

Field Effect Transistor

Silicon N Channel MOS Type (τ-MOS IV)

High Speed, High Current Switching Applications

Features

- Low Drain-Source ON Resistance
 - $R_{DS(ON)} = 0.24\Omega$ (Typ.)
- High Forward Transfer Admittance
 - $|Y_{fs}| = 15S$ (Typ.)
- Low Leakage Current
 - $I_{DSS} = -100\mu A$ (Max.) ($V_{DS} = 500V$)
- Enhancement-Mode
 - $V_{th} = 2.0 \sim 4.0V$ ($V_{DS} = -10V, I_b = 1mA$)

Absolute Maximum Ratings ($T_a = 25^\circ C$)

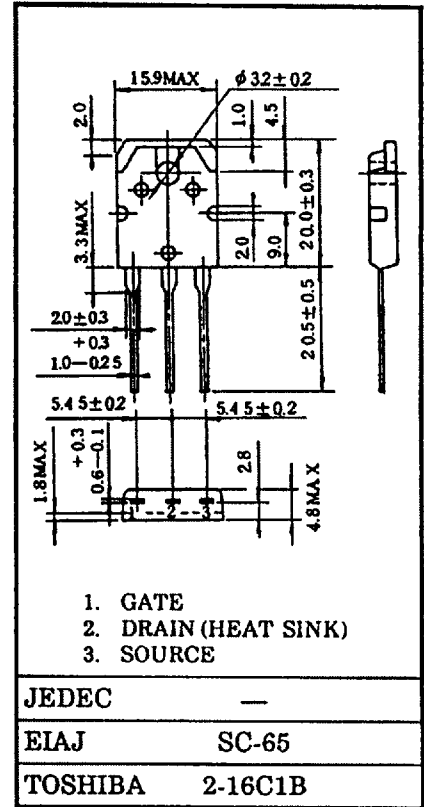
| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|--|-------|-----------|-----------|------------|
| Drain-Source Voltage | | V_{DSS} | 500 | V |
| Drain-Gate Voltage ($R_{GS} = 20k\Omega$) | | V_{DGR} | 500 | V |
| Gate-Source Voltage | | V_{GSS} | ± 30 | V |
| Drain Current | DC | I_b | 20 | A |
| | Pulse | I_{bP} | 80 | |
| Drain Power Dissipation ($T_c = 25^\circ C$) | | P_D | 150 | W |
| Channel Temperature | | T_{ch} | 150 | $^\circ C$ |
| Storage Temperature Range | | T_{stg} | -55 - 150 | $^\circ C$ |

Thermal Characteristics

| CHARACTERISTIC | SYMBOL | MAX. | UNIT |
|--|--------------------|-------|--------------|
| Thermal Resistance, Channel to Case | $R_{\theta(ch-c)}$ | 0.833 | $^\circ C/W$ |
| Thermal Resistance, Channel to Ambient | $R_{\theta(ch-a)}$ | 50 | $^\circ C/W$ |

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

Industrial Applications Unit in mm



Weight : 4.6g

Electrical Characteristics (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---------------|---------------|---|----------|------|----------|----------|
| Gate Leakage Current | | I_{GSS} | $V_{GS} = \pm 25V, V_{DS} = 0V$ | - | - | ± 10 | nA |
| Gate-Source Breakdown Voltage | | $V_{(BR)DSS}$ | $I_G = \pm 100\mu A, V_{DS} = 0V$ | ± 30 | - | - | μA |
| Drain Cut-off Current | | I_{DSS} | $V_{DS} = 500V, V_{GS} = 0V$ | - | - | 100 | μA |
| Drain-Source Breakdown Voltage | | $V_{(BR)DSS}$ | $I_D = 10mA, V_{GS} = 0V$ | 500 | - | - | V |
| Gate Threshold Voltage | | V_{th} | $V_{DS} = 10V, I_D = -1mA$ | 2.0 | - | 4.0 | V |
| Drain-Source ON Resistance | | $R_{DS(ON)}$ | $V_{GS} = 10V, I_D = 10A$ | - | 0.24 | 0.30 | Ω |
| Forward Transfer Admittance | | $ Y_{fs} $ | $V_{DS} = 10V, I_{BS} = 10A$ | 10 | 15 | - | S |
| Input Capacitance | | C_{iss} | $V_{DS} = 10V, V_{GS} = 0V,$ $f = 1MHz$ | - | 3000 | 4800 | pF |
| Reverse Transfer Capacitance | | C_{rss} | | - | 220 | 270 | |
| Output Capacitance | | C_{oss} | | - | 830 | 1200 | |
| Switching Time | Rise Time | t_r | <p>$I_D = 10A$ $V_{GS} = 10V$ $V_{th} = 2.0V$ $V_{DD} = 200V$ $Duty \leq 1\%, t_w = 10\mu s$</p> | - | 25 | 50 | ns |
| | Turn-on Time | t_{on} | | - | 60 | 120 | |
| | Fall Time | t_f | | - | 55 | 110 | |
| | Turn-off Time | t_{off} | | - | 280 | 560 | |
| Total Gate Charge (Gate-Source Plus Gate-Drain) | | Q_g | $V_{DD} = 400V, V_{GS} = -10V,$ $I_D = -20A$ | - | 65 | 130 | nC |
| Gate-Source Charge | | Q_{gs} | | - | 40 | - | |
| Gate-Drain ("Miller") Charge | | Q_{gd} | | - | 25 | - | |

Source-Drain Diode Ratings and Characteristics (Ta = 25°C)

| CHARACTERISTICS | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------------------------|-----------|-----------------------------|------|------|------|---------|
| Continuous Drain Reverse Current | I_{DR} | - | - | - | 20 | A |
| Pulse Drain Reverse Current | I_{DRP} | - | - | - | 80 | A |
| Diode Forward Voltage | V_{DSF} | $I_{DR} = 20A, V_{GS} = 0V$ | - | -1.0 | -1.7 | V |
| Reverse Recovery Time | t_r | $I_{DR} = 20A, V_{GS} = 0V$ | - | 450 | - | ns |
| Reverse Recovered Charge | Q_r | $dI_{DR}/dt = 100A/\mu s$ | - | 6.8 | - | μC |

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