

## Field Effect Transistor

### Silicon N Channel MOS Type (t-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 (Ta = 25°C)

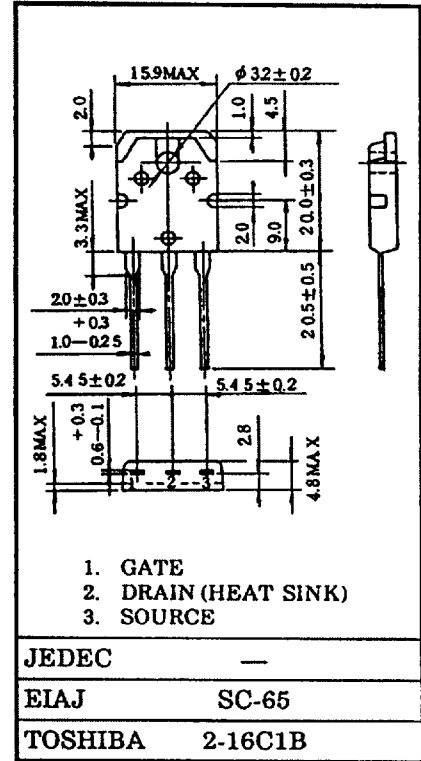
| CHARACTERISTIC                              | SYMBOL    | RATING    | UNIT |
|---|-----------|-----------|------|
| Drain-Source Voltage                        | $V_{DSS}$ | 500       | V    |
| Drain-Gate Voltage ( $R_{GS} = 20k\Omega$ ) | $V_{DGR}$ | 500       | V    |
| Gate-Source Voltage     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

#### Thermal Characteristics

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

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

Industrial Applications Unit in mm



Weight : 4.6g

**Electrical Characteristics (Ta = 25C)**

| CHARACTERISTIC                                  |               | SYMBOL        | TEST CONDITION                             | MIN.     | TYP. | MAX.     | UNIT     |
|---|---------------|---------------|--|----------|------|----------|----------|
| Gate Leakage Current                            |               | $I_{GSS}$     | $V_{GS} = \pm 25V, V_{DS} = 0V$            | -        | -    | $\pm 10$ | nA       |
| Gate-Source Breakdown Voltage                   |               | $V_{(BR)DSS}$ | $I_G = \pm 100V, V_{DS} = 0V$              | $\pm 30$ | -    | -        | $\mu A$  |
| Drain Cut-off Current                           |               | $I_{DSS}$     | $V_{DS} = 500V, V_{GS} = 0V$               | -        | -    | 100      | $\mu A$  |
| 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     | $\Omega$ |
| Forward Transfer Admittance                     |               | $ Y_{fs} $    | $V_{DS} = 10V, I_D = 10A$                  | 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     | $t_r$         |  | -        | 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 = 25C)**

| 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            | $V_{SF}$  | $I_{DR} = 20A, V_{GS} = 0V$ | -    | -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  | -    | $\mu C$ |

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