

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type (π-MOSII⁵)

2SK1489

Chopper Regulator Applications

- Low drain-source ON resistance : $R_{DS(ON)} = 0.8 \Omega$ (typ.)
- High forward transfer admittance : $|Y_{fs}| = 6.0 S$ (typ.)
- Low leakage current : $I_{DSS} = 300 \mu A$ (max) ($V_{DS} = 800 V$)
- Enhancement-mode : $V_{th} = 1.5 \sim 3.5 V$ ($V_{DS} = 10 V, I_D = 1 mA$)

Maximum Ratings (Ta = 25°C)

| Characteristics | | Symbol | Rating | Unit |
|--|----------------|-----------|----------|------|
| Drain-source voltage | | V_{DSS} | 1000 | V |
| Drain-gate voltage ($R_{GS} = 20 k\Omega$) | | V_{DGR} | 1000 | V |
| Gate-source voltage | | V_{GSS} | ± 30 | V |
| Drain current | DC (Note 1) | I_D | 12 | A |
| | Pulse (Note 1) | I_{DP} | 36 | |
| Drain power dissipation ($T_c = 25^\circ C$) | | P_D | 200 | W |
| Channel temperature | | T_{ch} | 150 | °C |
| Storage temperature range | | T_{stg} | -55~150 | °C |

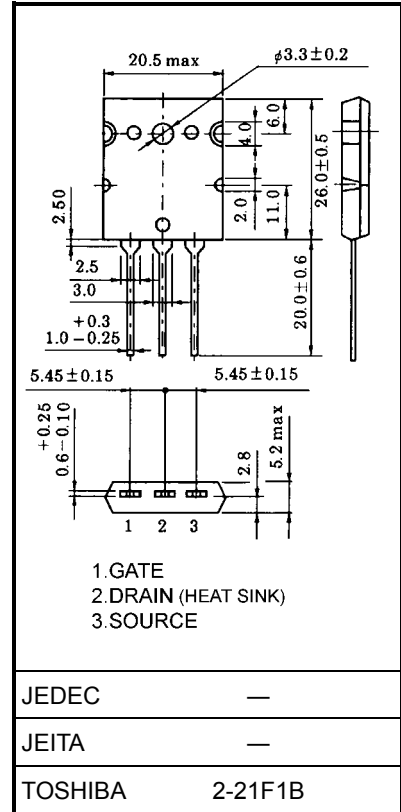
Thermal Characteristics

| Characteristics | Symbol | Max | Unit |
|--|----------------|-------|--------|
| Thermal resistance, channel to case | $R_{th(ch-c)}$ | 0.625 | °C / W |
| Thermal resistance, channel to ambient | $R_{th(ch-a)}$ | 35.7 | °C / W |

Note 1: Please use devices on condition that the channel temperature is below 150°C.

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

Unit: mm



Weight: 9.75 g (typ.)

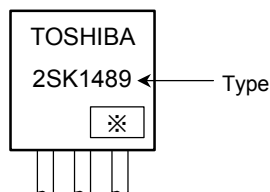
Electrical Characteristics (Ta = 25°C)

| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---------------|---------------|--|------|------|-----------|---------------|
| Gate leakage current | | I_{GSS} | $V_{GS} = \pm 25\text{ V}, V_{DS} = 0\text{ V}$ | — | — | ± 100 | nA |
| Drain cut-off current | | I_{DSS} | $V_{DS} = 800\text{ V}, V_{GS} = 0\text{ V}$ | — | — | 300 | μA |
| Drain-source breakdown voltage | | $V_{(BR)DSS}$ | $I_D = 10\text{ mA}, V_{GS} = 0\text{ V}$ | 1000 | — | — | V |
| Gate threshold voltage | | V_{th} | $V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$ | 1.5 | — | 3.5 | V |
| Drain-source ON resistance | | $R_{DS(ON)}$ | $V_{GS} = 10\text{ V}, I_D = 6\text{ A}$ | — | 0.8 | 1.0 | Ω |
| Forward transfer admittance | | $ Y_{fs} $ | $V_{DS} = 20\text{ V}, I_D = 6\text{ A}$ | 4.0 | 6.0 | — | S |
| Input capacitance | | C_{iss} | $V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$ | — | 2000 | — | pF |
| Reverse transfer capacitance | | C_{rss} | | — | 220 | — | |
| Output capacitance | | C_{oss} | | — | 360 | — | |
| Switching time | Rise time | t_r | | — | 100 | — | ns |
| | Turn-on time | t_{on} | | — | 140 | — | |
| | Fall time | t_f | | — | 150 | — | |
| | Turn-off time | t_{off} | | — | 500 | — | |
| Total gate charge (Gate-source plus gate-drain) | | Q_g | $V_{DD} \approx 400\text{ V}, V_{GS} = 10\text{ V}, I_D = 12\text{ A}$ | — | 110 | — | nC |
| Gate-source charge | | Q_{gs} | | — | 50 | — | |
| Gate-drain ("miller") charge | | Q_{gd} | | — | 60 | — | |

