

10V Drive Nch MOSFET

SP8K80

Structure

Silicon N-channel MOSFET

● Features

- 1) Built-in G-S protection diode.
- 2) Small surface mount package(SOP8).

Application

Switching

Packaging specifications

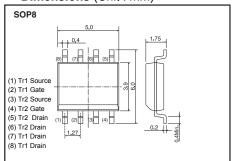
	Package	Taping	
Type	Code	ТВ	
	Basic ordering unit (pieces)	2500	
SP8K80		0	

● Absolute maximum ratings (Ta = 25°C)

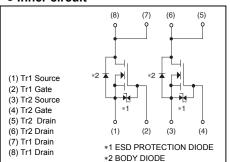
Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	500	V
Gate-source voltage		V_{GSS}	±30	V
Drain current	Continuous	I _D *3	±0.5	Α
	Pulsed	I _{DP} *1	±2	Α
Source current	Continuous	I _S *3	0.5	Α
(Body Diode)	Pulsed	I _{SP} *1	2	Α
Avalanche current		I _{AS} *2	0.25	Α
Avalanche energy		E _{AS} *2 0.017		mJ
Power dissipation		P _D *4	2	W
Channel temperature		T _{ch}	0.2	°C
Range of storage temperature		T_{stg}	-55 to +150	°C

^{*1} Pw \leq 10 μ s, Duty cycle \leq 1%

• Dimensions (Unit : mm)



• Inner circuit



^{*2} L = 500 μ H, V_{DD}=50V, R_G=25 Ω , T_{ch}=25°C

^{*3} Limited only by maximum channel temperature allowed.

^{*4} Mounted on a ceramic board.

● Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	-	-	±10	μA	V_{GS} =±30V, V_{DS} =0V
Drain-source breakdown voltage	$V_{(BR)DSS}$	500	-	-	V	I _D =1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	ı	-	100	μA	V _{DS} =500V, V _{GS} =0V
Gate threshold voltage	V _{GS (th)}	3.0	-	5.0	V	V _{DS} =10V, I _D =1mA
Static drain-source on-state resistance	R _{DS (on)} *	ı	9.0	11.7	Ω	I _D =0.25A, V _{GS} =10V
Forward transfer admittance	I Y _{fs} I*	0.1	-	-	S	V _{DS} =10V, I _D =0.25A
Input capacitance	C _{iss}	ı	23.5	-	pF	V _{DS} =25V
Output capacitance	C _{oss}	ı	36.5	-	рF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	ı	2.4	-	pF	f=1MHz
Turn-on delay time	t _{d(on)} *	-	10	-	ns	V _{DD} ≒ 250V, I _D =0.25A
Rise time	t _r *	ı	18	-	ns	V _{GS} =10V
Turn-off delay time	t _{d(off)} *	1	25	-	ns	R_L =1000 Ω
Fall time	t _f *	-	170	-	ns	R_G =10 Ω
Total gate charge	Q _g *	-	3.8	_	nC	V _{DD} ≒250V
Gate-source charge	Q _{gs} *	-	1.3	-	nC	I _D =0.5A
Gate-drain charge	Q _{gd} *	-	1.6	-	nC	V _{GS} =10V

^{*}Pulsed

●Body diode characteristics (Source-Drain)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Forward voltage	V _{SD} *	-	-	1.5	V	I _S =0.25A, V _{GS} =0V

^{*}Pulsed

●Electrical characteristic curves (Ta=25°C)

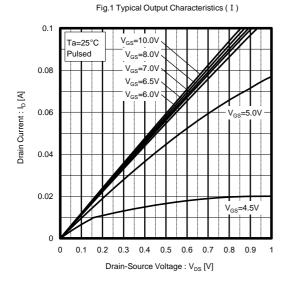


Fig.3 Typical Transfer Characteristics

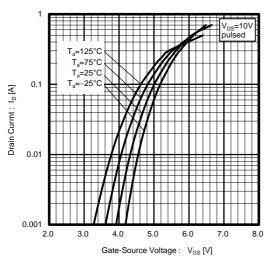


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

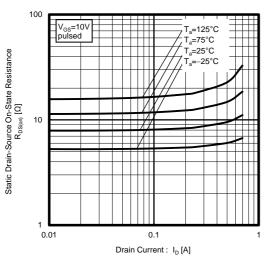


Fig.2 Typical Output Characteristics (II)

