

4V Drive Nch+Pch MOSFET

SP8M2

●Structure

Silicon N-channel MOSFET /
Silicon P-channel MOSFET

●Features

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

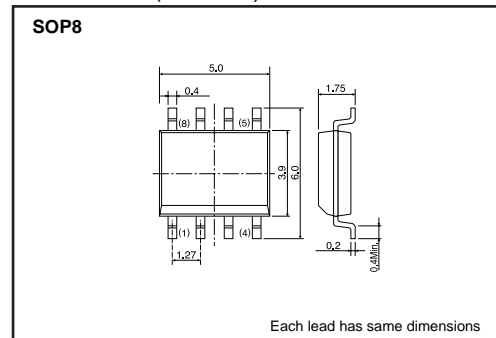
●Applications

Switching

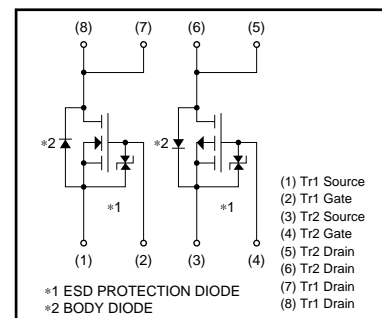
●Package specifications

Type	Package	Taping
	Code	TB
	Basic ordering unit (pieces)	2500
SP8M2		○

●Dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits		Unit
		Tr1 : N-ch	Tr2 : P-ch	
Drain-source voltage	V _{DSS}	30	-30	V
Gate-source voltage	V _{GSS}	±20	±20	V
Drain current	Continuous	I _D	±3.5	A
	Pulsed	I _{DP} *1	±14	A
Source current (Body diode)	Continuous	I _S	1.6	A
	Pulsed	I _{SP} *1	14	A
Total power dissipation	P _D *2	2.0		W / TOTAL
Channel temperature	T _{ch}	150		°C
Storage temperature	T _{stg}	-55 to +150		°C

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

Transistors

N-ch

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	–	–	±10	μA	$V_{GS}=\pm 20V, V_{DS}=0V$
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	$R_{DS(on)}$ *	–	59	83	mΩ	$I_D=3.5A, V_{GS}=10V$
		–	93	130	mΩ	$I_D=3.5A, V_{GS}=4.5V$
		–	107	150	mΩ	$I_D=3.5A, V_{GS}=4V$
Forward transfer admittance	$ Y_{fs} $ *	2.0	–	–	S	$V_{DS}=10V, I_D=3.5A$
Input capacitance	C_{iss}	–	140	–	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	$t_{d(on)}$ *	–	6	–	ns	$V_{DD}\doteq 15V$
Rise time	t_r *	–	6	–	ns	$I_D=1.75A$
Turn-off delay time	$t_{d(off)}$ *	–	17	–	ns	$V_{GS}=10V$
Fall time	t_f *	–	4	–	ns	$R_L=8.57\Omega$
Total gate charge	Q_g *	–	2.5	3.5	nC	$V_{DD}\doteq 15V, V_{GS}=5V$
Gate-source charge	Q_{gs} *	–	0.8	–	nC	$I_D=3.5A$
Gate-drain charge	Q_{gd} *	–	0.8	–	nC	$R_L=4.29\Omega, R_G=10\Omega$

*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD} *	–	–	1.2	V	$I_S=6.4A, V_{GS}=0V$

*Pulsed

Transistors

P-ch

●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)} *	–	65	90	mΩ	I _D = –3.5A, V _{GS} = –10V
		–	100	140	mΩ	I _D = –1.75A, V _{GS} = –4.5V
		–	120	165	mΩ	I _D = –1.75A, V _{GS} = –4V
Forward transfer admittance	Y _{fs} *	1.8	–	–	S	V _{DS} = –10V, I _D = –1.75A
Input capacitance	C _{iss}	–	490	–	pF	V _{DS} = –10V
Output capacitance	C _{oss}	–	110	–	pF	V _{GS} = 0V
Reverse transfer capacitance	C _{rss}	–	75	–	pF	f=1MHz
Turn-on delay time	t _{d(on)} *	–	10	–	ns	V _{DD} ≐ –15V
Rise time	t _r *	–	15	–	ns	I _D = –1.75A
Turn-off delay time	t _{d(off)} *	–	35	–	ns	V _{GS} = –10V
Fall time	t _f *	–	10	–	ns	R _L = 8.57Ω
Total gate charge	Q _g *	–	5.5	7.7	nC	V _{DD} ≐ –15V, V _{GS} = –5V
Gate-source charge	Q _{gs} *	–	1.5	–	nC	I _D = –3.5A
Gate-drain charge	Q _{gd} *	–	2.0	–	nC	R _L = 4.29Ω, R _G = 10Ω

*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V _{SD} *	–	–	–1.2	V	I _S = –1.6A, V _{GS} =0V

*Pulsed

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