Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

# TT8J3

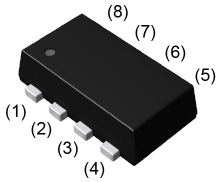
-30V Pch+Pch Middle Power MOSFET

Datasheet

| | |
|---|---|
| $V_{DSS}$ | -30V |
| $R_{DS(on)}$(Max.) | 84mΩ |
| $I_D$ | ±2.5A |
| $P_D$ | 1.25W |

## ●Outline

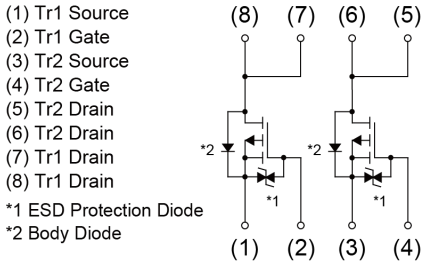
TSST8




## ●Features

1) Low on - resistance.
2) Small Surface Mount Package .
3) Pb-free lead plating ; RoHS compliant.
4) Halogen Free.

## ●Inner circuit




## ●Application

Switching

## ●Packaging specifications

| | | |
|---|---|---|
| Type | Packing | Embossed Tape |
| | Reel size (mm) | 180 |
| | Tape width (mm) | 8 |
| | Basic ordering unit (pcs) | 3000 |
| | Taping code | TR |
| | Marking | J03 |

## ●Absolute maximum ratings ($T_a$ = 25°C) <It is the same ratings for the Tr1 and Tr2>

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain - Source voltage | | $V_{DSS}$ | -30 | V |
| Continuous drain current | | $I_D$ | ±2.5 | A |
| Pulsed drain current | | $I_{D,pulse}$ *1 | ±6 | A |
| Gate - Source voltage | | $V_{GSS}$ | ±20 | V |
| Power dissipation | total | $P_D$ *2 | 1.25 | W |
| | element | | 1.0 | |
| Junction temperature | | $T_j$ | 150 | ℃ |
| Range of storage temperature | | $T_{stg}$ | -55 to +150 | ℃ |

## ●Thermal resistance

| Parameter | | Symbol | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Thermal resistance, junction - ambient | total | $R_{thJA}$*2 | - | 100 | - | |
| | element | | - | 125 | - | |

## ●Electrical characteristics ($T_a$ = 25°C) <It is the same characteristics for the Tr1 and Tr2>

| Parameter | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Drain - Source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = -1mA | -30 | - | - | V |
| Breakdown voltage temperature coefficient | $\frac{\Delta V_{(BR)DSS}}{\Delta T_j}$ | $I_D$ = -1mA referenced to 25°C | - | -24.1 | - | mV/°C |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ = -30V, $V_{GS}$ = 0V | - | - | -1 | μA |
| Gate - Source leakage current | $I_{GSS}$ | $V_{DS}$ = 0V, $V_{GS}$ = ±20V | - | - | ±10 | μA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}$ = -10V, $I_D$ = -1mA | -1.0 | - | -2.5 | V |
| Gate threshold voltage temperature coefficient | $\frac{\Delta V_{GS(th)}}{\Delta T_j}$ | $I_D$ = -1mA referenced to 25°C | - | 3.3 | - | mV/°C |
| Static drain - source on - state resistance | $R_{DS(on)}$*3 | $V_{GS}$ = -10V, $I_D$ = -2.5A | - | 65 | 84 | mΩ |
| | | $V_{GS}$ = -4.5V, $I_D$ = -1.2A | - | 100 | 130 | |
| | | $V_{GS}$ = -4V, $I_D$ = -1.2A | - | 120 | 160 | |
| Transconductance | $g_{fs}$*3 | $V_{DS}$ = -10V, $I_D$ = -2.5A | 1.8 | - | - | S |

*1 Pw ≤ 10μs, Duty cycle ≤ 1%

*2 Mounted on a ceramic board.

*3 Pulsed

●**Electrical characteristics** ($T_a$ = 25°C) <It is the same characteristics for the Tr1 and Tr2>

| Parameter | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Input capacitance | $C_{iss}$ | $V_{GS}$ = 0V | - | 460 | - | pF |
| Output capacitance | $C_{oss}$ | $V_{DS}$ = -10V | - | 65 | - | |
| Reverse transfer capacitance | $C_{rss}$ | f = 1MHz | - | 40 | - | |
| Turn - on delay time | $t_{d(on)}$ *3 | $V_{DD} \simeq$ -15V, $V_{GS}$ = -10V | - | 7 | - | ns |
| Rise time | $t_r$ *3 | $I_D$ = -1.2A | - | 20 | - | |
| Turn - off delay time | $t_{d(off)}$ *3 | $R_L$ = 12.5Ω | - | 35 | - | |
| Fall time | $t_f$ *3 | $R_G$ = 10Ω | - | 14 | - | |

●**Gate charge characteristics** ($T_a$ = 25°C) <It is the same characteristics for the Tr1 and Tr2>

| Parameter | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Total gate charge | $Q_g$ *3 | $V_{DD} \simeq$ -15V, $I_D$ = -2.5A $V_{GS}$ = -5V | - | 4.8 | - | nC |
| Gate - Source charge | $Q_{gs}$ *3 | | - | 1.8 | - | |
| Gate - Drain charge | $Q_{gd}$ *3 | | - | 1.2 | - | |

●**Body diode electrical characteristics** (Source-Drain) ($T_a$ = 25°C)