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

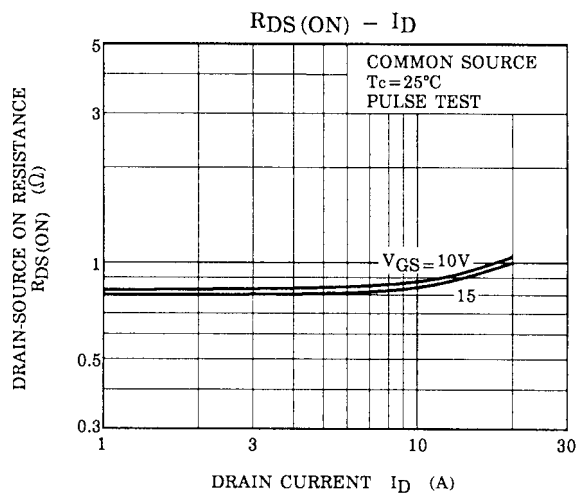
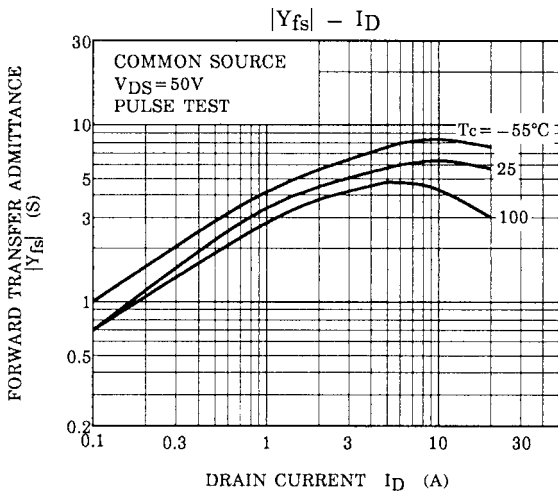
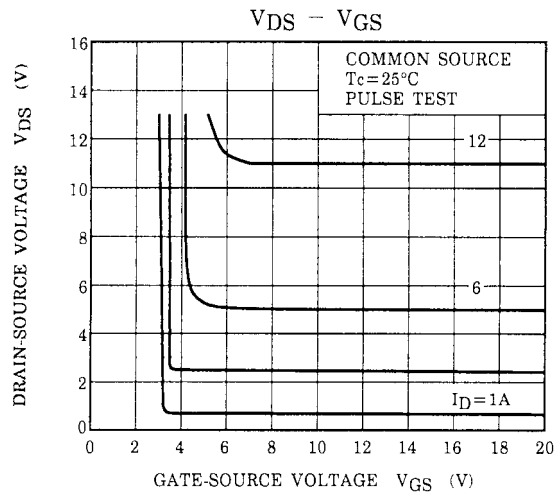
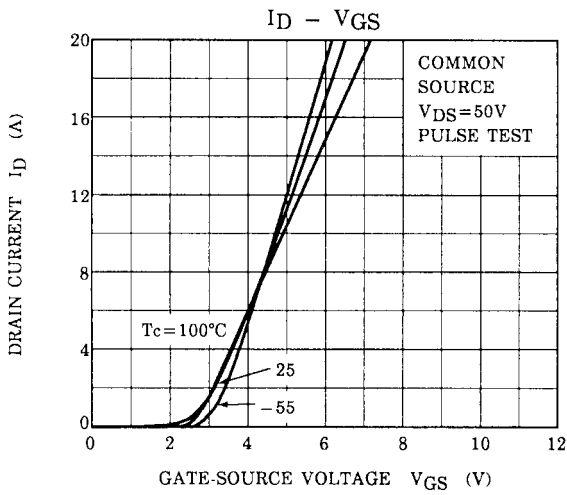
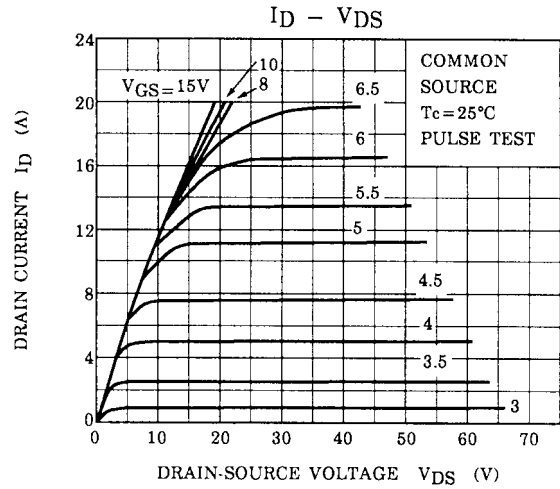
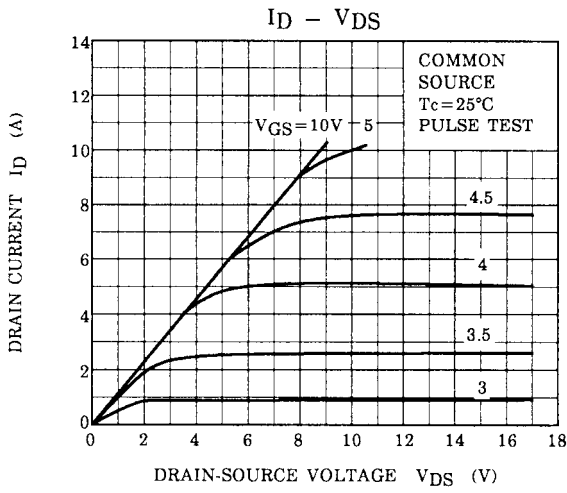
| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|-----------|---|-----|------|------|------|
| Continuous drain reverse current (Note 1) | I_{DR} | — | — | — | 12 | A |
| Pulse drain reverse current (Note 1) | I_{DRP} | — | — | — | 36 | A |
| Forward voltage (diode) | V_{DSF} | $I_{DR} = 12\text{ A}, V_{GS} = 0\text{ V}$ | — | — | -1.6 | V |

