4V Drive Nch+Nch MOSFET SP8K24

Structure

Silicon N-channel MOSFET

Features

Built-in G-S Protection Diode.
Small and Surface Mount Package (SOP8).

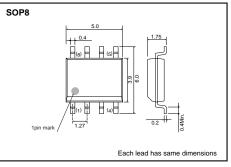
Applications

Power switching , $\ensuremath{\mathsf{DC}}\xspace$ / $\ensuremath{\mathsf{DC}}\xspace$ converter , Inverter

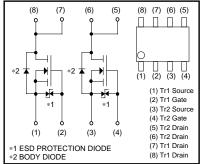
Packaging dimensions

	Package	Taping		
Туре	Code	ТВ		
	Basic ordering unit (pieces)	2500		
SP8K24		0		

•Dimensions (Unit : mm)



Equivalent circuit



A protection diode is included between the gate and the source terminals to protect the diode against static electricity when the product is in use. Use the protection circuit when the fixed voltages are exceeded.

Absolute maximum ratings (Ta=25°C)

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

Parameter		Symbol	Limits	Unit
Drain-source voltage		V _{DSS}	45	V
Gate-source voltage		V _{GSS}	±20	V
Drain current	Continuous	I _D	±6.0	A
	Pulsed	I _{DP *1}	±24	А
Source current	Continuous	۱ _s	1	А
(Body diode)	Pulsed	I _{SP ∗1}	24	A
Total power dissipation		P _D ∗2	2	W / TOTAL
		r _{D *2}	1.4	W / ELEMENT
Chanel temperature		T _{ch}	150	°C
Range of Storage temperature		T _{stg}	-55 to +150	°C

*1 PW \leq 10 μ s, Duty cycle \leq 1%

*2 Mounted on a ceramic board

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Transistor

•Electrical characteristics (Ta=25°C)

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

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Gate-source leakage	Igss	-	-	±10	μΑ	V _{GS} =±20V, V _{DS} =0V
Drain-source breakdown voltage	V(BR) DSS	45	-	-	V	I _D = 1mA, V _{GS} =0V
Zero gate voltage drain current	IDSS	-	-	1	μΑ	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)*	-	18	25	mΩ	ID= 6.0A, VGS= 10V
		-	24	34	mΩ	I _D = 6.0A, V _{GS} = 4.5V
		-	26	37	mΩ	ID= 6.0A, VGS= 4.0V
Forward transfer admittance	Y _{fs} *	6.0	-	-	S	V _{DS} = 10V, I _D = 6.0A
Input capacitance	Ciss	-	1400	-	pF	V _{DS} = 10V
Output capacitance	Coss	-	310	-	pF	V _{GS} =0V
Reverse transfer capacitance	Crss	-	175	-	pF	f=1MHz
Turn-on delay time	t _{d (on)} *	-	19	-	ns	Vpp≒25V
Rise time	tr *	-	30	-	ns	$I_{D} = 3.0A$
Turn-off delay time	td (off) *	-	72	-	ns	Vgs= 10V Rι= 8Ω
Fall time	t _f *	-	27	-	ns	R _G =10Ω
Total gate charge	Qg *	-	15.4	21.6	nC	V _{DD} ≒25V, V _{GS} =5V
Gate-source charge	Q _{gs} *	-	3.7	-	nC	I _D = 6.0A
Gate-drain charge	Q _{gd} *	-	6.5	I	nC	$R_L = 4\Omega, R_G = 10\Omega$
*Pulsed						

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward voltage	V _{SD} *	-	-	1.2	V	I _S =6.0A/V _{GS} =0V

* pulsed



Transistor

Electrical characteristic curves

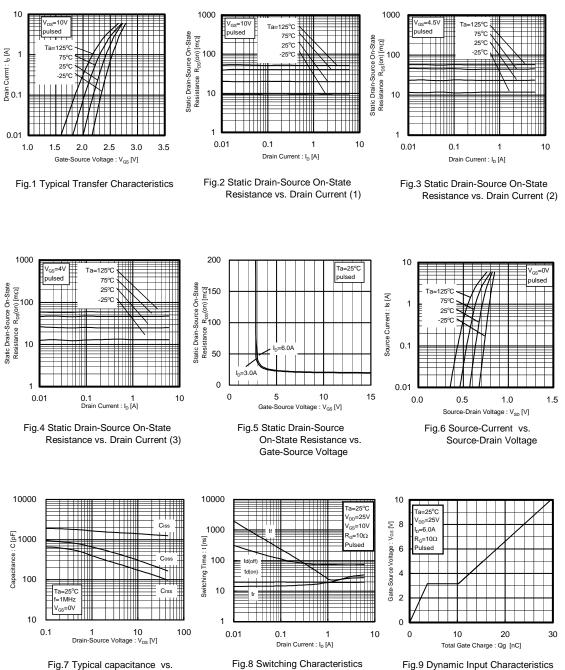


Fig.8 Switching Characteristics

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Source-Drain Voltage

Transistor

Measurement circuits

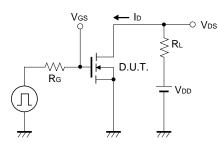


Fig.10 Switching Time Test Circuit

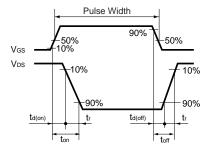


Fig.11 Switching Time Waveforms

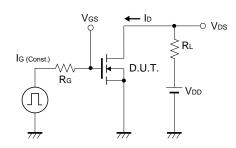


Fig.12 Gate Charge Test Circuit

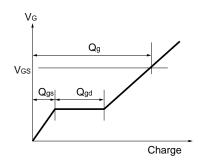
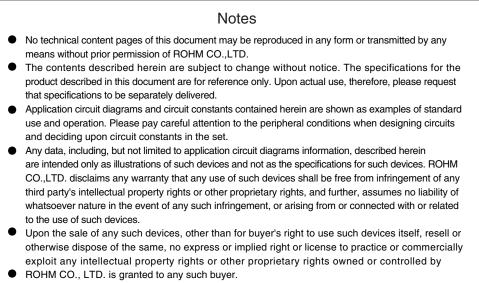


Fig.13 Gate Charge Waveform

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Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

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