<It is the same characteristics for the Tr1 and Tr2>

| Parameter | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Body diode continuous forward current | $I_S$ | $T_a$ = 25°C | - | - | -0.8 | A |
| Body diode pulse current | $I_{SP}$ *1 | | - | - | -6 | |
| Forward voltage | $V_{SD}$ *3 | $V_{GS}$ = 0V, $I_S$ = -2.5A | - | - | -1.2 | V |

## ●Electrical characteristic curves

Fig.1 Power Dissipation Derating Curve

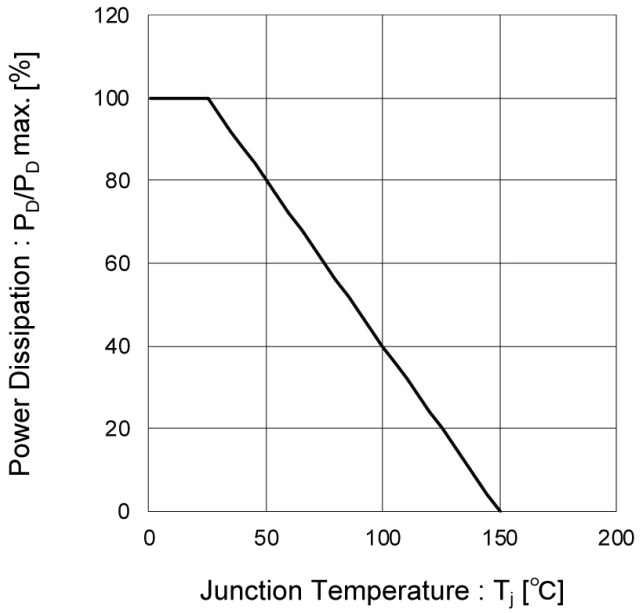



Fig.2 Maximum Safe Operating Area

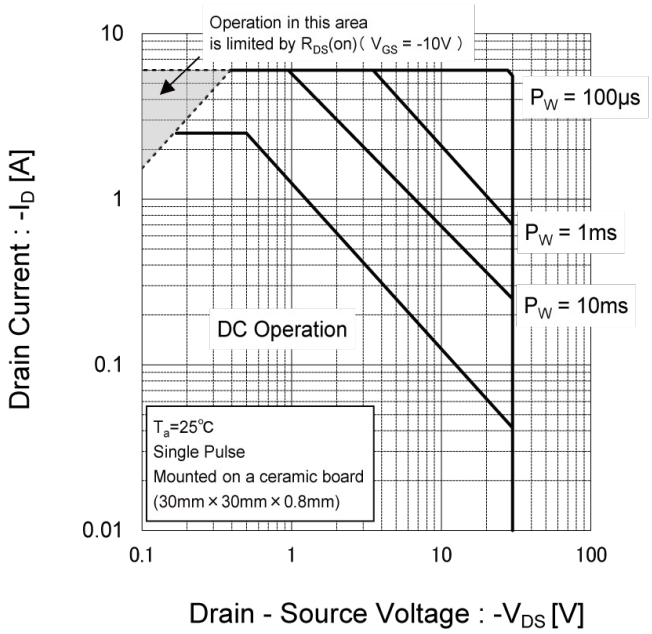



Fig.3 Normalized Transient Thermal Resistance vs. Pulse Width

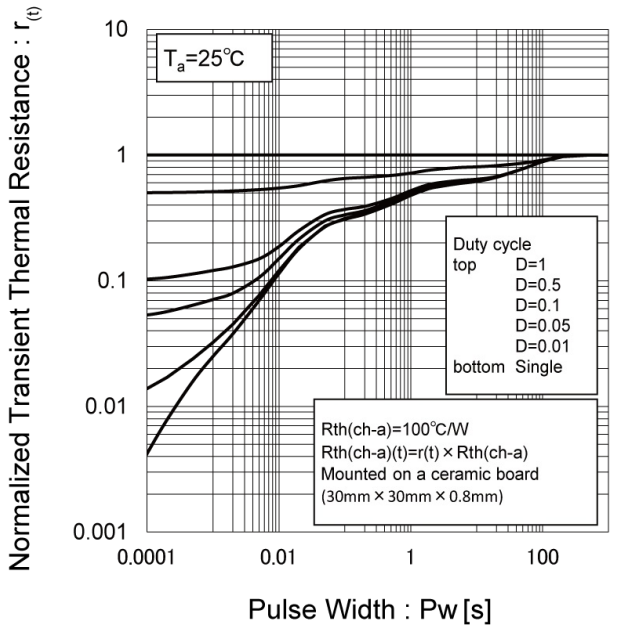
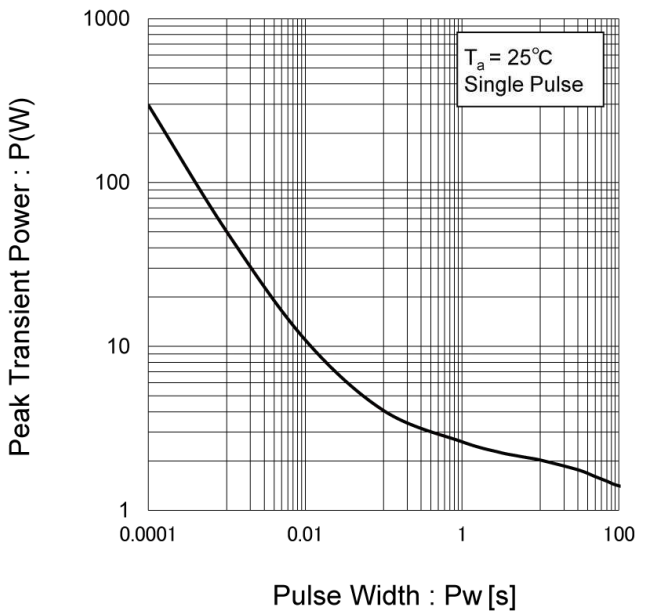



