1.5V Drive Nch MOSFET

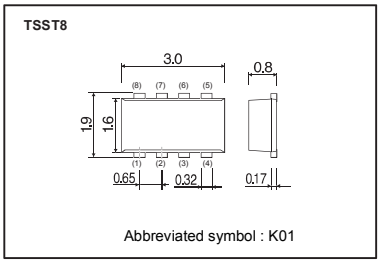
TT8K1

● Structure
Silicon N-channel MOSFET

● Features
1) Low On-resistance.
2) High power package.
3) 1.5V drive.

● Application
Switching

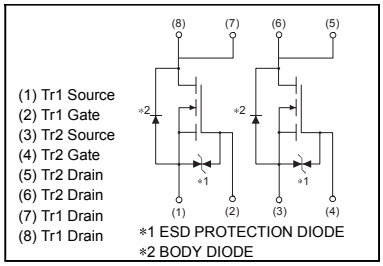
● Dimensions (Unit : mm)



● Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
TT8K1		O

● Inner circuit



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

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	20	V
Gate-source voltage		V_{GSS}	±10	V
Drain current	Continuous	I_D	±2.5	A
	Pulsed	I_{DP} *1	±10	A
Source current (Body Diode)	Continuous	I_S	0.8	A
	Pulsed	I_{SP} *1	10	A
Power dissipation		P_D *2	1.25	W / TOTAL
			1.0	W / ELEMENT
Channel temperature		Tch	150	°C
Range of storage temperature		Tstg	–55 to +150	°C

*1 Pw≤10μs, Duty cycle≤1%

*2 Mounted on a ceramic board.

● Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to Ambient	Rth (ch-a)*	100	°C / W /TOTAL
		125	°C / W /ELEMENT

*Mounted on a ceramic board.

● **Electrical characteristics** (Ta = 25°C)

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	-	-	±10	μA	V_{GS}=±10V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)DSS}$	20	-	-	V	I_D=1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	V_{DS}=20V, V_{GS}=0V
Gate threshold voltage	$V_{GS\ (th)}$	0.3	-	1	V	V_{DS}=10V, I_D=1mA
Static drain-source on-state resistance	$R_{DS\ (on)}$*	-	52	72	mΩ	I_D=2.5A, V_{GS}=4.5V
		-	65	90		I_D=2.5A, V_{GS}=2.5V
		-	85	120		I_D=1.2A, V_{GS}=1.8V
		-	100	140		I_D=0.5A, V_{GS}=1.5V
Forward transfer admittance	$\|Y_{fs}\|$*	2.7	-	-	S	I_D=2.5A, V_{DS}=10V
Input capacitance	C_{iss}	-	260	-	pF	V_{DS}=10V
Output capacitance	C_{oss}	-	65	-	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}*	-	35	-	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$*	-	9	-	ns	I_D=1.2A, V_{DD}≒10V
Rise time	t_r*	-	17	-	ns	V_{GS}=4.5V
Turn-off delay time	$t_{d(off)}$*	-	28	-	ns	R_L≒8.3Ω
Fall time	t_f*	-	17	-	ns	R_G=10Ω
Total gate charge	Q_g*	-	3.6	-	nC	I_D=2.5A, V_{DD}≒10V
Gate-source charge	Q_{gs}*	-	0.7	-	nC	V_{GS}=4.5V R_L≒ 4Ω
Gate-drain charge	Q_{gd}*	-	0.6	-	nC	R_G=10Ω

*Pulsed

●**Body diode characteristics** (Source-Drain) (Ta = 25°C)

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	V_{SD}	-	-	1.2	V	I_s=2.5A, V_{GS}=0V

*Pulsed

● Electrical characteristic curves

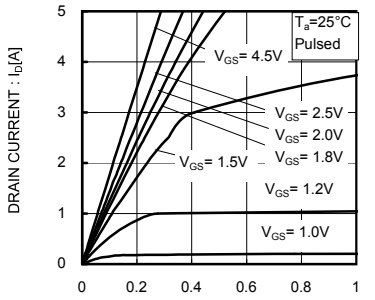


Fig.1 Typical Output Characteristics(Ⅰ)

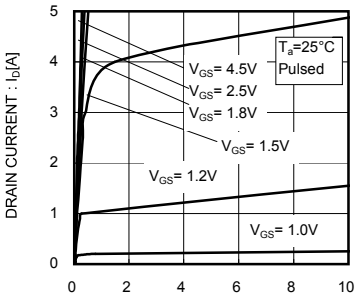


Fig.2 Typical Output Characteristics(Ⅱ)

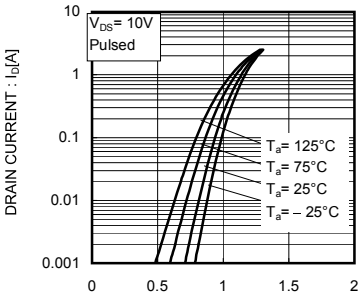


Fig.3 Typical Transfer Characteristics

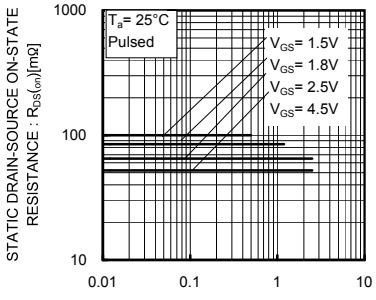


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(Ⅰ)

