

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

2SK2965

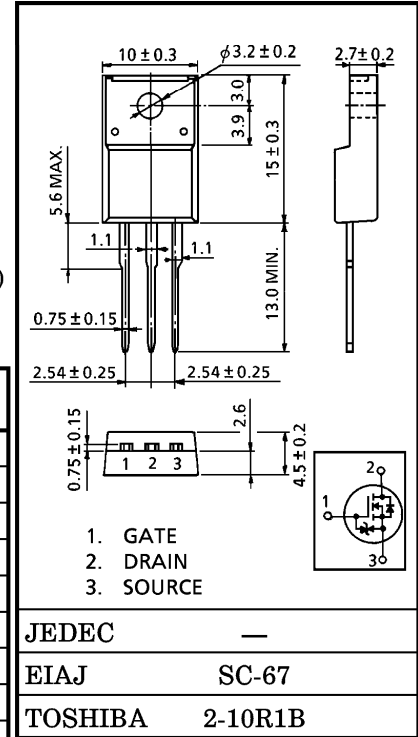
HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS
SWITCHING REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS
Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.15 \Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 10 S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100 \mu A$ (Max.) ($V_{DS} = 200 V$)
- Enhancement-Mode : $V_{th} = 1.5 \sim 3.5 V$ ($V_{DS} = 10 V, I_D = 1 mA$)

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

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|--|-----------|----------------|------------|
| Drain-Source Voltage | V_{DSS} | 200 | V |
| Drain-Gate Voltage ($R_{GS} = 20 k\Omega$) | V_{DGR} | 200 | V |
| Gate-Source Voltage | V_{GSS} | ± 20 | V |
| Drain Current | DC | I_D | 11 A |
| | Pulse | I_{DP} | 33 A |
| Drain Power Dissipation ($T_a = 25^\circ C$) | P_D | 35 | W |
| Single Pulse Avalanche Energy** | E_{AS} | 115 | mJ |
| Avalanche Current | I_{AR} | 11 | A |
| Repetitive Avalanche Energy* | E_{AR} | 3.5 | mJ |
| Channel Temperature | T_{ch} | 150 | $^\circ C$ |
| Storage Temperature Range | T_{stg} | $-55 \sim 150$ | $^\circ C$ |



Thermal Characteristics

| CHARACTERISTIC | SYMBOL | MAX. | UNIT |
|--|----------------|------|--------------|
| Thermal Resistance, Channel to Case | $R_{th(ch-c)}$ | 3.57 | $^\circ C/W$ |
| Thermal Resistance, Channel to Ambient | $R_{th(ch-a)}$ | 62.5 | $^\circ C/W$ |

Note ;

* Repetitive rating ; Pulse Width Limited by Max. junction temperature.

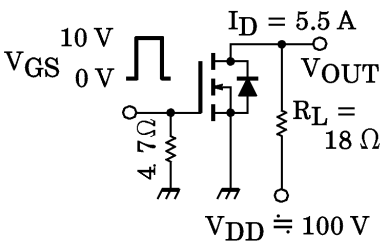
** $V_{DD} = 50 V$, Starting $T_{ch} = 25^\circ C$, $L = 1.53 mH$, $R_G = 25 \Omega$, $I_{AR} = 11 A$

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

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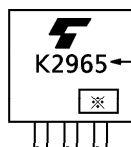
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---------------|---------------|---|--|------|----------|---------------|
| Gate Leakage Current | | I_{GSS} | $V_{GS} = \pm 16\text{ V}, V_{DS} = 0\text{ V}$ | — | — | ± 10 | μA |
| Drain Cut-off Current | | I_{DSS} | $V_{DS} = 200\text{ V}, V_{GS} = 0\text{ V}$ | — | — | 100 | μA |
| Gate-Source Breakdown Voltage | | $V_{(BR)DSS}$ | $I_D = 10\text{ mA}, V_{GS} = 0\text{ V}$ | 200 | — | — | V |
| Gate Threshold Voltage | | V_{th} | $V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$ | 1.5 | — | 3.5 | V |
| Drain-Source ON Resistance | | $R_{DS(ON)}$ | $V_{GS} = 10\text{ V}, I_D = 5.5\text{ A}$ | — | 0.15 | 0.26 | Ω |
| Forward Transfer Admittance | | $ Y_{fs} $ | $V_{DS} = 10\text{ V}, I_D = 5.5\text{ A}$ | 5.0 | 10 | — | S |
| Input Capacitance | | C_{iss} | $V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V}$ $f = 1\text{ MHz}$ | — | 1200 | — | pF |
| Reverse Transfer Capacitance | | C_{rss} | | — | 100 | — | |
| Output Capacitance | | C_{oss} | | — | 290 | — | |
| Switching Time | Rise Time | t_r |  <p>$V_{GS} = 10\text{ V}$ 0 V $I_D = 5.5\text{ A}$ V_{OUT} $R_L = 18\ \Omega$ $V_{DD} \doteq 100\text{ V}$</p> | — | 15 | — | ns |
| | Turn-on Time | t_{on} | | — | 25 | — | |
| | Fall Time | t_f | | — | 10 | — | |
| | Turn-off Time | t_{off} | | $V_{IN} : t_r, t_f < 5\text{ ns},$ $Duty \leq 1\%, t_w = 10\ \mu\text{s}$ | — | 75 | |
| Total Gate Charge (Gate-Source Plus Gate-Drain) | | Q_g | $V_{DD} \doteq 100\text{ V}, V_{GS} = 10\text{ V}$ $I_D = 10\text{ A}$ | — | 30 | — | nC |
| Gate-Source Charge | | Q_{gs} | | — | 20 | — | |
| Gate-Drain ("Miller") Charge | | Q_{gd} | | — | 10 | — | |

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

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------------------------|-----------|---|------|------|------|---------------|
| Continuous Drain Reverse Current | I_{DR} | — | — | — | 11 | A |
| Pulse Drain Reverse Current | I_{DRP} | — | — | — | 33 | A |
| Diode Forward Voltage | V_{DSF} | $I_{DR} = 11\text{ A}, V_{GS} = 0\text{ V}$ | — | — | -2.0 | V |
| Reverse Recovery Time | t_{rr} | $I_{DR} = 11\text{ A}, V_{GS} = 0\text{ V}$ | — | 175 | — | ns |
| Reverse Recovery Charge | Q_{rr} | $dI_{DR} / dt = 100\text{ A} / \mu\text{s}$ | — | 1.3 | — | μC |

MARKING



TYPE ← K2965
 ※ Lot Number
 □ □ — Month (Starting from Alphabet A)
 — Year (Last Number of the Christian Era)