Fig.4 Single Pulse Maximum Power dissipation



## ●Electrical characteristic curves

Fig.5 Typical Output Characteristics(I)

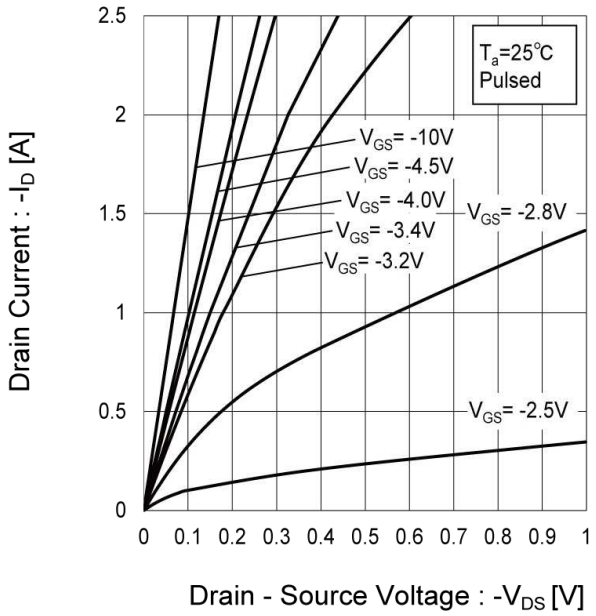



Fig.6 Typical Output Characteristics(II)

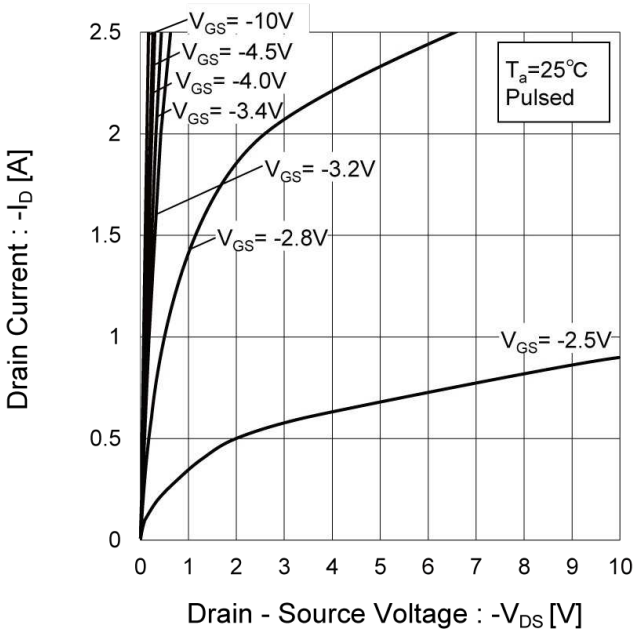
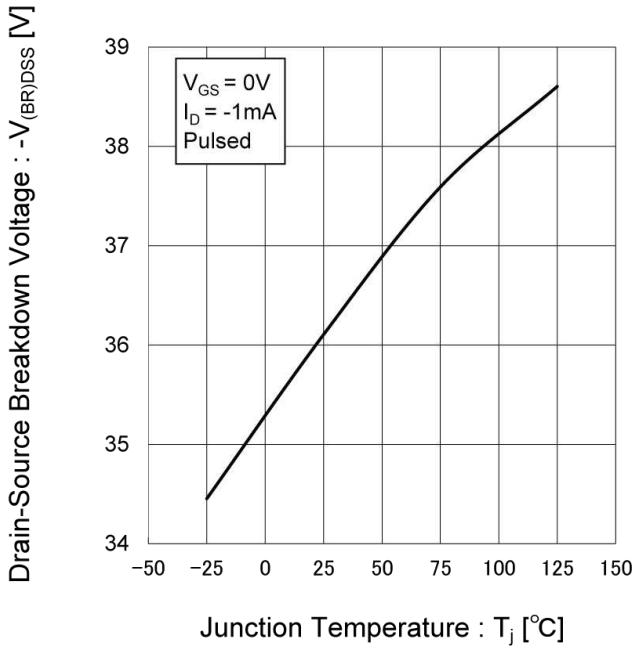



