

Switching (−30V, −2.0A)

SP8J4

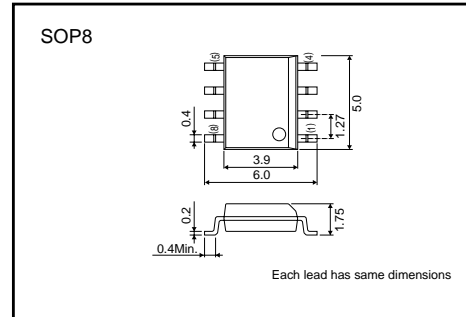
●Features

- 1) Low On-resistance. (270mΩ 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)



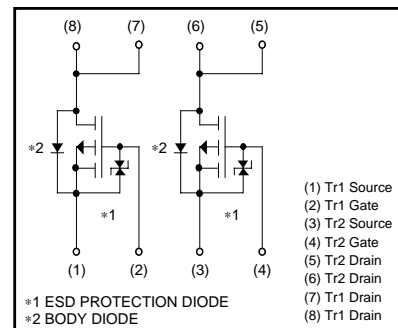
●Structure

Silicon P-channel
MOS FET

●Packaging specifications

Type	Package	Taping
	Code	TB
	Basic ordering unit (pieces)	2500
SP8J4		○

●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	±2.0
	Pulsed	I _{DP}	±8.0
Source current (Body diode)	Continuous	I _S	−1.6
	Pulsed	I _{SP}	−8.0
Total power dissipation	P _D	2.0	W
Channel temperature	T _{ch}	150	°C
Range of Storage temperature	T _{stg}	−55 to +150	°C

*1 P_{WS}≤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 _{BSS}	−	−	−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)}	−	170	235	mΩ	I _D = −2.0A, V _{GS} = −10V
		−	270	375	mΩ	I _D = −1.0A, V _{GS} = −4.5V
		−	320	440	mΩ	I _D = −1.0A, V _{GS} = −4.0V
Forward transfer admittance	Y _{fs}	1.0	−	−	S	V _{DS} = −10V, I _D = −1.0A
Input capacitance	C _{iss}	−	190	−	pF	V _{DS} = −10V
Output capacitance	C _{oss}	−	45	−	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	−	30	−	pF	f=1MHz
Turn-on delay time	t _{d (on)}	−	7	−	ns	I _D = −1.0A
Rise time	t _r	−	10	−	ns	V _{DD} ≐ −15V
Turn-off delay time	t _{d (off)}	−	25	−	ns	V _{GS} = −10V
Fall time	t _f	−	4.5	−	ns	R _L =15Ω
Total gate charge	Q _g	−	2.4	−	nC	R _{GS} =10Ω
Gate-source charge	Q _{gs}	−	1.0	−	nC	V _{DD} ≐ −15V
Gate-drain charge	Q _{gd}	−	0.8	−	nC	V _{GS} = −5V

