

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

2SJ312

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS

- 4-Volt Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 80m\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 8.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = -100\mu A$ (Max.) ($V_{DS} = -60V$)
- 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}	-60	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		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 ($T_c = 25^\circ C$)		P_D	40	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 Case	$R_{th(ch-c)}$	3.125	°C / W
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	83.3	°C / W

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

INDUSTRIAL APPLICATIONS

TO-220FL Unit in mm

1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

JEDEC	—
EIAJ	—
TOSHIBA	2-10S1B

TO-220SM Unit in mm

1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

JEDEC	—
EIAJ	—
TOSHIBA	2-10S2B

Weight : 1.5g

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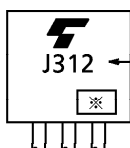
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 16V, V_{DS} = 0V$	—	—	± 10	μA
Drain Cut-off Current		I_{DSS}	$V_{DS} = -60V, V_{GS} = 0V$	—	—	-100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = -10mA, V_{GS} = 0V$	-60	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = -10V, I_D = -1mA$	-0.8	—	-2.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = -4V, I_D = -5A$	—	130	190	m Ω
			$V_{GS} = -10V, I_D = -7A$	—	80	120	
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = -10V, I_D = -7A$	5.0	8.0	—	S
Input Capacitance		C_{iss}	$V_{DS} = -10V, V_{GS} = 0V,$ $f = 1MHz$	—	1200	—	pF
Reverse Transfer Capacitance		C_{rss}		—	220	—	
Output Capacitance		C_{oss}		—	550	—	
Switching Time	Rise Time	t_r	<p>$V_{GS} = 0V, -10V$ $I_D = -7A$ $R_L = 4.3\Omega$ $V_{DD} \doteq -30V$</p>	—	20	—	ns
	Turn-on Time	t_{on}		—	30	—	
	Fall Time	t_f		—	25	—	
	Turn-off Time	t_{off}		$V_{IN} : t_r, t_f < 5ns,$ $Duty \leq 1\%, t_w = 10\mu s$	—	100	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} \doteq -48V, V_{GS} = -10V,$ $I_D = -14A$	—	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}	$I_{DR} = -14A, V_{GS} = 0V$	—	—	1.7	V
Reverse Recovery Time		t_{rr}	$I_{DR} = -14A, V_{GS} = 0V$ $dI_{DR} / dt = 50A / \mu s$	—	110	—	ns
Reverse Recovered Charge		Q_{rr}		—	0.18	—	μC

MARKING



TYPE ← J312
 ※ Lot Number
 □ □ — Month (Starting from Alphabet A)
 — Year (Last Number of the Christian Era)

