TT8J3

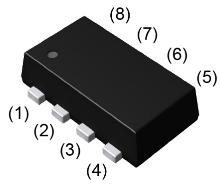
-30V Pch+Pch Middle Power MOSFET

Datasheet

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

●Outline

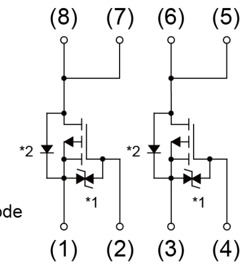
TSST8



●Inner circuit

(1) Tr1 Source
(2) Tr1 Gate
(3) Tr2 Source
(4) Tr2 Gate
(5) Tr2 Drain
(6) Tr2 Drain
(7) Tr1 Drain
(8) Tr1 Drain

*1 ESD Protection Diode
*2 Body Diode



●Features

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

●Packaging specifications

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

●Application

Switching

●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	-	°C/W
	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

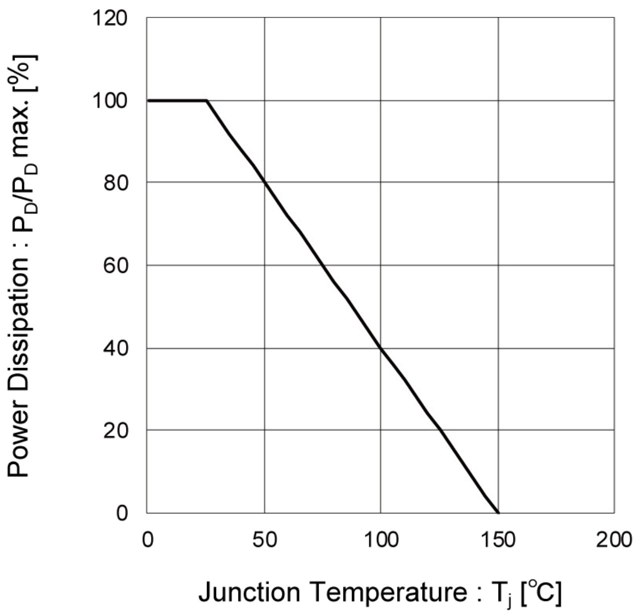


Fig.2 Maximum Safe Operating Area

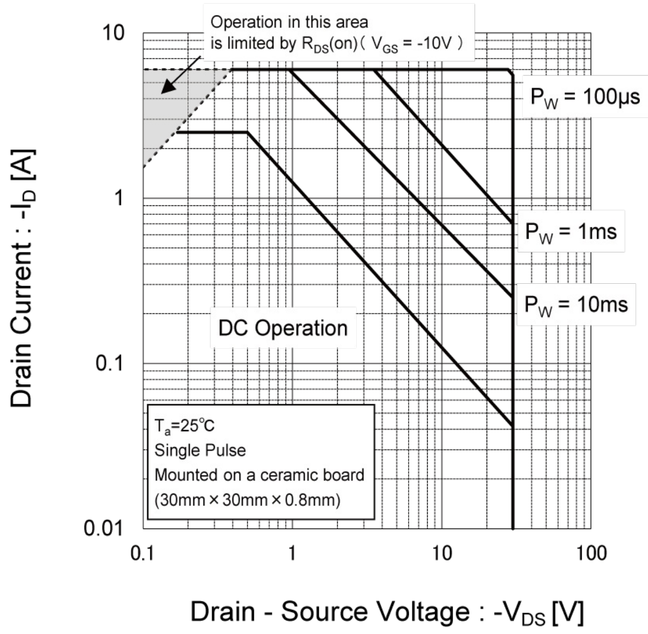


Fig.3 Normalized Transient Thermal Resistance vs. Pulse Width

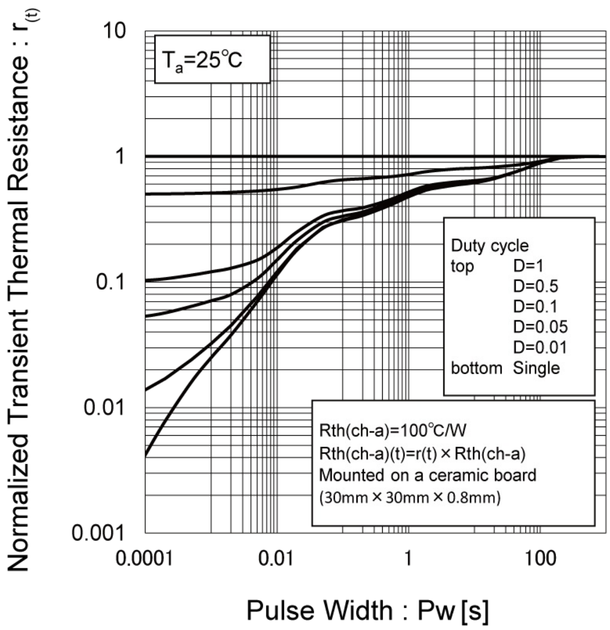
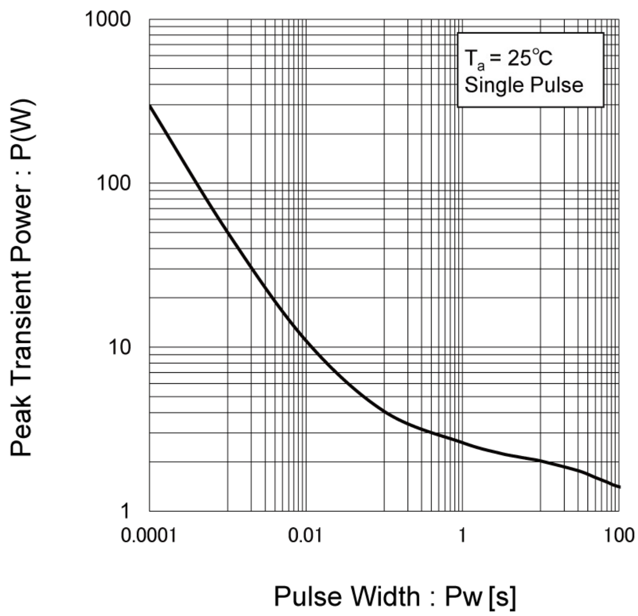


Fig.4 Single Pulse Maximum Power dissipation



●Electrical characteristic curves

Fig.5 Typical Output Characteristics(I)

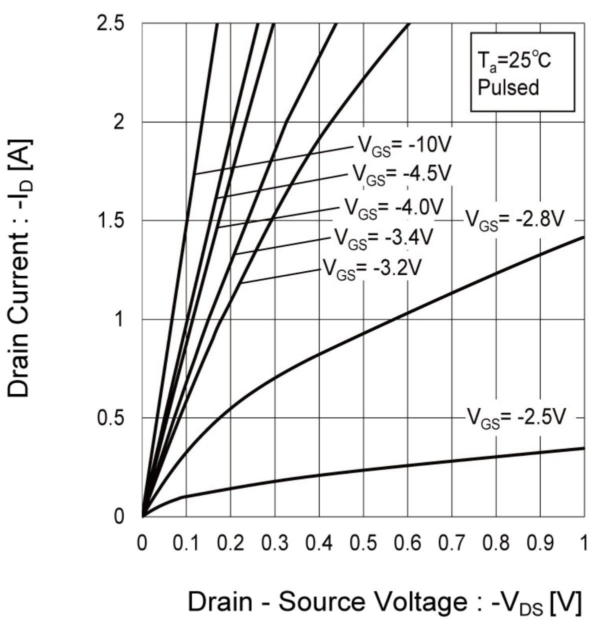


Fig.6 Typical Output Characteristics(II)

