

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π -MOSII·5)

2SK1357

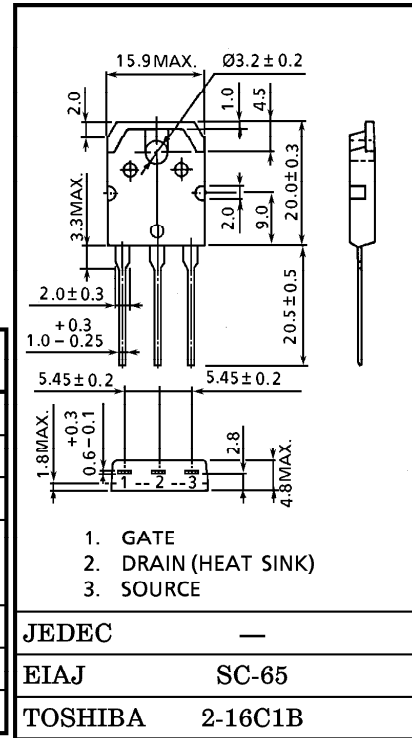
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.
DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS.

INDUSTRIAL APPLICATIONS
Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 2.5\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 2.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 300\mu A$ (Max.) @ $V_{DS} = 720V$
- Enhancement-Mode : $V_{th} = 1.5\sim 3.5V$ @ $V_{DS} = 10V, I_D = 1mA$

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

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|--|-------|-----------|---------------|------------|
| Drain-Source Voltage | | V_{DSS} | 900 | V |
| Drain-Gate Voltage ($R_{GS} = 20k\Omega$) | | V_{DGR} | 900 | V |
| Gate-Source Voltage | | V_{GSS} | ± 30 | V |
| Drain Current | DC | I_D | 5 | A |
| | Pulse | I_{DP} | 15 | |
| Drain Power Dissipation ($T_c = 25^\circ C$) | | P_D | 125 | W |
| Channel Temperature | | T_{ch} | 150 | $^\circ C$ |
| Storage Temperature Range | | T_{stg} | $-55\sim 150$ | $^\circ C$ |



Weight : 4.6g

THERMAL CHARACTERISTICS

| CHARACTERISTIC | SYMBOL | MAX. | UNIT |
|--|----------------|------|----------------|
| Thermal Resistance, Channel to Case | $R_{th(ch-c)}$ | 1.0 | $^\circ C / W$ |
| Thermal Resistance, Channel to Ambient | $R_{th(ch-a)}$ | 50 | $^\circ C / W$ |

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 | | I_{GSS} | $V_{GS} = \pm 25V, V_{DS} = 0V$ | — | — | ± 100 | nA |
| Drain Cut-off Current | | I_{DSS} | $V_{DS} = 720V, V_{GS} = 0V$ | — | — | 300 | μA |
| Drain-Source Breakdown Voltage | | $V_{(BR)DSS}$ | $I_D = 10mA, V_{GS} = 0V$ | 900 | — | — | V |
| Gate Threshold Voltage | | V_{th} | $V_{DS} = 10V, I_D = 1mA$ | 1.5 | — | 3.5 | V |
| Drain-Source ON Resistance | | $R_{DS(ON)}$ | $I_D = 2A, V_{GS} = 10V$ | — | 2.5 | 2.8 | Ω |
| Forward Transfer Admittance | | $ Y_{fs} $ | $V_{DS} = 20V, I_D = 2A$ | 1.0 | 2.0 | — | S |
| Input Capacitance | | C_{iss} | $V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$ | — | 700 | 1000 | pF |
| Reverse Transfer Capacitance | | C_{rss} | | — | 55 | 90 | |
| Output Capacitance | | C_{oss} | | — | 100 | 150 | |
| Switching Time | Rise Time | t_r | <p>$V_{GS} = 10V$ $I_D = 2A$ $R_L = 200\Omega$ $V_{IN} : t_r, t_f < 5ns, V_{DD} = 400V$ Duty $\leq 1\%, t_w = 10\mu s$</p> | — | 18 | 35 | ns |
| | Turn-on Time | t_{on} | | — | 30 | 60 | |
| | Fall Time | t_f | | — | 12 | 25 | |
| | Turn-off Time | t_{off} | | — | 70 | 140 | |
| Total Gate Charge (Gate-Source Plus Gate-Drain) | | Q_g | $V_{DD} = 400V, V_{GS} = 10V, I_D = 4A$ | — | 60 | 120 | nC |
| Gate-Source Charge | | Q_{gs} | | — | 35 | — | |
| Gate-Drain ("Miller") Charge | | Q_{gd} | | — | 22 | — | |

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

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------------------------|-----------|-------------------------------|------|------|------|---------|
| Continuous Drain Reverse Current | I_{DR} | — | — | — | 4 | A |
| Pulse Drain Reverse Current | I_{DRP} | — | — | — | 12 | A |
| Diode Forward Voltage | V_{DSF} | $I_{DR} = 4A, V_{GS} = 0V$ | — | — | -1.9 | V |
| Reverse Recovery Time | t_{rr} | $I_{DR} = 4A, V_{GS} = 0V$ | — | 1000 | — | ns |
| Reverse Recovered Charge | Q_{rr} | $dI_{DR} / dt = 100A / \mu s$ | — | 0.13 | — | μC |

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