

4V Drive Pch MOSFET

RSD080P05

● Structure

Silicon P-channel MOSFET

● Features

- 1) Low on-resistance.
- 2) Fast switching speed.
- 3) Drive circuits can be simple.
- 4) Parallel use is easy.

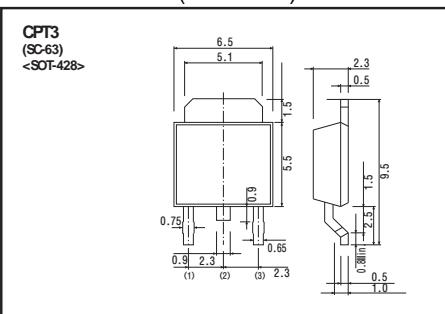
● Application

Switching

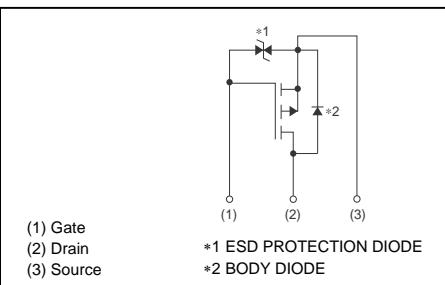
● Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	2500
RSD080P05		O

● Dimensions (Unit : mm)



● Inner circuit



- **Absolute maximum ratings** ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DSS}	-45	V
Gate-source voltage	V_{GSS}	± 20	V
Drain current	Continuous	I_D	± 8.0
	Pulsed	I_{DP} *1	± 16
Source current (Body Diode)	Continuous	I_S	-8.0
	Pulsed	I_{SP} *1	-16
Power dissipation	P_D *2	15	W
Channel temperature	T_{ch}	150	°C
Range of storage temperature	T_{stg}	-55 to +150	°C

*1 $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$

*2 T_c=25°C

● Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to Case	$R_{th\ (ch-c)}$ *	8.33	°C / W

* $T_c=25^\circ\text{C}$

● 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	$V_{GS(\text{th})}$	-1.0	-	-3.0	V	$V_{DS} = -10V, I_D = -1mA$
Static drain-source on-state resistance	$R_{DS(\text{on})}^*$	-	65	91	$m\Omega$	$I_D = -8.0A, V_{GS} = -10V$
		-	95	133		$I_D = -8.0A, V_{GS} = -4.5V$
		-	105	147		$I_D = -8.0A, V_{GS} = -4.0V$
Forward transfer admittance	$ Y_{fs} ^*$	6.0	-	-	S	$I_D = -8.0A, V_{DS} = -10V$
Input capacitance	C_{iss}	-	1000	-	pF	$V_{DS} = -10V$
Output capacitance	C_{oss}	-	160	-	pF	$V_{GS} = 0V$
Reverse transfer capacitance	C_{rss}	-	80	-	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}^*$	-	12	-	ns	$I_D = -4.0A, V_{DD} = -25V$
Rise time	t_r^*	-	15	-	ns	$V_{GS} = -10V$
Turn-off delay time	$t_{d(off)}^*$	-	50	-	ns	$R_L = 6.25\Omega$
Fall time	t_f^*	-	20	-	ns	$R_G = 10\Omega$
Total gate charge	Q_g^*	-	9.0	-	nC	$V_{DD} = -25V$
Gate-source charge	Q_{gs}^*	-	4.0	-	nC	$I_D = -8.0A,$
Gate-drain charge	Q_{gd}^*	-	3.0	-	nC	$V_{GS} = -5V$

*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	V_{SD}^*	-	-	-1.2	V	$I_s = -8.0A, V_{GS} = 0V$

*Pulsed

●Electrical characteristic curves (Ta=25°C)

Fig.1 Typical Output Characteristics (I)

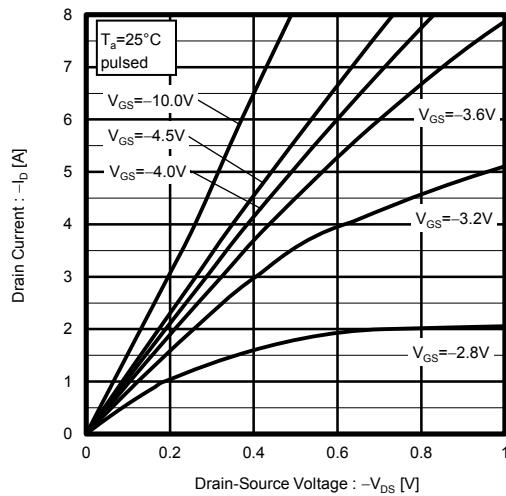


Fig.2 Typical Output Characteristics (II)