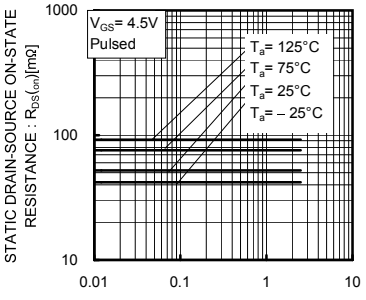


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(Ⅱ)

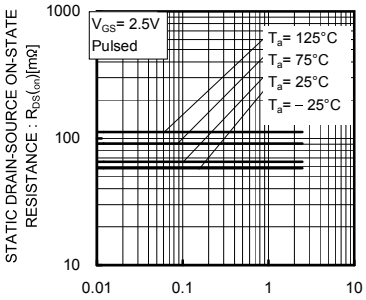


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(Ⅲ)

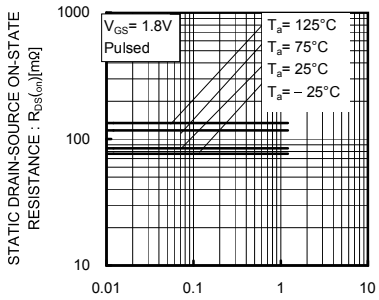


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(Ⅳ)

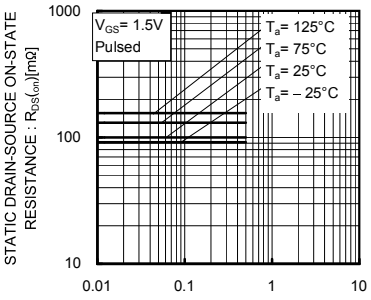


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(Ⅴ)

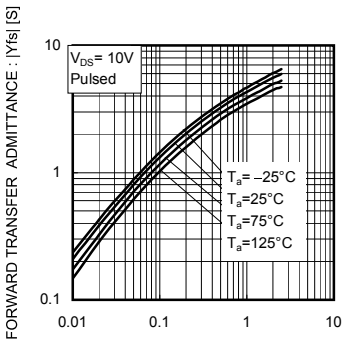


Fig.9 Forward Transfer Admittance vs. Drain Current

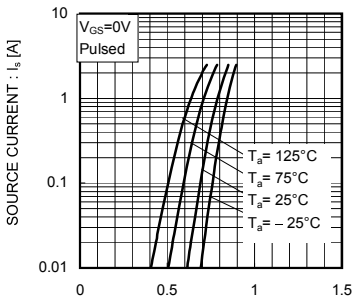


Fig.10 Reverse Drain Current vs. Sourse-Drain Voltage

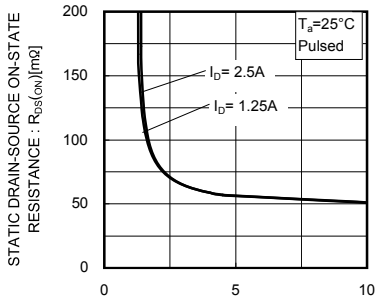


Fig.11 Static Drain-Source On-State Resistance vs. Gate Source Voltage

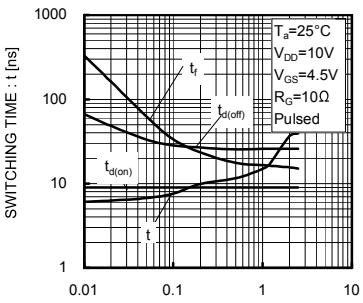


Fig.12 Switching Characteristics

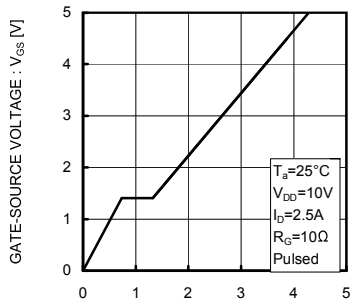


Fig.13 Dynamic Input Characteristics

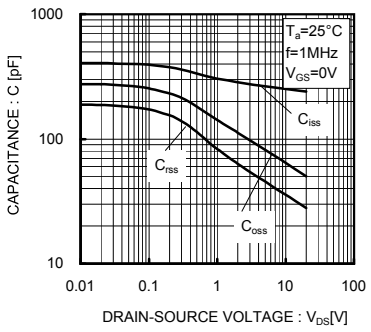


Fig.14 Typical Capacitance vs. Drain-Source Voltage

● **Measurement circuits**

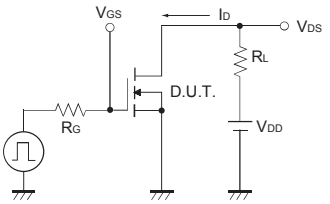


Fig.1-1 Switching time measurement circuit

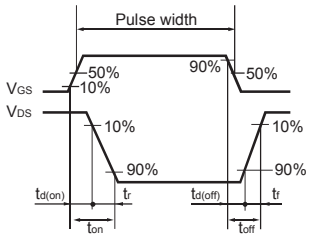


Fig.1-2 Switching waveforms

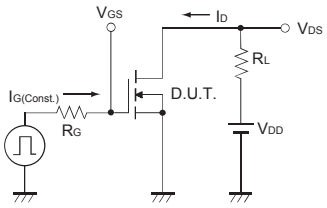


Fig.2-1 Gate charge measurement circuit

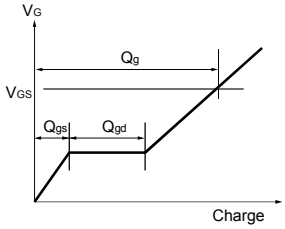


Fig.2-2 Gate Charge Waveform

● **Notice**

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

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