

# 4V Drive Nch MOSFET

## RSJ550N10

### ● Structure

Silicon N-channel MOSFET

### ● Features

- 1) Low on-resistance.
- 2) High Power Package.
- 3) 4V drive.

### ● Application

Switching

### ● Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	1000
RSJ550N10		○

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

Parameter	Symbol	Limits	Unit	
Drain-source voltage	$V_{DSS}$	100	V	
Gate-source voltage	$V_{GSS}$	$\pm 20$	V	
Drain current	Continuous	$I_D$ *3	$\pm 55$	A
	Pulsed	$I_{DP}$ *1	$\pm 110$	A
Source current (Body Diode)	Continuous	$I_S$ *3	55	A
	Pulsed	$I_{SP}$ *1	110	A
Power dissipation	$P_D$ *2	100	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  $T_C = 25^\circ C$

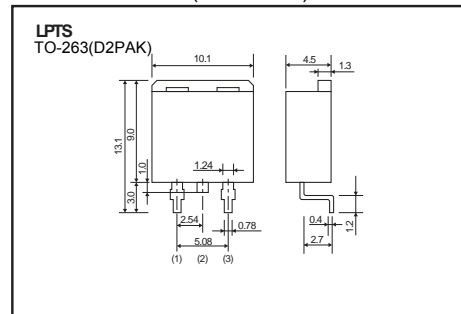
\*3 Please use within the range of SOA.

### ● Thermal resistance

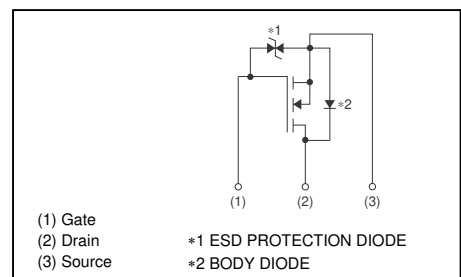
Parameter	Symbol	Limits	Unit
Channel to Case	$R_{th(ch-c)}$ *	1.25	°C / W

\*  $T_C = 25^\circ C$

### ● Dimensions (Unit : mm)



### ● Inner circuit



**● Electrical characteristics (Ta = 25°C)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	$I_{GSS}$	-	-	$\pm 10$	$\mu A$	$V_{GS}=\pm 20V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	100	-	-	V	$I_D=1mA, V_{GS}=0V$
Zero gate voltage drain current	$I_{DSS}$	-	-	1	$\mu A$	$V_{DS}=100V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	1	-	2.5	V	$V_{DS}=10V, I_D=1mA$
Static drain-source on-state resistance	$R_{DS(on)}^*$	-	12	16.8	m $\Omega$	$I_D=27.5A, V_{GS}=10V$
		-	13.5	18.9		$I_D=27.5A, V_{GS}=4V$
Forward transfer admittance	$ Y_{fs} ^{\dagger}$	30	-	-	S	$V_{DS}=10V, I_D=27.5A$
Input capacitance	$C_{ISS}$	-	6150	-	pF	$V_{DS}=25V$
Output capacitance	$C_{OSS}$	-	460	-	pF	$V_{GS}=0V$
Reverse transfer capacitance	$C_{RSS}$	-	320	-	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}^*$	-	32	-	ns	$V_{DD}\approx 50V, I_D=27.5A$
Rise time	$t_r^*$	-	105	-	ns	$V_{GS}=10V$
Turn-off delay time	$t_{d(off)}^*$	-	375	-	ns	$R_L=1.82\Omega$
Fall time	$t_f^*$	-	360	-	ns	$R_G=10\Omega$
Total gate charge	$Q_g^*$	-	143	-	nC	$V_{DD}\approx 50V, I_D=27.5A$
Gate-source charge	$Q_{gs}^*$	-	16	-	nC	$V_{GS}=10V$
Gate-drain charge	$Q_{gd}^*$	-	34	-	nC	

\*Pulsed

**● Body diode characteristics (Source-Drain)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	$V_{SD}^*$	-	-	1.5	V	$I_S=55A, V_{GS}=0V$

\*Pulsed

●Electrical characteristic curves (Ta=25°C)

Fig.1 Typical Output Characteristics ( I )