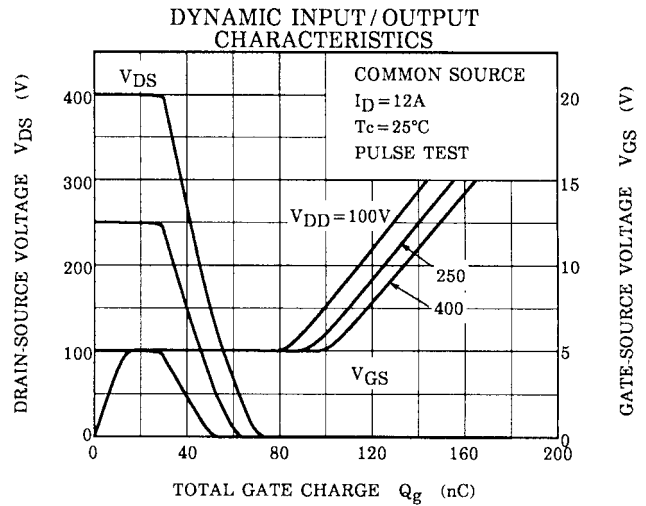
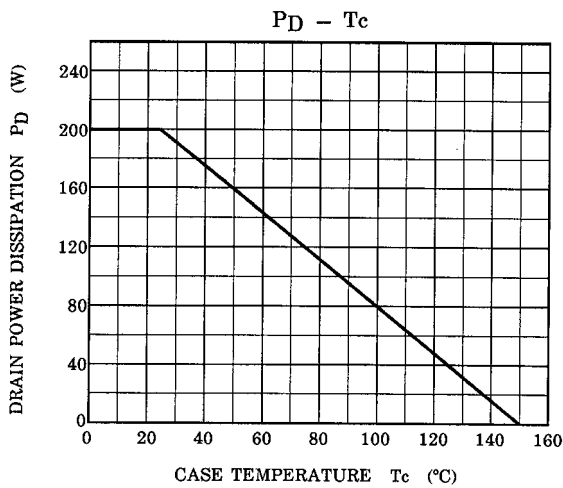
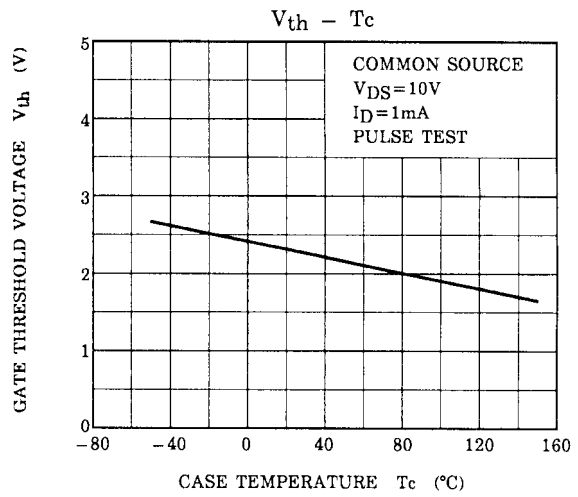
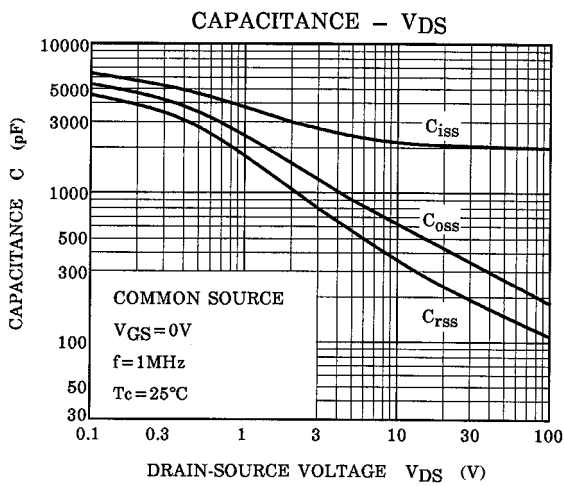
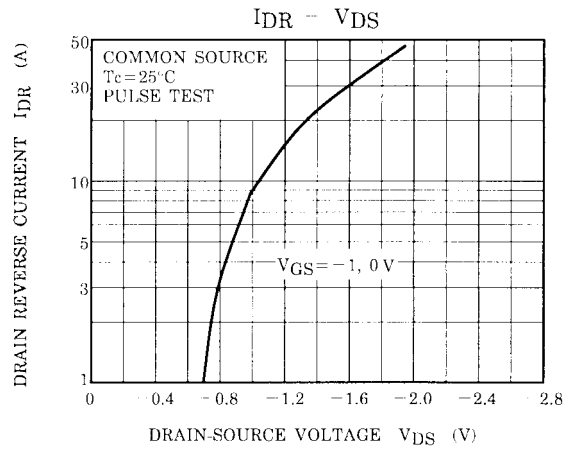
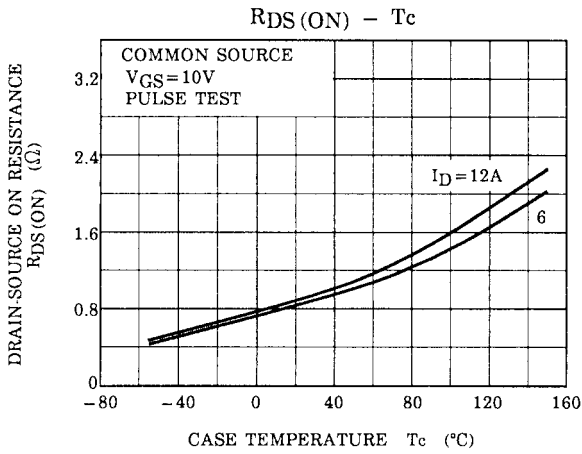
Marking