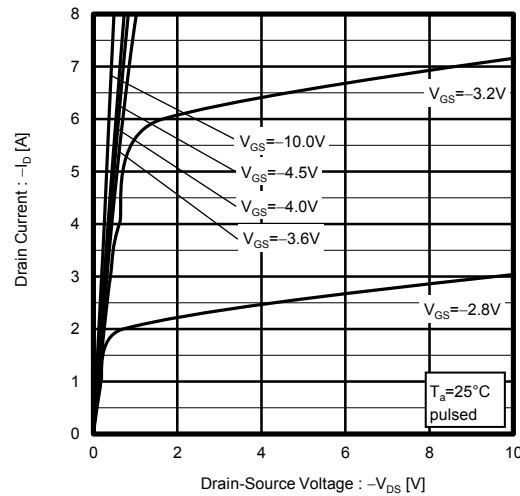


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

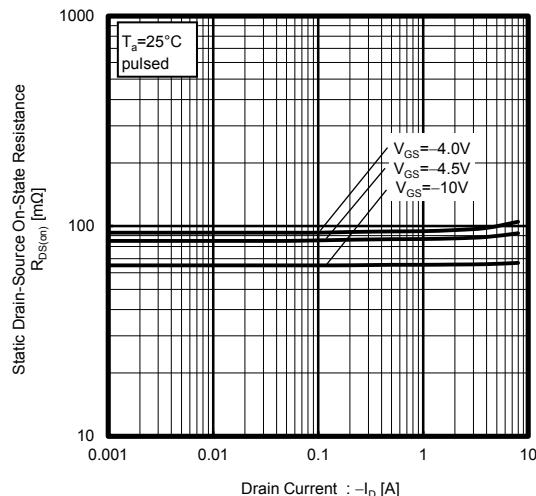


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

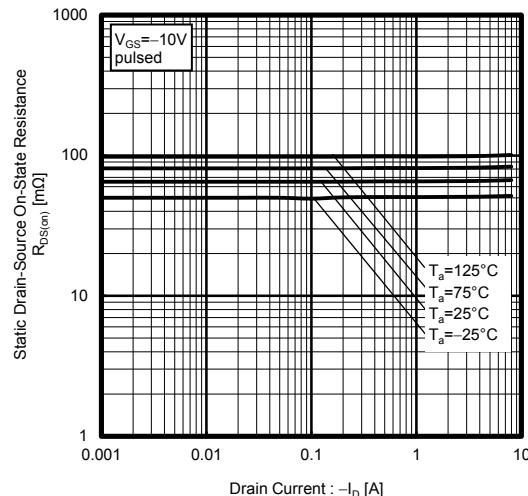


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

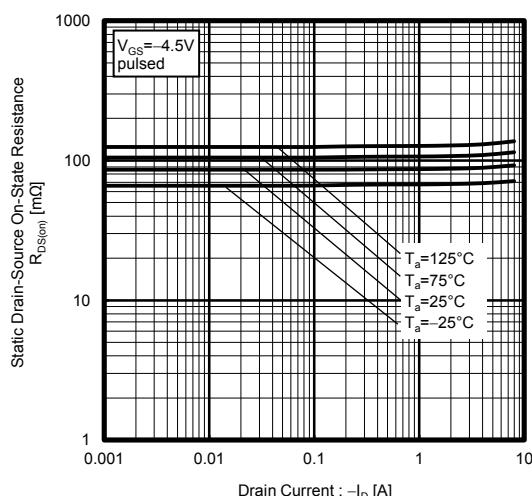


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current

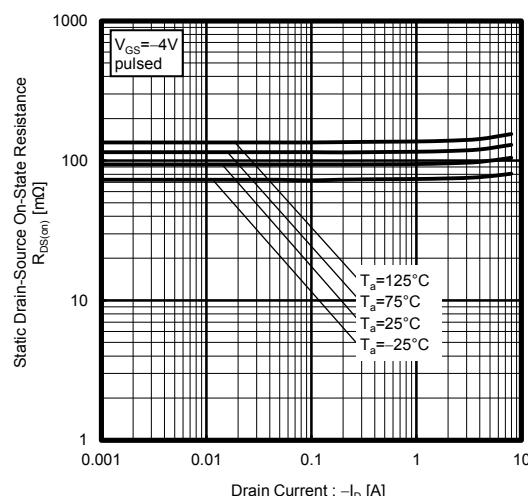


Fig.7 Forward Transfer Admittance vs. Drain Current

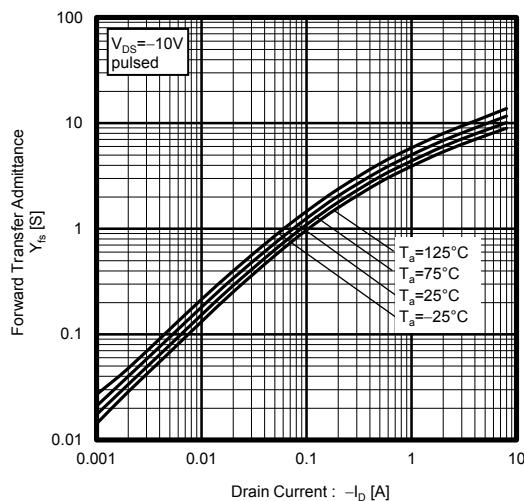


