

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π -MOSVI)

2SK2989

HIGH SPEED SWITCHING APPLICATIONS

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

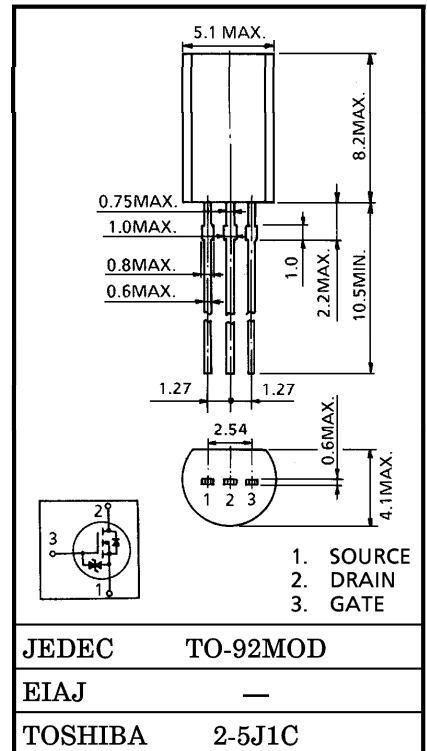
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 120 \text{ m}\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 2.6 \text{ S}$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100 \mu\text{A}$ ($V_{DS} = 50 \text{ V}$)
- Enhancement-Mode : $V_{th} = 0.8 \sim 2.0 \text{ V}$
($V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$)

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	50	V
Drain-Gate Voltage ($R_{GS} = 20 \text{ k}\Omega$)	V_{DGR}	50	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	DC	I_D	5
	Pulse	I_{DP}	15
Drain Power Dissipation ($T_a = 25^\circ\text{C}$)	P_D	0.9	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 Ambient	$R_{th(ch-a)}$	138	$^\circ\text{C}/\text{W}$

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

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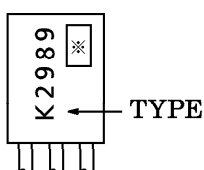
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	I _{GSS}	V _{GS} = ±16 V, V _{DS} = 0 V	—	—	±10	μA	
Drain Cut-off Current	I _{DSS}	V _{DS} = 50 V, V _{GS} = 0 V	—	—	100	μA	
Drain-Source Breakdown Voltage	V _{(BR)DSS}	I _D = 10 mA, V _{GS} = 0 V	50	—	—	V	
Gate Threshold Voltage	V _{th}	V _{DS} = 10 V, I _D = 1 mA	0.8	—	2.0	V	
Drain-Source ON Resistance	R _{D(S)ON}	V _{GS} = 4 V, I _D = 1.3 A	—	240	330	mΩ	
		V _{GS} = 10 V, I _D = 2.5 A	—	120	150		
Forward Transfer Admittance	Y _{fs}	V _{DS} = 10 V, I _D = 2.5 A	1.3	2.6	—	S	
Input Capacitance	C _{iss}	V _{DS} = 10 V, V _{GS} = 0 V f = 1 MHz	—	145	—	pF	
Reverse Transfer Capacitance	C _{rss}		—	25	—		
Output Capacitance	C _{oss}		—	75	—		
Switching Time	Rise Time	t _r		—	16	—	ns
	Turn-on Time	t _{on}		—	23	—	
	Fall Time	t _f		—	27	—	
	Turn-off Time	t _{off}		V _{IN} : t _r , t _f < 5 ns, Duty ≤ 1%, t _w = 10 μs	—	110	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q _g	V _{DD} ≐ 40 V, V _{GS} = 10 V	—	6.5	—	nC	
Gate-Source Charge	Q _{gs}	I _D = 5 A	—	5	—		
Gate-Drain ("Miller") Charge	Q _{gd}		—	1.5	—		

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	5	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	15	A
Diode Forward Voltage	V _{DSF}	I _{DR} = 5 A, V _{GS} = 0 V	—	—	-1.5	V

MARKING



※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)