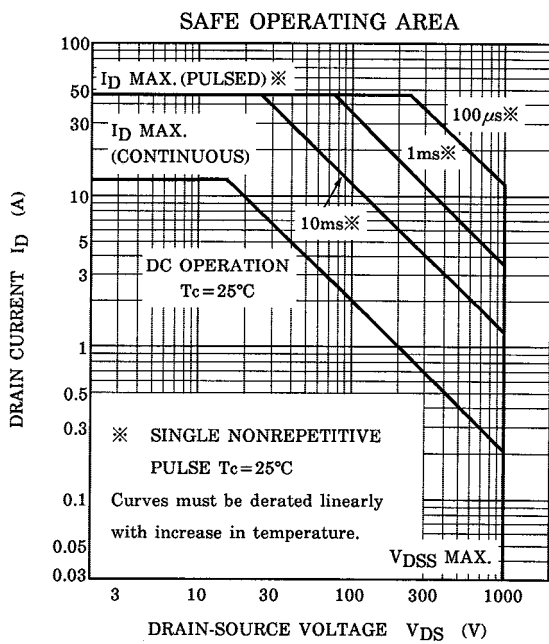
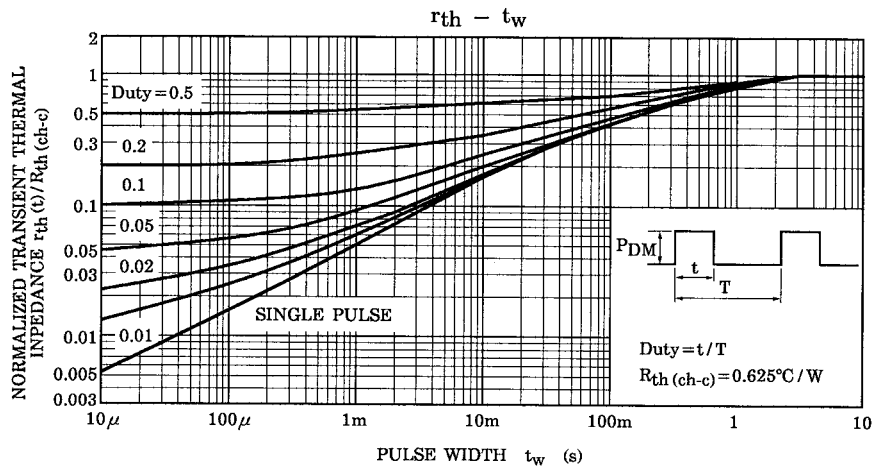


⊛ Lot Number

Month (starting from alphabet A)
 Year (last number of the christian era)







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