Fig.7 Breakdown Voltage vs. Junction Temperature



## ●Electrical characteristic curves

Fig.8 Typical Transfer Characteristics

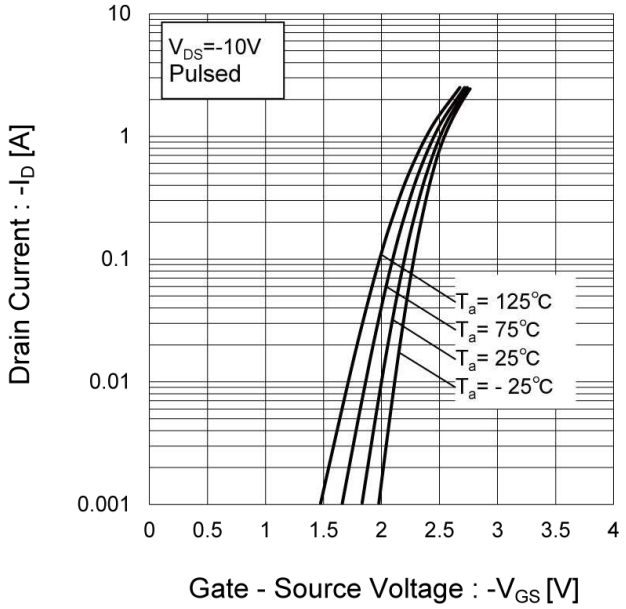



Fig.9 Gate Threshold Voltage vs. Junction Temperature

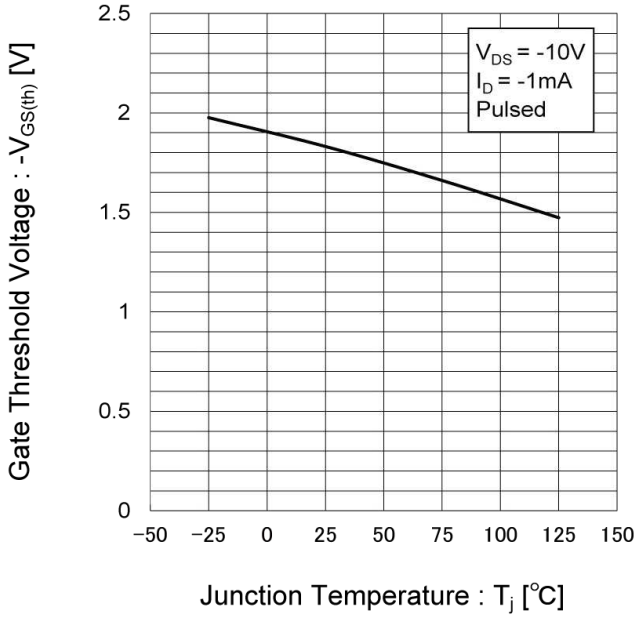
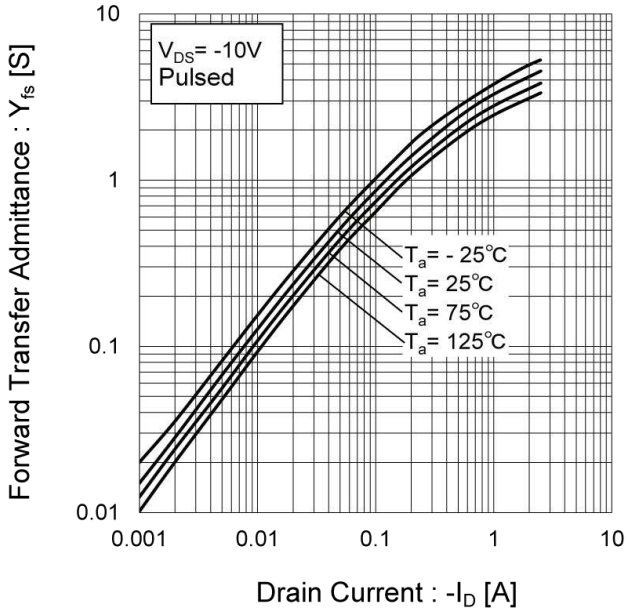