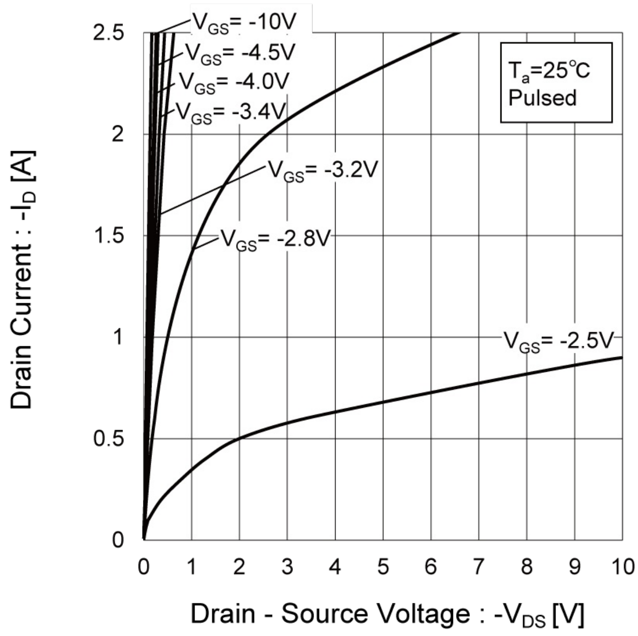
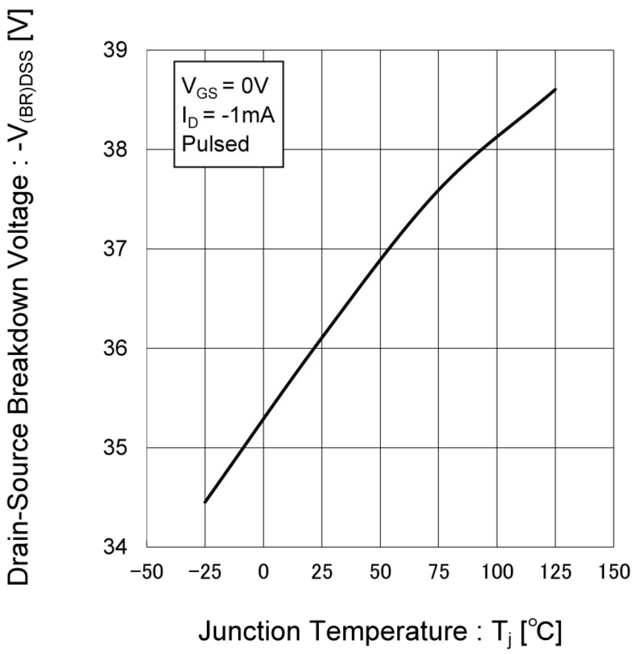


Fig.7 Breakdown Voltage vs. Junction Temperature



●Electrical characteristic curves

Fig.8 Typical Transfer Characteristics

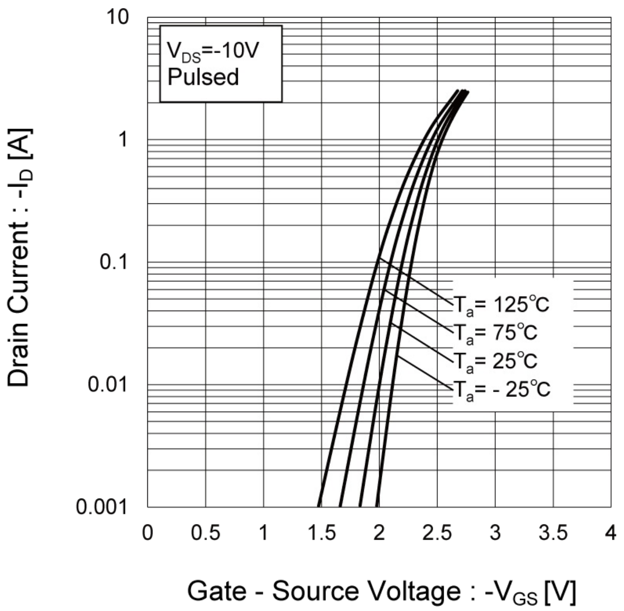


Fig.9 Gate Threshold Voltage vs. Junction Temperature

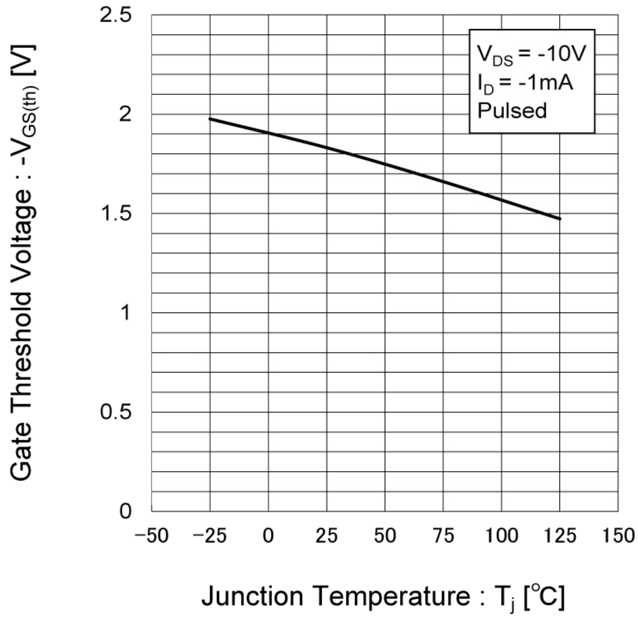
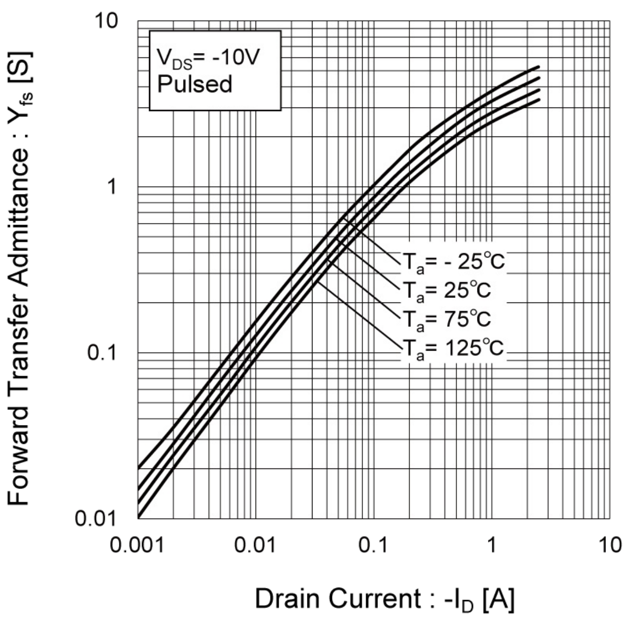


