

4V Drive Pch MOSFET

RSD140P06

● 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
RSD140P06		○

● Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V _{DSS}	-60	V	
Gate-source voltage	V _{GSS}	±20	V	
Drain current	Continuous	I _D	±14	A
	Pulsed	I _{DP} *1	±28	A
Source current (Body Diode)	Continuous	I _S	-14	A
	Pulsed	I _{SP} *1	-28	A
Power dissipation	P _D *2	20	W	
Channel temperature	T _{ch}	150	°C	
Range of storage temperature	T _{stg}	-55 to +150	°C	

*1 Pw≤10μs, Duty cycle≤1%

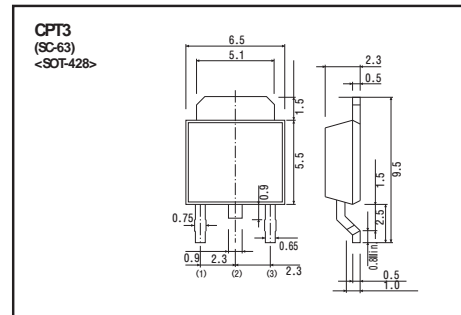
*2 T_c=25°C

● Thermal resistance

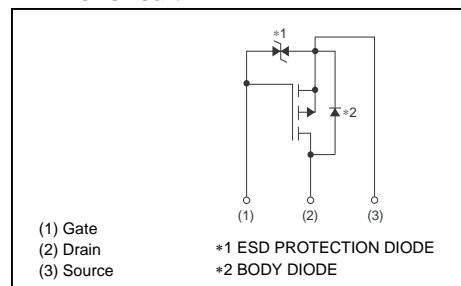
Parameter	Symbol	Limits	Unit
Channel to Case	R _{th(ch-c)} *	6.25	°C / W

* T_c=25°C

● Dimensions (Unit : mm)



● Inner circuit



(1) Gate
(2) Drain
(3) Source

*1 ESD PROTECTION DIODE
*2 BODY DIODE

●Electrical characteristics (T_a = 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}	-60	-	-	V	I _D =-1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	-	-	-1	μA	V _{DS} =-60V, V _{GS} =0V
Gate threshold voltage	V _{GS(th)}	-1.0	-	-3.0	V	V _{DS} =-10V, I _D =-1mA
Static drain-source on-state resistance	R _{DS(on)} *	-	60	84	mΩ	I _D =-14A, V _{GS} =-10V
		-	73	103		I _D =-14A, V _{GS} =-4.5V
		-	77	108		I _D =-14A, V _{GS} =-4.0V
Forward transfer admittance	Y _{fs} *	10	-	-	S	I _D =-14A, V _{DS} =-10V
Input capacitance	C _{iss}	-	1900	-	pF	V _{DS} =-10V
Output capacitance	C _{oss}	-	200	-	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	-	100	-	pF	f=1MHz
Turn-on delay time	t _{d(on)} *	-	20	-	ns	I _D =-7.0A, V _{DD} =-30V
Rise time	t _r *	-	45	-	ns	V _{GS} =-10V
Turn-off delay time	t _{d(off)} *	-	240	-	ns	R _L =4.3Ω
Fall time	t _f *	-	110	-	ns	R _G =10Ω
Total gate charge	Q _g *	-	27	-	nC	V _{DD} =-30V
Gate-source charge	Q _{gs} *	-	4.5	-	nC	I _D =-14A,
Gate-drain charge	Q _{gd} *	-	5.0	-	nC	V _{GS} =-10V

*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	V _{SD} *	-	-	-1.2	V	I _s =-14A, V _{GS} =0V

*Pulsed

●Electrical characteristic curves (Ta=25°C)

Fig.1 Typical Output Characteristics (I)

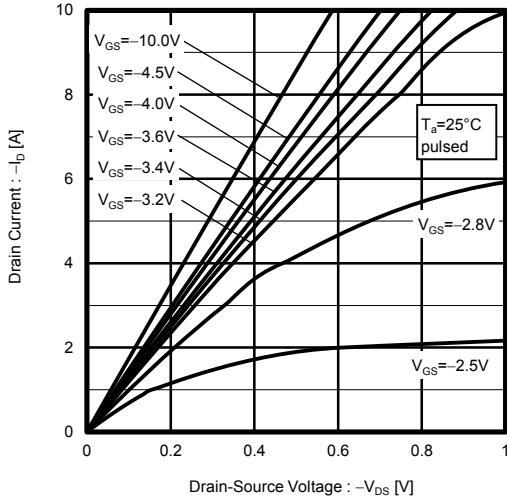


Fig.2 Typical Output Characteristics (II)

