

TOSHIBA**2SK3176**TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π -MOSV)**2SK3176**

HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS

SWITCHING REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

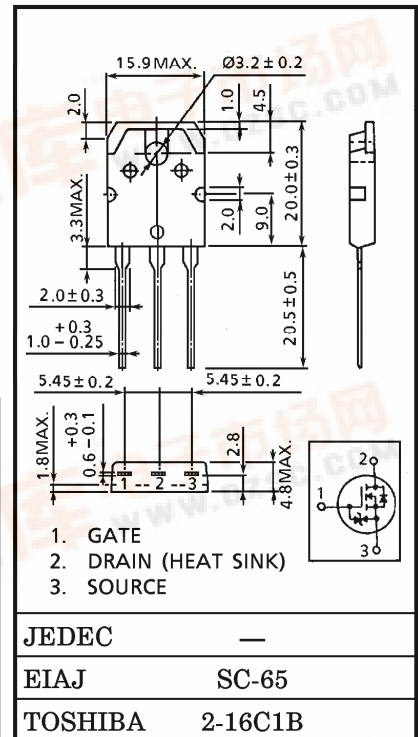
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 38 \text{ m}\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 28 \text{ S}$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100 \mu\text{A}$ (Max.) ($V_{DS} = 200 \text{ V}$)
- Enhancement-Model : $V_{th} = 1.5 \sim 3.5 \text{ V}$ ($V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$)

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

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	200	V
Drain-Gate Voltage ($R_{GS} = 20 \text{ k}\Omega$)		V_{DGR}	200	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	30	A
	Pulse	I_{DP}	120	A
Drain Power Dissipation ($T_a = 25^\circ\text{C}$)		P_D	150	W
Single Pulse Avalanche Energy*		E_{AS}	925	mJ
Avalanche Current		I_{AR}	30	A
Repetitive Avalanche Energy**		E_{AR}	15	mJ
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	$R_{th(ch-a)}$	50.0	$^\circ\text{C/W}$

Note ;

* $V_{DD} = 50 \text{ V}$, $T_{ch} = 25^\circ\text{C}$, $L = 1.66 \text{ mH}$, $I_{AR} = 30 \text{ A}$, $R_G = 25 \Omega$

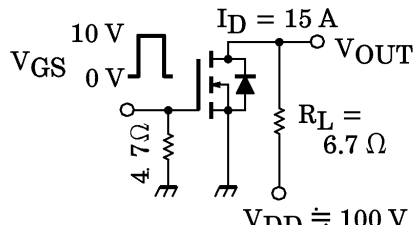
** Repetitive rating ; Pulse Width Limited by Max. junction temperature.

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

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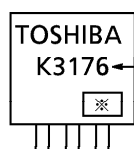
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GSS}	V _{GS} = ±16 V, V _{DS} = 0 V	—	—	±10	μA
Drain Cut-off Current		I _{DSS}	V _{DS} = 200 V, V _{GS} = 0 V	—	—	100	μA
Drain-Source Breakdown Voltage		V (BR) DSS	I _D = 10 mA, V _{GS} = 0 V	200	—	—	V
Gate Threshold Voltage		V _{th}	V _{DS} = 10 V, I _D = 1 mA	1.5	—	3.5	V
Drain-Source ON Resistance		R _{DS (ON)}	V _{GS} = 10 V, I _D = 15 A	—	38	52	mΩ
Forward Transfer Admittance		Y _{fs}	V _{DS} = 10 V, I _D = 15 A	15	30	—	S
Input Capacitance		C _{iss}	V _{DS} = 10 V, V _{GS} = 0 V f = 1 MHz	—	5400	—	pF
Reverse Transfer Capacitance		C _{rss}		—	580	—	
Output Capacitance		C _{oss}		—	1900	—	
Switching Time	Rise Time	t _r		—	15	—	ns
	Turn-on Time	t _{on}		—	55	—	
	Fall Time	t _f		—	25	—	
	Turn-off Time	t _{off}		—	190	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q _g	V _{DD} ≐ 160 V, V _{GS} = 10 V I _D = 30 A	—	125	—	nC
Gate-Source Charge		Q _{gs}		—	80	—	
Gate-Drain ("Miller") Charge		Q _{gd}		—	45	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	30	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	90	A
Diode Forward Voltage	V _{DSF}	I _{DR} = 30 A, V _{GS} = 0 V	—	—	−2.0	V
Reverse Recovery Time	t _{rr}	I _{DR} = 30 A, V _{GS} = 0 V	—	270	—	ns
Reverse Recovery Charge	Q _{rr}	dI _{DR} / dt = 100 A / μs	—	3.0	—	μC

MARKING



TYPE

※ Lot Number



Month (Starting from Alphabet A)



Year (Last Number of the Christian Era)