Fig.10 Tranceconductance vs. Drain Current



●Electrical characteristic curves

Fig.11 Drain Current Derating Curve

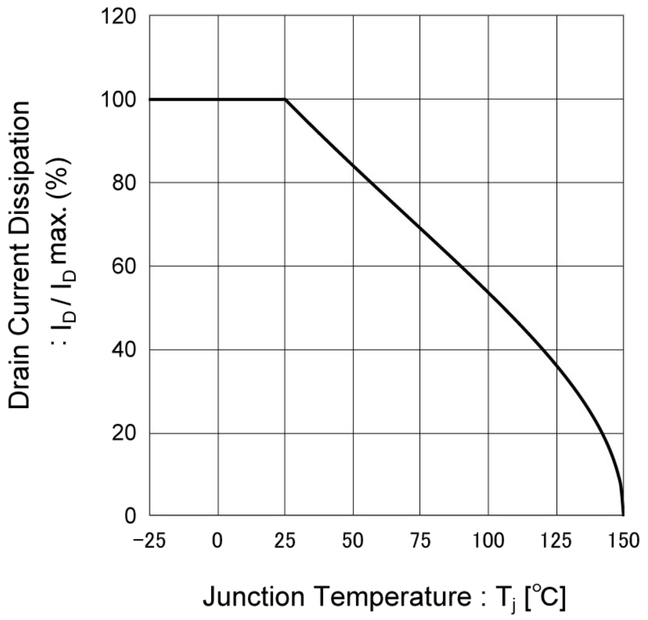


Fig.12 Static Drain - Source On - State Resistance vs. Gate Source Voltage

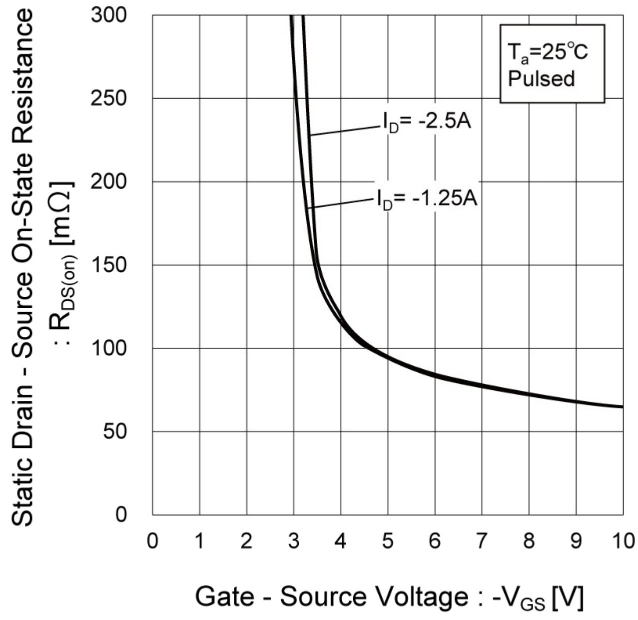
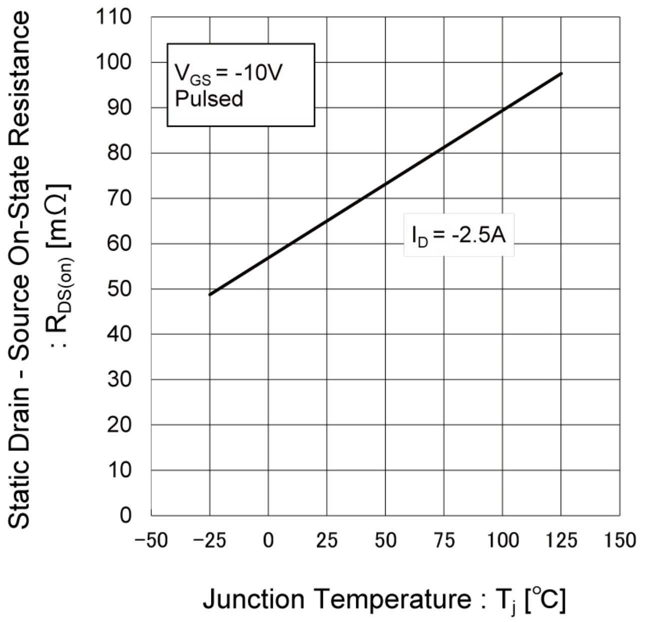


