

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (L²-π-MOSIII)

2SK941

HIGH SPEED SWITCHING APPLICATIONS.

INDUSTRIAL APPLICATIONS

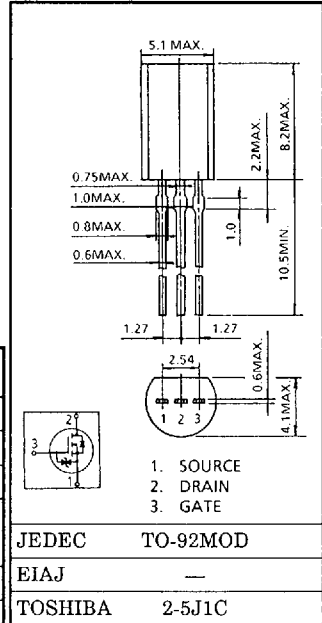
RELAY DRIVE, MOTOR DRIVE AND DC-DC CONVERTER APPLICATIONS.

Unit in mm

- 4-Volt Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.95\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 0.65S$ (Typ.)
- Low Leakage Current : $I_{GSS} = \pm 3\mu A$ (Max.) @ $V_{GS} = \pm 16V$
 $I_{DSS} = 100\mu A$ (Max.) @ $V_{DS} = 100V$
- Enhancement-Mode : $V_{th} = 0.8 \sim 2.0V$ @ $V_{DS} = 10V, I_D = 1mA$

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	100	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	0.6	A
	Pulse	I_{DP}	1.8	
Drain Power Dissipation (Ta = 25°C)		P_D	0.9	W
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	-55~150	°C



THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	138	°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		IGSS	VGS = ±16V, VDS = 0V	—	—	±3	μA
Drain Cut-off Current		IDSS	VDS = 100V, VGS = 0V	—	—	100	μA
Drain-Source Breakdown Voltage		V(BR)DSS	ID = 10mA, VGS = 0V	100	—	—	V
Gate Threshold Voltage		Vth	VDS = 10V, ID = 1mA	0.8	—	2.0	V
ON State Drain Current		ID(ON)	VDS = 4V, VGS = 4V	0.6	—	—	A
Drain-Source ON Resistance		RDS(ON)	VGS = 4V, ID = 0.3A	—	1.2	1.8	Ω
			VGS = 10V, ID = 0.3A	—	0.95	1.3	
Forward Transfer Admittance		Yfs	VDS = 10V, ID = 0.3A	0.40	0.65	—	S
Input Capacitance		Ciss	VDS = 10V, VGS = 0V, f = 1MHz	—	85	130	pF
Reverse Transfer Capacitance		Crss		—	15	35	
Output Capacitance		Coss		—	40	65	
Switching Time	Rise Time	tr		—	4	15	ns
	Turn-on Time	ton		—	9	25	
	Fall Time	tf		—	30	70	
	Turn-off Time	toff		—	75	160	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD = 80V, VGS = 10V, ID = 0.6A	—	3.6	7.2	nC
Gate-Source Charge		Qgs		—	2.3	—	
Gate-Drain ("Miller") Charge		Qgd		—	1.3	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	0.6	A
Pulse Drain Reverse Current	IDRP	—	—	—	1.8	A
Diode Forward Voltage	VDSF	IDR = 0.6A, VGS = 0V	—	-0.8	-1.4	V
Reverse Recovery Time	t _{rr}	IDR = 0.6A, VGS = 0V	—	120	—	ns
Reverse Recovered Charge	Q _{rr}	dIDR / dt = 20A / μs	—	50	—	μC