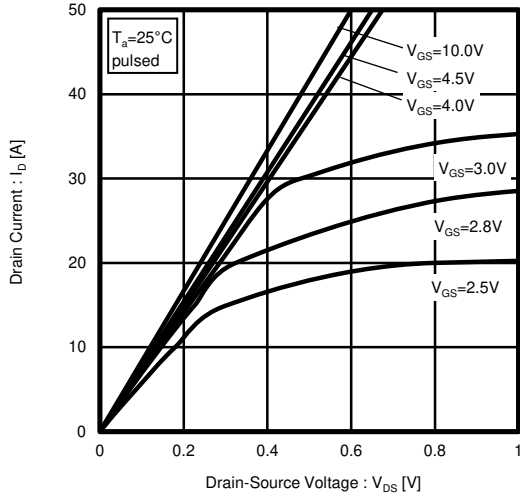


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

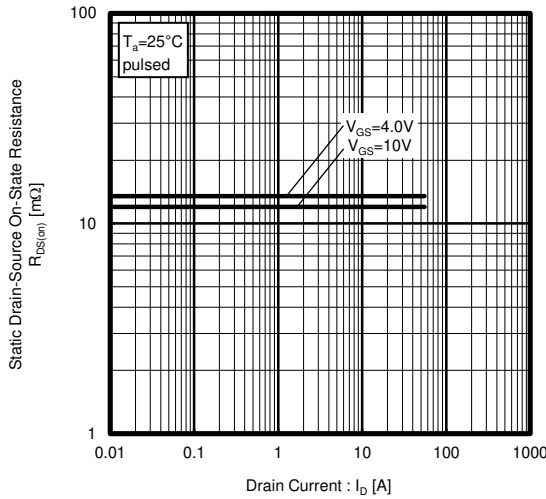


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

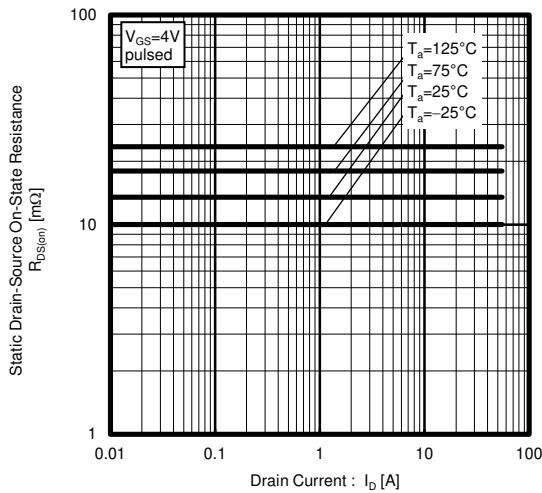


Fig.2 Typical Output Characteristics ( II )

