

TOSHIBA Field Effect Transistor Silicon P Channel MOS Type (L²-π-MOSV)

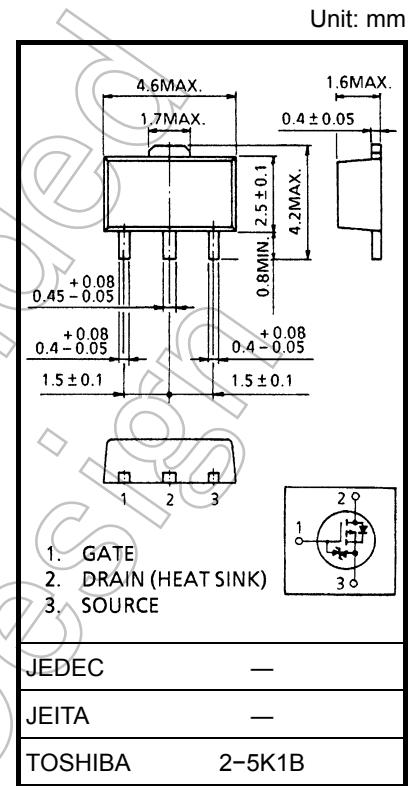
2SJ465

DC-DC Converter, Relay Drive and Motor Drive Applications

- 2.5-V gate drive
- Low drain-source ON-resistance : $R_{DS(ON)} = 0.54 \Omega$ (typ.)
- High forward transfer admittance : $|Y_{fs}| = 1.7 S$ (typ.)
- Low leakage current : $I_{DSS} = -100 \mu A$ (max) ($V_{DS} = -16 V$)
- Enhancement mode : $V_{th} = -0.5$ to $-1.1 V$
($V_{DS} = -10 V, I_D = -200 \mu A$)

Absolute Maximum Ratings (Ta = 25°C)

| Characteristics | Symbol | Rating | Unit |
|--|----------------|------------|------|
| Drain-source voltage | V_{DSS} | -16 | V |
| Drain-gate voltage ($R_{GS} = 20 k\Omega$) | V_{DGR} | -16 | V |
| Gate-source voltage | V_{GSS} | ± 8 | V |
| Drain current | DC (Note 1) | I_D | -2 |
| | Pulse (Note 1) | I_{DP} | -6 |
| Drain power dissipation | P_D | 0.5 | W |
| Drain power dissipation (Note 2) | P_D | 1.5 | W |
| Channel temperature | T_{ch} | 150 | °C |
| Storage temperature range | T_{stg} | -55 to 150 | °C |



Weight: 0.05 g (typ.)

Note 1: Ensure that the channel temperature does not exceed 150°C.

Note 2: Mounted on a ceramic substrate (25.4 mm × 25.4 mm × 0.8 mm)

Note 3: 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).

Thermal Characteristics

| Characteristics | Symbol | Max | Unit |
|--|----------------|-----|--------|
| Thermal resistance, channel to ambient | $R_{th(ch-a)}$ | 250 | °C / W |

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

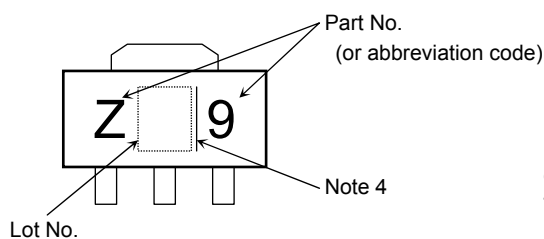
Electrical Characteristics (Ta = 25°C)

| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---------------|----------------|---|------|------|----------|---------------|
| Gate leakage current | | I_{GSS} | $V_{GS} = \pm 6.5 \text{ V}, V_{DS} = 0 \text{ V}$ | — | — | ± 10 | μA |
| Drain cut-off current | | I_{DSS} | $V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}$ | — | — | -100 | μA |
| Drain-source breakdown voltage | | $V_{(BR) DSS}$ | $I_D = -10 \text{ mA}, V_{GS} = 0 \text{ V}$ | -16 | — | — | V |
| Gate threshold voltage | | V_{th} | $V_{DS} = -10 \text{ V}, I_D = -200 \mu\text{A}$ | -0.5 | — | -1.1 | V |
| Drain-source ON-resistance | | $R_{DS(ON)}$ | $V_{GS} = -2.5 \text{ V}, I_D = -0.5 \text{ A}$ | — | 0.82 | 1.0 | Ω |
| | | | $V_{GS} = -4 \text{ V}, I_D = -1 \text{ A}$ | — | 0.54 | 0.71 | |
| Forward transfer admittance | | $ Y_{fs} $ | $V_{DS} = -10 \text{ V}, I_D = -1 \text{ A}$ | 0.8 | 1.7 | — | S |
| Input capacitance | | C_{iss} | $V_{DS} = -10 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$ | — | 270 | — | pF |
| Reverse transfer capacitance | | C_{rss} | | — | 25 | — | |
| Output capacitance | | C_{oss} | | — | 115 | — | |
| Switching time | Rise time | t_r | | — | 200 | — | ns |
| | Turn-on time | t_{on} | | — | 250 | — | |
| | Fall time | t_f | | — | 200 | — | |
| | Turn-off time | t_{off} | | — | 500 | — | |
| Total gate charge (Gate-source plus gate-drain) | | Q_g | $V_{DD} \approx -16 \text{ V}, V_{GS} = -5 \text{ V}, I_D = -2 \text{ A}$ | — | 5 | — | nC |
| Gate-source charge | | Q_{gs} | | — | 3.2 | — | |
| Gate-drain ("miller") charge | | Q_{gd} | | — | 1.8 | — | |

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

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|-----------|---|-----|------|-----|---------------|
| Continuous drain reverse current (Note 1) | I_{DR} | — | — | — | -2 | A |
| Pulse drain reverse current (Note 1) | I_{DRP} | — | — | — | -6 | A |
| Forward voltage (diode) | V_{DSF} | $I_{DR} = -2 \text{ A}, V_{GS} = 0 \text{ V}$ | — | — | 1.7 | V |
| Reverse recovery time | t_{rr} | $I_{DR} = -2 \text{ A}, V_{GS} = 0 \text{ V}$ | — | 130 | — | ns |
| Reverse recovery charge | Q_{rr} | $dI_{DR} / dt = 50 \text{ A} / \mu\text{s}$ | — | 0.13 | — | μC |