Fig.10 Tranceconductance vs. Drain Current



## ●Electrical characteristic curves

Fig.11 Drain Current Derating Curve

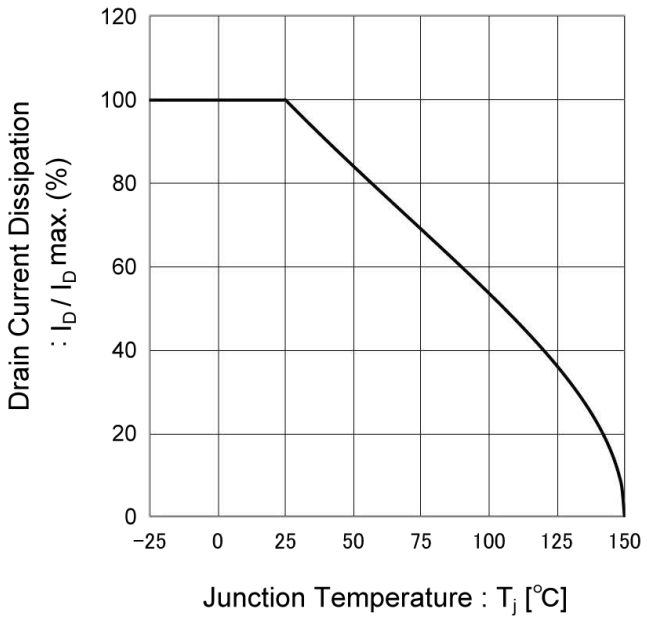



Fig.12 Static Drain - Source On - State Resistance vs. Gate Source Voltage

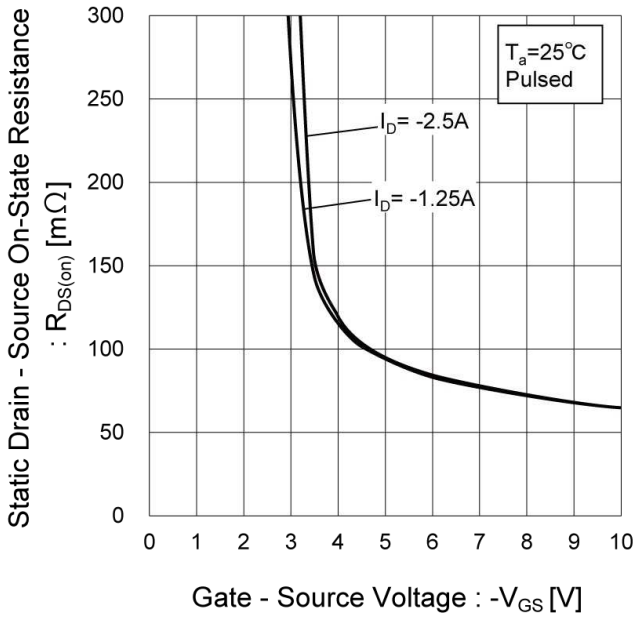
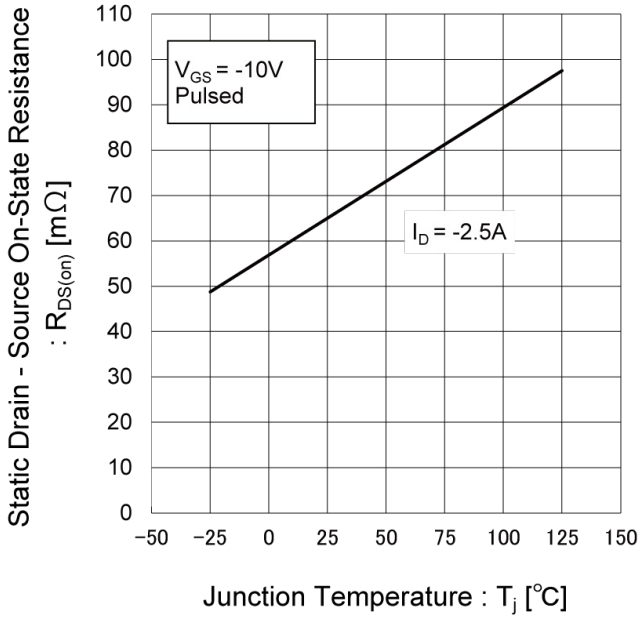



Fig.13 Static Drain - Source On - State Resistance vs. Junction Temperature



## ●Electrical characteristic curves

Fig.14 Static Drain - Source On - State Resistance vs. Drain Current(I)

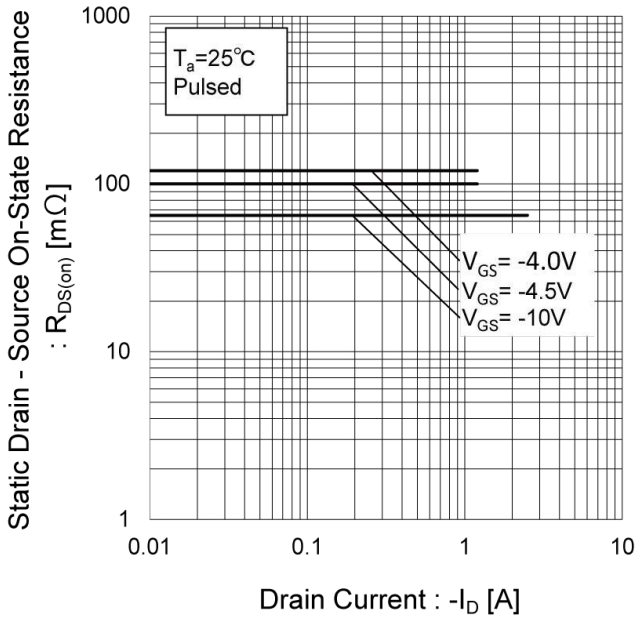



Fig.15 Static Drain - Source On - State Resistance vs. Drain Current(II)

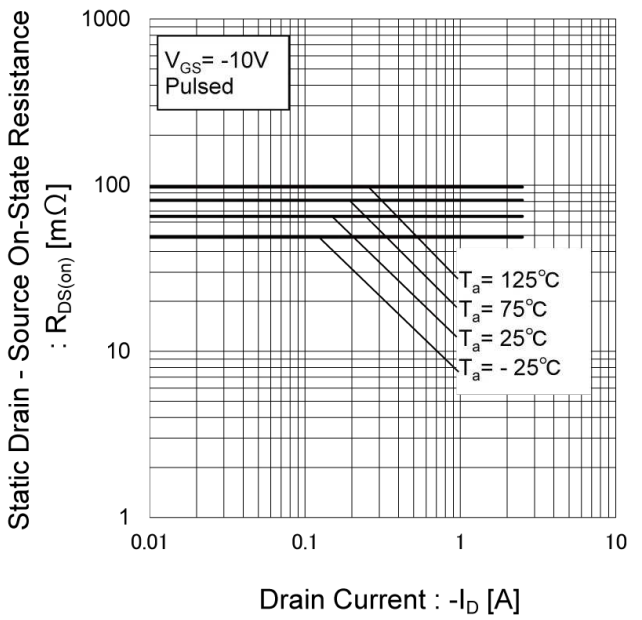



Fig.16 Static Drain - Source On - State Resistance vs. Drain Current(III)

