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

2SK2972

HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS

SWITCHING REGULATOR APPLICATIONS

INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance   : $R_{DS\,(ON)}$ = 0.75 Ω (Typ.)

- High Forward Transfer Admittance : $|Y_{fs}|$ = 7.0 S (Typ.)

- Low Leakage Current : I_{DSS} = 100 μA (Max.) (V_{DS} = 500 V)

- Enhancement-Mode   : V_{th} = 2.5~4.5 V (V_{DS} = 10 V, I_D = 1 mA)

1. GATE
2. DRAIN
3. SOURCE

JEDEC	—
EIAJ	SC-67
TOSHIBA	2-10R1B

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	500	V
Drain-Gate Voltage (R_{GS} = 20 kΩ)		V_{DGR}	500	V
Gate-Source Voltage		V_{GSS}	±30	V
Drain Current	DC	I_D	10	A
	Pulse	I_{DP}	32	A
Drain Power Dissipation (Tc = 25°C)		P_D	40	W
Single Pulse Avalanche Energy**		E_{AS}	312	mJ
Avalanche Current		I_{AR}	8	A
Repetitive Avalanche Energy*		E_{AR}	4	mJ
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	-55~150	°C
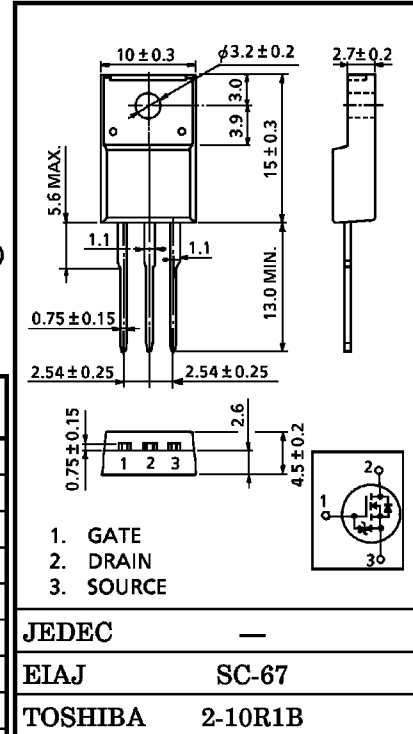
THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th\,(ch-c)}$	3.125	°C / W
Thermal Resistance, Channel to Ambient	$R_{th\,(ch-a)}$	62.5	°C / W

Note ;
* Repetitive rating ; Pulse Width Limited by Max. junction temperature.
** V_{DD} = 90 V, Starting T_{ch} = 25°C, L = 8.3 mH, R_G = 25 Ω, I_{AR} = 8 A

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

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 25\,V$, $V_{DS} = 0\,V$	—	—	± 10	μA
Gate-Source Breakdown Voltage		$V_{(BR)GSS}$	$I_G = \pm 10\,\mu A$, $V_{DS} = 0\,V$	± 30	—	—	V
Drain Cut-off Current		I_{DSS}	$V_{DS} = 500\,V$, $V_{GS} = 0\,V$	—	—	100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10\,mA$, $V_{GS} = 0\,V$	500	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10\,V$, $I_D = 1\,mA$	2.5	—	4.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = 10\,V$, $I_D = 5\,A$	—	0.75	0.85	Ω
Forward Transfer Admittance		$\lvert Y_{fs} \rvert$	$V_{DS} = 10\,V$, $I_D = 5\,A$	3.5	7.0	—	S
Input Capacitance		C_{iss}	$V_{DS} = 10\,V$, $V_{GS} = 0\,V$, $f = 1\,MHz$	—	1300	—	pF
Reverse Transfer Capacitance		C_{rss}		—	120	—	
Output Capacitance		C_{oss}		—	400	—	
Switching Time	Rise Time	t_r	V_{IN} : t_r, $t_f < 5\,ns$, Duty $\leqq 1\%$, $t_w = 10\,\mu s$	—	26	—	ns
	Turn-on Time	t_{on}		—	45	—	
	Fall Time	t_f		—	40	—	
	Turn-off Time	t_{off}		—	160	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} \fallingdotseq 400\,V$, $V_{GS} = 10\,V$, $I_D = 8\,A$	—	30	—	nC
Gate-Source Charge		Q_{gs}		—	17	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	13	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	10	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	32	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 8\,A$, $V_{GS} = 0\,V$	—	—	-1.7	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 8\,A$, $V_{GS} = 0\,V$	—	1200	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR}/dt = 100\,A/\mu s$	—	10	—	μC

MARKING
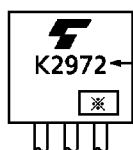
※ Lot Number

— Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)