Marking

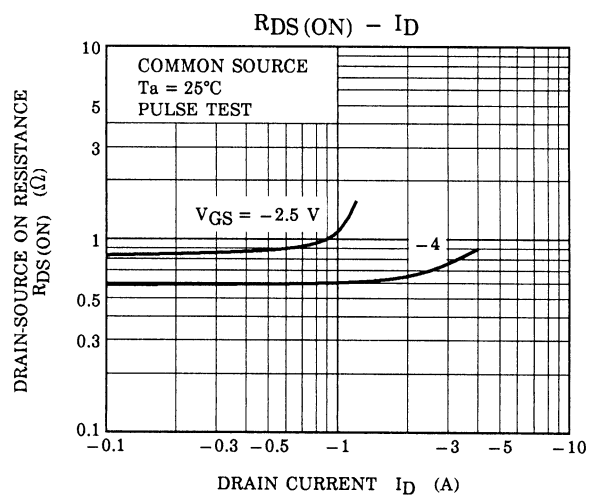
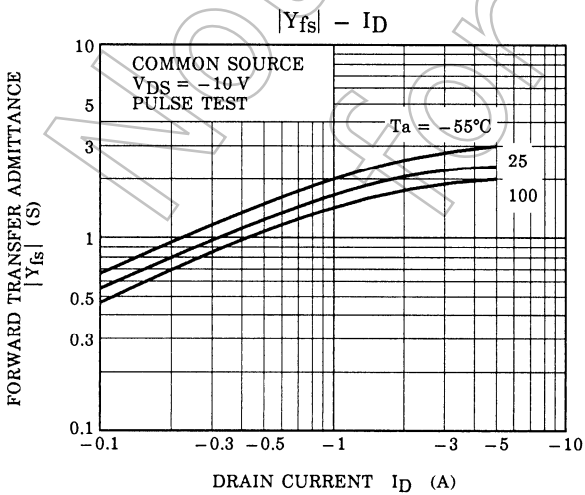
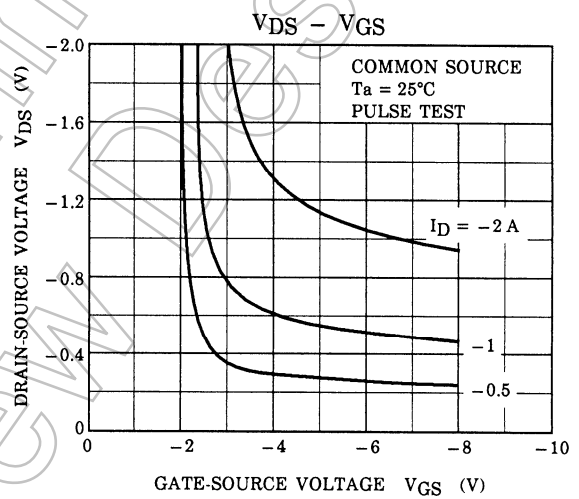
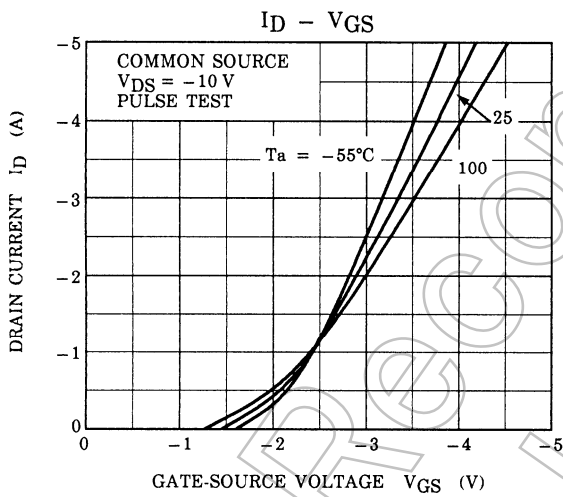
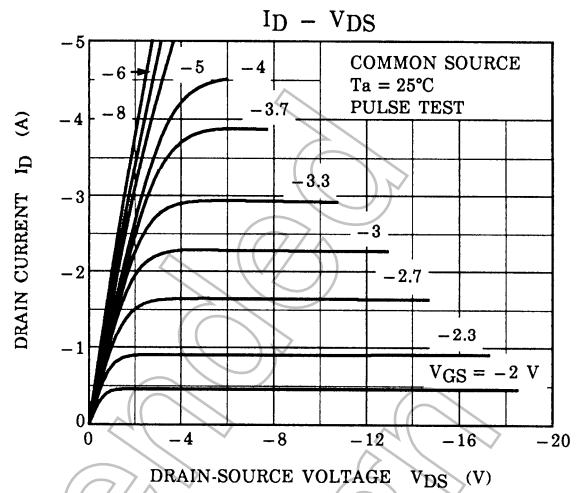
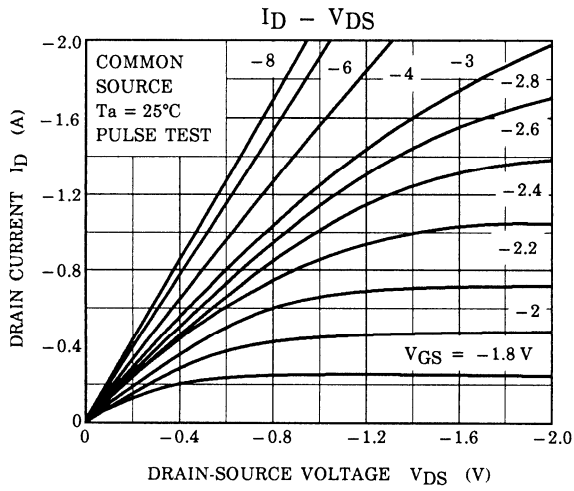


