

Transistor

# 4V Drive Pch MOS FET

## RSS070P05

### ●Structure

Silicon P-channel  
MOS FET

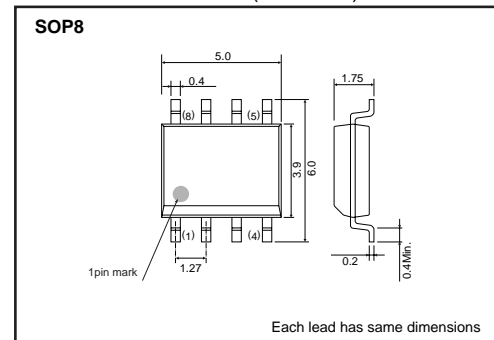
### ●Features

- 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
RSS070P05		○

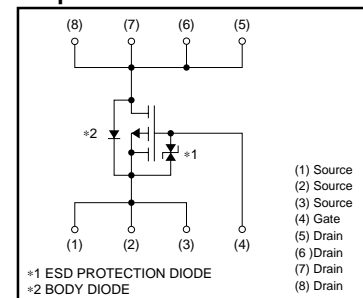
### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	$V_{DS}$	-45	V	
Gate-source voltage	$V_{GS}$	$\pm 20$	V	
Drain current	Continuous	$I_D$	$\pm 7.0$	A
	Pulsed	$I_{DP}$ *1	$\pm 28$	A
Source current (Body diode)	Continuous	$I_S$	-1.6	A
	Pulsed	$I_{SP}$ *1	-28	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  $PW \leq 10\mu s$ , Duty cycle  $\leq 1\%$

\*2 Mounted on a ceramic board

### ●Equivalent circuit



### ●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 <sub>GSS</sub>	–	–	±10	μA	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V
Drain-source breakdown voltage	V <sub>(BR) DSS</sub>	–45	–	–	V	I <sub>D</sub> = –1mA, V <sub>GS</sub> =0V
Zero gate voltage drain current	I <sub>DSS</sub>	–	–	–1	μA	V <sub>DS</sub> = –45V, V <sub>GS</sub> =0V
Gate threshold voltage	V <sub>GS(th)</sub>	–1.0	–	–2.5	V	V <sub>DS</sub> = –10V, I <sub>D</sub> = –1mA
Static drain-source on-state resistance	R <sub>DS(on)*</sub>	–	19	27	mΩ	I <sub>D</sub> = –7A, V <sub>GS</sub> = –10V
		–	25	35	mΩ	I <sub>D</sub> = –7A, V <sub>GS</sub> = –4.5V
		–	28	39	mΩ	I <sub>D</sub> = –7A, V <sub>GS</sub> = –4.0V
Forward transfer admittance	Y <sub>fs</sub>   *	10.0	–	–	S	V <sub>DS</sub> = –10V, I <sub>D</sub> = –7A
Input capacitance	C <sub>iss</sub>	–	4100	–	pF	V <sub>DS</sub> = –10V
Output capacitance	C <sub>oss</sub>	–	510	–	pF	V <sub>GS</sub> =0V
Reverse transfer capacitance	C <sub>rss</sub>	–	330	–	pF	f=1MHz
Turn-on delay time	t <sub>d(on)</sub> *	–	31	–	ns	V <sub>DD</sub> ≐ –25V
Rise time	t <sub>r</sub> *	–	35	–	ns	I <sub>D</sub> = –3.5A
Turn-off delay time	t <sub>d(off)</sub> *	–	135	–	ns	V <sub>GS</sub> = –10V
Fall time	t <sub>f</sub> *	–	50	–	ns	R <sub>L</sub> =–7Ω
Total gate charge	Q <sub>g</sub> *	–	34.0	47.6	nC	R <sub>G</sub> =10Ω
Gate-source charge	Q <sub>gs</sub> *	–	9.5	–	nC	V <sub>DD</sub> ≐ –25V V <sub>GS</sub> = –5V
Gate-drain charge	Q <sub>gd</sub> *	–	12	–	nC	I <sub>D</sub> = –7A
						R <sub>L</sub> =3.5Ω R <sub>G</sub> =10Ω

\*Pulsed

## Body diode characteristics (Source-Drain)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V <sub>SD</sub> *	–	–	–1.2	V	I <sub>S</sub> = –7A, V <sub>GS</sub> =0V

\*Pulsed

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●Electrical characteristic curves

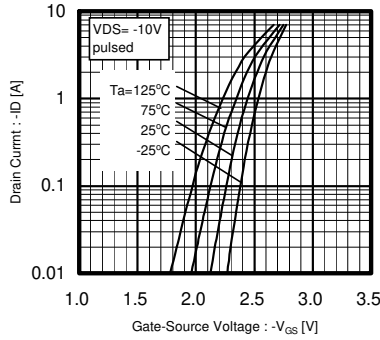


Fig.1 Typical Transfer Characteristics

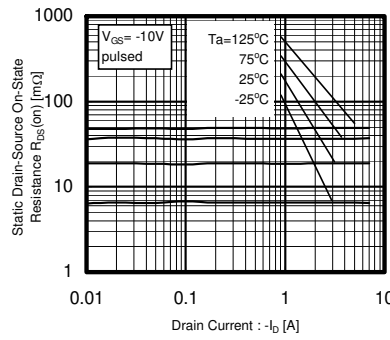


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current (1)