Fig.13 Static Drain - Source On - State Resistance vs. Junction Temperature



●Electrical characteristic curves

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

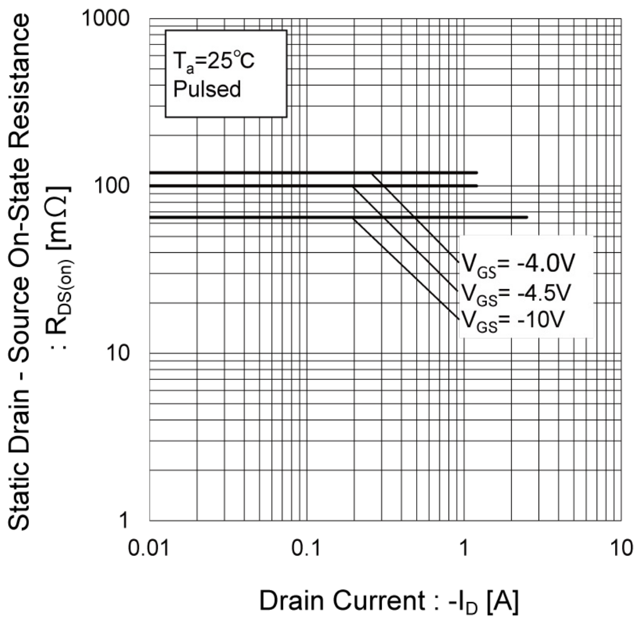


Fig.15 Static Drain - Source On - State Resistance vs. Drain Current(II)

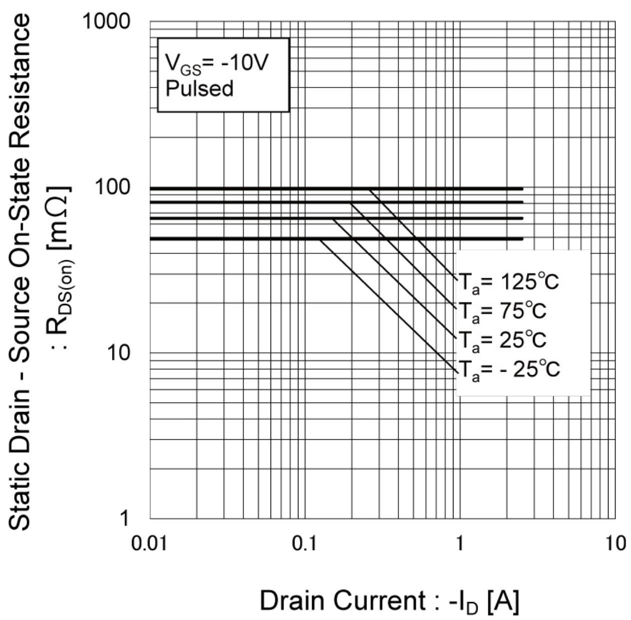


Fig.16 Static Drain - Source On - State Resistance vs. Drain Current(III)