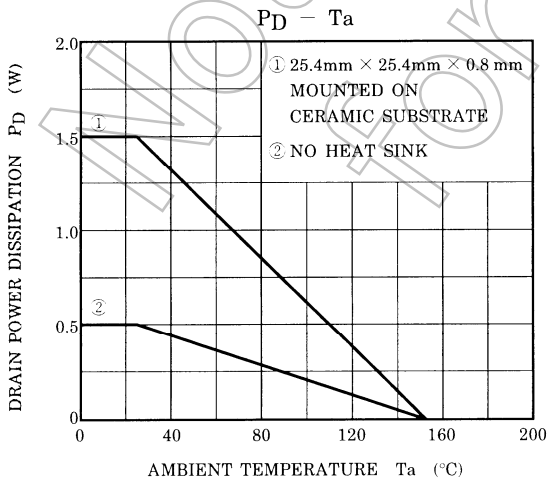
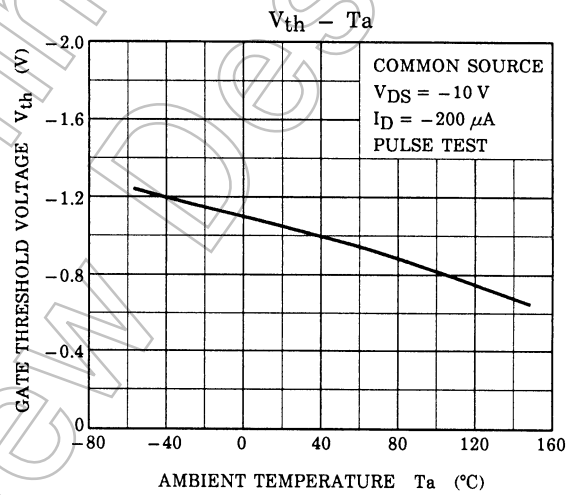
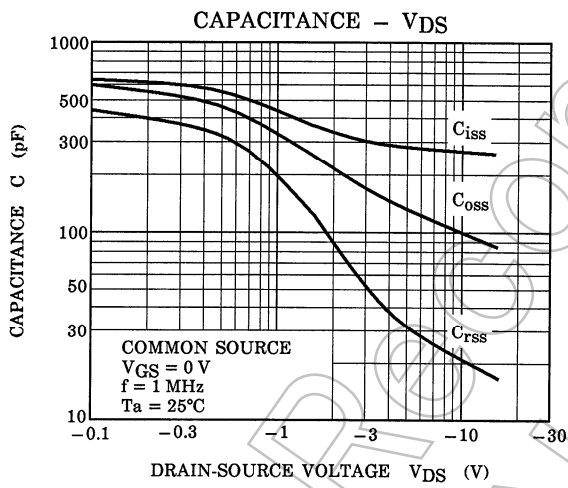
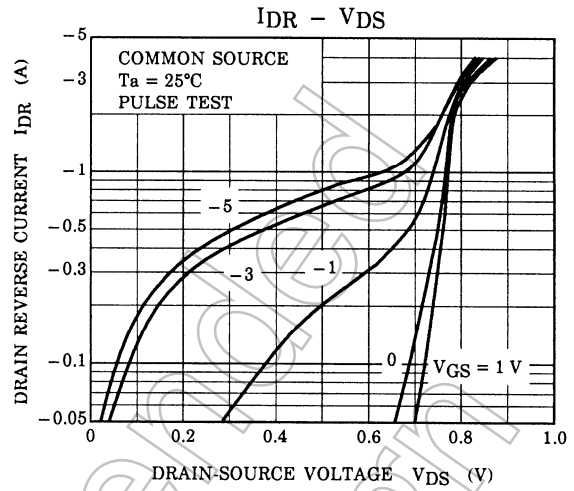
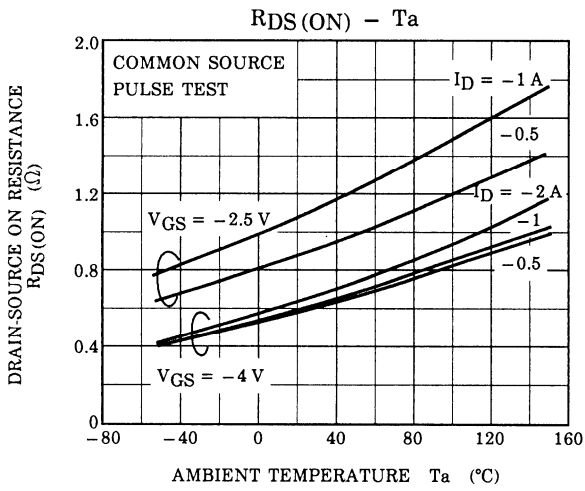
Note 4: A line to the right of a Lot No. identifies the indication of product Labels.

