Transistors

4V Drive Pch+Pch MOS FET

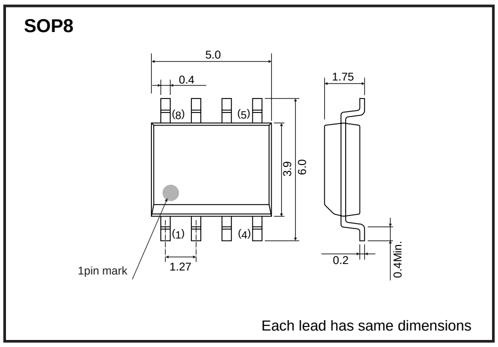
SP8J5

●Structure
Silicon P-channel MOS FET

●Features
1) Low On-resistance. (25mΩ at 4.5V)
2) High Power Package. (P_D=2.0W)
3) High speed switching.
4) Low voltage drive. (4V)

●Applications
Power switching, DC-DC converter

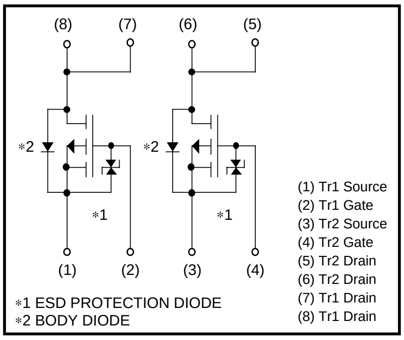
●External dimensions (Unit : mm)



●Packaging specifications

Type	Package	Taping
	Code	TB
	Basic ordering unit (pieces)	2500
SP8J5		○

●Inner circuit



●Absolute maximum ratings (Ta=25°C)
<It is the same ratings for Tr1 and Tr2.>

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	–30	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	±7.0	A
	Pulsed	I_{DP} ∗1	±28	A
Source current (Body diode)	Continuous	I_S	–1.6	A
	Pulsed	I_{SP} ∗1	–28	A
Total power dissipation		P_D ∗2	2.0	W
Channel temperature		Tch	150	°C
Range of Storage temperature		Tstg	–55 to +150	°C

∗1 Pw≤10µs, Duty cycle≤1%
∗2 Mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth(ch-a) ∗	62.5	°C / W

∗ Mounted on a ceramic board.

●Electrical characteristics (Ta=25°C)

<It is the same characteristics for Tr1 and Tr2.>

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	$R_{DS\ (on)}$ *	–	20	28	mΩ	I_D= –7A, V_{GS}= –10V
		–	25	35	mΩ	I_D= –3.5A, V_{GS}= –4.5V
		–	30	42	mΩ	I_D= –3.5A, V_{GS}= –4.0V
Forward transfer admittance	$\|Y_{fs}\|$ *	6.0	–	–	S	V_{DS}= –10V, I_D= –3.5A
Input capacitance	C_{iss}	–	2600	–	pF	V_{DS}= –10V
Output capacitance	C_{oss}	–	450	–	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	–	350	–	pF	f=1MHz
Turn-on delay time	$t_{d\ (on)}$ *	–	20	–	ns	I_D= –3.5A
Rise time	t_r *	–	50	–	ns	V_{DD}≒ –15V
Turn-off delay time	$t_{d\ (off)}$ *	–	110	–	ns	V_{GS}= –10V R_L=4.3Ω
Fall time	t_f *	–	70	–	ns	R_G=10Ω
Total gate charge	Q_g *	–	25	–	nC	V_{DD}≒–15V
Gate-source charge	Q_{gs} *	–	5.5	–	nC	V_{GS}= –5V
Gate-drain charge	Q_{gd} *	–	10	–	nC	I_D= –7A

*Pulsed

●Body diode characteristics (Source-drain) (Ta=25°C)

<It is the same characteristics for Tr1 and Tr2.>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}	–	–	–1.2	V	I_S= –1.6A, V_{GS}=0V

