

TOSHIBA Field Effect Transistor Silicon P Channel MOS Type

# 2SJ148

High Speed Switching Applications

Analog Switch Applications

Interface Applications

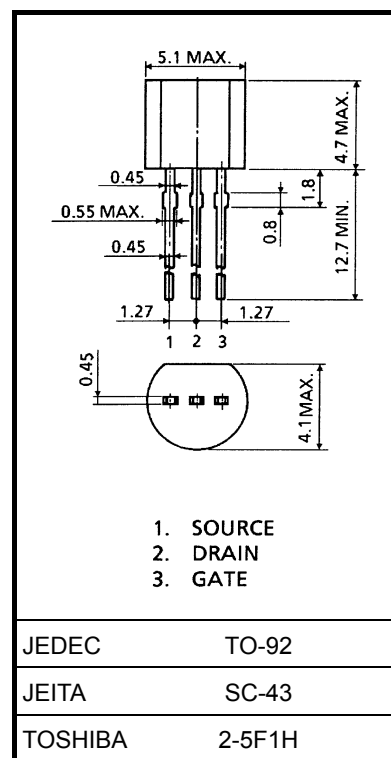
Unit: mm

- Excellent switching time:  $t_{on} = 14 \text{ ns}$  (typ.)
- High forward transfer admittance:  $|Y_{fs}| = 100 \text{ mS}$  (min)
- Low on resistance:  $R_{DS(ON)} = 1.3 \Omega$  (typ.)
- Enhancement-mode
- Complementary to 2SK982

## Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

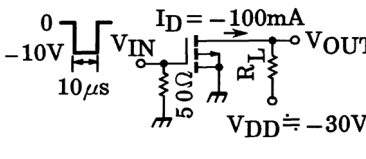
| Characteristics                                      |       | Symbol    | Rating   | Unit             |
|------------------------------------------------------|-------|-----------|----------|------------------|
| Drain-source voltage                                 |       | $V_{DSS}$ | -60      | V                |
| Gate-source voltage                                  |       | $V_{GSS}$ | $\pm 20$ | V                |
| Drain current                                        | DC    | $I_D$     | -200     | mA               |
|                                                      | Pulse | $I_{DP}$  | -800     |                  |
| Drain power dissipation ( $T_a = 25^\circ\text{C}$ ) |       | $P_D$     | 400      | mW               |
| Channel temperature                                  |       | $T_{ch}$  | 150      | $^\circ\text{C}$ |
| Storage temperature range                            |       | $T_{stg}$ | -55~150  | $^\circ\text{C}$ |

