Transistor

Switching (45V, 7.0A) **RSS070N05**

Features

1) Built-in G-S Protection Diode.

2) Small and Surface Mount Package (SOP8).

Applications

Power switching , DC / DC converter , Inverter

Structure

Silicon N-channel MOS FET

Packaging dimensions

Package	Taping
Code	TB
Basic ordering unit(pieces)	2500

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V _{DSS}	45	V	
Gate-source voltage	V _{GSS}	20	V	
Drain current	Continuous	I _D	±7.0	А
	Pulsed	I _{DP}	±28	Α *΄
Source current	Continuous	ا _s	1.6	А
(Body diode)	Pulsed	I _{SP}	28	Α *΄
Total power dissipation	PD	2	W *2	
Chanel temperature	T _{ch}	150	°C	
Range of Storage temp	T _{stg}	-55 to +150	°C	

*1 PW $\leq 10 \mu s$, Duty cycle $\leq 1\%$

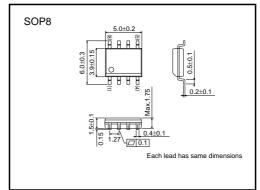
*2 Mounted on a ceramic board

•Thermal resistance (Ta=25°C)

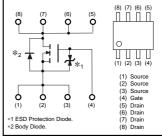
Parameter	Symbol	Limits	Unit	
Chanel to ambient	R _{th(ch-a)}	62.5	°C/W *2	
*2 Mounted on a ceramic board				

Mounted on a ceramic board

•External 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 a protection circuit when the fixed voltage are exceeded.

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●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Condition
Gate-source leakage	I _{GSS}	_	-	10	μA	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	I _{DSS}	_	-	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		_	18	25	mΩ	I _D =7A/V _{GS} =10V
	R _{DS(on)} *	—	23	32		$I_D=7A/V_{GS}=4.5V$
		_	25	35		I _D =7A/V _{GS} =4.0V
Forward transfer admittance	Y _{fs} *	6.0	—	—	S	V _{DS} =10V/I _D =7A
Input capacitance	C _{iss}	_	1000	_	pF	V _{DS} =10V
Output capacitance	C _{oss}	_	230	_		V _{GS} =0V
Reverce transfer capacitance	C _{rss}	_	125	_	1	f=1MHz
Turn-on delay time	t _{d(on)} *	_	16	_		V _{DD} =25V
Rise time	t _r *	_	27	_		I _D =3.5A
Turn-off delay time	t _{d(off)} *	_	57	_	ns	V _{GS} =10V
Fall time	t _f *	_	21	_		$R_L=7.1\Omega/R_G=10\Omega$
Total gate charge	Q _g *	—	12.0	16.8	nC	$V_{DD}=25V/I_{D}=7 A$
Gate-source charge	Q _{gs} *	_	3.0	_		V _{GS} =5V
Gate-drain charge	Q _{qd} *	_	4.6	—		$R_L=3.6\Omega/R_G=10\Omega$

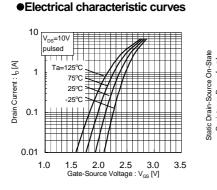
* pulsed

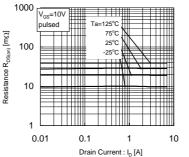
•Body diode characteristics (Source-Drain)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Condition
Forward voltage	V _{SD} *	—	_	1.2	V	I _S =1.6A/V _{GS} =0V
* pulsed						

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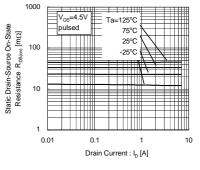


Fig.1 Typical Transfer Characteristics

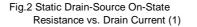


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current (2)

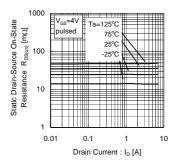


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (3)

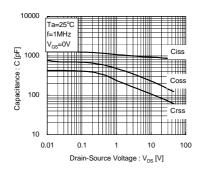
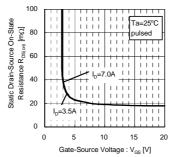


Fig.7 Typical capacitance vs. Source-Drain Voltage





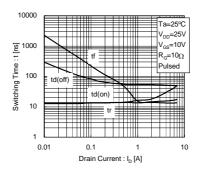


Fig.8 Switching Characteristics

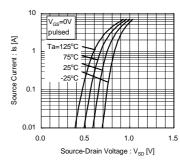
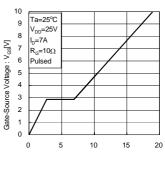


Fig.6 Source-Current vs. Source-Drain Voltage



Total Gate Charge : Qg [nC]



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Measurement circuits

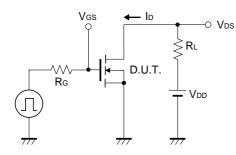


Fig.10 Switching Time Test Circuit

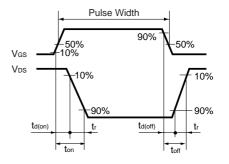


Fig.11 Switching Time Waveforms

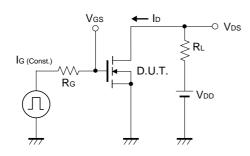
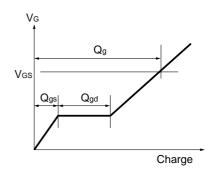


Fig.12 Gate Charge Test Circuit





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