10V Drive Nch MOSFET

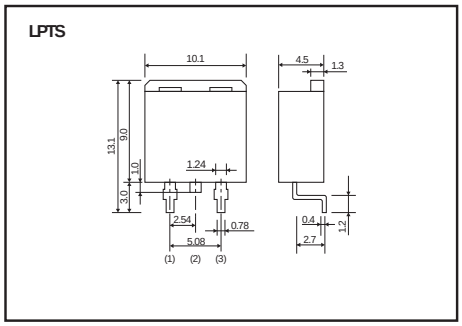
RSJ400N06

● Structure
Silicon N-channel MOSFET

● Features
1) Low on-resistance.
2) High current
3) High power Package

● Application
Switching

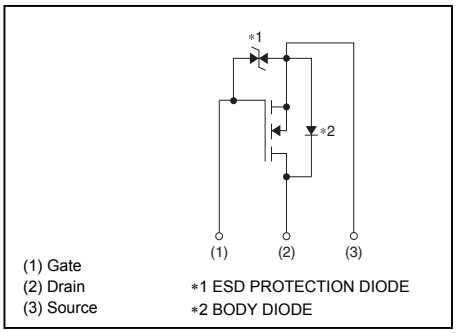
● Dimensions (Unit : mm)



● Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	1000
RSJ400N06		○

● Inner circuit



● 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	±40	A
	Pulsed	I_{DP} *1	±80	A
Source current (Body Diode)	Continuous	I_S	40	A
	Pulsed	I_{SP} *1	80	A
Power dissipation		P_D *2	50	W
Channel temperature		Tch	150	°C
Range of storage temperature		Tstg	−55 to +150	°C

*1 Pw≤10μs, Duty cycle≤1%

*2 T_c=25°C

● Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to Case	$R_{th\ (ch\text{-}c)}$ *	2.5	°C / W

* T_c=25°C

●**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	$R_{DS\ (on)}$ *	-	11	16	mΩ	I_D=40A, V_{GS}=10V
Forward transfer admittance	$\|Y_{fs}\|$ *	14	-	-	S	I_D=20A, V_{DS}=10V
Input capacitance	C_{iss}	-	2400	-	pF	V_{DS}=10V
Output capacitance	C_{oss}	-	490	-	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	-	250	-	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$ *	-	20	-	ns	I_D=20A, V_{DD}≒ 30V
Rise time	t_r *	-	60	-	ns	V_{GS}=10V
Turn-off delay time	$t_{d(off)}$ *	-	90	-	ns	R_L=1.5Ω
Fall time	t_f *	-	140	-	ns	R_G=10Ω
Total gate charge	Q_g *	-	52	-	nC	V_{DD}≒ 30V
Gate-source charge	Q_{gs} *	-	8	-	nC	I_D=40A,
Gate-drain charge	Q_{gd} *	-	15	-	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=40A, V_{GS}=0V

*Pulsed

●Electrical characteristic curves (Ta=25°C)

