

Field Effect Transistor

Silicon N Channel MOS Type (π -MOS II.5)

High Speed, High Current DC-DC Converter,

Relay Drive and Motor Drive Applications

Features

- Low Drain-Source ON Resistance
 - $R_{DS(ON)} = 1.1\Omega$ (Typ.)
- High Forward Transfer Admittance
 - $|Y_{fs}| = 4.0S$ (Typ.)
- Low Leakage Current
 - $I_{DSS} = 300\mu A$ (Max.) @ $V_{DS} = 720V$
- Enhancement-Mode
 - $V_{th} = 1.5 \sim 3.5V$ @ $V_{DS} = 10V, I_D = 1mA$

Absolute 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 | 9 |
| | Pulse | I_{DP} | 27 |
| 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 | $^\circ C$ |

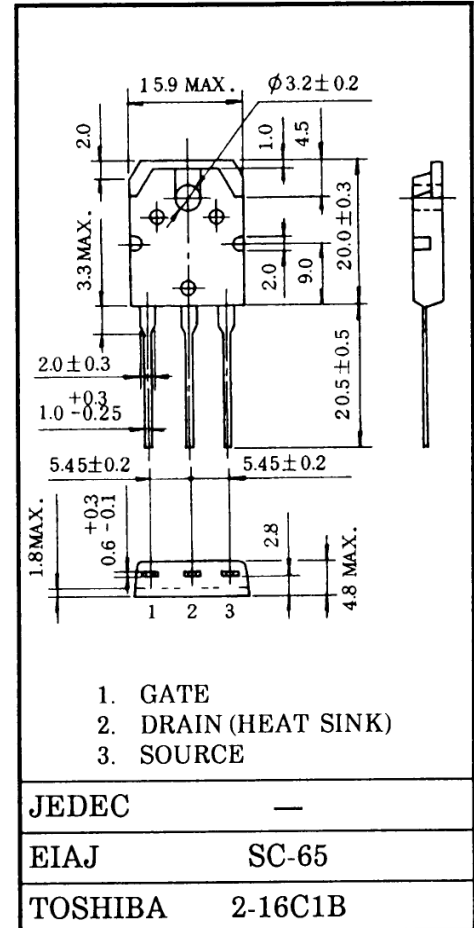
Thermal Characteristics

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

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

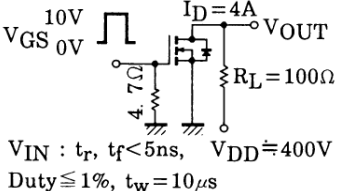
Industrial Applications

Unit in mm



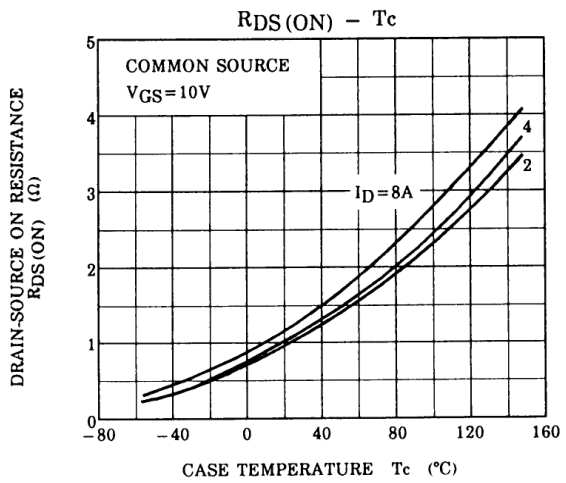
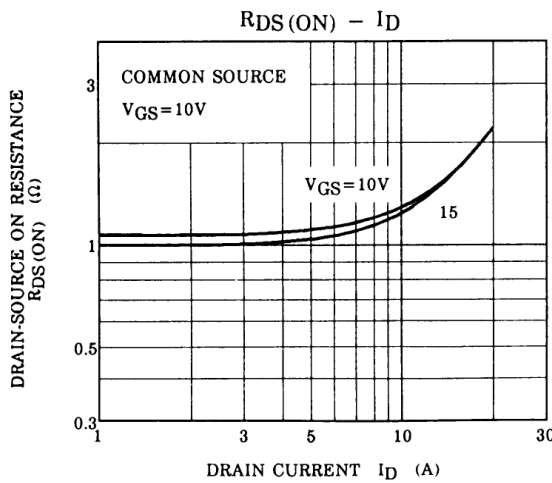
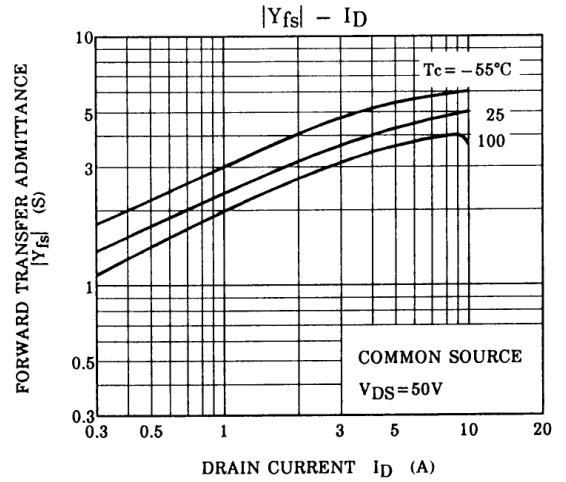
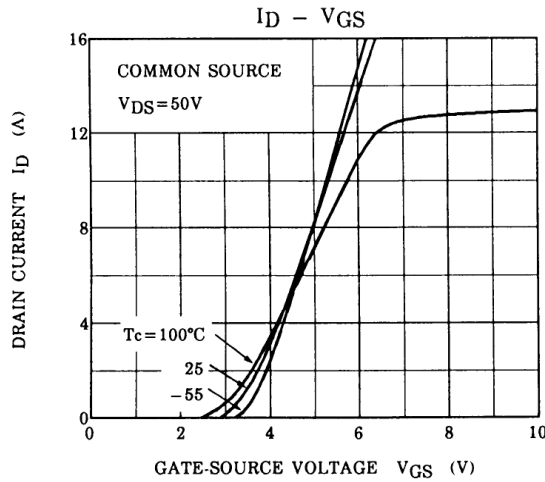
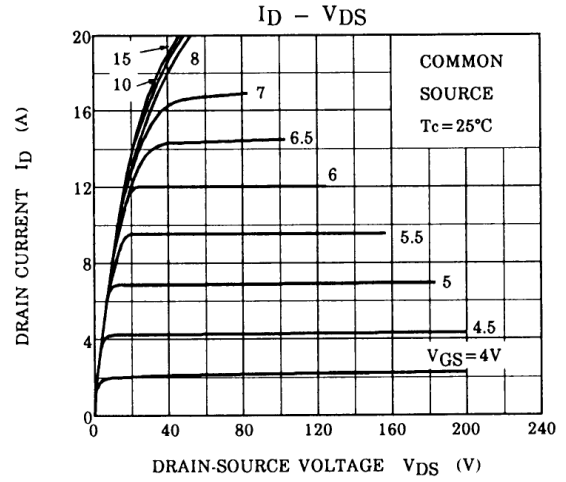
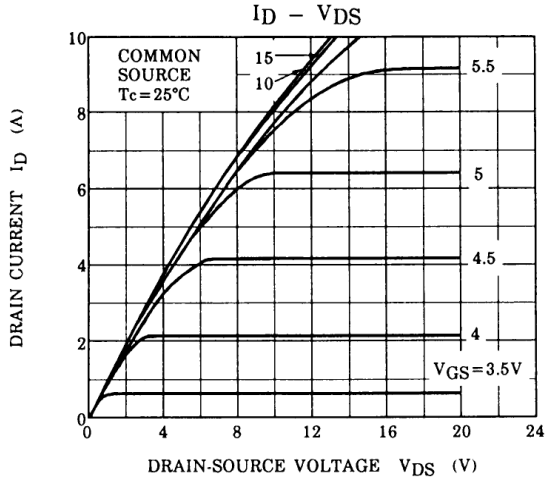
Weight : 4.6g