●**Electrical characteristic curves**

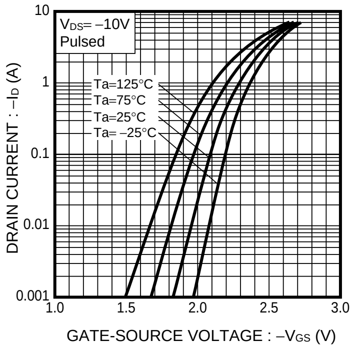


Fig.1 Typical Transfer Characteristics

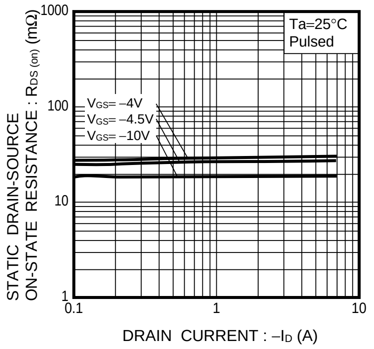


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

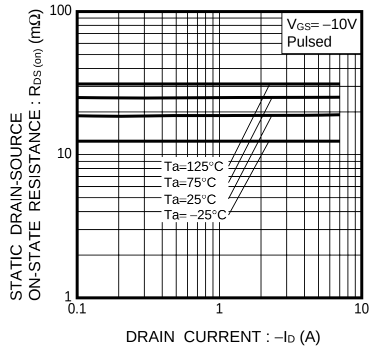


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

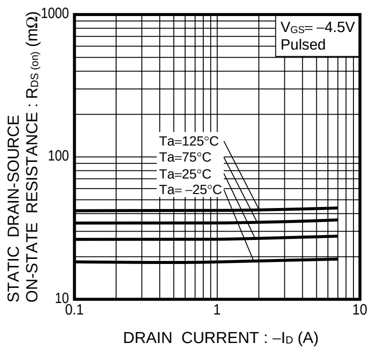


Fig.4 Static Drain-Source On-State vs. Drain Current

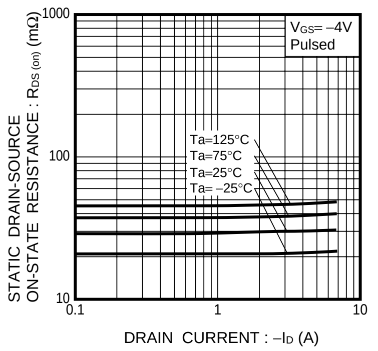


Fig.5 Static Drain-Source On-State vs. Drain Current

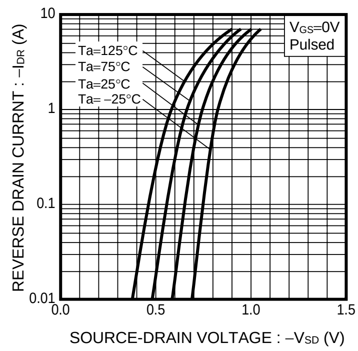


Fig.6 Reverse Drain Current Source-Drain Current

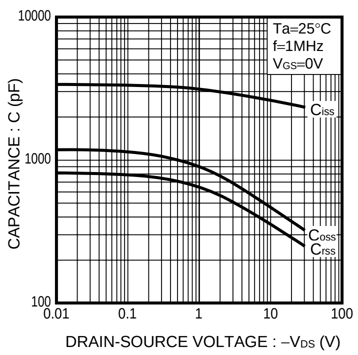


Fig.7 Typical Capacitance vs. Drain-Source Voltage

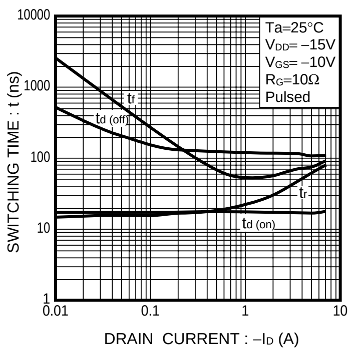


Fig.8 Switching Characteristics

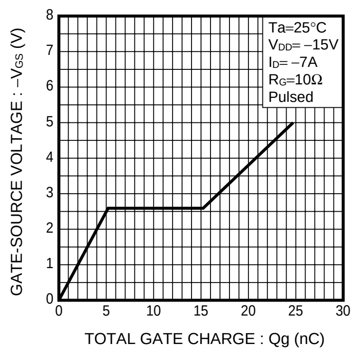


Fig.9 Dynamic Input Characteristics

●**Measurement circuits**

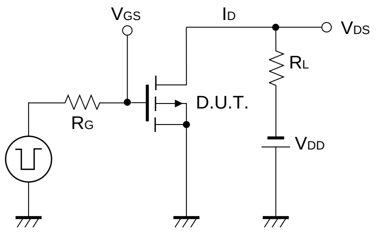


Fig.10 Switching Time Test Circuit

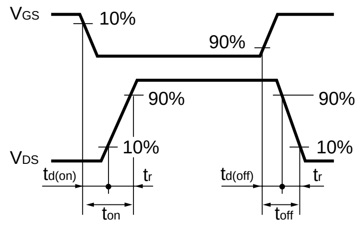


Fig.11 Switching Time Waveforms

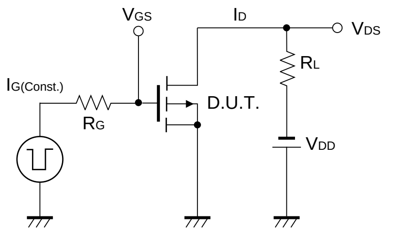


Fig.12 Gate Charge Test Circuit

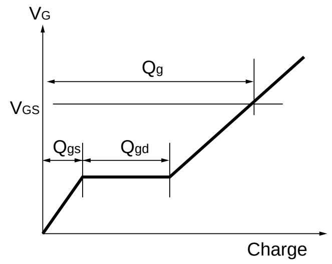


Fig.13 Gate Charge Waveform

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