

Switching (−30V, −2.0A)

SP8J4

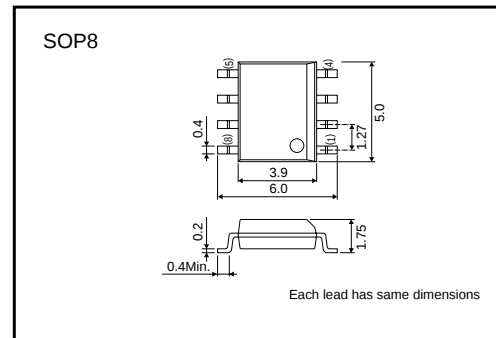
●Features

- 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)



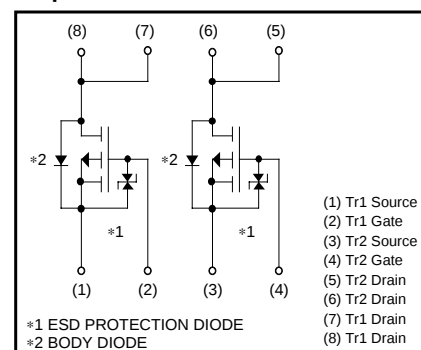
●Structure

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	A
	Pulsed	I _{DP}	±8.0	A *1
Source current (Body diode)	Continuous	I _S	−1.6	A
	Pulsed	I _{SP}	−8.0	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 Pw≤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)}	−	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	V _{DD} ≒ −15V
Gate-source charge	Q _{gs}	−	1.0	−	nC	V _{GS} = −5V
Gate-drain charge	Q _{gd}	−	0.8	−	nC	I _D = −2.0A

*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

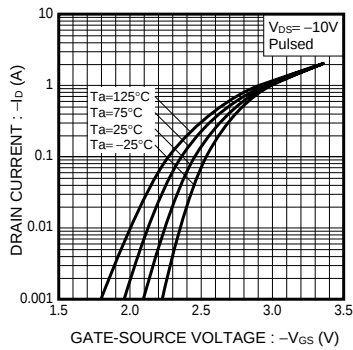


Fig.1 Typical Transfer Characteristics

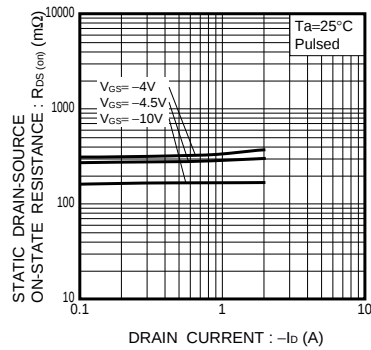


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

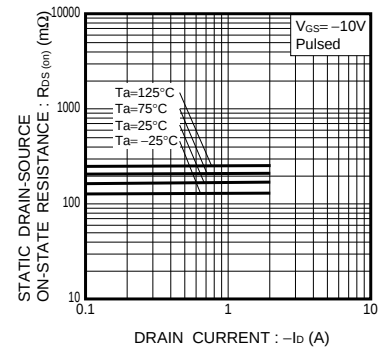


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

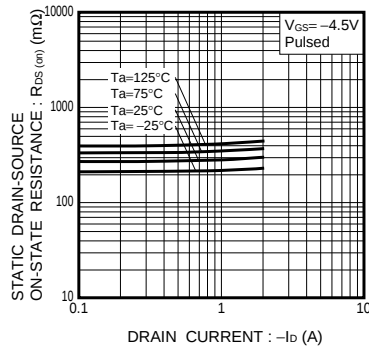


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

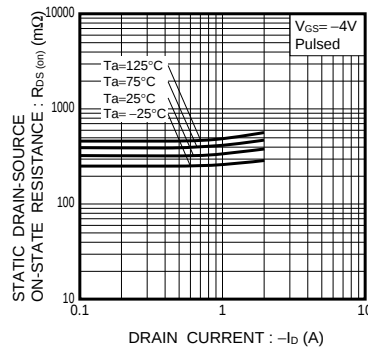


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

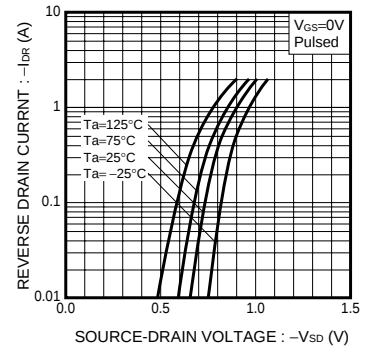


Fig.6 Reverse Drain Current Source-Drain Current

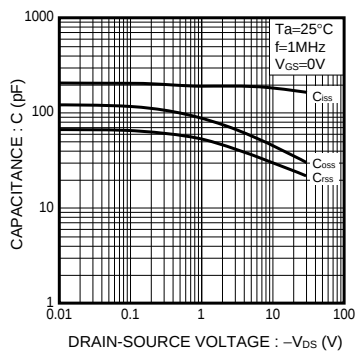


Fig.7 Typical Capacitance vs. Drain-Source Voltage

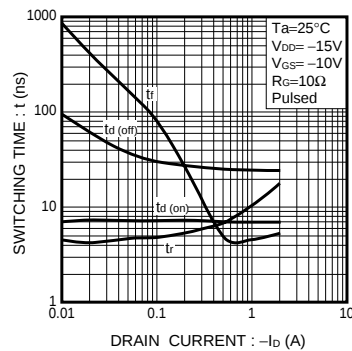


Fig.8 Switching Characteristics

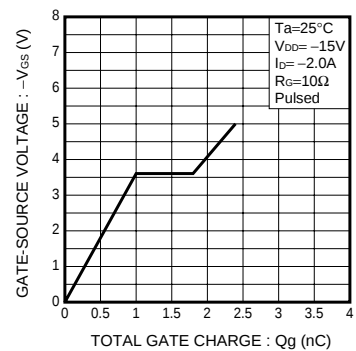


Fig.9 Dynamic Input Characteristics

Transistors

●Measurement circuits

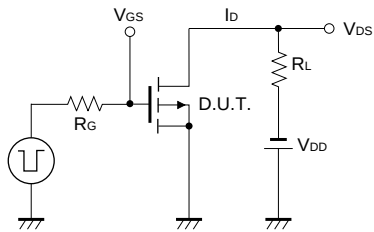


Fig.10 Switching Time Test Circuit

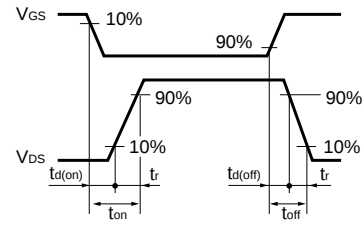


Fig.11 Switching Time Waveforms

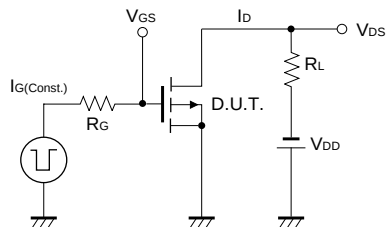


Fig.12 Gate Charge Test Circuit

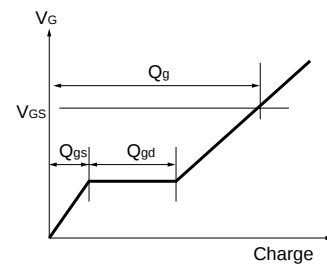


Fig.13 Gate Charge Waveform

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