* 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

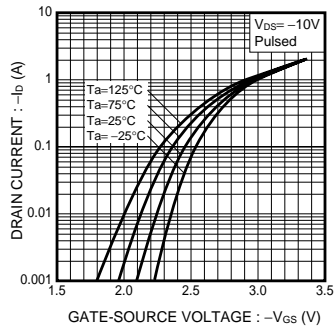


Fig.1 Typical Transfer Characteristics

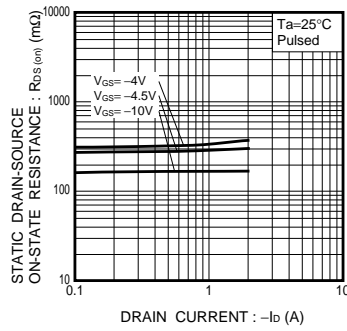


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

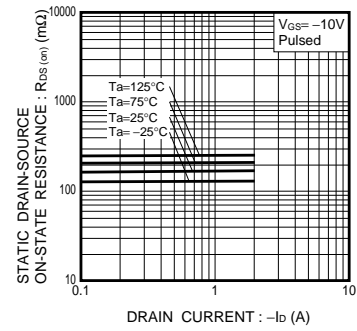


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

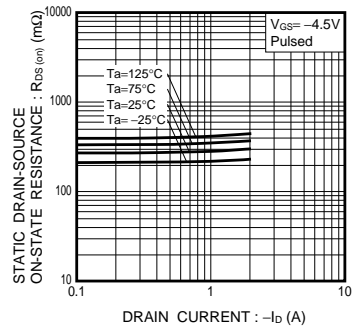


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

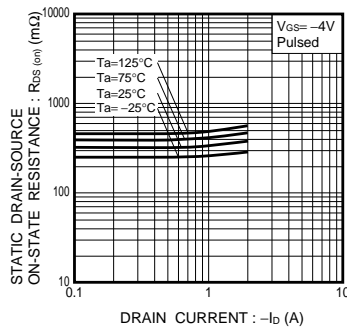


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

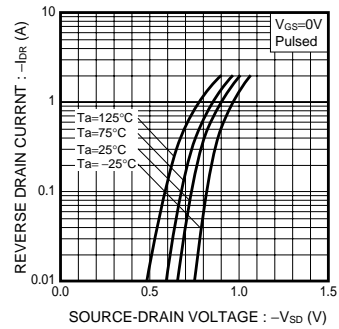


Fig.6 Reverse Drain Current Source-Drain Current

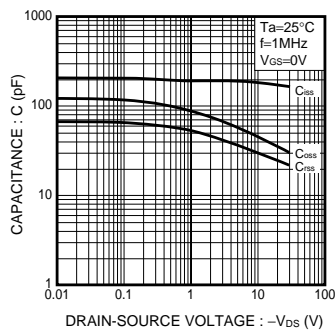


Fig.7 Typical Capacitance vs. Drain-Source Voltage

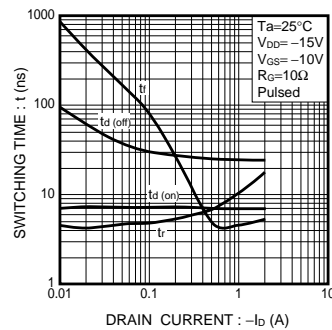


Fig.8 Switching Characteristics

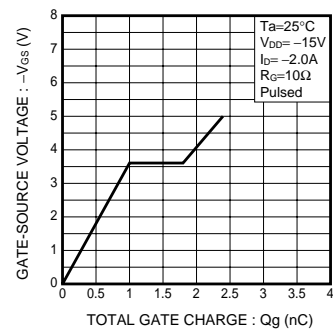


Fig.9 Dynamic Input Characteristics

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● Measurement circuits

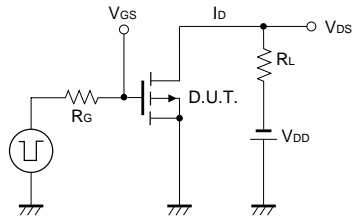


Fig.10 Switching Time Test Circuit

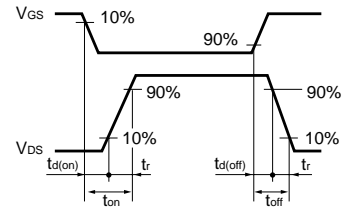


Fig.11 Switching Time Waveforms

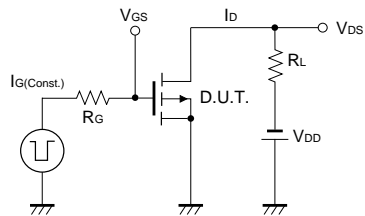


Fig.12 Gate Charge Test Circuit

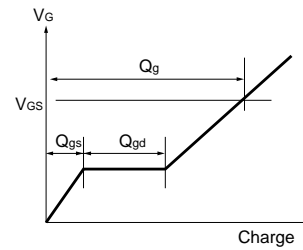


Fig.13 Gate Charge Waveform

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