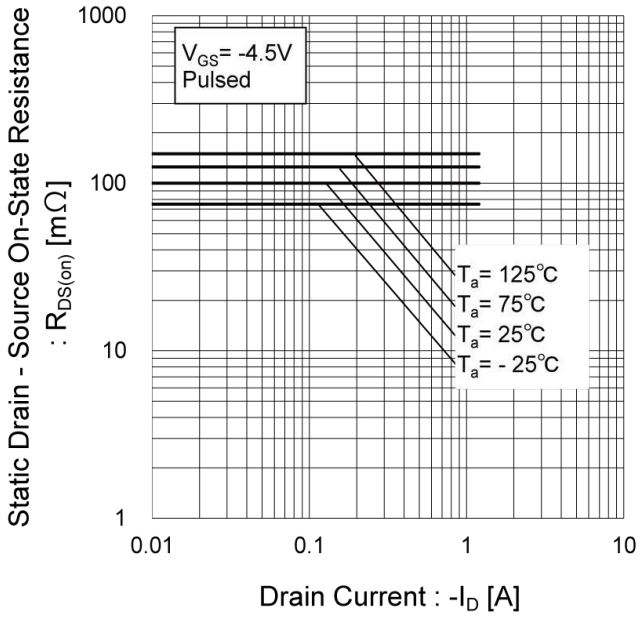
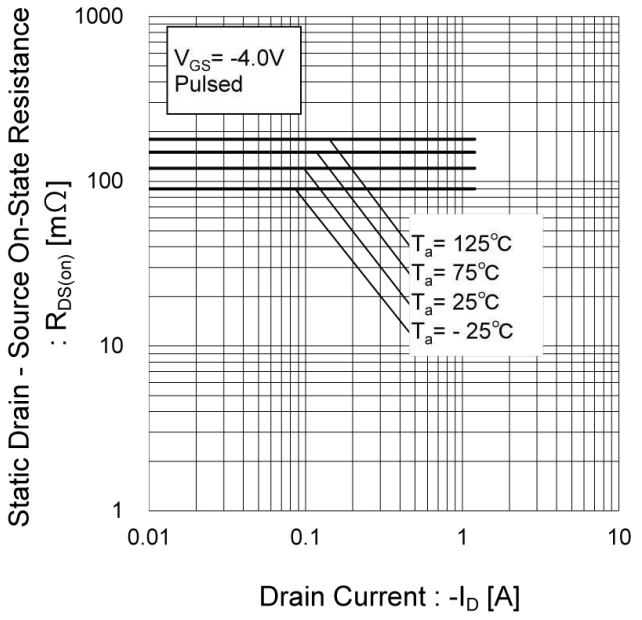



Fig.17 Static Drain - Source On - State Resistance vs. Drain Current(Ⅳ)



