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Switching (−30V, −4.5A)

SP8J2

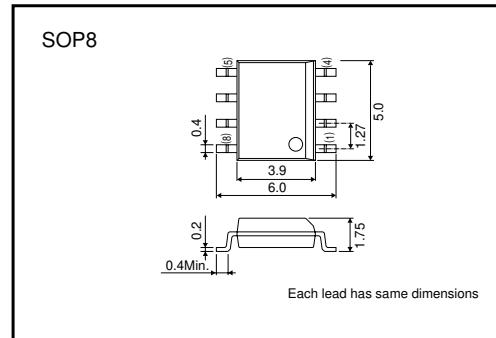
●Features

- 1) Low On-resistance. (57mΩ at 4.5V)
- 2) High Power Package.
- 3) High speed switching.
- 4) Low voltage drive. (4.5V)

●Applications

Power switching, DC-DC converter

●External dimensions (Unit : mm)



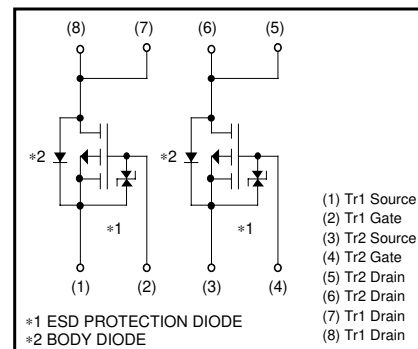
●Structure

Silicon P-channel
MOS FET

●Packaging specifications

Type	Package	Taping
		Code
	Basic ordering unit (pieces)	2500
SP8J2		○

●Equivalent circuit



Transistors

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V _{DSS}	-30	V
Gate-source voltage	V _{GSS}	±20	V
Drain current	Continuous	I _D	±4.5 A
	Pulsed	I _{DP}	±18 A *1
Source current (Body diode)	Continuous	I _S	-1.6 A
	Pulsed	I _{SP}	-18 A *1
Total power dissipation	P _D	2.0	W *2
Channel temperature	T _{ch}	150	°C
Range of Storage temperature	T _{stg}	-55 to +150	°C

*1 P_w≤10μs, Duty cycle≤1%

*2 Mounted on a ceramic board

●Electrical characteristics (Ta=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}	-30	-	-	V	I _D =-1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	-	-	1-	μA	V _{DS} =-30V, 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)}	-	40	56	mΩ	I _D =-4.5A, V _{GS} =-10V *
		-	57	80	mΩ	I _D =-2.5A, V _{GS} =-4.5V *
		-	65	90	mΩ	I _D =-2.5A, V _{GS} =-4.0V *
Forward transfer admittance	Y _{fs}	3.5	-	-	S	V _{DS} =-10V, I _D =-2.5A *
Input capacitance	C _{iss}	-	850	-	pF	V _{DS} =-10V
Output capacitance	C _{oss}	-	190	-	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	-	120	-	pF	f=1MHz
Turn-on delay time	t _{d(on)}	-	10	-	ns	I _D =-2.5A *
Rise time	t _r	-	25	-	ns	V _{DD} ≐-15V V _{GS} =-10V *
Turn-off delay time	t _{d(off)}	-	60	-	ns	R _L =6.0Ω *
Fall time	t _f	-	25	-	ns	R _{GS} =10Ω *
Total gate charge	Q _g	-	8.5	-	nC	V _{DD} ≐-15V
Gate-source charge	Q _{gs}	-	2.5	-	nC	V _{GS} =-5V
Gate-drain charge	Q _{gd}	-	3.0	-	nC	I _D =-4.5A

*Pulsed

Body diode characteristics (source-drain characteristics)

Forward voltage	V _{SD}	-	-	1-2	V	I _S =-1.6A, V _{GS} =0V
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Transistors