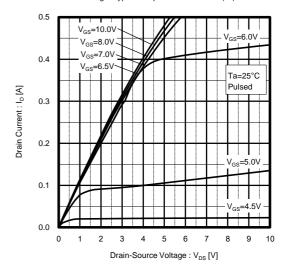


Fig.4 Gate Threshold Voltage vs. Channel Temperature

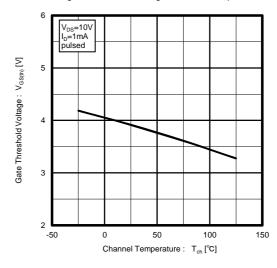
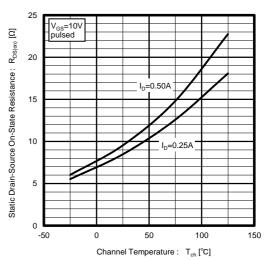


Fig.6 Static Drain-Source On-State Resistance vs. Channel Temperature



Forward Transfer Admittance Y_{fs} [S]

0.1

0.01

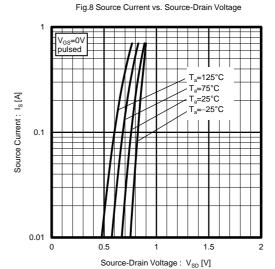
0.001

0.001

T_a=75°C T_a=25°C

Fig.7 Forward Transfer Admittance vs. Drain Current

Drain Current : $I_D[A]$



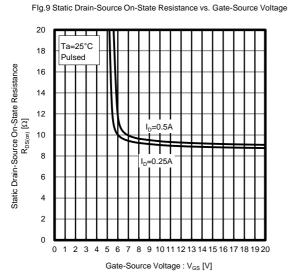


Fig.11 Dynamic Input Characteristics

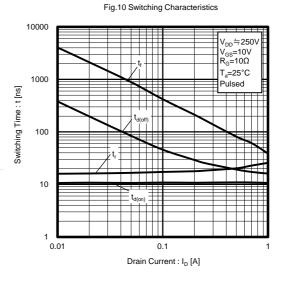
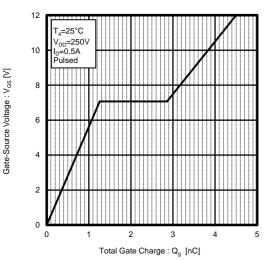


Fig.12 Typical Capacitance vs. Drain-Source Voltage



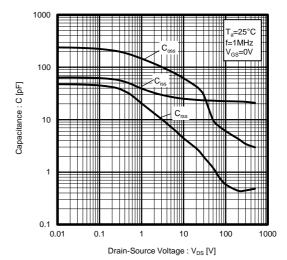


Fig.13 Normalized Transient Thermal Resistance v.s. Pulse Width

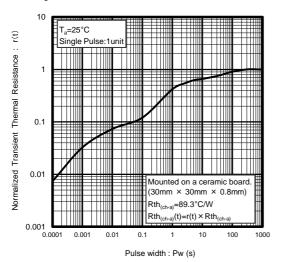


Fig.15 Reverse Recovery Time vs. Source Current

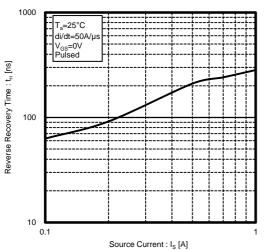
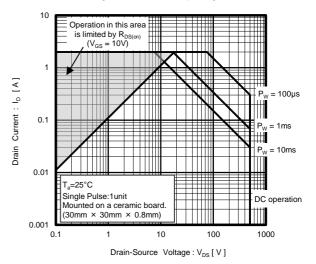


Fig.14 Maximum Safe Operating Area



Measurement circuits

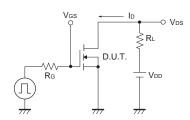


Fig.1-1 Switching Time Measurement Circuit

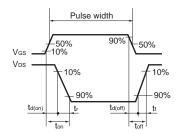


Fig.1-2 Switching Waveforms

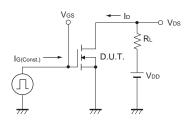


Fig.2-1 Gate Charge Measurement Circuit

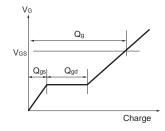


Fig.2-2 Gate Charge Waveform

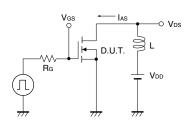


Fig.3-1 Avalanche Measurement Circuit

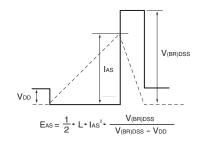


Fig.3-2 Avalanche Waveform

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