

Transistor

# 4V Drive Nch MOS FET

## RSS095N05

### ●Structure

Silicon N-channel  
MOS FET

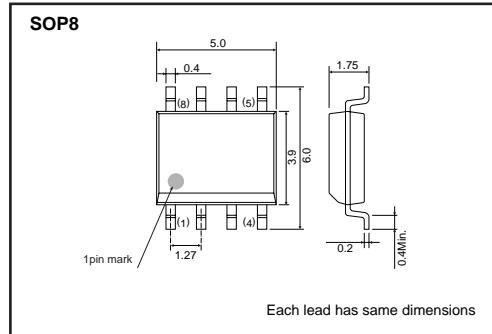
### ●Features

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

### ●Applications

Power switching , DC / DC converter , Inverter

### ●External dimensions (Unit : mm)



### ●Packaging dimensions

Package	Taping
Code	TB
Basic ordering unit(pieces)	2500

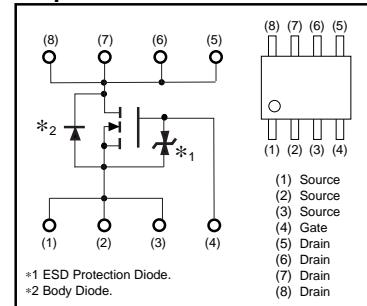
### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	$V_{DSS}$	45	V
Gate-source voltage	$V_{GSS}$	20	V
Drain current	Continuous	$I_D$	$\pm 9.5$
	Pulsed	$I_{DP}$	$\pm 38$
Source current (Body diode)	Continuous	$I_S$	1.6
	Pulsed	$I_{SP}$	$\pm 38$
Total power dissipation	$P_D$	$\pm 2$	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 is exceeded.

### ●Thermal resistance

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

\* Mounted on a ceramic board

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	$I_{GSS}$	—	—	10	$\mu A$	$V_{GS}=20V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	45	—	—	V	$I_D= 1mA, V_{GS}=0V$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu A$	$V_{DS}= 45V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(\text{th})}$	1.0	—	2.5	V	$V_{DS}= 10V, I_D= 1mA$
Static drain-source on-state resistance	$R_{DS(\text{on})}^*$	—	11	16	$m\Omega$	$I_D= 9.5A, V_{GS}= 10V$
		—	14	20	$m\Omega$	$I_D= 9.5A, V_{GS}= 4.5V$
		—	15	21	$m\Omega$	$I_D= 9.5A, V_{GS}= 4V$
Forward transfer admittance	$ Y_{fs} ^*$	10.0	—	—	S	$V_{DS}= 10V, I_D= 9.5A$
Input capacitance	$C_{iss}$	—	1830	—	pF	$V_{DS}= 10V$
Output capacitance	$C_{oss}$	—	410	—	pF	$V_{GS}=0V$
Reverse transfer capacitance	$C_{rss}$	—	210	—	pF	$f=1MHz$
Turn-on delay time	$t_{d(\text{on})}^*$	—	20	—	ns	$V_{DD}= 25V$
Rise time	$t_r^*$	—	35	—	ns	$I_D= 5.0A$
Turn-off delay time	$t_{d(\text{off})}^*$	—	78	—	ns	$V_{GS}= 10V$
Fall time	$t_f^*$	—	31	—	ns	$R_L=5\Omega$
Total gate charge	$Q_g^*$	—	18.9	26.5	nC	$V_{DD}= 25V, V_{GS}= 5V$
Gate-source charge	$Q_{gs}^*$	—	4.9	—	nC	$I_D= 9.5A$
Gate-drain charge	$Q_{gd}^*$	—	7.2	—	nC	$R_L=2.6\Omega, R_G=10\Omega$

\*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	$V_{SD}^*$	—	—	1.2	V	$I_S= 9.5A, V_{GS}=0V$

\*Pulsed

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## ● Electrical characteristic curves

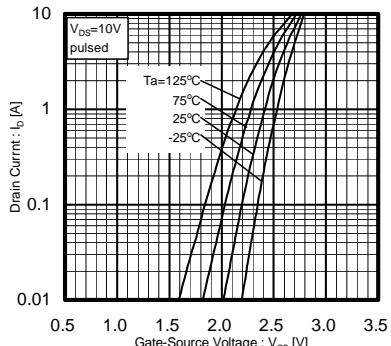


Fig.1 Typical Transfer Characteristics

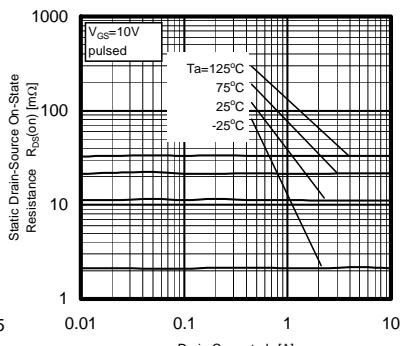


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current (1)

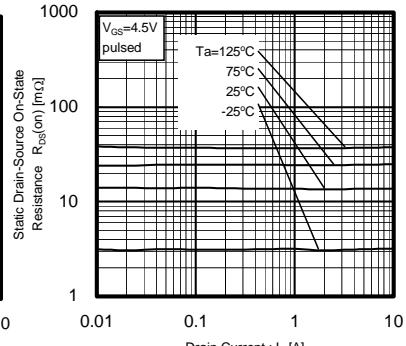


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current (2)