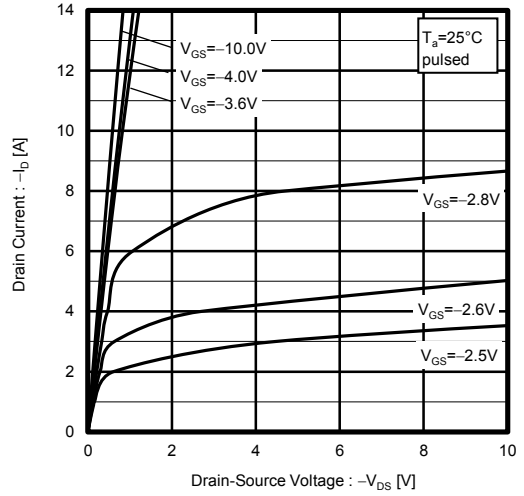


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

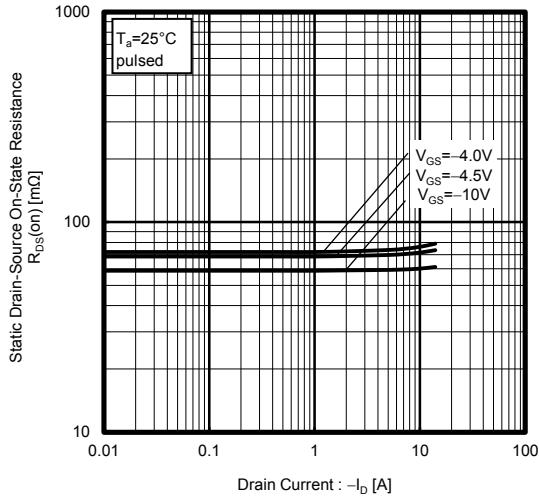


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

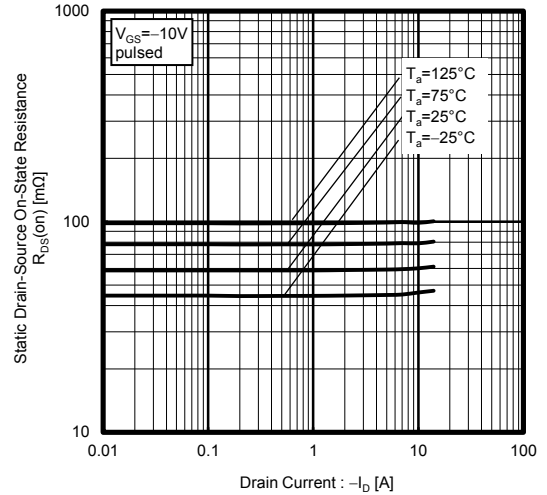


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

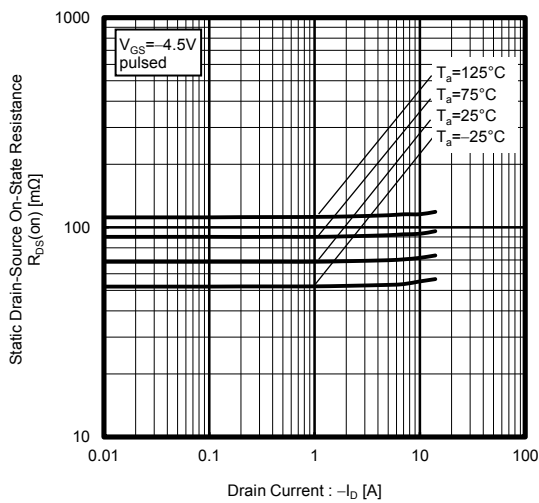


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current

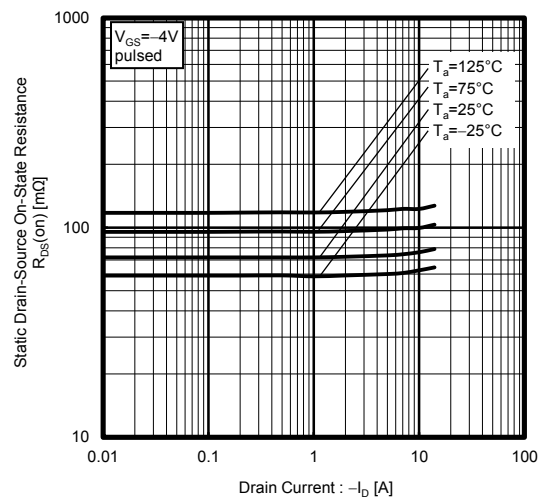


Fig.7 Forward Transfer Admittance vs. Drain Current

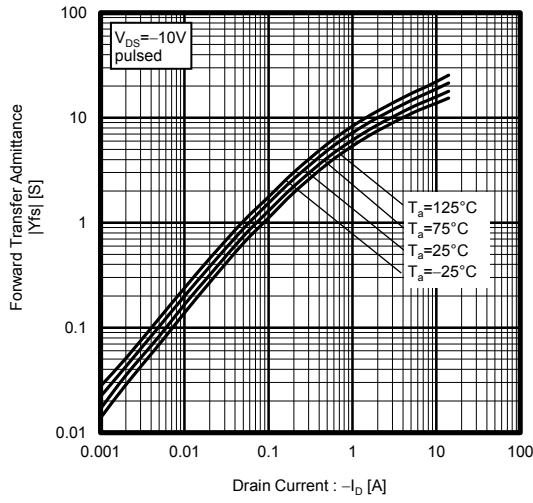