Fig.8 Typical Transfer Characteristics

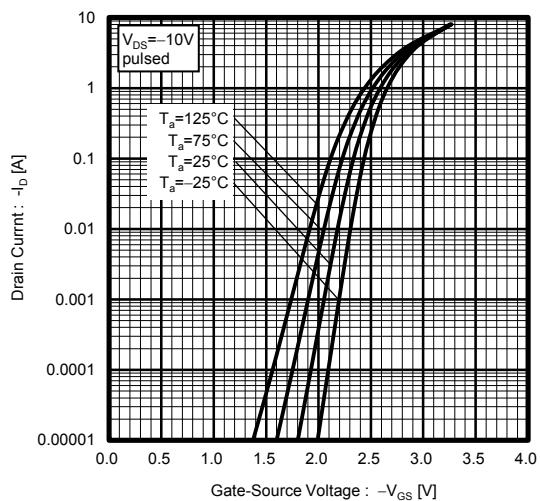


Fig.9 Source Current vs. Source-Drain Voltage

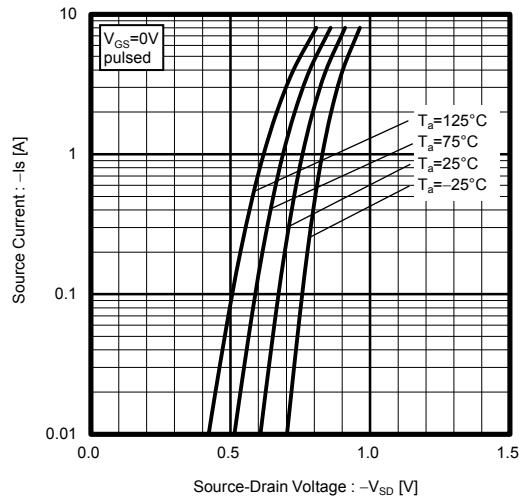


Fig.10 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

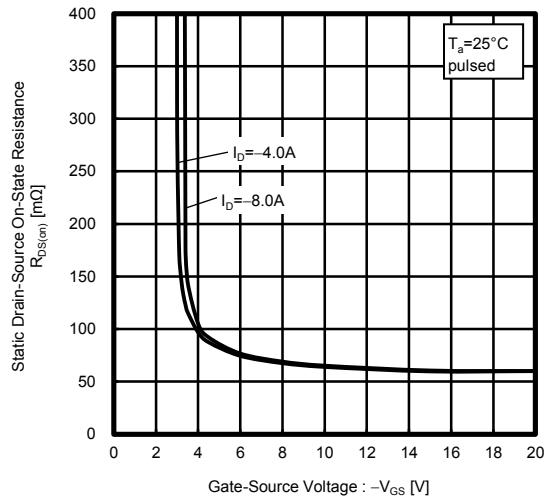


Fig.11 Switching Characteristics

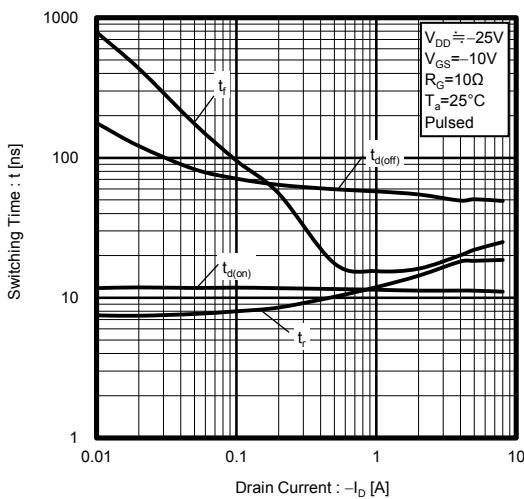


Fig.12 Dynamic Input Characteristics

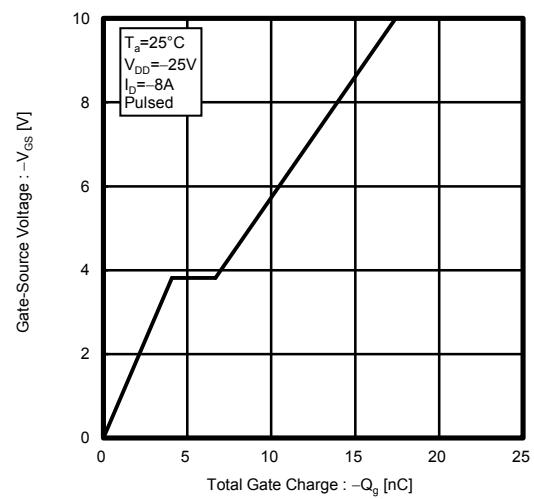


Fig.13 Typical Capacitance vs. Drain-Source Voltage

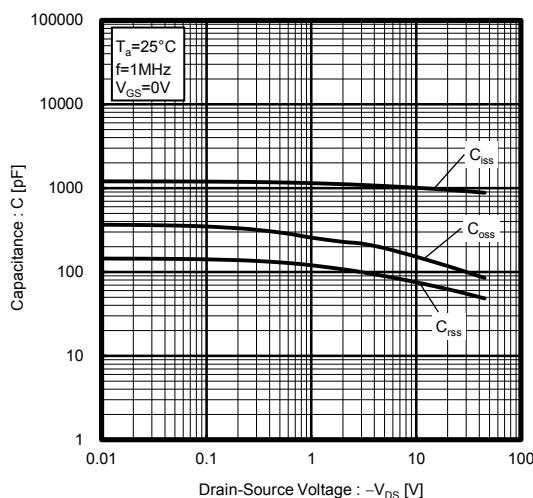


Fig.14 Maximum Safe Operating Area

