

4V Drive Nch+Pch MOSFET

SH8M24

●Structure

Silicon N-channel / P-channel MOSFET

●Features

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

●Application

Switching

●Packaging specifications

Type	Package	Taping
	Code	TB
	Basic ordering unit (pieces)	2500
SH8M24		○

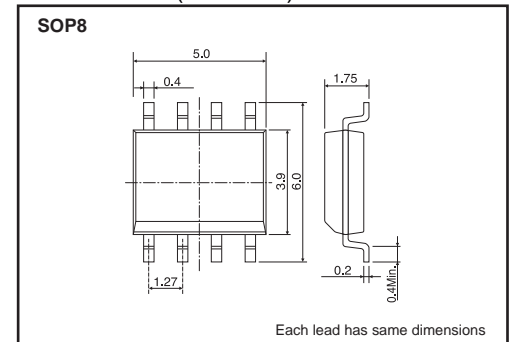
●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits		Unit	
		Tr1 : N-ch	Tr2 : P-ch		
Drain-source voltage	V _{DSS}	45	-45	V	
Gate-source voltage	V _{GSS}	±20	±20	V	
Drain current	Continuous	I _D	±4.5	±3.5	A
	Pulsed	I _{DP} *1	±18	±14	A
Source current (Body diode)	Continuous	I _S	1.0	-1.0	A
	Pulsed	I _{SP} *1	18	-14	A
Total power dissipation	P _D *2	2.0		W / TOTAL	
		1.4		W / ELEMENT	
Channel temperature	T _{ch}	150		°C	
Storage temperature	T _{stg}	-55 to +150		°C	

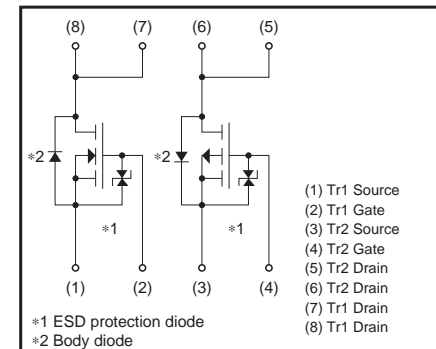
*1 Pw≤10μs, Duty cycle≤1%

*2 Mounted on a ceramic board.

●Dimensions (Unit : mm)



●Inner circuit



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	$V_{(BR)DSS}$	45	–	–	V	$I_D = 1mA, V_{GS} = 0V$
Zero gate voltage drain current	I_{DSS}	–	–	1	μA	$V_{DS} = 45V, V_{GS} = 0V$
Gate threshold voltage	$V_{GS(th)}$	1.0	–	2.5	V	$V_{DS} = 10V, I_D = 1mA$
Static drain-source on-state resistance	$R_{DS(on)}$ *	–	33	46	mΩ	$I_D = 4.5A, V_{GS} = 10V$
		–	41	57	mΩ	$I_D = 4.5A, V_{GS} = 4.5V$
		–	46	64	mΩ	$I_D = 4.5A, V_{GS} = 4V$
Forward transfer admittance	$ Y_{fs} $ *	3.5	–	–	S	$V_{DS} = 10V, I_D = 4.5A$
Input capacitance	C_{iss}	–	550	–	pF	$V_{DS} = 10V$
Output capacitance	C_{oss}	–	140	–	pF	$V_{GS} = 0V$
Reverse transfer capacitance	C_{rss}	–	70	–	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$ *	–	12	–	ns	$V_{DD} = 25V$
Rise time	t_r *	–	18	–	ns	$I_D = 2.5A$
Turn-off delay time	$t_{d(off)}$ *	–	42	–	ns	$V_{GS} = 10V$
Fall time	t_f *	–	12	–	ns	$R_L = 10\Omega$
Total gate charge	Q_g *	–	6.8	9.6	nC	$V_{DD} = 25V, V_{GS} = 5V$
Gate-source charge	Q_{gs} *	–	2.0	–	nC	$I_D = 4.5A$
Gate-drain charge	Q_{gd} *	–	2.9	–	nC	$R_L = 5.6\Omega, R_G = 10\Omega$

* Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD} *	–	–	1.2	V	$I_S = 4.5A, V_{GS} = 0V$

* Pulsed

P-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	$V_{(BR)DSS}$	-45	-	-	V	$I_D=-1mA, V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}	-	-	-1	μA	$V_{DS}=-45V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	-1.0	-	-2.5	V	$V_{DS}=-10V, I_D=-1mA$
Static drain-source on-state resistance	$R_{DS(on)}^*$	-	45	63	m Ω	$I_D=-3.5A, V_{GS}=-10V$
		-	60	84	m Ω	$I_D=-3.5A, V_{GS}=-4.5V$
		-	66	92	m Ω	$I_D=-3.5A, V_{GS}=-4V$
Forward transfer admittance	$ Y_{fs} ^*$	4.5	-	-	S	$V_{DS}=-10V, I_D=-3.5A$
Input capacitance	C_{iss}	-	1700	-	pF	$V_{DS}=-10V$
Output capacitance	C_{oss}	-	200	-	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{rss}	-	135	-	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}^*$	-	16	-	ns	$V_{DD}=-25V$
Rise time	t_r^*	-	17	-	ns	$I_D=-2.0A$
Turn-off delay time	$t_{d(off)}^*$	-	70	-	ns	$V_{GS}=-10V$
Fall time	t_f^*	-	14	-	ns	$R_L=12.5\Omega$
Total gate charge	Q_g^*	-	13.0	18.2	nC	$V_{DD}=-25V, V_{GS}=-5V$
Gate-source charge	Q_{gs}^*	-	3.6	-	nC	$I_D=-3.5A$
Gate-drain charge	Q_{gd}^*	-	4.7	-	nC	$R_L=7.1\Omega, R_G=10\Omega$

* Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}^*	-	-	-1.2	V	$I_S=-3.5A, V_{GS}=0V$

* Pulsed

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