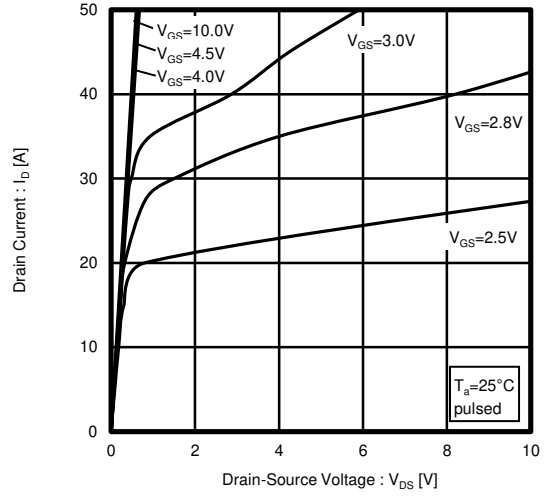


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

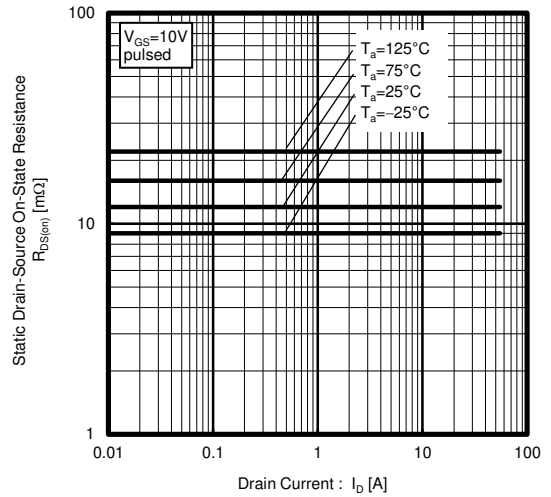


Fig.6 Typical Transfer Characteristics

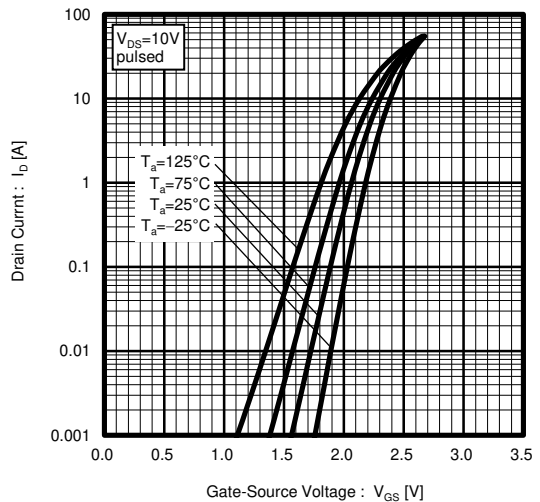


Fig.7 Source Current vs. Source-Drain Voltage

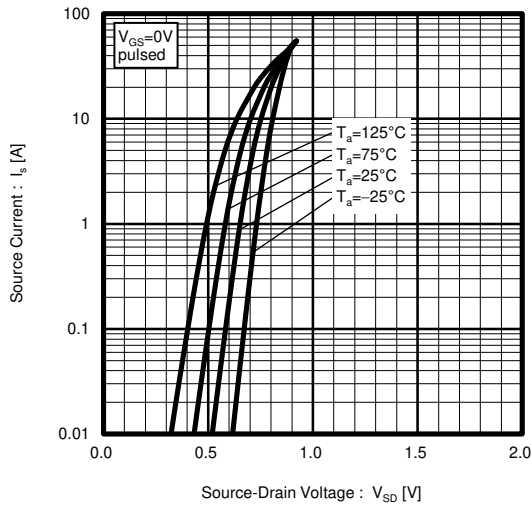


Fig.8 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

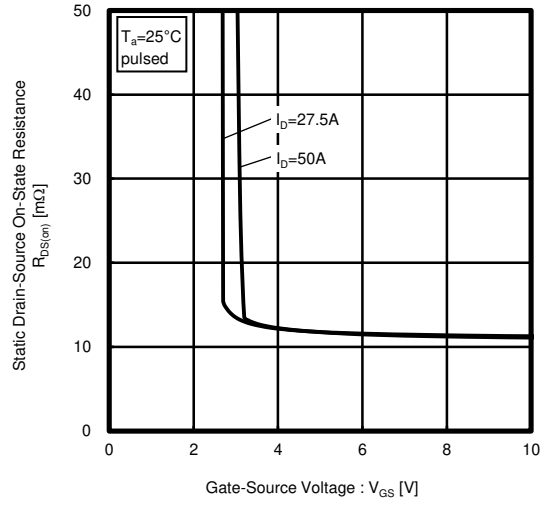


Fig.9 Switching Characteristics

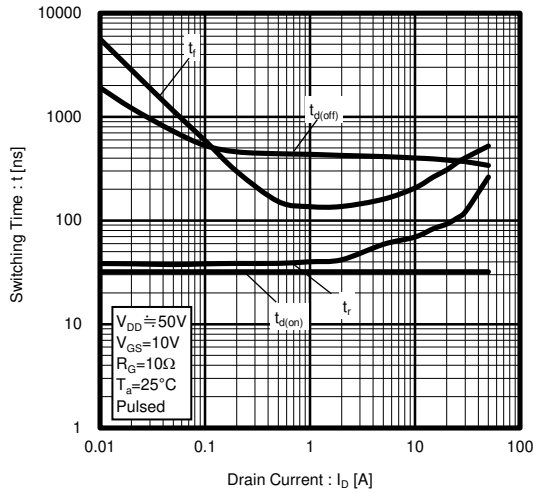


Fig.10 Dynamic Input Characteristics

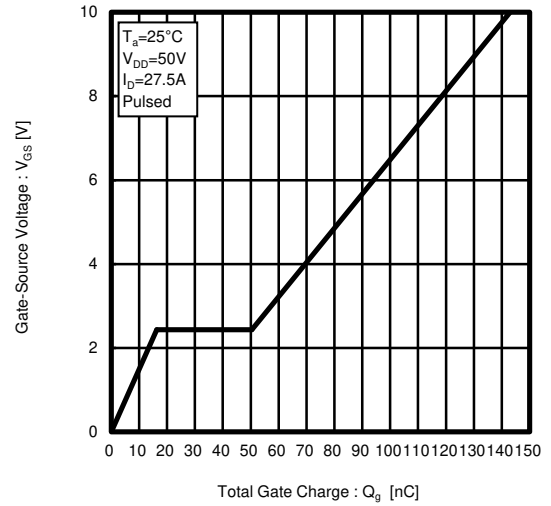


Fig.11 Typical Capacitance vs. Drain-Source Voltage

