

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (L²-π-MOSV)

2SK2615

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS
Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.23\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 2.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100\mu A$ (Max.) ($V_{DS} = 60V$)
- Enhancement-Mode : $V_{th} = 0.8 \sim 2.0V$ ($V_{DS} = 10V, I_D = 1mA$)

MAXIMUM RATINGS (Ta = 25°C)

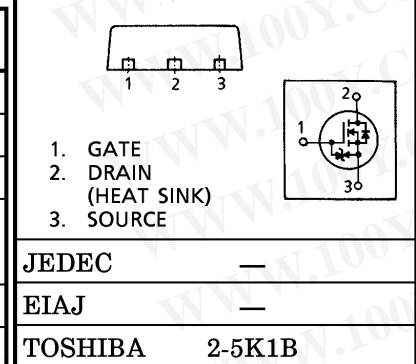
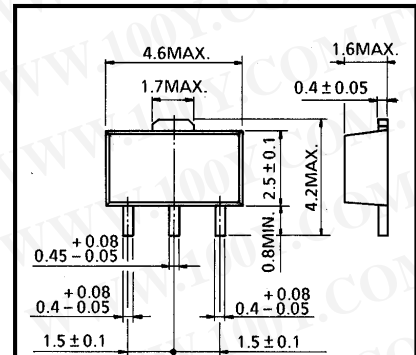
| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|---|-------|-----------|---------|------|
| Drain-Source Voltage | | V_{DSS} | 60 | V |
| Drain-Gate Voltage ($R_{GS} = 20k\Omega$) | | V_{DGR} | 60 | V |
| Gate-Source Voltage | | V_{GSS} | ±20 | V |
| Drain Current | DC | I_D | 2 | A |
| | Pulse | I_{DP} | 6 | |
| Drain Power Dissipation (Ta = 25°C) | | P_D | 0.5 | W |
| Drain Power Dissipation | | P_D^* | 1.5 | W |
| Channel Temperature | | T_{ch} | 150 | °C |
| Storage Temperature Range | | T_{stg} | -55~150 | °C |

* : Mounted on ceramic substrate (600mm²×0.8t)

HERMAL CHARACTERISTICS

| CHARACTERISTIC | 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.



Weight : 0.05g (Typ.)

