

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

2SJ312

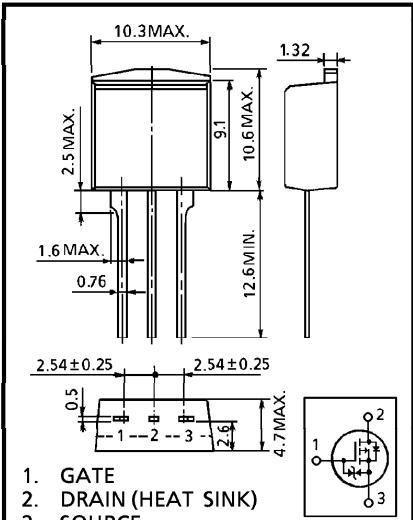
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS

TO-220FL 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 : $V_{th} = -0.8 \sim -2.0 \text{ V}$
($V_{DS} = -10 \text{ V}$, $I_D = -1 \text{ mA}$)

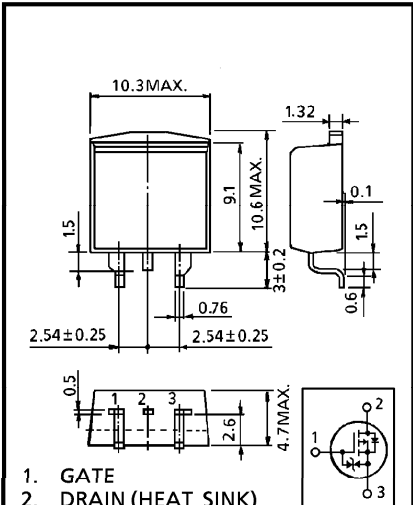


| | |
|---------|---------|
| JEDEC | — |
| EIAJ | — |
| TOSHIBA | 2-10S1B |

MAXIMUM RATINGS (Ta = 25°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 | °C |
| Storage Temperature Range | | T_{stg} | -55~150 | °C |

TO-220SM Unit in mm



| | |
|---------|---------|
| JEDEC | — |
| EIAJ | — |
| TOSHIBA | 2-10S2B |

Weight : 1.5 g

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.**

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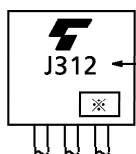
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---------------|------------------|---|--|------|------|------|
| Gate Leakage Current | | IGSS | VGS = ±16 V, VDS = 0 V | — | — | ±10 | μA |
| Drain Cut-off Current | | IDSS | VDS = -60 V, VGS = 0 V | — | — | -100 | μA |
| Drain-Source Breakdown Voltage | | V(BR)DSS | ID = -10 mA, VGS = 0 V | -60 | — | — | V |
| Gate Threshold Voltage | | Vth | VDS = -10 V, ID = -1 mA | -0.8 | — | -2.0 | V |
| Drain-Source ON Resistance | | RDS(ON) | VGS = -4 V, ID = -5 A | — | 130 | 190 | mΩ |
| | | | VGS = -10 V, ID = -7 A | — | 80 | 120 | |
| Forward Transfer Admittance | | Yfs | VDS = -10 V, ID = -7 A | 5.0 | 8.0 | — | S |
| Input Capacitance | | Ciss | VDS = -10 V, VGS = 0 V, f = 1 MHz | — | 1200 | — | pF |
| Reverse Transfer Capacitance | | Crss | | — | 220 | — | |
| Output Capacitance | | Coss | | — | 550 | — | |
| Switching Time | Rise Time | tr | <p> $V_{GS} = 0\text{ V}$ $V_{GS} = -10\text{ V}$ $I_D = -7\text{ A}$ $R_L = 4.3\ \Omega$ $V_{DD} = -30\text{ V}$ </p> | — | 20 | — | ns |
| | Turn-on Time | ton | | — | 30 | — | |
| | Fall Time | tf | | — | 25 | — | |
| | Turn-off Time | t _{off} | | $V_{IN} : t_r, t_f < 5\text{ ns}$, Duty $\leq 1\%$, $t_w = 10\ \mu\text{s}$ | — | 100 | |
| Total Gate Charge (Gate-Source Plus Gate-Drain) | | Qg | $V_{DD} = -48\text{ V}$, $V_{GS} = -10\text{ V}$, $I_D = -14\text{ A}$ | — | 45 | — | nC |
| Gate-Source Charge | | Qgs | | — | 30 | — | |
| Gate-Drain ("Miller") Charge | | Qgd | | — | 15 | — | |

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

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------------------------|-----------------|------------------------|------|------|------|------|
| Continuous Drain Reverse Current | IDR | — | — | — | -14 | A |
| Pulse Drain Reverse Current | IDRP | — | — | — | -56 | A |
| Diode Forward Voltage | VDSF | IDR = -14 A, VGS = 0 V | — | — | 1.7 | V |
| Reverse Recovery Time | t _{rr} | IDR = -14 A, VGS = 0 V | — | 110 | — | ns |
| Reverse Recovered Charge | Q _{rr} | dIDR / dt = 50 A / μs | — | 0.18 | — | μC |

MARKING



← TYPE

※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)