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

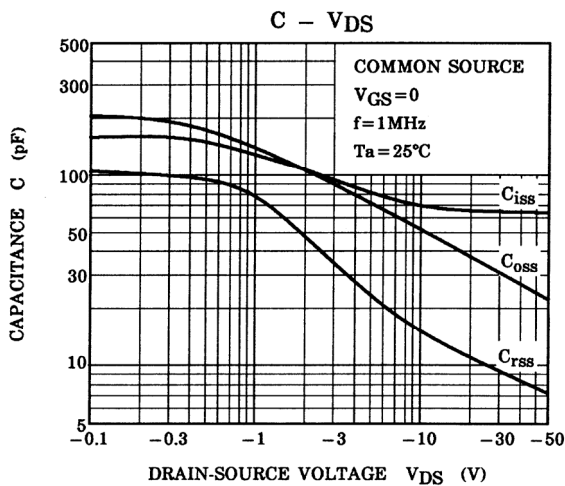
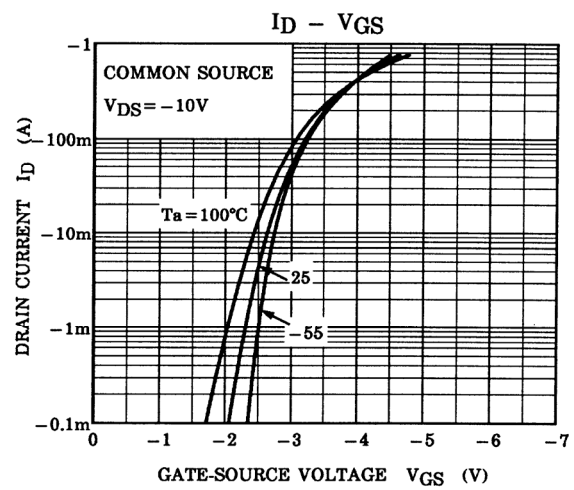
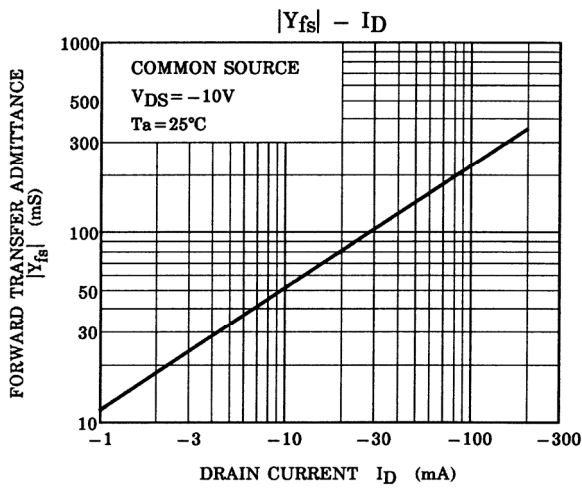
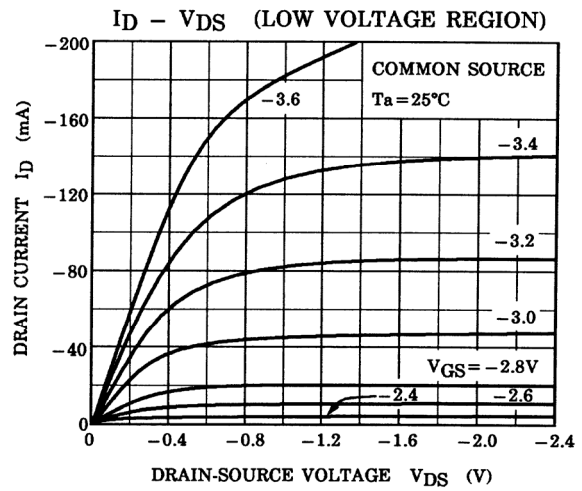
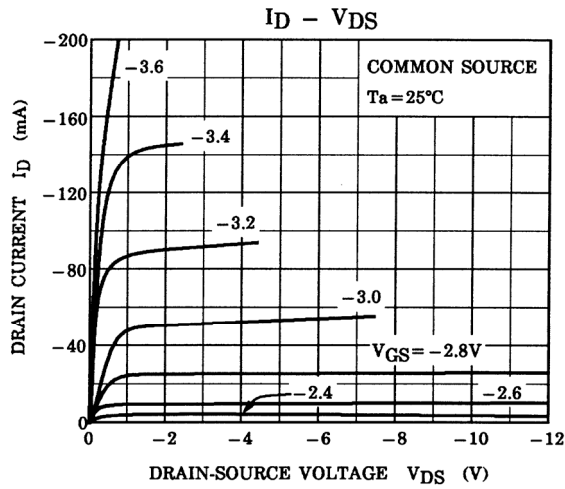


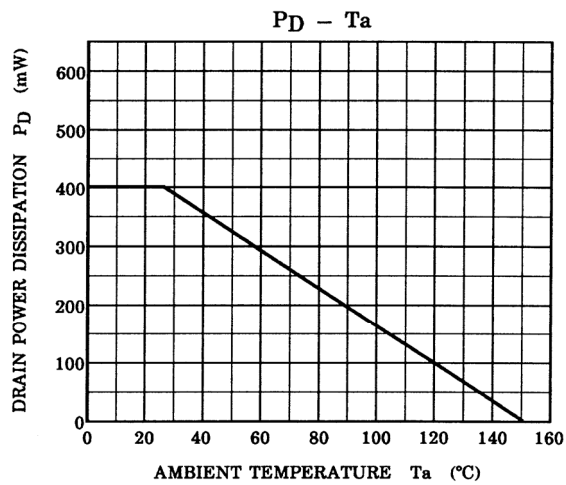
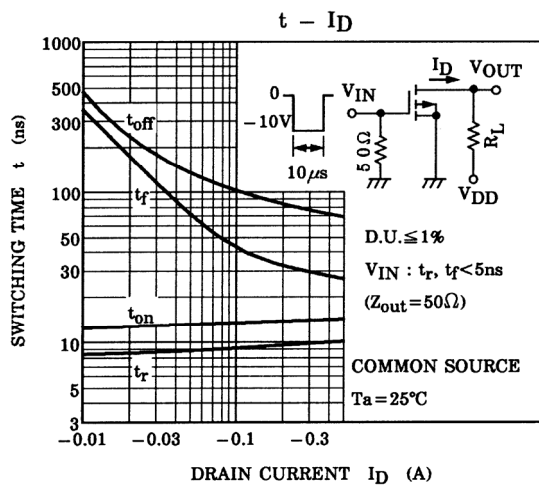
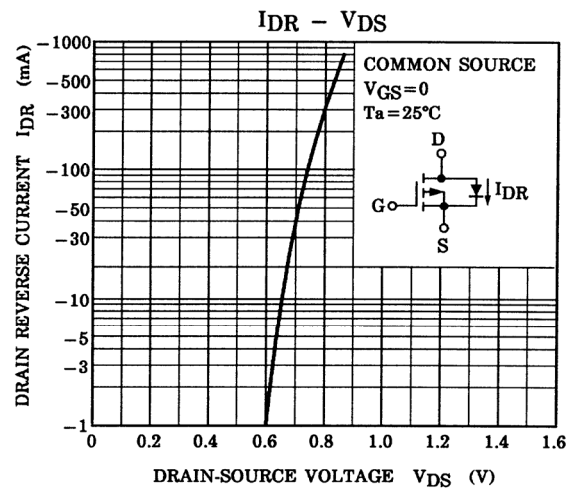
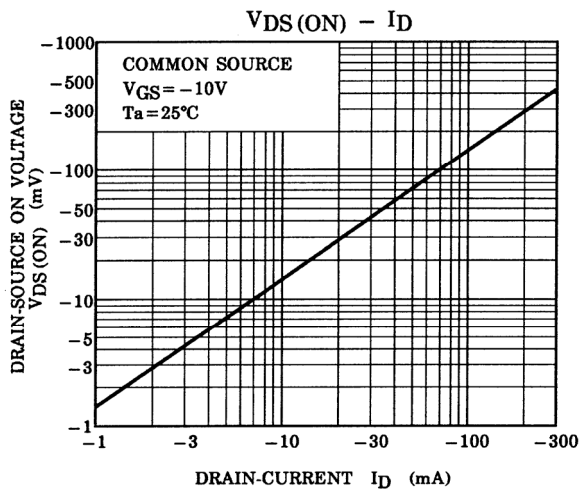
Weight: 0.21 g (typ.)