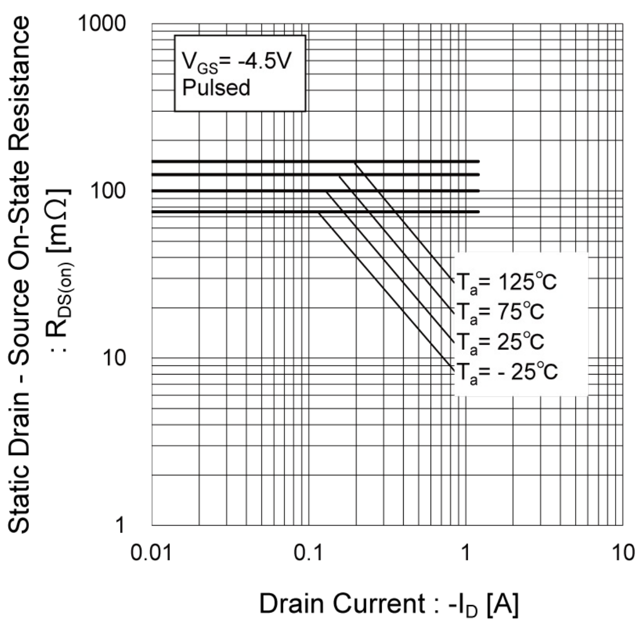
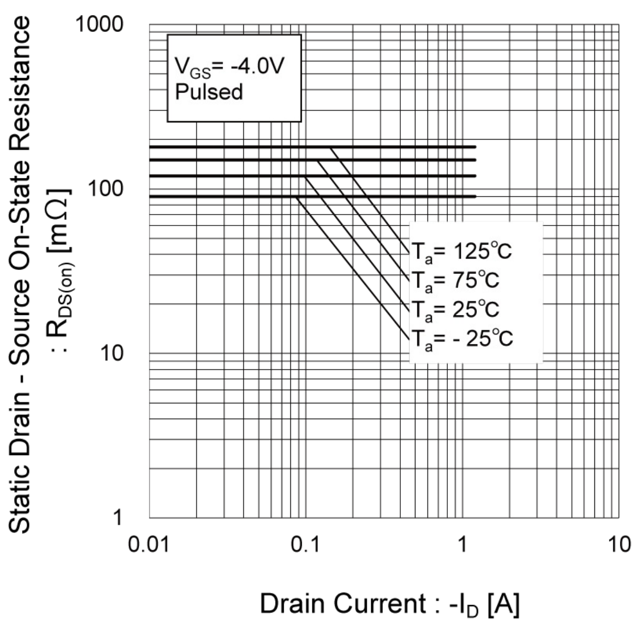


Fig.17 Static Drain - Source On - State Resistance vs. Drain Current(Ⅳ)



