

4V Drive Nch+Pch MOSFET

SH8M24

●Structure

Silicon N-channel / P-channel MOSFET

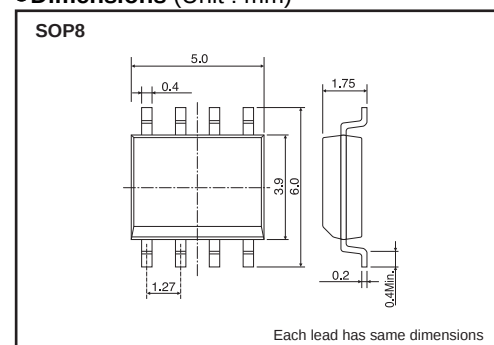
●Features

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

●Application

Switching

●Dimensions (Unit : mm)



●Packaging specifications

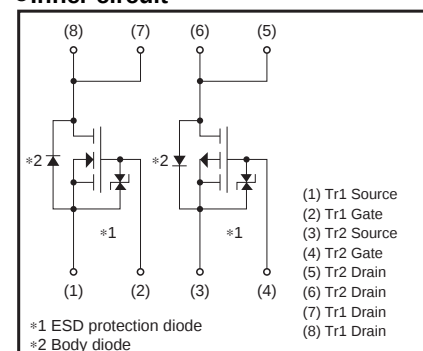
Type	Package	Taping
	Code	TB
	Basic ordering unit (pieces)	2500
SH8M24		○

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits		Unit
		Tr1 : N-ch	Tr2 : P-ch	
Drain-source voltage	V_{DS}	45	-45	V
Gate-source voltage	V_{GS}	±20	±20	V
Drain current	Continuous	I_D	±4.5	A
	Pulsed	I_{DP}^{*1}	±18	A
Source current (Body diode)	Continuous	I_S	1.0	A
	Pulsed	I_{SP}^{*1}	18	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 $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$
 *2 Mounted on a ceramic board.

●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	$V_{DD} \approx 25V$
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	$V_{DD} \approx 25V, V_{GS} = 5V$
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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