MARKING

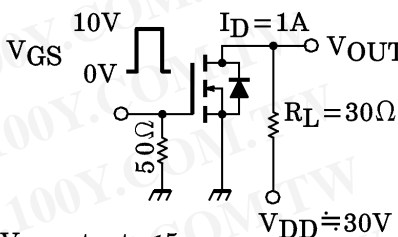


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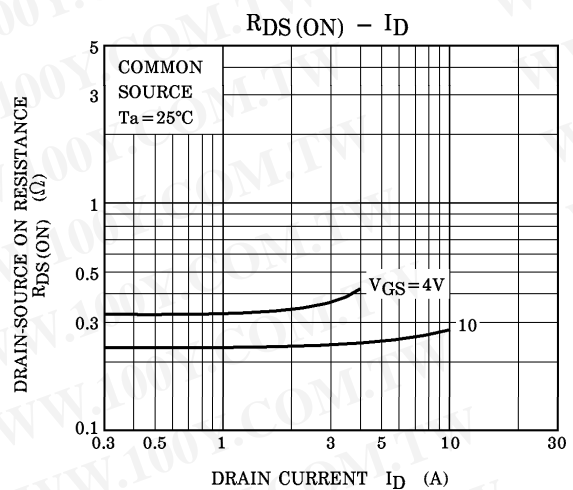
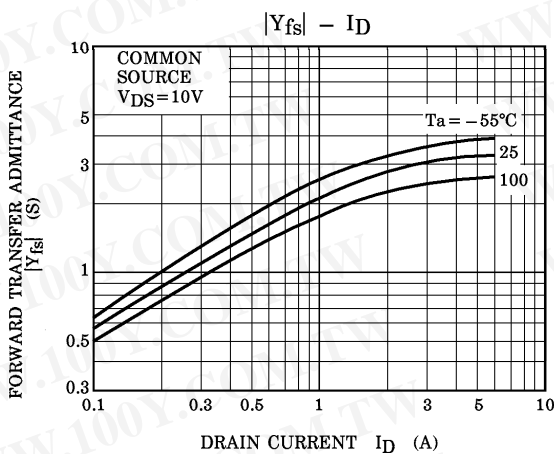
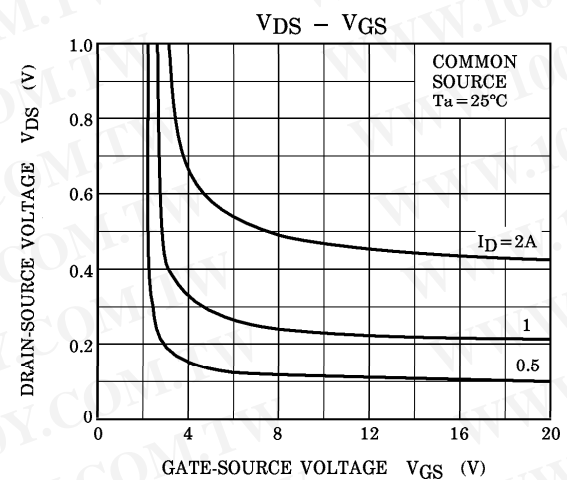
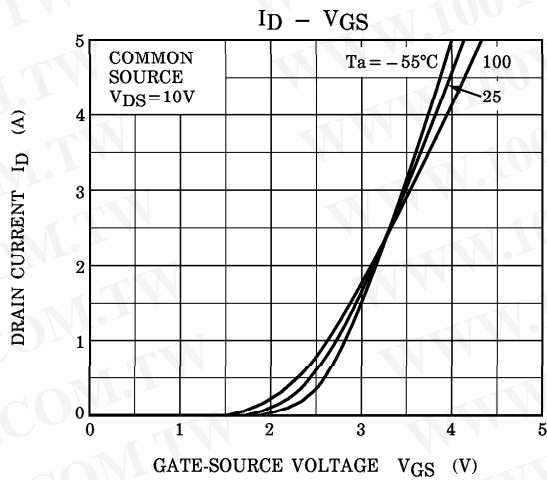
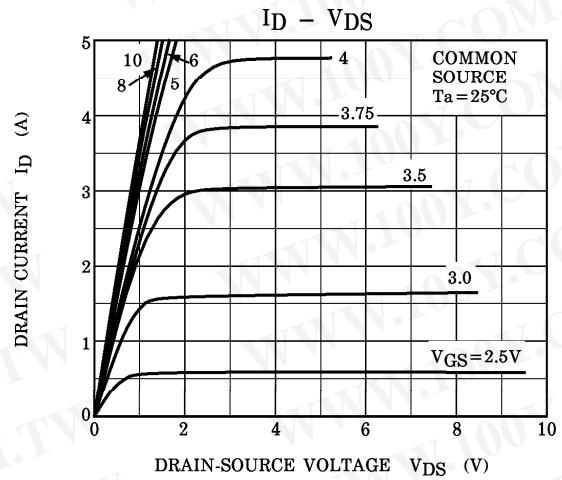
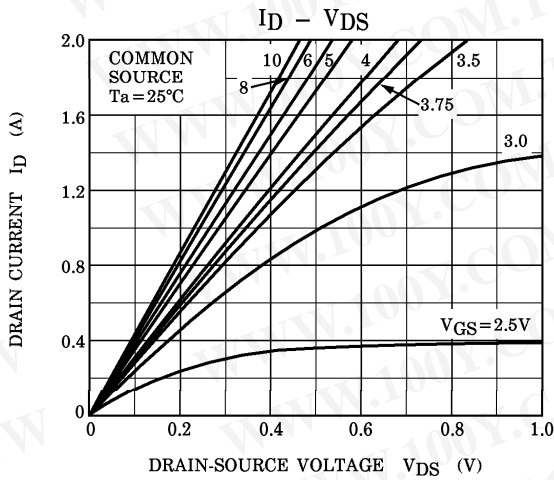
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---------------|----------|--|---|------|------|------|
| Gate Leakage Current | | IGSS | VGS = ±16V, VDS = 0V | — | — | ±10 | μA |
| Drain Cut-off Current | | IDSS | VDS = 60V, VGS = 0V | — | — | 100 | μA |
| Drain-Source Breakdown Voltage | | V(BR)DSS | ID = 10mA, VGS = 0V | 60 | — | — | V |
| Gate Threshold Voltage | | Vth | VDS = 10V, ID = 1mA | 0.8 | — | 2.0 | V |
| Drain-Source ON Resistance | | RDS(ON) | VGS = 4V, ID = 1A | — | 0.33 | 0.44 | Ω |
| | | | VGS = 10V, ID = 1A | — | 0.23 | 0.30 | |
| Forward Transfer Admittance | | Yfs | VDS = 10V, ID = 1A | 1.0 | 2.0 | — | S |
| Input Capacitance | | Ciss | VDS = 10V, VGS = 0V, f = 1MHz | — | 150 | — | pF |
| Reverse Transfer Capacitance | | Crss | | — | 25 | — | |
| Output Capacitance | | Coss | | — | 70 | — | |
| Switching Time | Rise Time | tr |  <p>VGS = 10V, 0V ID = 1A VOUT RL = 30Ω VDD = 30V</p> | — | 25 | — | ns |
| | Turn-on Time | ton | | — | 30 | — | |
| | Fall Time | tf | | — | 50 | — | |
| | Turn-off Time | toff | | VIN : tr, tf < 5ns, Duty ≤ 1%, tw = 10μs | — | 150 | |
| Total Gate Charge (Gate-Source Plus Gate-Drain) | | Qg | VDD = 48V, VGS = 10V, ID = 2A | — | 6.0 | — | nC |
| Gate-Source Charge | | Qgs | | — | 4.6 | — | |
| Gate-Drain ("Miller") Charge | | Qgd | | — | 1.4 | — | |