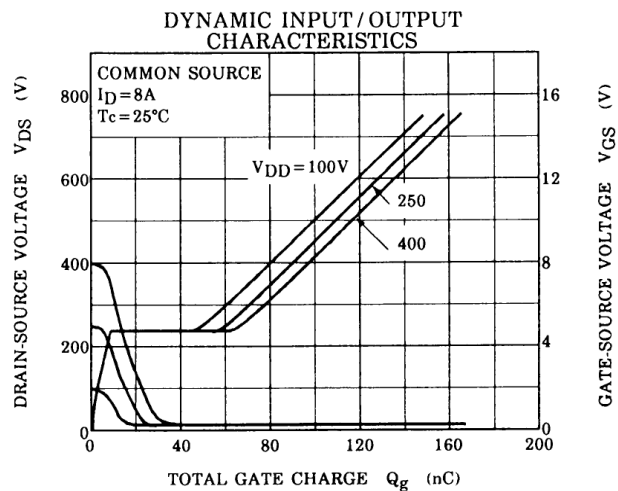
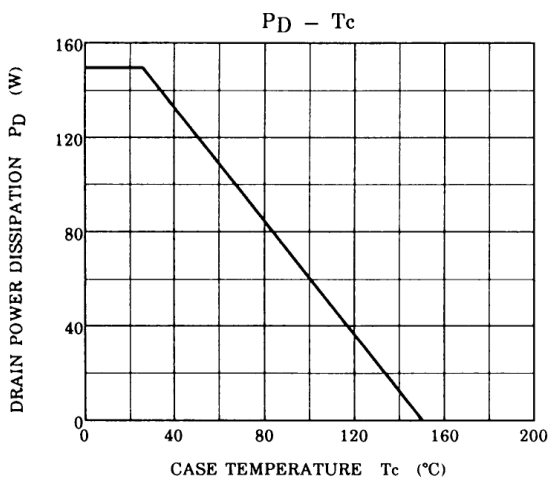
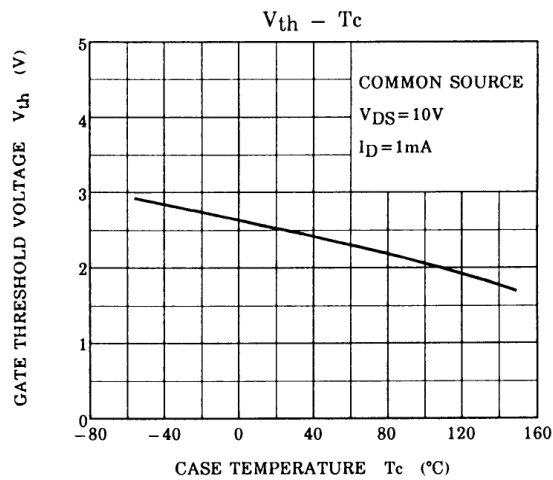
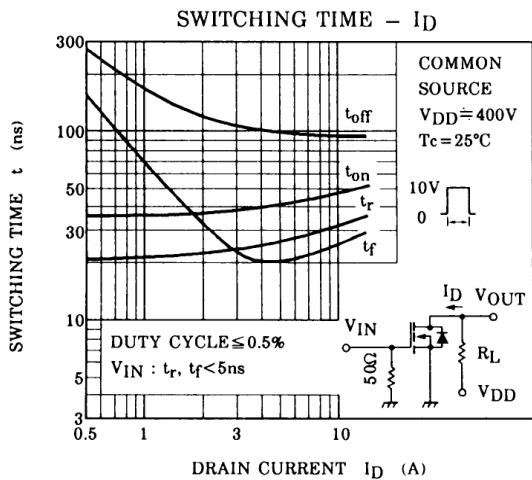
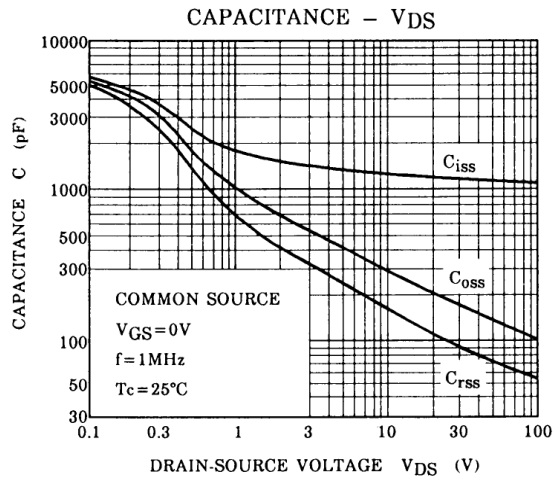
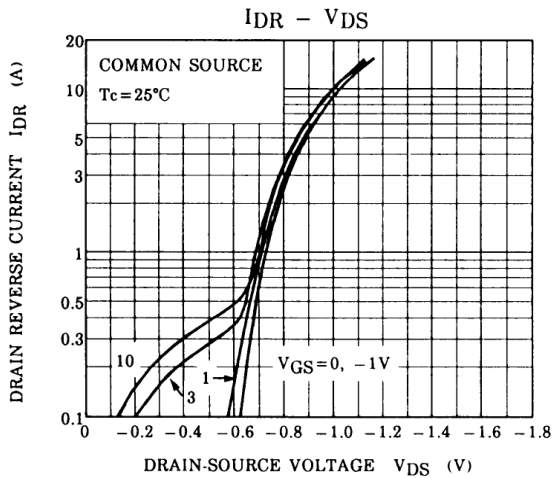
Electrical Characteristics (Ta = 25°C)