## ●Electrical characteristic curves

Fig.18 Typical Capacitance vs. Drain - Source Voltage

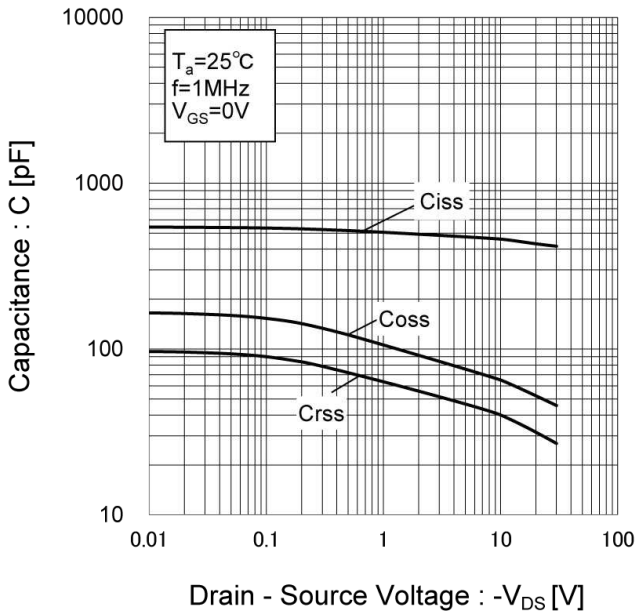



Fig.19 Switching Characteristics

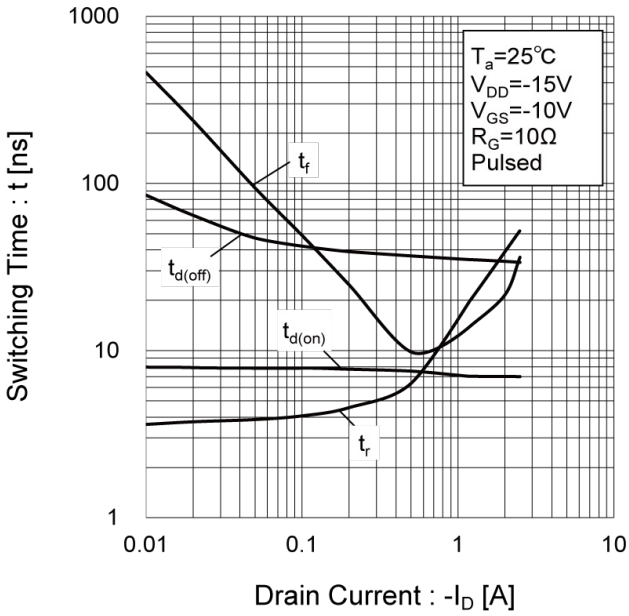



Fig.20 Dynamic Input Characteristics

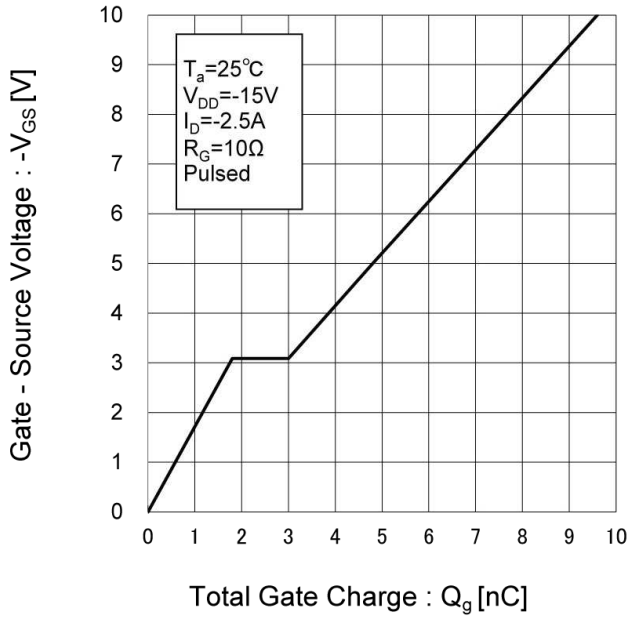
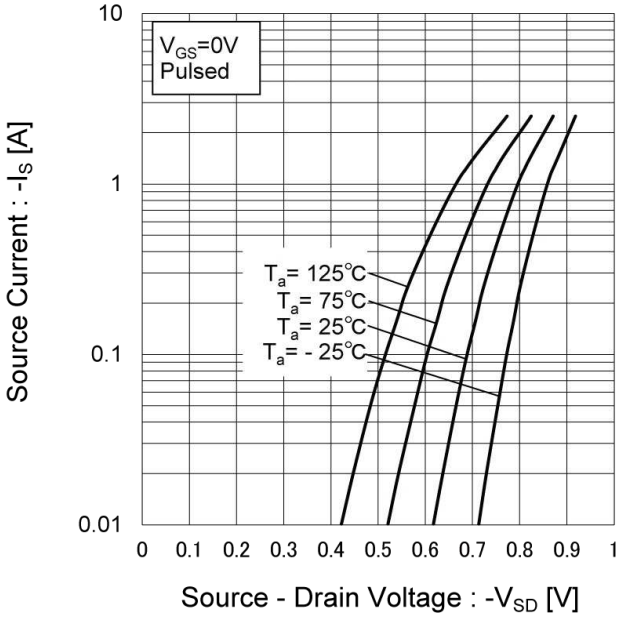



Fig.21 Source Current vs. Source Drain Voltage



## ●Measurement circuits <It is the same for the Tr1 and Tr2>

Fig.1-1 Switching Time Measurement Circuit

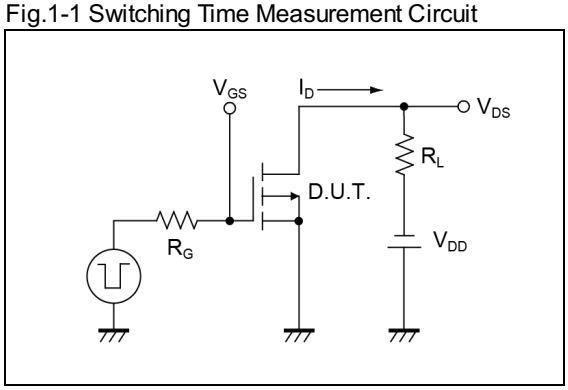



Fig.1-2 Switching Waveforms

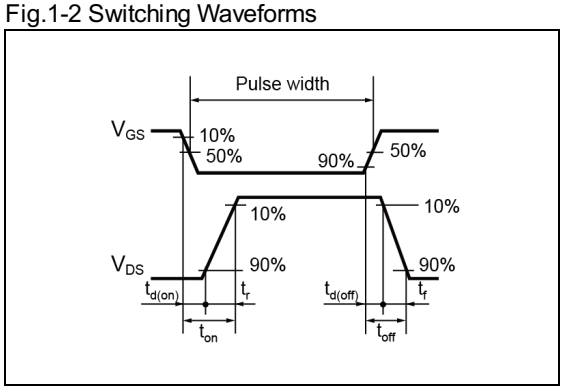



Fig.2-1 Gate Charge Measurement Circuit

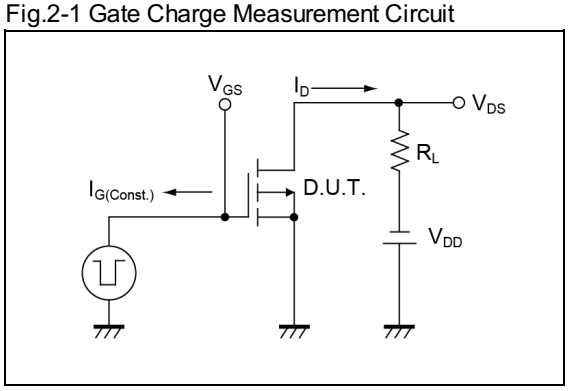
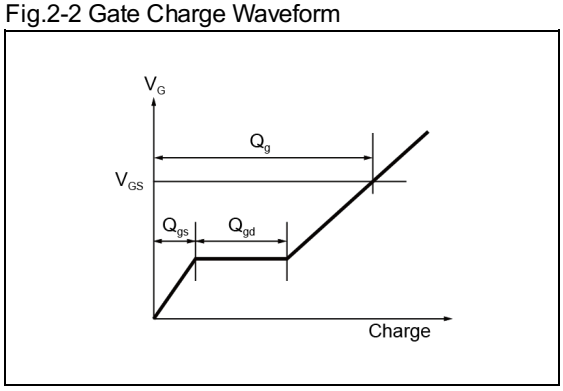