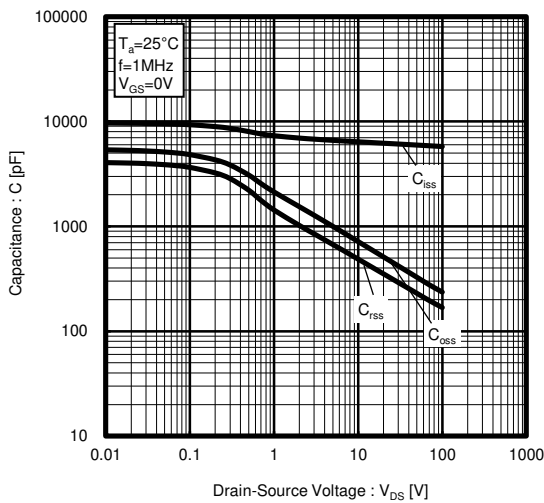


Fig.12 Normalized Transient Thermal Resistance v.s. Pulse Width

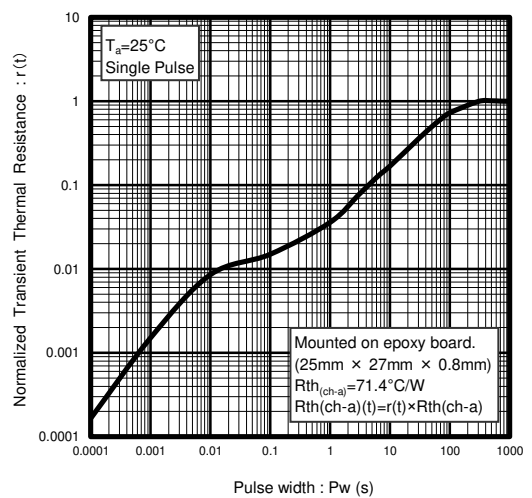
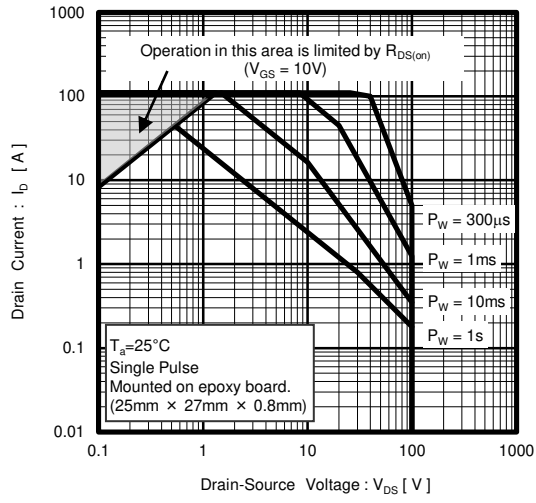


Fig.13 Maximum Safe Operating Area



● Measurement circuits

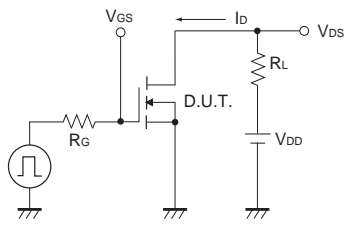


Fig.1-1 Switching Time Measurement Circuit

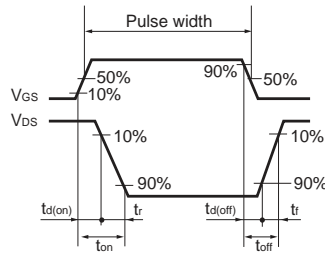


Fig.1-2 Switching Waveforms

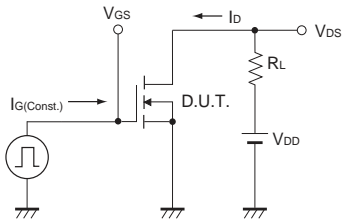


Fig.2-1 Gate Charge Measurement Circuit

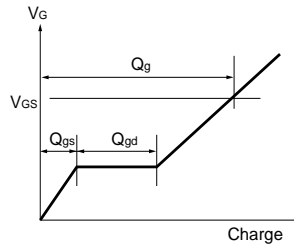


Fig.2-2 Gate Charge Waveform

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