●Electrical characteristic curves

Fig.18 Typical Capacitance vs. Drain - Source Voltage

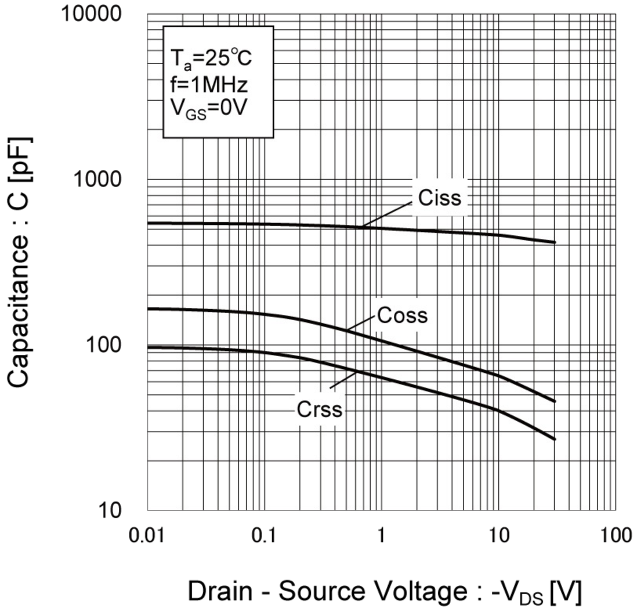


Fig.19 Switching Characteristics

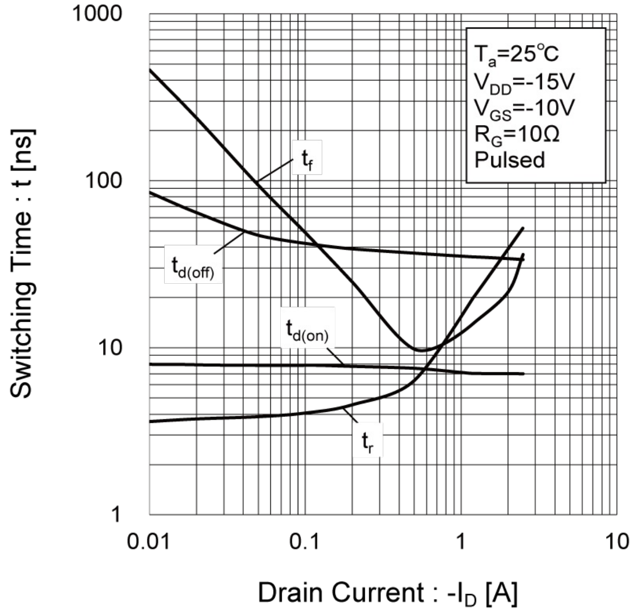


Fig.20 Dynamic Input Characteristics

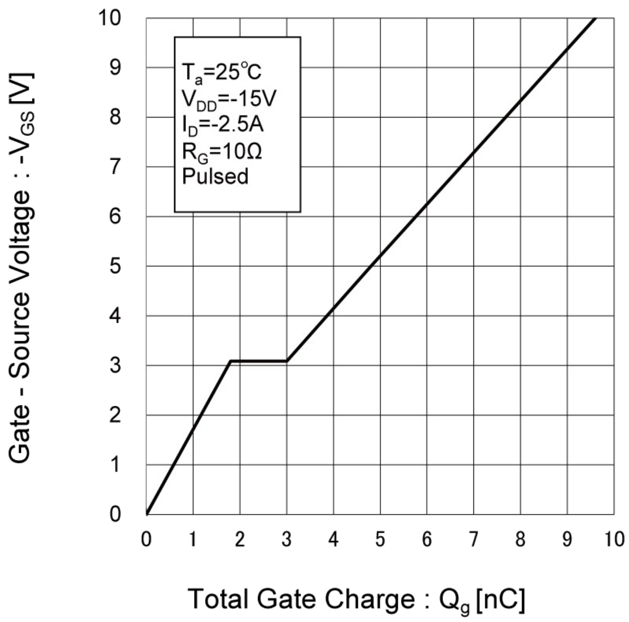
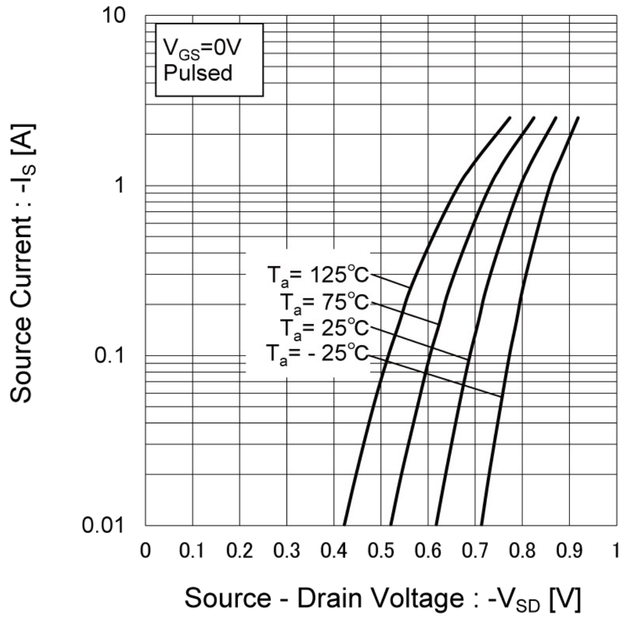


