4V Drive Nch MOS FET

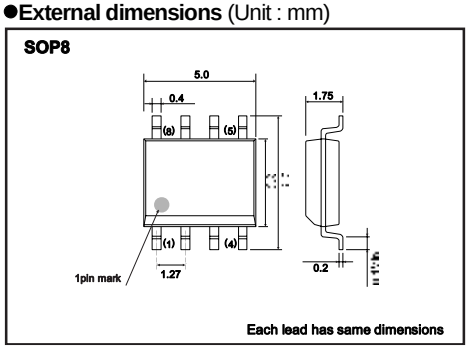
RSS085N05

●Structure
Silicon N-channel
MOS FET

●Features
1) Built-in G-S Protection Diode.
2) Small and Surface Mount Package (SOP8).

●Applications
Power switching , DC / DC converter, Inverter

●External dimensions (Unit : mm)



●Packaging dimensions

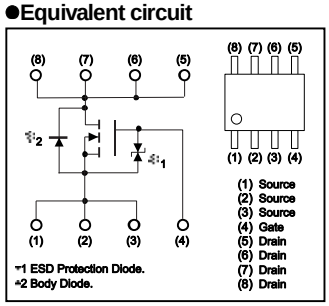
Type	Package	Taping
	Code	TB
	Basic ordering unit (pieces)	2500
RSS085N05		○

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	45	V
Gate-source voltage		V_{GSS}	20	V
Drain current	Continuous	I_D	±8.5	A
	Pulsed	I_{DP} *1	±34	A
Source current (Body diode)	Continuous	I_S	1.6	A
	Pulsed	I_{SP} *1	34	A
Total power dissipation		P_D *2	2	W
Chanel temperature		T_{ch}	150	°C
Range of Storage temperature		T_{stg}	-55 to +150	°C

*1 PW≤10μs, Duty cycle≤1%
*2 Mounted on a ceramic board

●Equivalent circuit



* A protection diode is included between the gate and the source terminals to protect the diode against static electricity when the product is in use. Use a protection circuit when the fixed voltage are exceeded.

●Thermal resistance

Parameter	Symbol	Limits	Unit
Chanel to ambient	$R_{th(ch-a)}$ *	62.5	°C/W

* Mounted on a ceramic board

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	–	–	10	μA	V_{GS}=20V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	45	–	–	V	I_D= 1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	–	–	1	μA	V_{DS}= 45V, V_{GS}=0V
Gate threshold voltage	$V_{GS\,(th)}$	1.0	–	2.5	V	V_{DS}= 10V, I_D= 1mA
Static drain-source on-state resistance	$R_{DS\,(on)}$*	–	13	18	mΩ	I_D= 8.5A, V_{GS}= 10V
		–	16	23	mΩ	I_D= 8.5A, V_{GS}= 4.5V
		–	18	25	mΩ	I_D= 8.5A, V_{GS}= 4V
Forward transfer admittance	$\|Y_{fs}\|$*	7.0	–	–	S	V_{DS}= 10V, I_D= 8.5A
Input capacitance	C_{iss}	–	1500	–	pF	V_{DS}= 10V
Output capacitance	C_{oss}	–	350	–	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	–	170	–	pF	f=1MHz
Turn-on delay time	$t_{d\,(on)}$*	–	19	–	ns	V_{DD}≒ 25V I_D= 4.0A V_{GS}= 10V R_L=6.3Ω R_G=10Ω
Rise time	t_r*	–	25	–	ns	
Turn-off delay time	$t_{d\,(off)}$*	–	71	–	ns	
Fall time	t_f*	–	24	–	ns	
Total gate charge	Q_g*	–	15.3	21.4	nC	V_{DD}≒25V V_{GS}= 5V
Gate-source charge	Q_{gs}*	–	4.4	–	nC	I_D= 8.5A
Gate-drain charge	Q_{gd}*	–	6.0	–	nC	R_L=2.9Ω R_G=10Ω

*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}*	–	–	1.2	V	I_S= 8.5A, V_{GS}=0V

*Pulsed

●**Electrical characteristic curves**

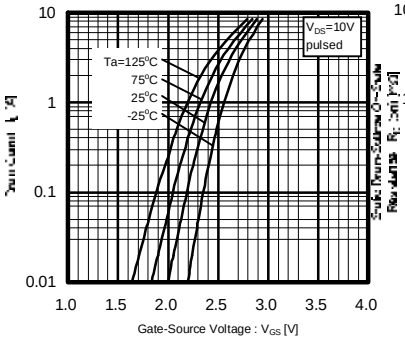


Fig.1 Typical Transfer Characteristics

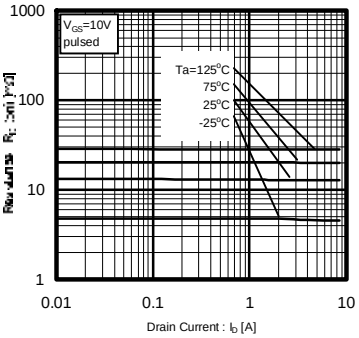


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current (1)