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

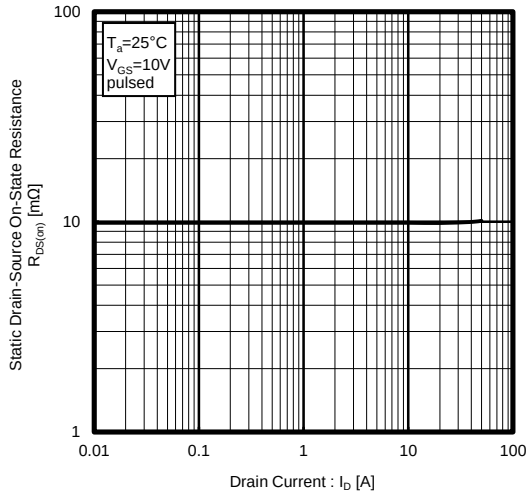


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

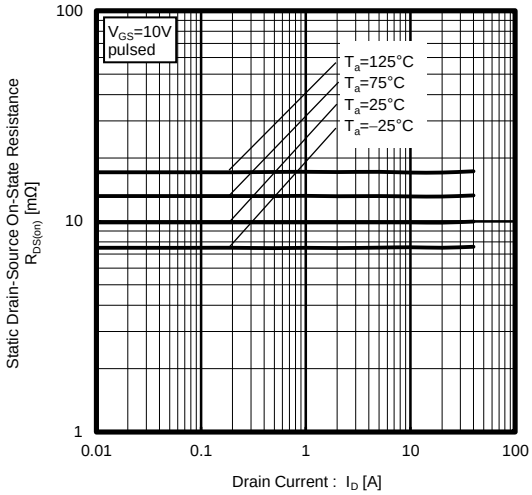


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

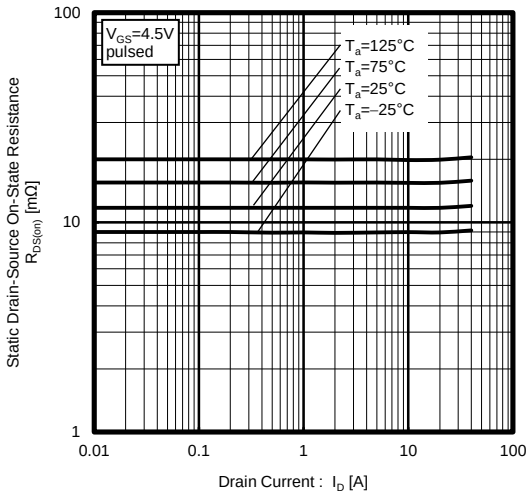


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

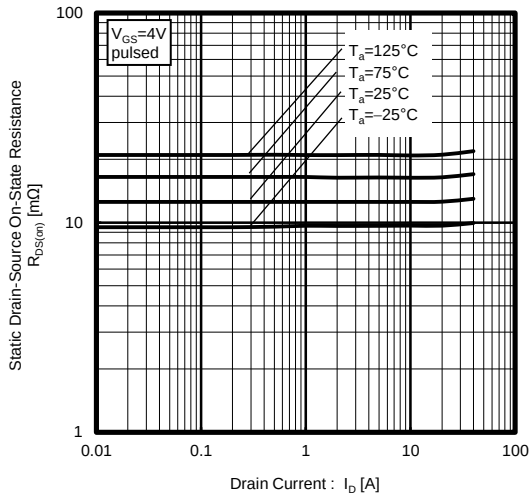


Fig.5 Forward Transfer Admittance vs. Drain Current

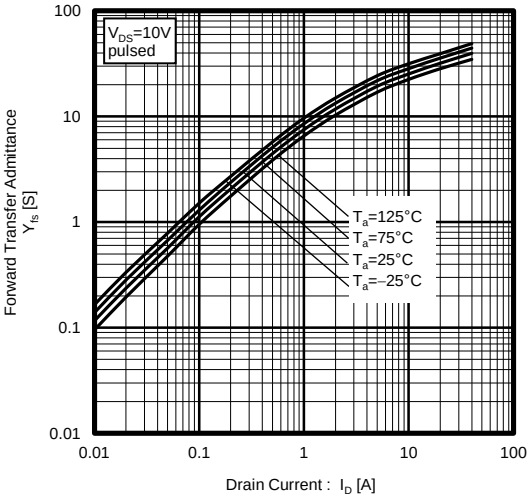


Fig.6 Typical Transfer Characteristics

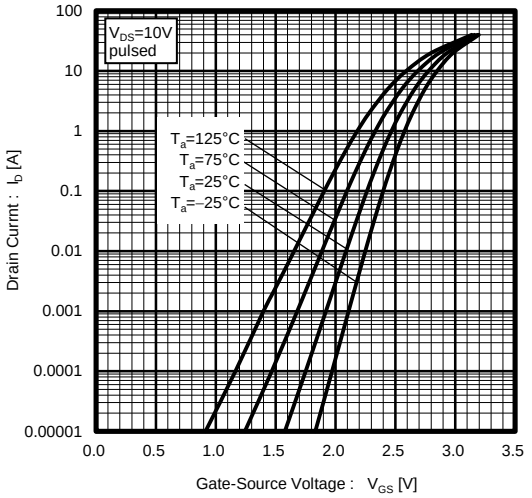


Fig.7 Source Current vs. Source-Drain Voltage

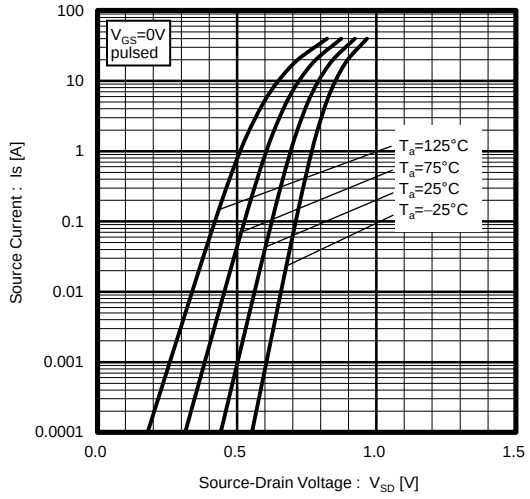


Fig.8 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

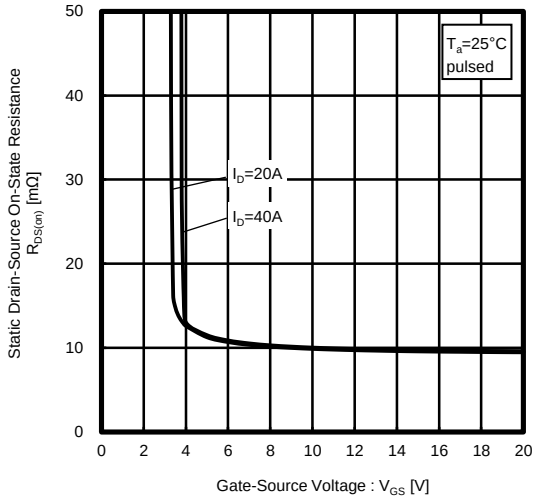