Fig.21 Source Current vs. Source Drain Voltage



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

Fig.1-1 Switching Time Measurement Circuit

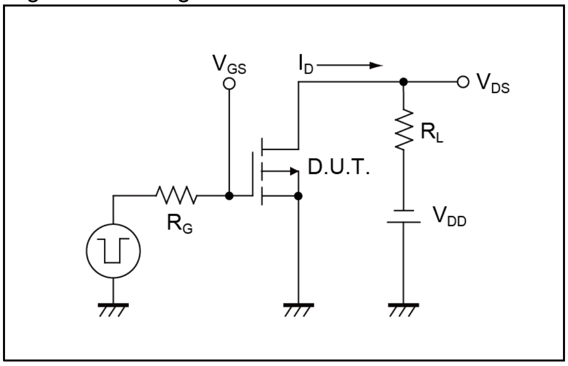


Fig.1-2 Switching Waveforms

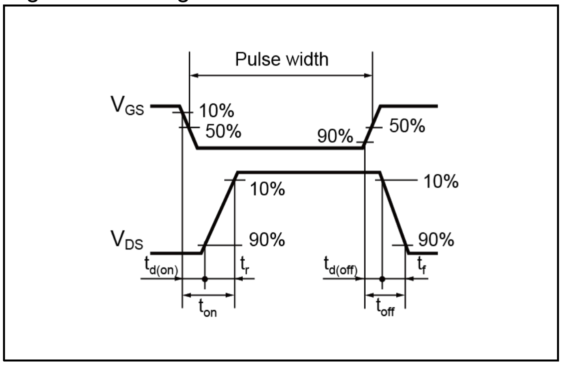


Fig.2-1 Gate Charge Measurement Circuit

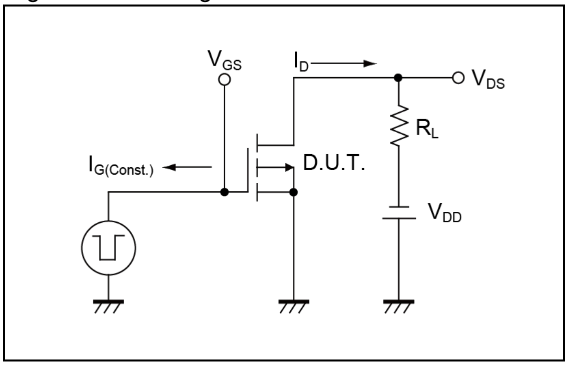
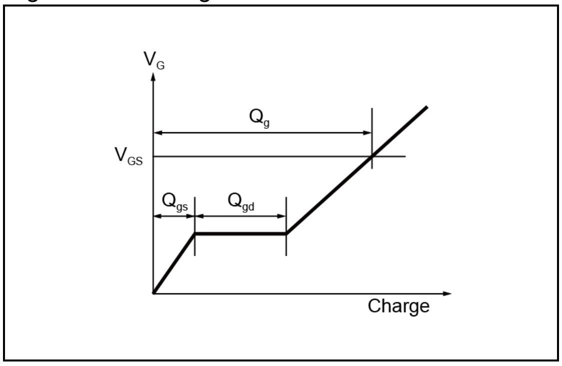


Fig.2-2 Gate Charge Waveform

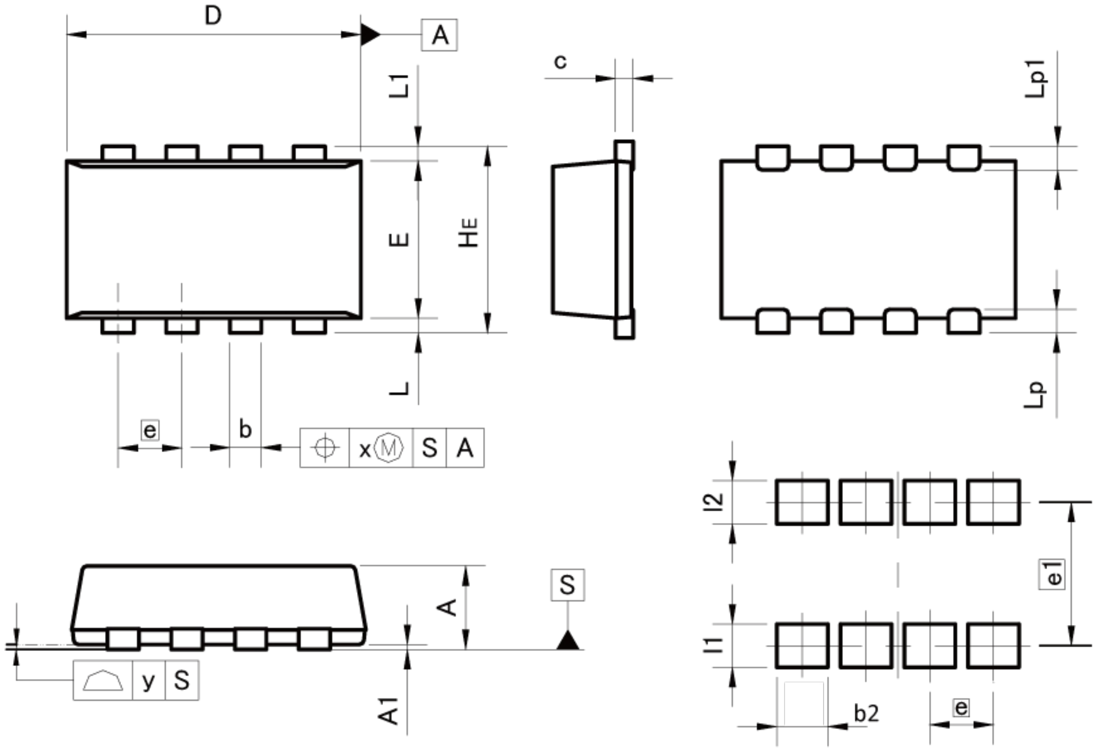


●Notice

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	
H_E	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

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.

Как с нами связаться

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