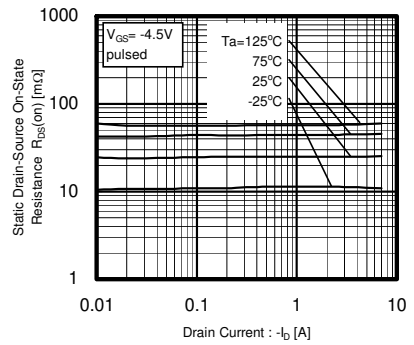


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current (2)

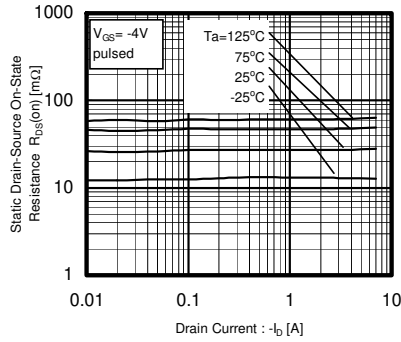


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (3)

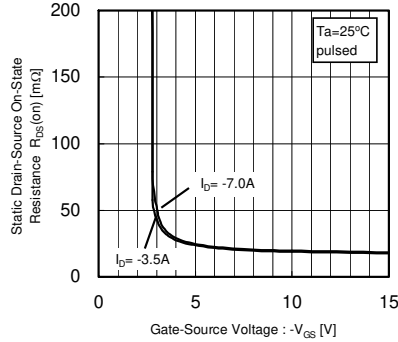


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

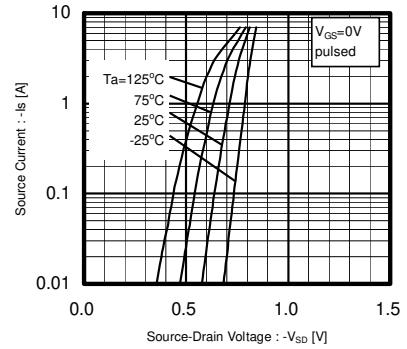


Fig.6 Source-Current vs. Source-Drain Voltage

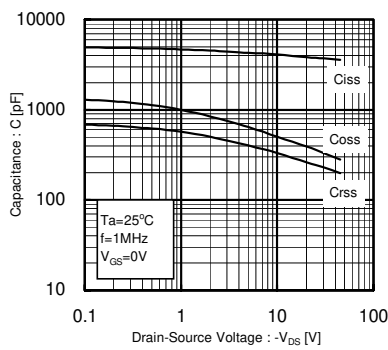


Fig.7 Typical capacitance vs. Source-Drain Voltage

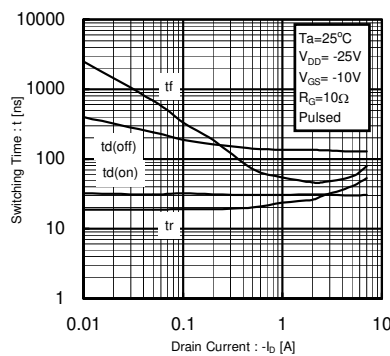


Fig.8 Switching Characteristics

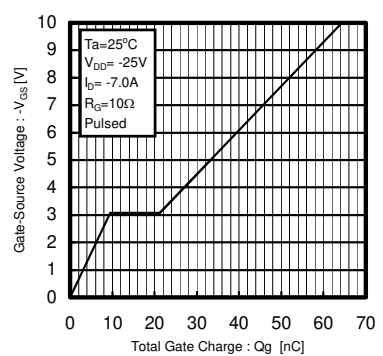


Fig.9 Dynamic Input Characteristics

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● Measurement circuits

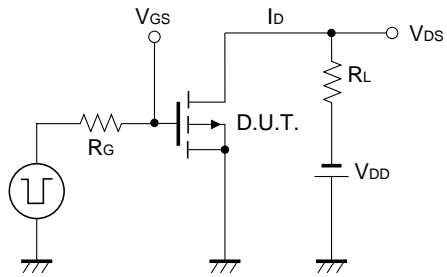


Fig.10 Switching Time Test Circuit

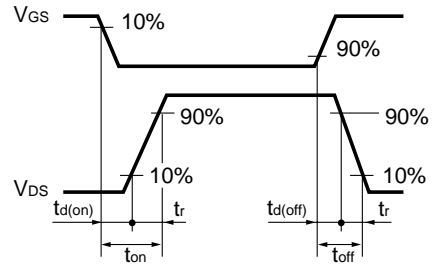


Fig.11 Switching Time Waveforms

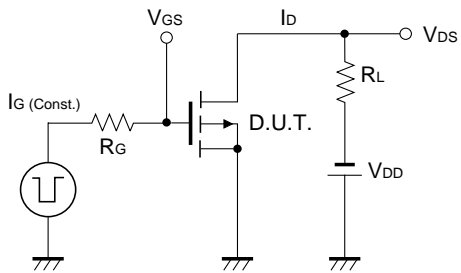


Fig.12 Gate Charge Test Circuit

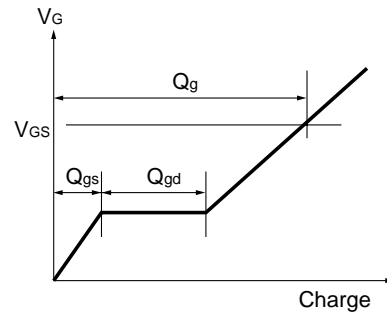


Fig.13 Gate Charge Waveform

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