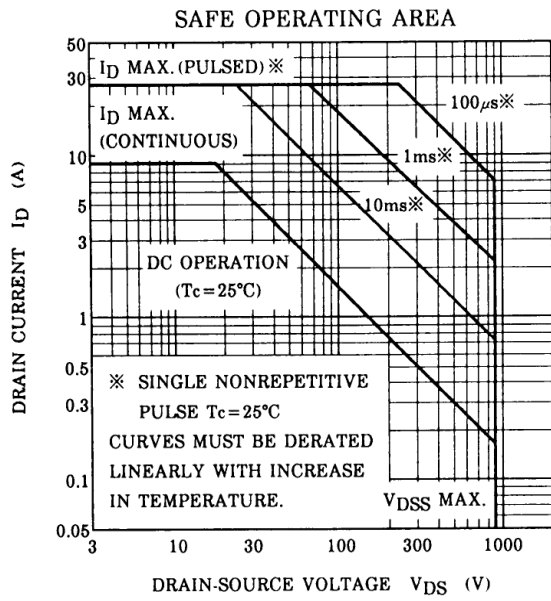
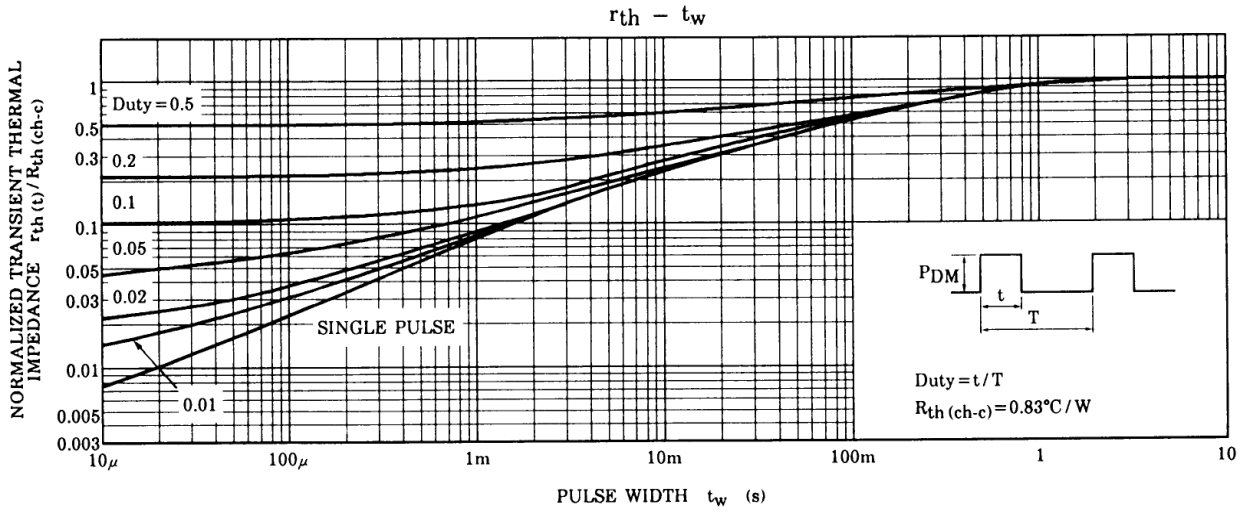
| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-------------------------------------------------|---------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|-----------|----------|
| Gate Leakage Current | | I_{GSS} | $V_{GS} = \pm 25V, V_{DS} = 0V$ | – | – | ± 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 | | $R_{DS(ON)}$ | $I_D = 4A, V_{GS} = 10V$ | – | 1.1 | 1.4 | Ω |
| Forward Transfer Admittance | | $ Y_{fs} $ | $V_{DS} = 20V, I_D = 4A$ | 2.0 | 4.0 | – | S |
| Input Capacitance | | C_{iss} | $V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$ | – | 1300 | 1800 | pF |
| Reverse Transfer Capacitance | | C_{rss} | | – | 100 | 150 | |
| Output Capacitance | | C_{oss} | | – | 180 | 260 | |
| Switching Time | Rise Time | t_r |  <p>$V_{GS} = 10V, 0V$ $I_D = 4A$ $R_L = 100\Omega$ $V_{IN} : t_r, t_f < 5ns, V_{DD} = 400V$ $Duty \leq 1\%, t_w = 10\mu s$</p> | – | 25 | 50 | ns |
| | Turn-on Time | t_{on} | | – | 40 | 80 | |
| | Fall Time | t_f | | – | 20 | 40 | |
| | Turn-off Time | t_{off} | | – | 100 | 200 | |
| Total Gate Charge (Gate-Source Plus Gate-Drain) | | Q_g | $V_{DD} = 400V, V_{GS} = 10V,$ $I_D = 9A$ | – | 120 | 240 | nC |
| Gate-Source Charge | | Q_{gs} | | – | 70 | – | |
| Gate-Drain ("Miller") Charge | | Q_{gd} | | – | 50 | – | |

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

| CHARACTERISTICS | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------------------------|-----------|----------------------------|------|------|------|------|
| Continuous Drain Reverse Current | I_{DR} | – | – | – | 9 | A |
| Pulse Drain Reverse Current | I_{DRP} | – | – | – | 27 | A |
| Diode Forward Voltage | V_{DSF} | $I_{DR} = 9A, V_{GS} = 0V$ | – | – | -2.0 | V |







Notes

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