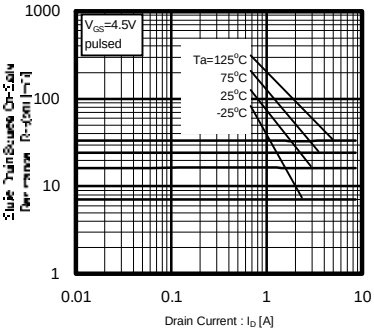


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current (2)

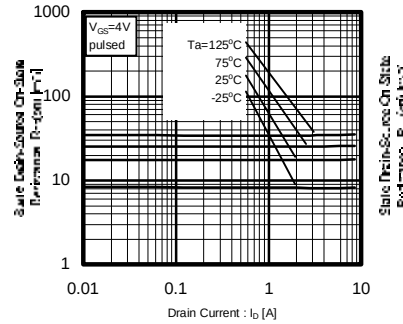


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (3)

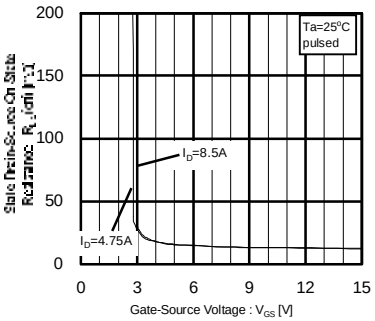


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

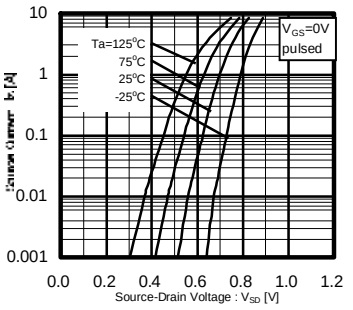


Fig.6 Source-Current vs. Source-Drain Voltage

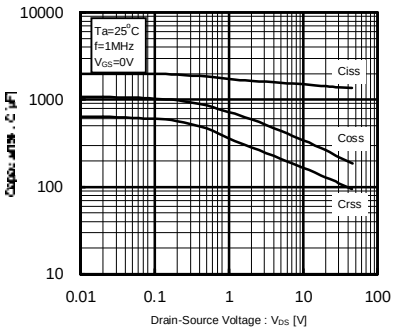


Fig.7 Typical capacitance vs. Source-Drain Voltage

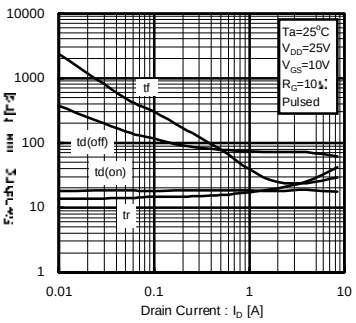


Fig.8 Switching Characteristics

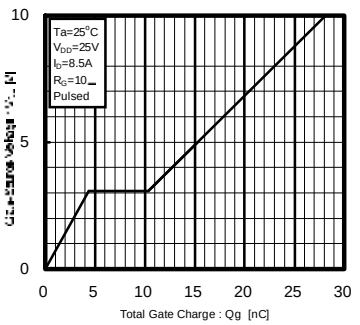


Fig.9 Dynamic Input Characteristics

●**Measurement circuits**

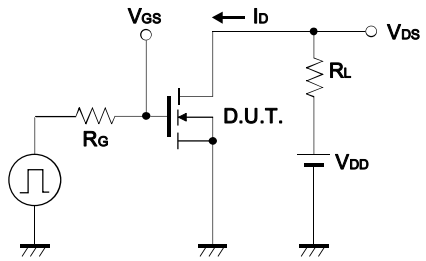


Fig.10 Switching Time Test Circuit

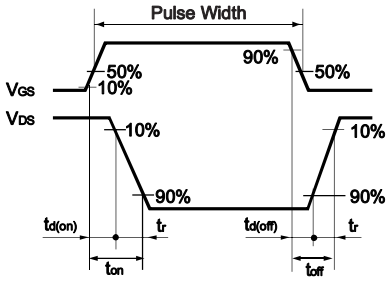


Fig.11 Switching Time Waveforms

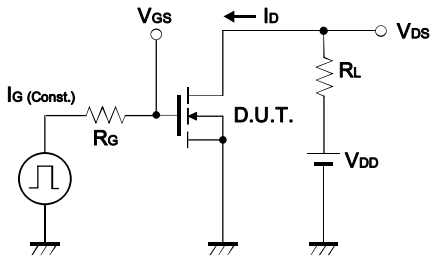


Fig.12 Gate Charge Test Circuit

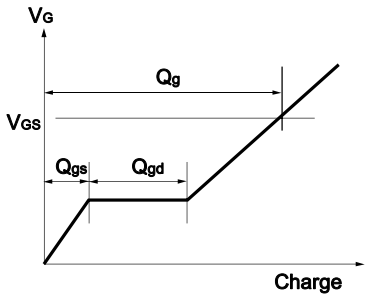


Fig.13 Gate Charge Waveform

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