

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

2SK2493

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
 CHOPPER REGULATOR, AND DC-DC CONVERTER APPLICATIONS

INDUSTRIAL APPLICATIONS
 Unit in mm

- 2.5 V Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.08 \text{ m}\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 8.0 \text{ S}$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100 \mu\text{A}$ (Max.) ($V_{DS} = 16 \text{ V}$)
- Enhancement-Mode : $V_{th} = 0.5 \sim 1.1 \text{ V}$
 $(V_{DS} = 10 \text{ V}, I_D = 1 \text{ mA})$

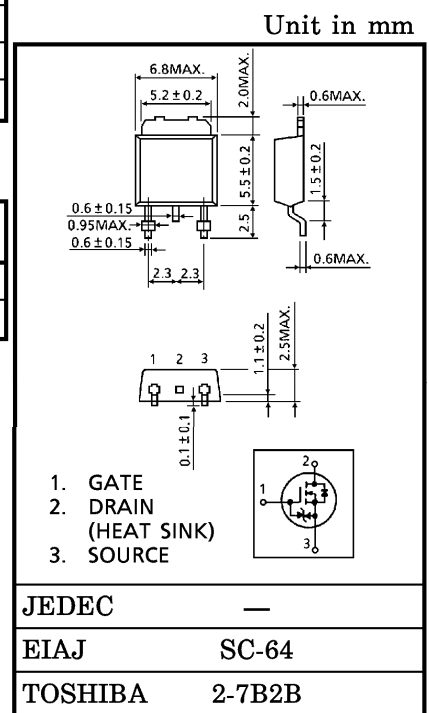
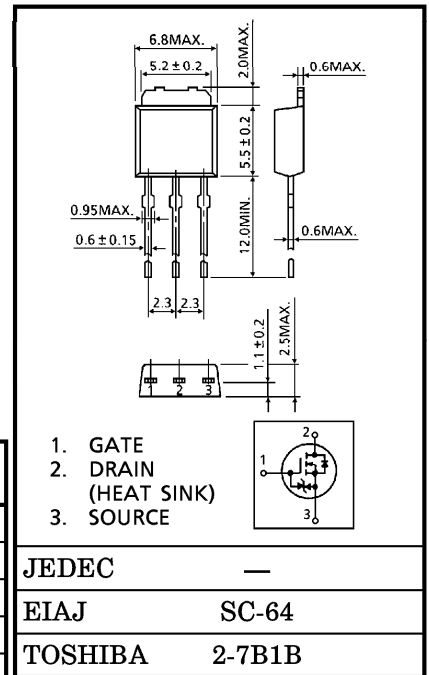
MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|--|-----------|----------------|------------------|
| Drain-Source Voltage | V_{DSS} | 16 | V |
| Drain-Gate Voltage ($R_{GS} = 20 \text{ k}\Omega$) | V_{DGR} | 16 | V |
| Gate-Source Voltage | V_{GSS} | ± 8 | V |
| Drain Current | DC | I_D | 5 A |
| | Pulse | I_{DP} | 20 A |
| Drain Power Dissipation ($T_c = 25^\circ\text{C}$) | P_D | 20 | W |
| Channel Temperature | T_{ch} | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | $-55 \sim 150$ | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| CHARACTERISTIC | SYMBOL | MAX. | UNIT |
|--|----------------|------|--------------------|
| Thermal Resistance, Channel To Case | $R_{th(ch-c)}$ | 6.25 | $^\circ\text{C/W}$ |
| Thermal Resistance, Channel To Ambient | $R_{th(ch-a)}$ | 125 | $^\circ\text{C/W}$ |

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



Weight : 0.36 g

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT | |
|---|-----------------------|---|------|--|------|------|----|
| Gate Leakage Current | I _{GSS} | V _{GS} = ±6.5 V, V _{DS} = 0 V | — | — | ±10 | μA | |
| Drain Cut-off Current | I _{DSS} | V _{DS} = 16 V, V _{GS} = 0 V | — | — | 100 | μA | |
| Drain-Source Breakdown Voltage | V _{(BR) DSS} | I _D = 10 mA, V _{GS} = 0 V | 16 | — | — | V | |
| Gate Threshold Voltage | V _{th} | V _{DS} = 10 V, I _D = 1 mA | 0.5 | — | 1.1 | V | |
| Drain-Source ON Resistance | R _{DS (ON)} | V _{GS} = 2.5 V, I _D = 2.5 A | — | 0.08 | 0.12 | Ω | |
| | | V _{GS} = 4 V, I _D = 2.5 A | — | 0.07 | 0.1 | | |
| Forward Transfer Admittance | Y _{fs} | V _{DS} = 10 V, I _D = 2.5 A | 4.0 | 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} | | — | 110 | — | | |
| Output Capacitance | C _{oss} | | — | 380 | — | | |
| Switching Time | Rise Time | t _r | | — | 30 | — | ns |
| | Turn-on Time | t _{on} | | — | 50 | — | |
| | Fall Time | t _f | | — | 200 | — | |
| | Turn-off Time | t _{off} | | V _{IN} : t _r , t _f < 5 ns, Duty ≤ 1%, t _w = 10 μs | — | 650 | |
| Total Gate Charge (Gate-Source Plus Gate-Drain) | Q _g | V _{DD} ≐ 16 V, V _{GS} = 5 V I _D = 5 A | — | 23 | — | nC | |
| Gate-Source Charge | Q _{gs} | | — | 17 | — | | |
| Gate-Drain ("Miller") Charge | Q _{gd} | | — | 6 | — | | |

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

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------------------------|-------------------|---|------|------|------|------|
| Continuous Drain Reverse Current | I _{IDR} | — | — | — | 5 | A |
| Pulse Drain Reverse Current | I _{IDRP} | — | — | — | 20 | A |
| Diode Forward Voltage | V _{DSSF} | I _{IDR} = 5 A, V _{GS} = 0 V | — | — | -1.7 | V |
| Reverse Recovery Time | t _{rr} | I _{IDR} = 5 A, V _{GS} = 0 V | — | 120 | — | ns |
| Reverse Recovery Charge | Q _{rr} | dI _{IDR} / dt = 50 A / μs | — | 0.12 | — | μC |

MARKING