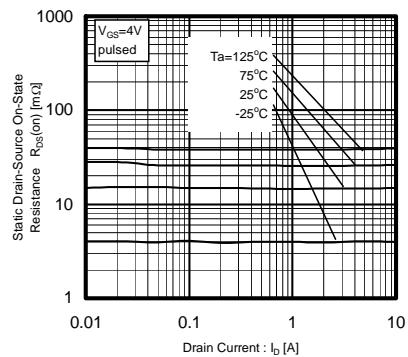


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (3)

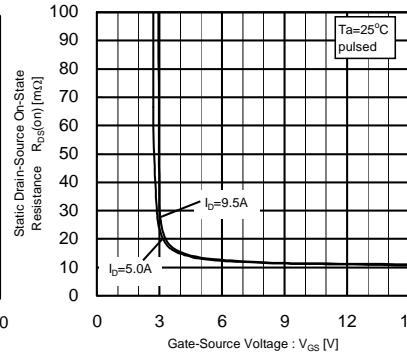


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

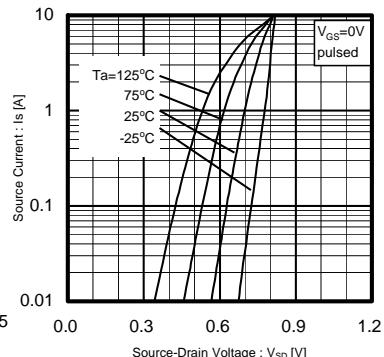


Fig.6 Source-Current vs. Source-Drain Voltage

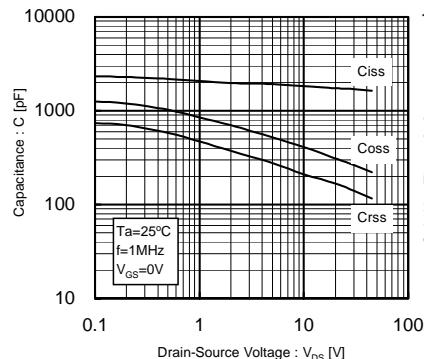


Fig.7 Typical capacitance vs. Source-Drain Voltage

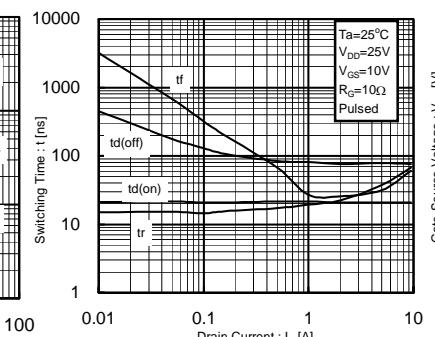


Fig.8 Switching Characteristics

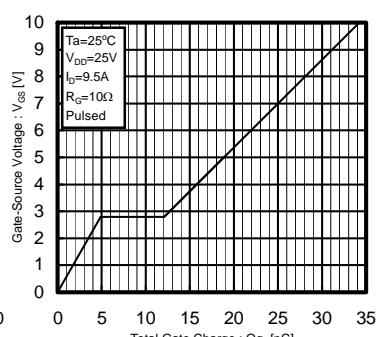


Fig.9 Dynamic Input Characteristics

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## ●Measurement circuits

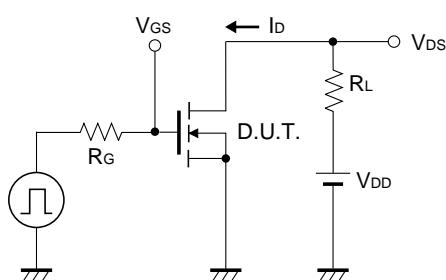


Fig.10 Switching Time Test Circuit

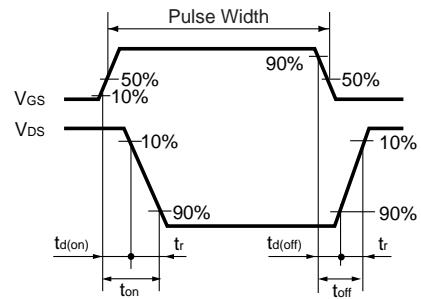


Fig.11 Switching Time Waveforms

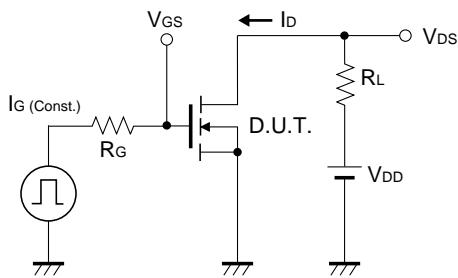


Fig.12 Gate Charge Test Circuit

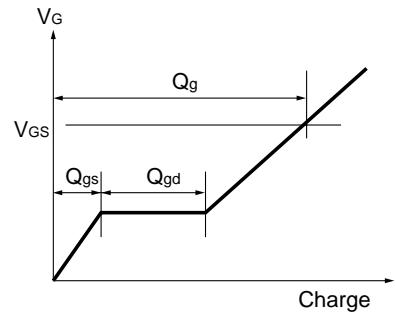


Fig.13 Gate Charge Waveform

## Appendix

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