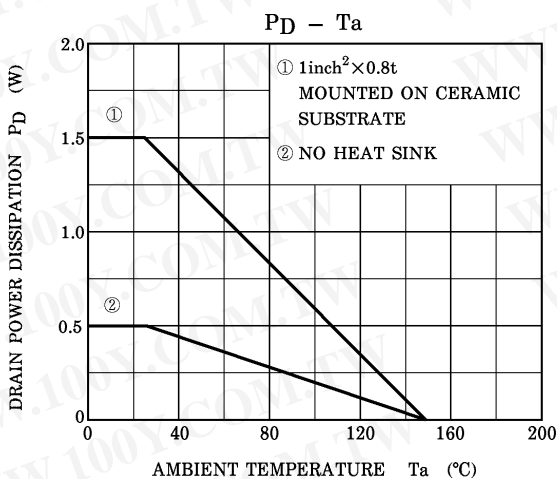
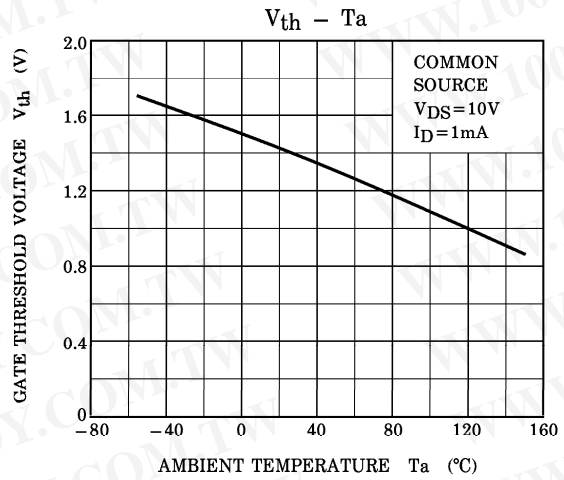
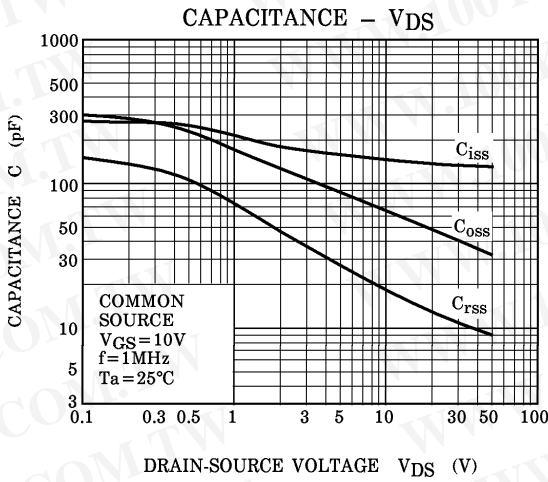
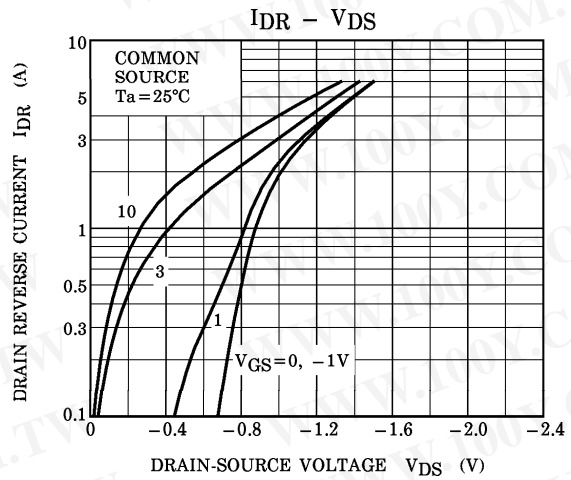
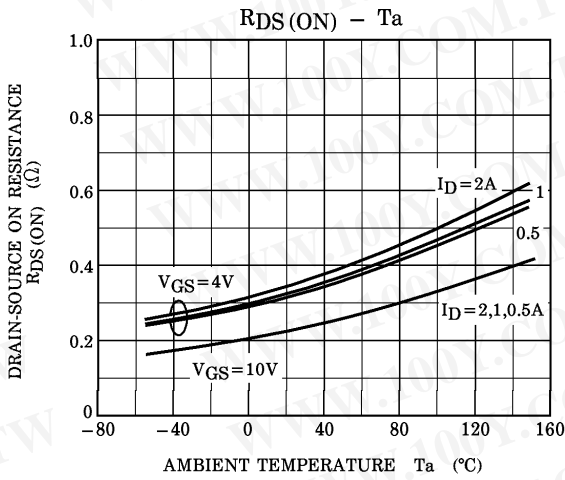
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------------------------|--------|----------------------|------|------|------|------|
| Continuous Drain Reverse Current | IDR | — | — | — | 2 | A |
| Pulse Drain Reverse Current | IDRP | — | — | — | 6 | A |
| Diode Forward Voltage | VDSF | IDR = 2A, VGS = 0V | — | — | -1.5 | V |
| Reverse Recovery Time | trr | IDR = 2A, VGS = 0V | — | 100 | — | ns |
| Reverse Recovered Charge | Qrr | dIDR / dt = 50A / μs | — | 40 | — | μC |