Fig.8 Typical Transfer Characteristics

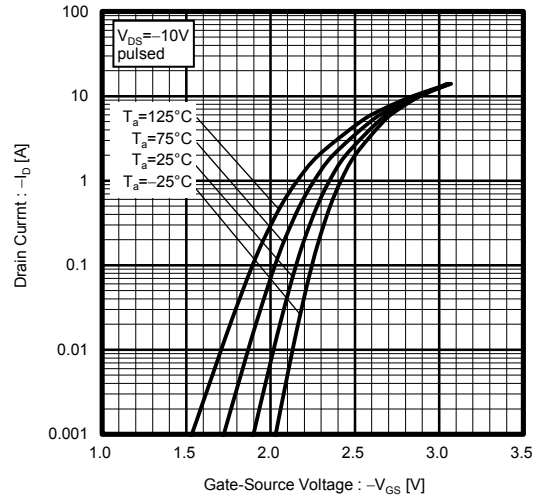


Fig.9 Source Current vs. Source-Drain Voltage

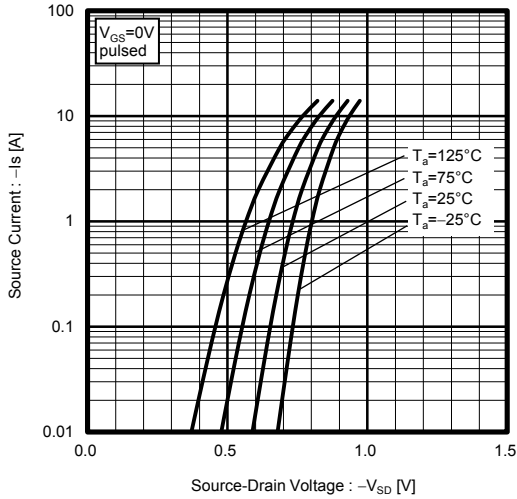


Fig.10 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

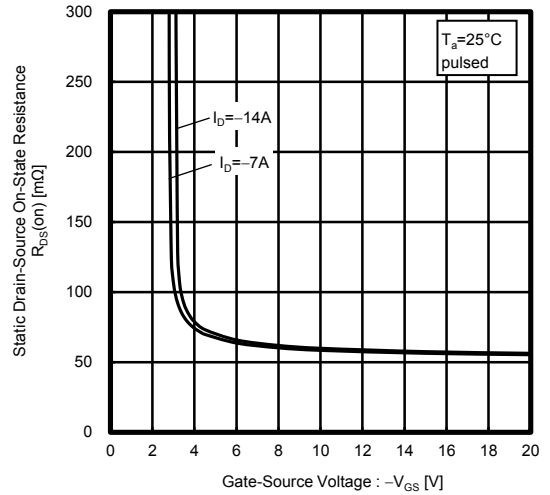


Fig.11 Switching Characteristics

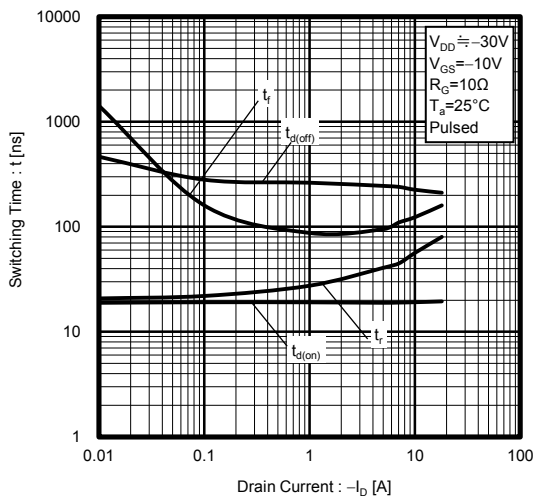


Fig.12 Dynamic Input Characteristics

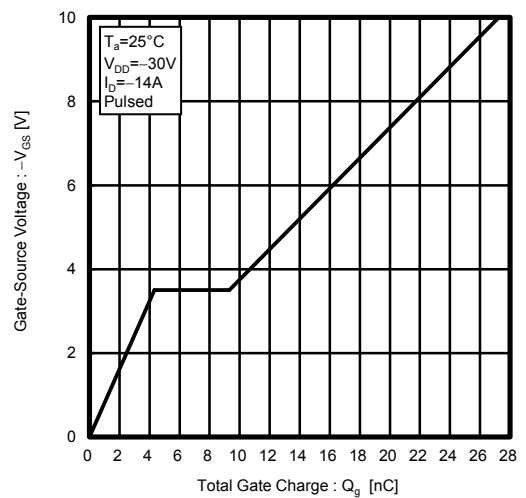


Fig.13 Typical Capacitance vs. Drain-Source Voltage

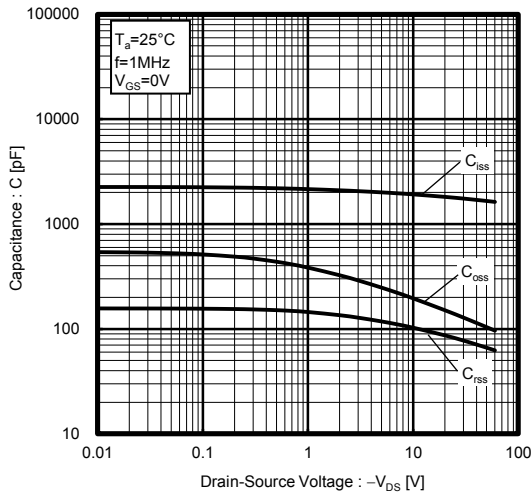


Fig.14 Maximum Safe Operating Area