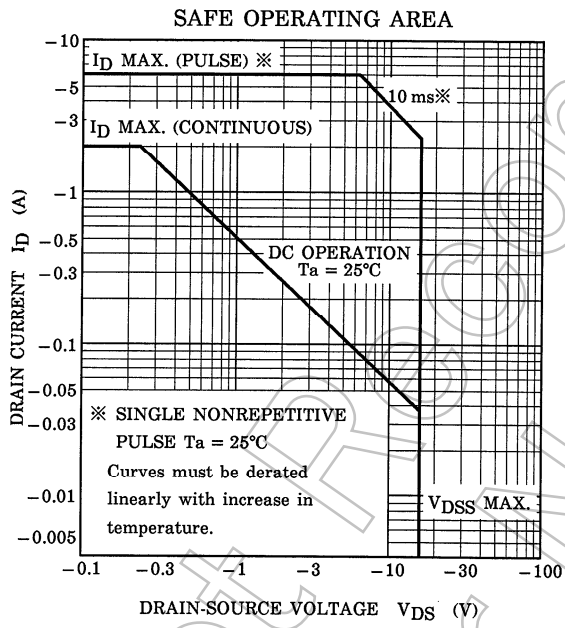
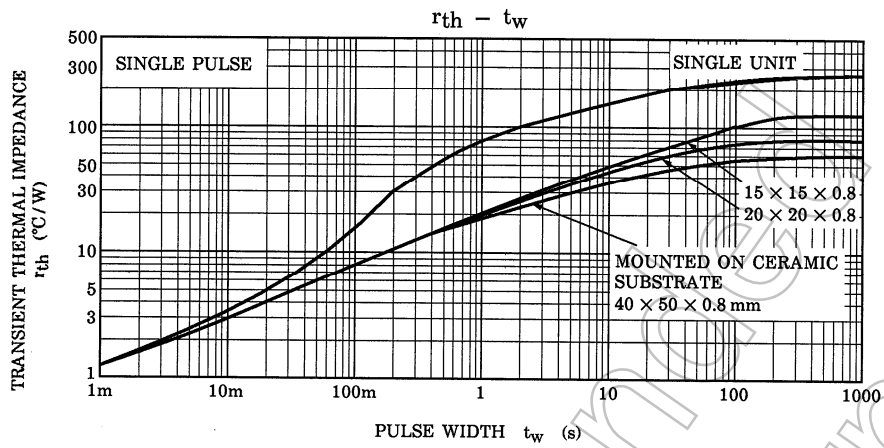
Without a line: [[Pb]]/INCLUDES > MCV

With a line: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

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