

4V Drive Pch MOS FET

RSS070P05

●Structure

Silicon P-channel
MOS FET

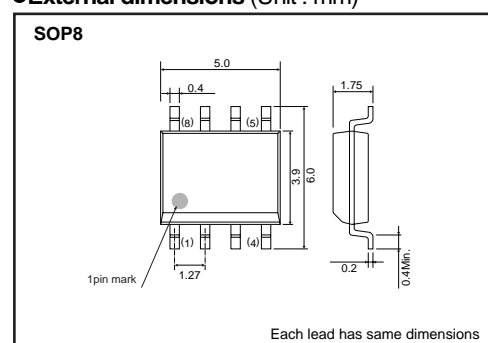
●Features

- 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		○

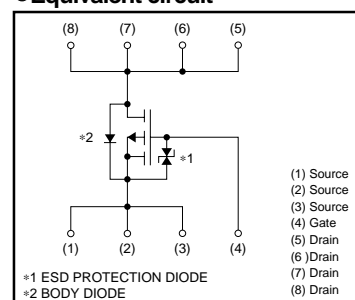
●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DS}	-45	V
Gate-source voltage		V_{GS}	± 20	V
Drain current	Continuous	I_D	± 7.0	A
	Pulsed	I_{DP} *1	± 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

Transistor

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 20V$, $V_{DS} = 0V$
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	$R_{DS(on)}^*$	—	19	27	m Ω	$I_D = -7A$, $V_{GS} = -10V$
		—	25	35	m Ω	$I_D = -7A$, $V_{GS} = -4.5V$
		—	28	39	m Ω	$I_D = -7A$, $V_{GS} = -4.0V$
Forward transfer admittance	$ Y_{fs} ^*$	10.0	—	—	S	$V_{DS} = -10V$, $I_D = -7A$
Input capacitance	C_{iss}	—	4100	—	pF	$V_{DS} = -10V$
Output capacitance	C_{oss}	—	510	—	pF	$V_{GS} = 0V$
Reverse transfer capacitance	C_{rss}	—	330	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}^*$	—	31	—	ns	$V_{DD} \doteq -25V$
Rise time	t_r^*	—	35	—	ns	$I_D = -3.5A$
Turn-off delay time	$t_{d(off)}^*$	—	135	—	ns	$V_{GS} = -10V$
Fall time	t_f^*	—	50	—	ns	$R_L = -7\Omega$
Total gate charge	Q_g^*	—	34.0	47.6	nC	$V_{DD} \doteq -25V$, $V_{GS} = -5V$
Gate-source charge	Q_{gs}^*	—	9.5	—	nC	$I_D = -7A$
Gate-drain charge	Q_{gd}^*	—	12	—	nC	$R_L = 3.5\Omega$, $R_G = 10\Omega$

*Pulsed

Body diode characteristics (Source-Drain)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}^*	—	—	-1.2	V	$I_S = -7A$, $V_{GS} = 0V$

*Pulsed

Transistor

●Electrical characteristic curves

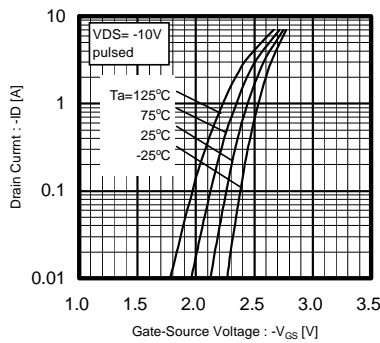


Fig.1 Typical Transfer Characteristics

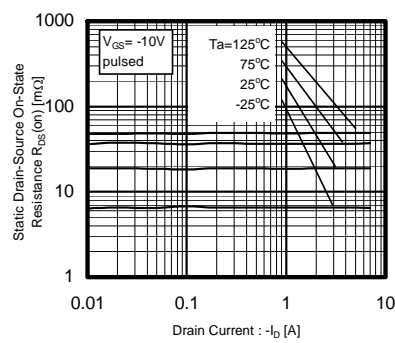


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current (1)

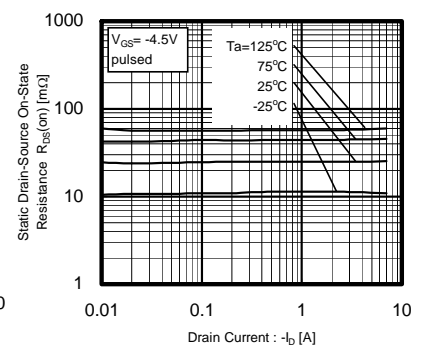


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current (2)