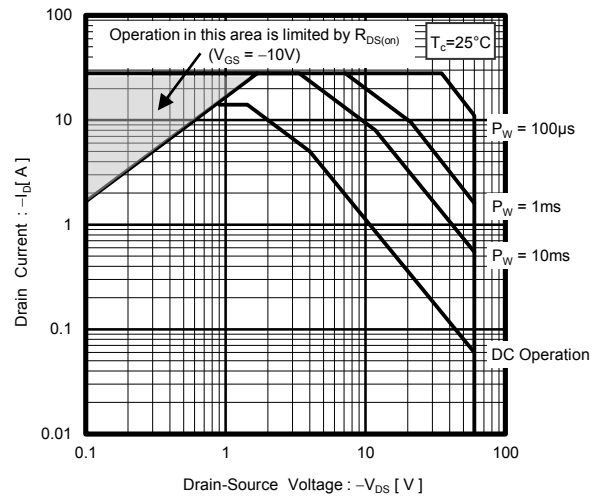
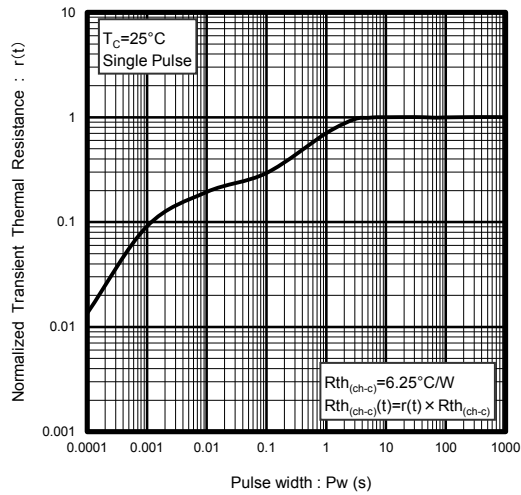


Fig.15 Normalized Transient Thermal Resistance v.s. Pulse Width



● Measurement circuits

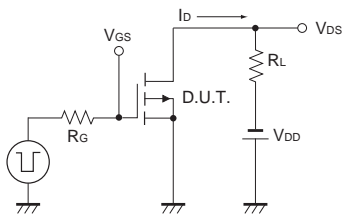


Fig.1-1 Switching Time Measurement Circuit

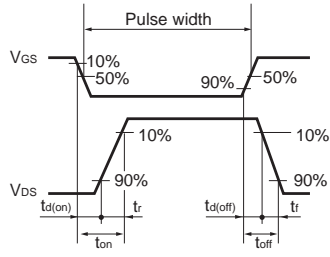


Fig.1-2 Switching Waveforms

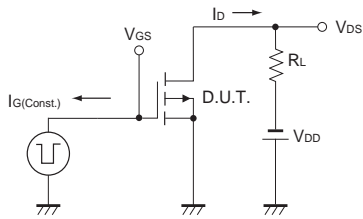


Fig.2-1 Gate Charge Measurement Circuit

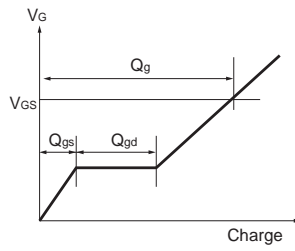


Fig.2-2 Gate Charge Waveform

Notes

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