

TOSHIBA FIELD EFFECT TRANSISTOR SILICON P CHANNEL MOS TYPE (L²-π-MOSIV)

2SJ304

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS

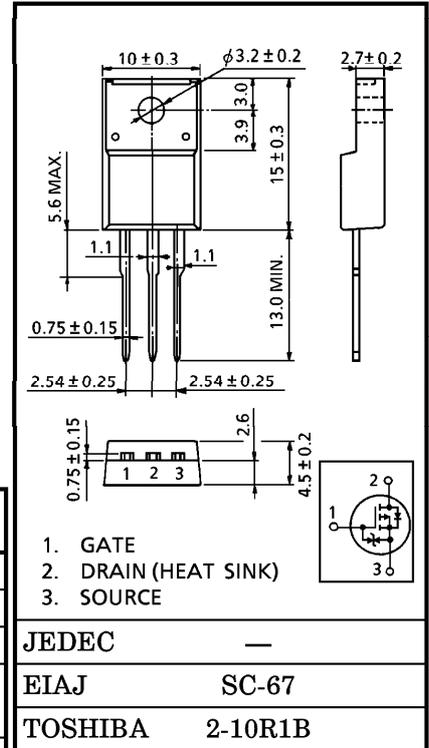
INDUSTRIAL APPLICATIONS

Unit in mm

- 4 V Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 80 \text{ m}\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 8.0 \text{ S}$ (Typ.)
- Low Leakage Current : $I_{DSS} = -100 \mu\text{A}$ (Max.) ($V_{DS} = -60 \text{ V}$)
- 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}	-60	V
Drain-Gate Voltage ($R_{GS} = 20 \text{ k}\Omega$)		V_{DGR}	-60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	-14	A
	Pulse	I_{DP}	-56	
Drain Power Dissipation ($T_c = 25^\circ\text{C}$)		P_D	40	W
Channel Temperature		T_{ch}	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55~150	$^\circ\text{C}$



Weight : 1.9 g

THERMAL CHARACTERISTICS

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

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

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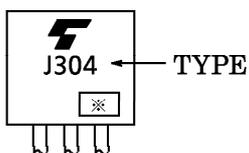
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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} = -60 V, V _{GS} = 0 V	—	—	-100	μA	
Drain-Source Breakdown Voltage	V _{(BR)DSS}	I _D = -10 mA, V _{GS} = 0 V	-60	—	—	V	
Gate Threshold Voltage	V _{th}	V _{DS} = -10 V, I _D = -1 mA	-0.8	—	-2.0	V	
Drain-Source ON Resistance	R _{Ds(ON)}	V _{GS} = -4 V, I _D = -5 A	—	130	190	mΩ	
		V _{GS} = -10 V, I _D = -7 A	—	80	120		
Forward Transfer Admittance	Y _{fs}	V _{DS} = -10 V, I _D = -7 A	5.0	8.0	—	S	
Input Capacitance	C _{iss}	V _{DS} = -10 V, V _{GS} = 0 V, f = 1 MHz	—	1200	—	pF	
Reverse Transfer Capacitance	C _{rss}		—	220	—		
Output Capacitance	C _{oss}		—	550	—		
Switching Time	Rise Time	t _r		—	20	—	ns
	Turn-on Time	t _{on}		—	30	—	
	Fall Time	t _f		—	25	—	
	Turn-off Time	t _{off}		—	100	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q _g	V _{DD} ≐ -48 V, V _{GS} = -10 V, I _D = -14A	—	45	—	nC	
Gate-Source Charge	Q _{gs}		—	30	—		
Gate-Drain ("Miller") Charge	Q _{gd}		—	15	—		

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	-14	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	-56	A
Diode Forward Voltage	V _{DSF}	I _{DR} = -14 A, V _{GS} = 0 V	—	—	1.7	V
Reverse Recovery Time	t _{rr}	I _{DR} = -14 A, V _{GS} = 0 V dI _{DR} /dt = 50 A/μs	—	110	—	ns
Reverse Recovered Charge	Q _{rr}		—	0.18	—	μC

MARKING



※ Lot Number

□ □ — Month (Starting from Alphabet A)

_____ Year (Last Number of the Christian Era)