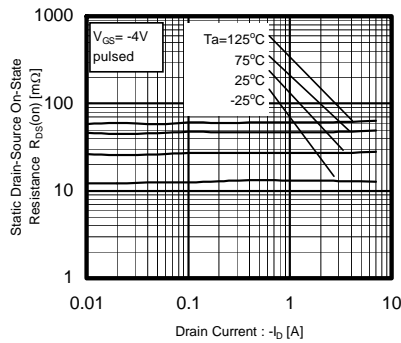


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (3)

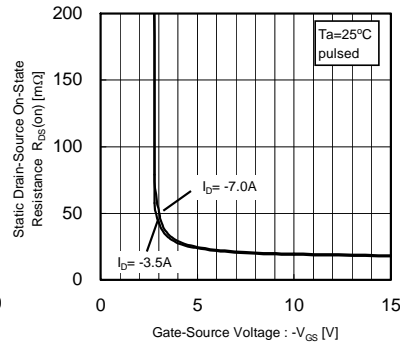


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

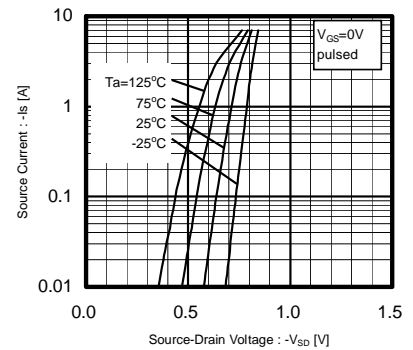


Fig.6 Source-Current vs. Source-Drain Voltage

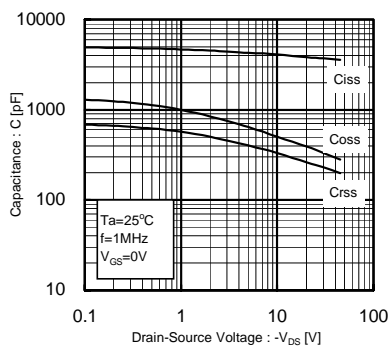


Fig.7 Typical capacitance vs. Source-Drain Voltage

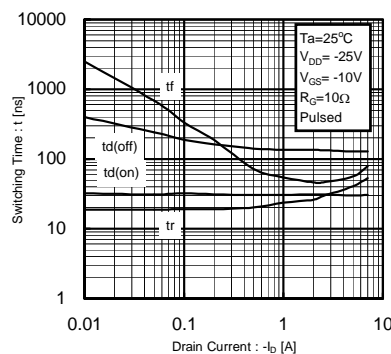


Fig.8 Switching Characteristics

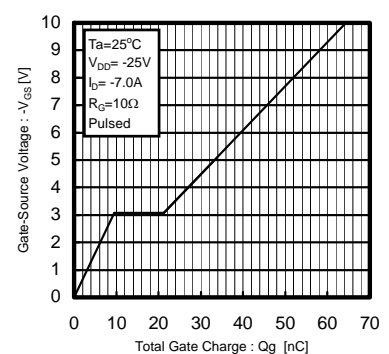


Fig.9 Dynamic Input Characteristics

Transistor

●Measurement circuits

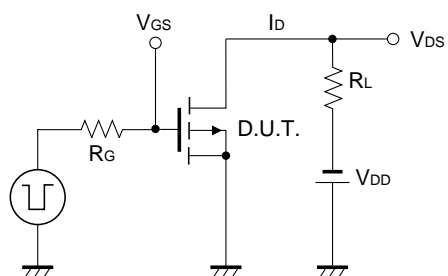


Fig.10 Switching Time Test Circuit

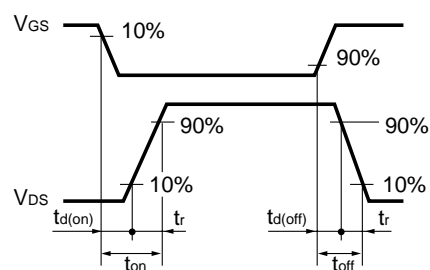


Fig.11 Switching Time Waveforms

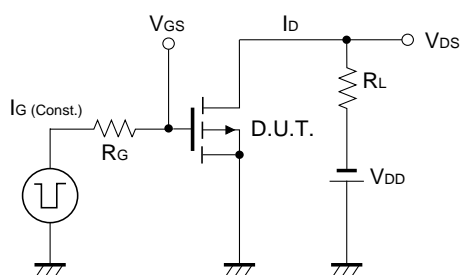


Fig.12 Gate Charge Test Circuit

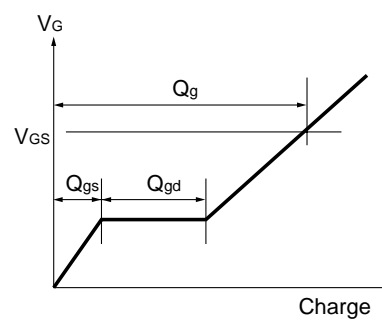


Fig.13 Gate Charge Waveform

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