Fig.2-2 Gate Charge Waveform

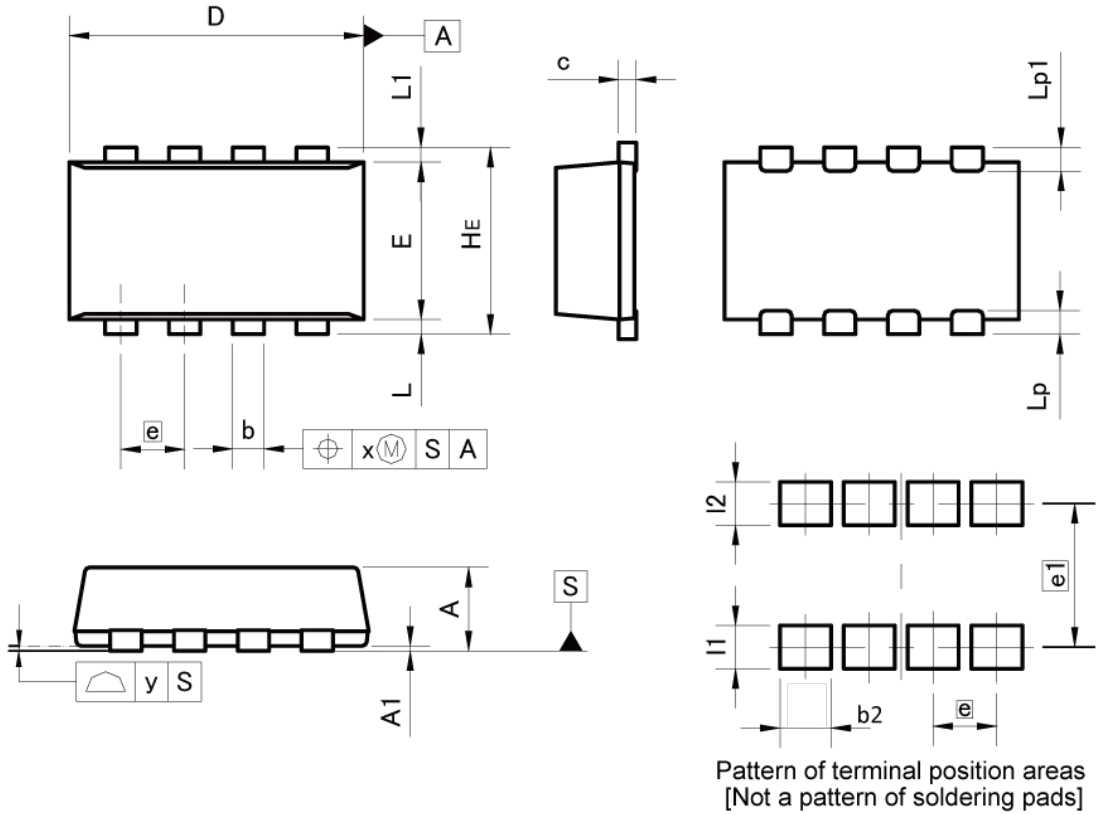



## ●Notice

This product might cause chip aging and breakdown under the large electrified environment.
Please consider to design ESD protection circuit.

## ●Dimensions

TSST8




Pattern of terminal position areas
[Not a pattern of soldering pads]

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 0.75 | 0.85 | 0.030 | 0.033 |
| A1 | 0.00 | 0.05 | 0.000 | 0.002 |
| b | 0.22 | 0.42 | 0.009 | 0.017 |
| c | 0.12 | 0.22 | 0.005 | 0.009 |
| D | 2.90 | 3.10 | 0.114 | 0.122 |
| E | 1.50 | 1.70 | 0.059 | 0.067 |
| e | 0.65 | | 0.026 | |
| HE | 1.80 | 2.00 | 0.071 | 0.079 |
| L | 0.05 | 0.25 | 0.002 | 0.010 |
| L1 | 0.05 | 0.25 | 0.002 | 0.010 |
| Lp | 0.15 | 0.34 | 0.006 | 0.013 |
| Lp1 | 0.15 | 0.34 | 0.006 | 0.013 |
| x | – | 0.10 | – | 0.004 |
| y | – | 0.10 | – | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| b2 | – | 0.52 | – | 0.020 |
| e1 | 1.46 | | 0.057 | |
| l1 | – | 0.44 | – | 0.017 |
| l2 | – | 0.44 | – | 0.017 |

Dimension in mm/inches

## Notes

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2) Before you use our Products, please contact our sales representative and verify the latest specifications :

3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
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4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

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7) The Products specified in this document are not designed to be radiation tolerant.

8) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.

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ROHM SEMICONDUCTOR

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# TT8J3 - Web Page

Distribution Inventory

| | |
|---|---|
| Part Number | TT8J3 |
| Package | TSST8 |
| Unit Quantity | 3000 |
| Minimum Package Quantity | 3000 |
| Packing Type | Taping |
| Constitution Materials List | inquiry |
| RoHS | Yes |