## Electrical Characteristics (Ta = 25°C)

| Characteristics                |               | Symbol        | Test Condition                                                                                                                                                                                                                                                                                                                         | Min | Typ. | Max       | Unit          |
|--------------------------------|---------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|-----------|---------------|
| Gate leakage current           |               | $I_{GSS}$     | $V_{GS} = \pm 10\text{ V}, V_{DS} = 0$                                                                                                                                                                                                                                                                                                 | —   | —    | $\pm 100$ | nA            |
| Drain cut-off current          |               | $I_{DSS}$     | $V_{DS} = -60\text{ V}, V_{GS} = 0$                                                                                                                                                                                                                                                                                                    | —   | —    | -10       | $\mu\text{A}$ |
| Drain-source breakdown voltage |               | $V_{(BR)DSS}$ | $I_D = -1\text{ mA}, V_{GS} = 0$                                                                                                                                                                                                                                                                                                       | -60 | —    | —         | V             |
| Gate threshold voltage         |               | $V_{th}$      | $V_{DS} = -10\text{ V}, I_D = -1\text{ mA}$                                                                                                                                                                                                                                                                                            | -2  | —    | -3.5      | V             |
| Forward transfer admittance    |               | $ Y_{fs} $    | $V_{DS} = -10\text{ V}, I_D = -50\text{ mA}$                                                                                                                                                                                                                                                                                           | 100 | —    | —         | mS            |
| Drain-source ON resistance     |               | $R_{DS(ON)}$  | $I_D = -50\text{ mA}, V_{GS} = -10\text{ V}$                                                                                                                                                                                                                                                                                           | —   | 1.3  | 2.0       | $\Omega$      |
| Drain-source ON voltage        |               | $V_{DS(ON)}$  | $I_D = -50\text{ mA}, V_{GS} = -10\text{ V}$                                                                                                                                                                                                                                                                                           | —   | -65  | -100      | mV            |
| Input capacitance              |               | $C_{iss}$     | $V_{DS} = -10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$                                                                                                                                                                                                                                                                                  | —   | 73   | 85        | pF            |
| Reverse transfer capacitance   |               | $C_{rss}$     | $V_{DS} = -10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$                                                                                                                                                                                                                                                                                  | —   | 15   | 22        | pF            |
| Output capacitance             |               | $C_{oss}$     | $V_{DS} = -10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$                                                                                                                                                                                                                                                                                  | —   | 48   | 60        | pF            |
| Switching time                 | Rise time     | $t_r$         |  <p><math>I_D = -100\text{ mA}</math><br/> <math>V_{IN}</math><br/> <math>-10\text{ V}</math><br/> <math>10\mu\text{s}</math><br/> <math>50\Omega</math><br/> <math>R_L</math><br/> <math>V_{OUT}</math><br/> <math>V_{DD} = -30\text{ V}</math></p> | —   | 8    | —         | ns            |
|                                | Turn-on time  | $t_{on}$      |                                                                                                                                                                                                                                                                                                                                        | —   | 14   | —         |               |
|                                | Fall time     | $t_f$         |                                                                                                                                                                                                                                                                                                                                        | —   | 35   | —         |               |
|                                | Turn-off Time | $t_{off}$     |                                                                                                                                                                                                                                                                                                                                        | —   | 100  | —         |               |

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





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20070701-EN GENERAL

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