current	DC	$I_D$	15 A
	Pulse	$I_{DP}$	60 A
Drain Power Dissipation ( $T_c = 25\text{ }^\circ\text{C}$ )	$P_D$	150	W
Channel Temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	$-55 \sim 150$	$^\circ\text{C}$

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel To Case	$R_{th(ch-c)}$	0.833	$^\circ\text{C/W}$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	50	$^\circ\text{C/W}$

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 <sub>GSS</sub>	V <sub>GS</sub> = ±25V, V <sub>DS</sub> = 0V	—	—	±10	μA
Gate-Source Breakdown Voltage		V (BR) <sub>GSS</sub>	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0V	±30	—	—	
Drain Cut-off Current		I <sub>DSS</sub>	V <sub>DS</sub> = 500V, V <sub>GS</sub> = 0V	—	—	100	μA
Drain-Source Breakdown Voltage		V (BR) <sub>DSS</sub>	I <sub>D</sub> = 10mA, V <sub>GS</sub> = 0V	500	—	—	V
Gate Threshold Voltage		V <sub>th</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 1mA	2.0	—	4.0	V
Drain-Source ON Resistance		R <sub>DS (ON)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 7A	—	0.29	0.40	Ω
Forward Transfer Admittance		Y <sub>fs</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 7A	—	14	—	S
Input Capacitance		C <sub>iss</sub>	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V f= 1MHz	—	2350	—	pF
Reverse Transfer Capacitance		C <sub>rss</sub>		—	200	—	
Output Capacitance		C <sub>oss</sub>		—	730	—	
Switching Time	Rise Time	t <sub>r</sub>		—	20	—	nS
	Turn-on Time	t <sub>on</sub>		—	55	—	
	Fall Time	t <sub>f</sub>		—	40	—	
	Turn-off Time	t <sub>off</sub>		—	235	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q <sub>g</sub>	V <sub>DD</sub> = 400V, V <sub>GS</sub> = 10V I <sub>D</sub> = 15A	—	50	—	nC
Gate-Source Charge		Q <sub>gs</sub>		—	30	—	
Gate-Drain ("Miller") Charge		Q <sub>gd</sub>		—	20	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I <sub>DR</sub>	—	—	—	15	A
Pulse Drain Reverse Current	I <sub>DRP</sub>	—	—	—	60	A
Diode Forward Voltage	V <sub>DSF</sub>	I <sub>DR</sub> = 15A, V <sub>GS</sub> = 0V	—	—	-1.7	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>DR</sub> = 15A, V <sub>GS</sub> = 0V d I <sub>DR</sub> /dt = 100A/μS	—	490	—	nS
Reverse Recovery Charge	Q <sub>rr</sub>		—	5.4	—	μC