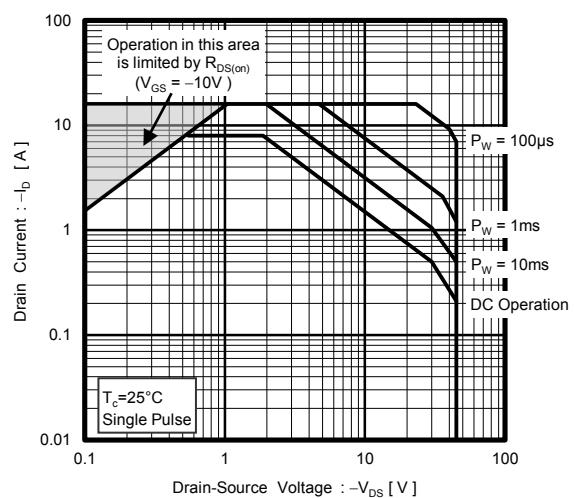
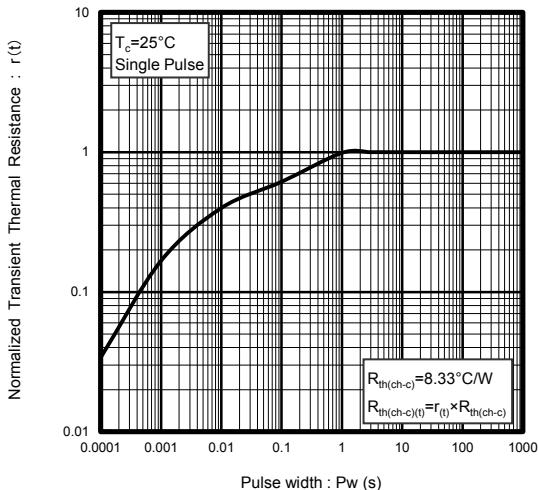


Fig.15 Normalized Transient Thermal Resistance v.s. Pulse Width



● Measurement circuits

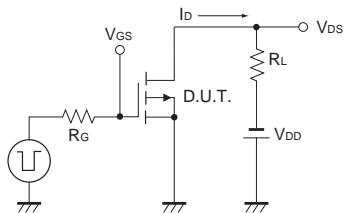


Fig.1-1 Switching Time Measurement Circuit

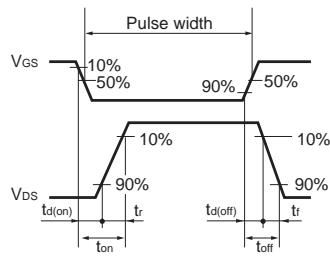


Fig.1-2 Switching Waveforms

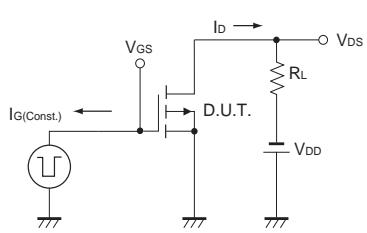


Fig.2-1 Gate Charge Measurement Circuit

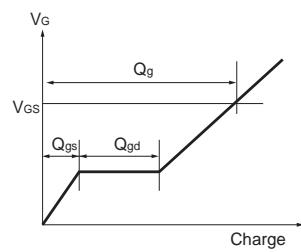


Fig.2-2 Gate Charge Waveform

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