Fig.9 Switching Characteristics

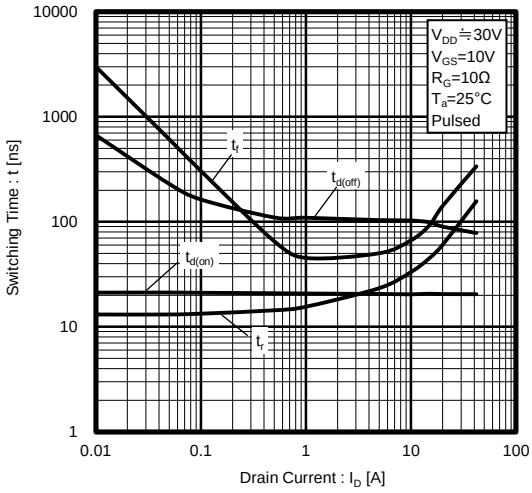


Fig.10 Dynamic Input Characteristics

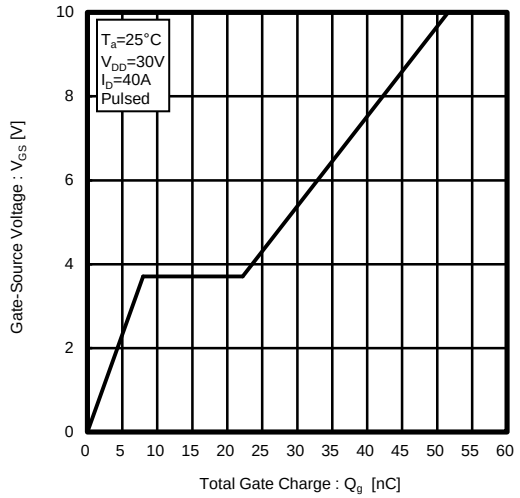


Fig.11 Typical Capacitance vs. Drain-Source Voltage

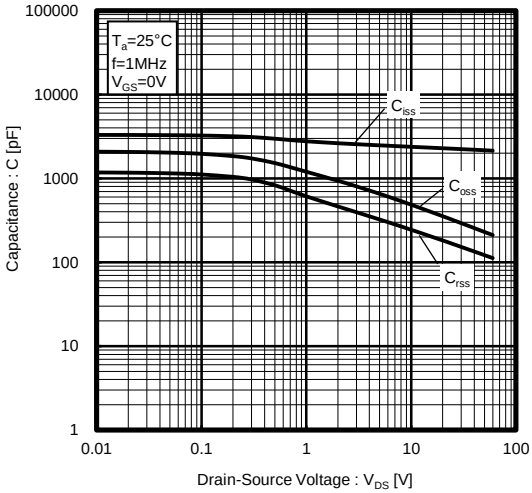
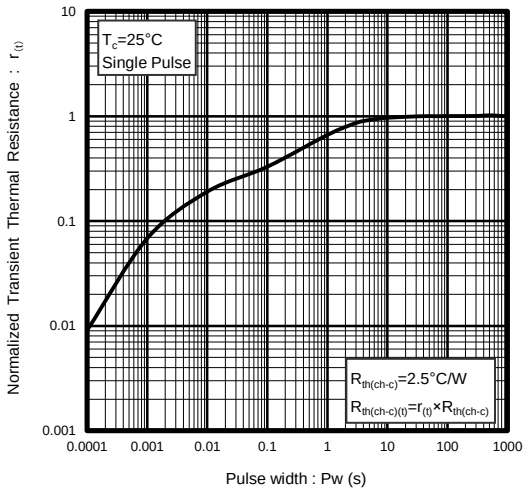


Fig.12 Normalized Transient Thermal Resistance v.s. Pulse Width



● Measurement circuits

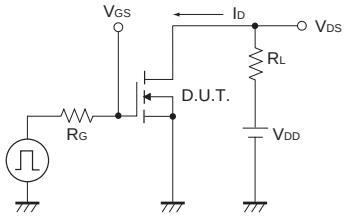


Fig.1-1 Switching Time Measurement Circuit

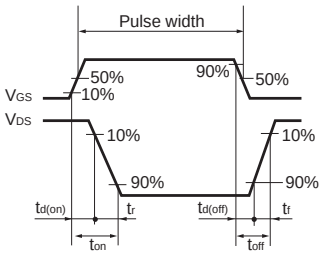


Fig.1-2 Switching Waveforms

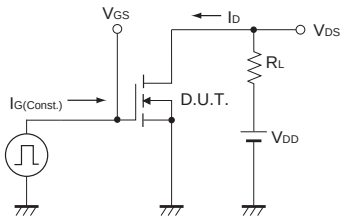


Fig.2-1 Gate Charge Measurement Circuit

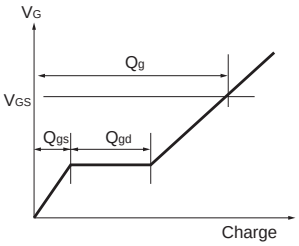


Fig.2-2 Gate Charge Waveform

Notes

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