●Electrical characteristic curves

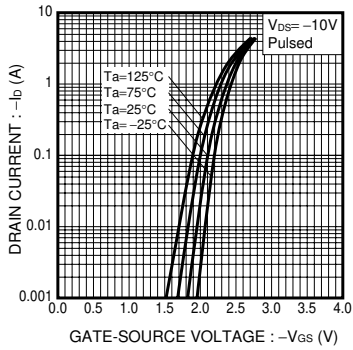


Fig.1 Typical Transfer Characteristics

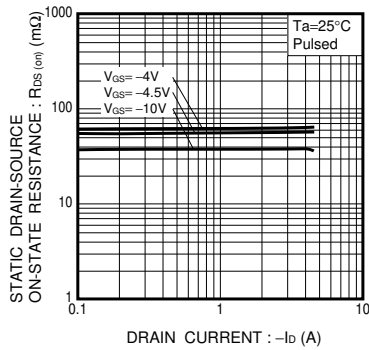


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

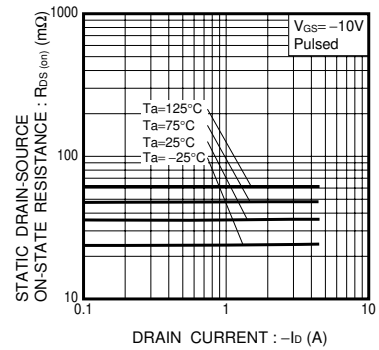


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

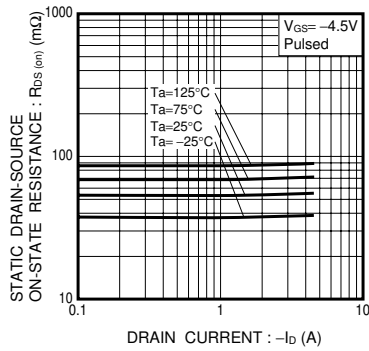


Fig.4 Static Drain-Source On-State vs. Drain Current

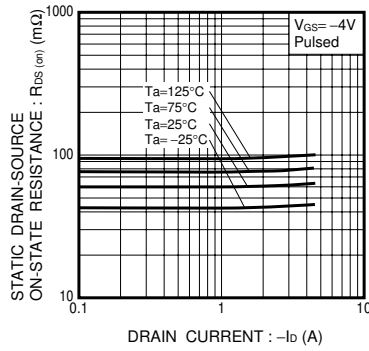


Fig.5 Static Drain-Source On-State vs. Drain Current

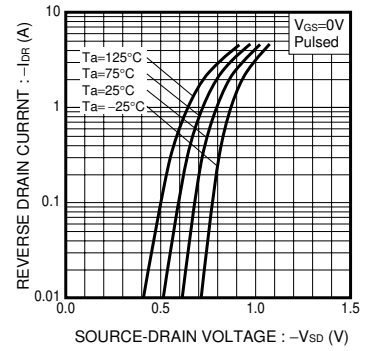


Fig.6 Reverse Drain Current Source-Drain Current

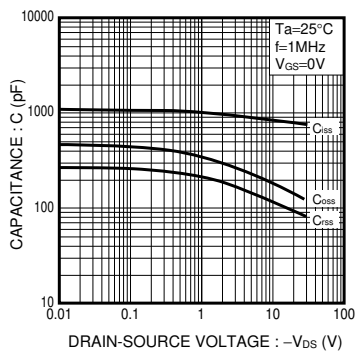


Fig.7 Typical Capacitance vs. Drain-Source Voltage

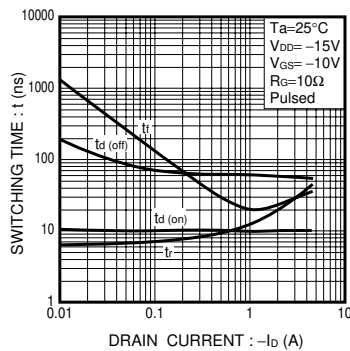


Fig.8 Switching Characteristics

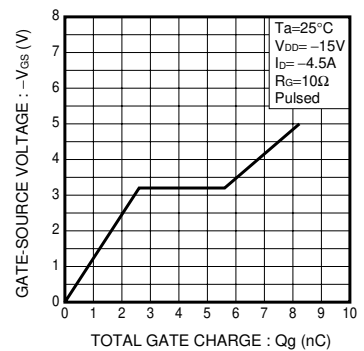


Fig.9 Dynamic Input Characteristics

Transistors

● Measurement circuits

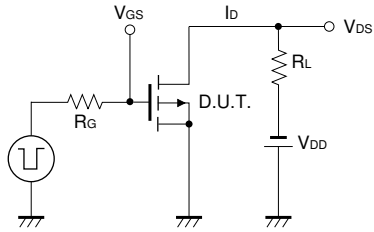


Fig.10 Switching Time Test Circuit

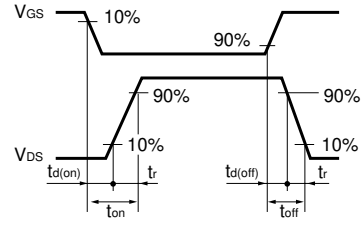


Fig.11 Switching Time Waveforms

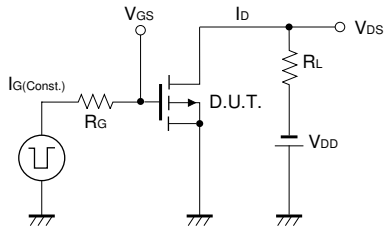


Fig.12 Gate Charge Test Circuit

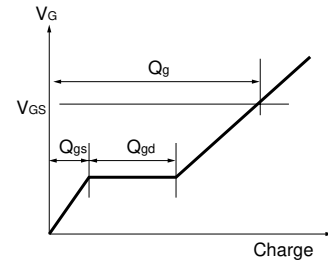


Fig.13 Gate Charge Waveform

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