

TOSHIBA FIELD EFFECT TRANSISTOR

2SK2150

SILICON N CHANNEL MOS TYPE

(π - MOS IV)

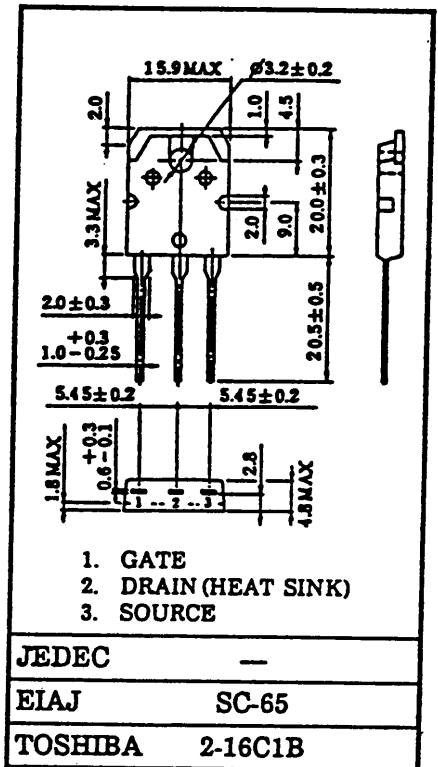
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.
CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR
DRIVE APPLICATIONS.

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 : $V_{th} = 2.0 \sim 4.0\text{V}$ ($V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$)

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

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}	± 30	V
Drain Current	DC	I_D	15 A
	Pulse	I_{DP}	60 A
Drain Power Dissipation ($T_c = 25^\circ\text{C}$)	P_D	150	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ\text{C}$



Weight : 4.6g

THERMAL CHARACTERISTICS

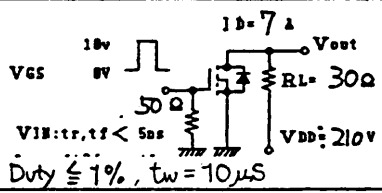
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel To Case	$R_{th(ch-c)}$	0.833	$^\circ\text{C/W}$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	50	$^\circ\text{C/W}$

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

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TOSHIBA CORPORATION

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GSS}	V _{GS} = ±25V, V _{DS} = 0V	—	—	±10	μA
Gate-Source Breakdown Voltage		V (BR) _{GSS}	I _G = ±100 μA, V _{DS} = 0V	±30	—	—	
Drain Cut-off Current		I _{DSS}	V _{DS} = 500V, V _{GS} = 0V	—	—	100	μA
Drain-Source Breakdown Voltage		V (BR) _{DSS}	I _D = 10mA, V _{GS} = 0V	500	—	—	V
Gate Threshold Voltage		V _{th}	V _{DS} = 10V, I _D = 1mA	2.0	—	4.0	V
Drain-Source ON Resistance		R _{DS} (ON)	V _{GS} = 10V, I _D = 7A	—	0.29	0.40	Ω
Forward Transfer Admittance		Y _{fs}	V _{DS} = 10V, I _D = 7A	—	14	—	S
Input Capacitance		C _{iss}	V _{DS} = 10V, V _{GS} = 0V f = 1MHz	—	2350	—	pF
Reverse Transfer Capacitance		C _{rss}		—	200	—	
Output Capacitance		C _{oss}		—	730	—	
Switching Time	Rise Time	t _r	 V_{GS} = 10V, I_D = 7A, R_L = 30Ω V_{DS} = 210V V_{IN}: t_r, t_f < 50ns Duty ≤ 1%, t_w = 10μs	—	20	—	nS
	Turn-on Time	t _{on}		—	55	—	
	Fall Time	t _f		—	40	—	
	Turn-off Time	t _{off}		—	235	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q _g	V _{DD} = 400V, V _{GS} = 10V I _D = 15A	—	50	—	nC
Gate-Source Charge		Q _{gs}		—	30	—	
Gate-Drain ("Miller") Charge		Q _{gd}		—	20	—	

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

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