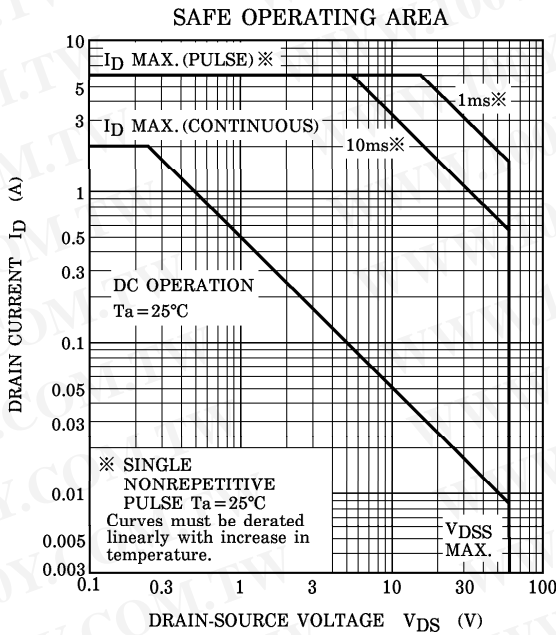
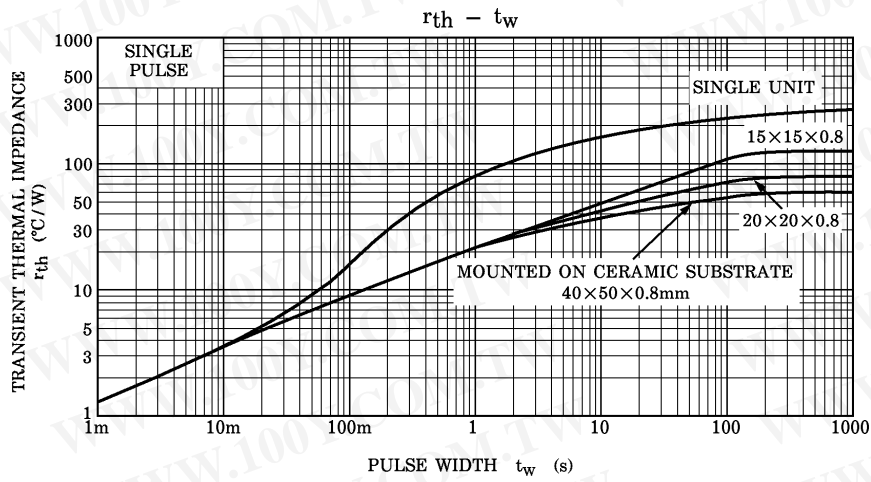
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