

ANTREX Electronics

Electronic Components Sourcing Information

Product Reference Information

Part Number:	RSS140N03TB
Manufacturer:	Rohm Semiconductor
Package:	Please confirm with sales
Availability:	Please confirm with sales

Product Page:

<https://antrexco.com/product/details/rohm-semiconductor/rss140n03tb.html>

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Supplier verification and packaging condition review

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Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

Switching (30V, $\pm 14\text{A}$)

RSS140N03

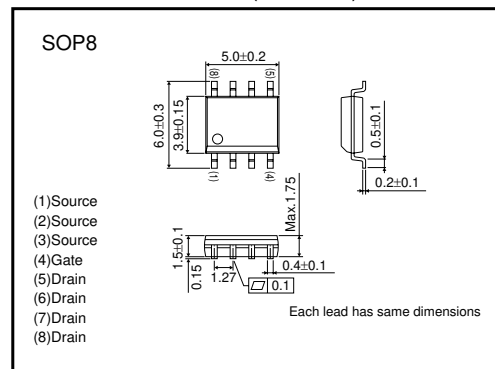
●Features

- 1) Low on-resistance.
- 2) Built-in G-S Protection Diode.
- 3) Small and Surface Mount Package (SOP8).

●Applications

Power switching, DC/DC converter.

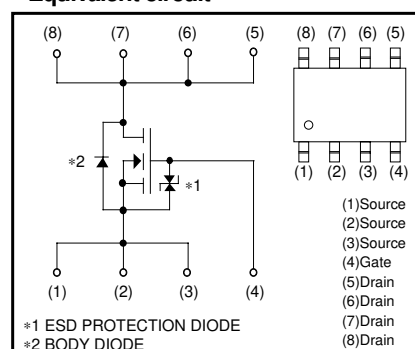
●External dimensions (Unit : mm)



●Structure

- Silicon N-channel MOS FET

●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 ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DS}	30	V
Gate-source voltage	V_{GS}	20	V
Drain current	Continuous	I_D	± 14 A
	Pulsed	I_{DP}	± 56 A *1
Source current (Body diode)	Continuous	I_S	1.6 A
	Pulsed	I_{SP}	6.4 A *1
Total power dissipatino	P_D	2	W *2
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

*1 $P_w \leq 10\mu\text{s}$, Duty cycle $\leq 1\%$

*2 Mounted on a ceramic board.

Transistor

●Thermal resistance (Ta=25°C)

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth (ch-a)	62.5	°C / W *

* Mounted on a ceramic board.

●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}	—	—	10	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)}	—	4.9	6.7	mΩ	I _D =±14A, V _{GS} =10V *
		—	6.0	8.4		I _D =±14A, V _{GS} =4.5V *
		—	6.5	9.0		I _D =±14A, V _{GS} =4V *
Forward transfer admittance	Y _{fs}	13	—	—	S	I _D =±14A, V _{DS} =10V *
Input capacitance	C _{iss}	—	3150	—	pF	V _{DS} =10V
Output capacitance	C _{oss}	—	830	—	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	—	500	—	pF	f=1MHz
Turn-on delay time	t _{d(on)}	—	16	—	ns	I _D =7A, V _{DD} ≐15V *
Rise time	t _r	—	52	—	ns	V _{GS} =10V *
Turn-off delay time	t _{d(off)}	—	125	—	ns	R _L =2.14Ω *
Fall time	t _f	—	78	—	ns	R _{GS} =10Ω *
Total gate charge	Q _g	—	37	—	nC	V _{DD} ≐15V *
Gate-source charge	Q _{gs}	—	6.2	—	nC	V _{GS} =5V *
Gate-drain charge	Q _{gd}	—	13.5	—	nC	I _D =±14A *

* Pulsed

●Body diode characteristics (Source-Drain Characteristics) (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

●Electrical characteristic curves

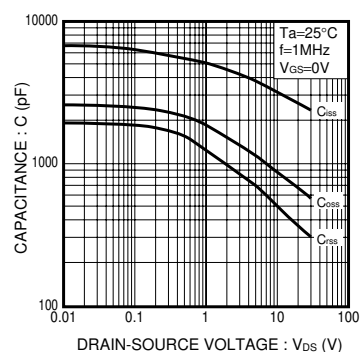


Fig.1 Typical Capacitance vs. Drain-Source Voltage

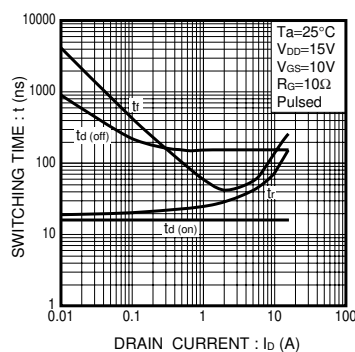


Fig.2 Switching Characteristics

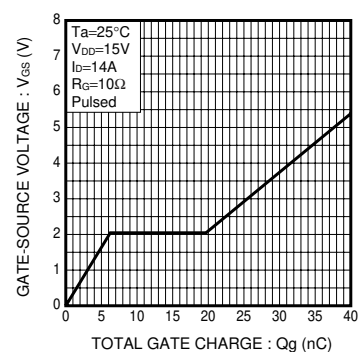


Fig.3 Dynamic Input Characteristics

Transistor

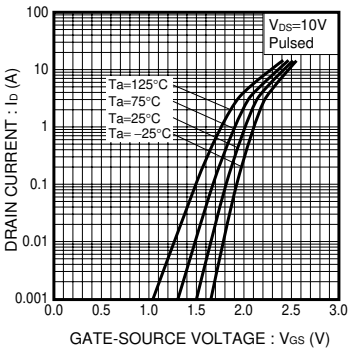


Fig.4 Typical Transfer Characteristics

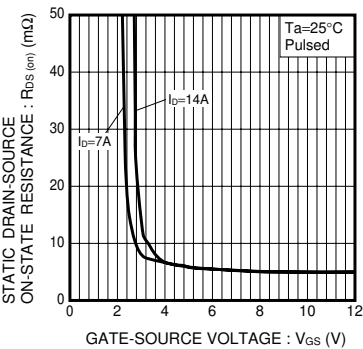


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

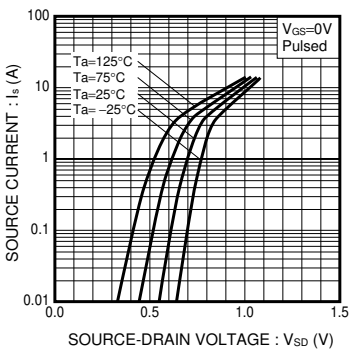


Fig.6 Source Current vs. Source-Drain Voltage

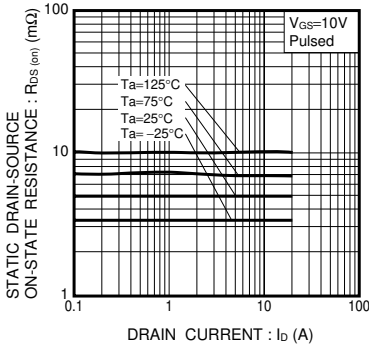


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current (I)

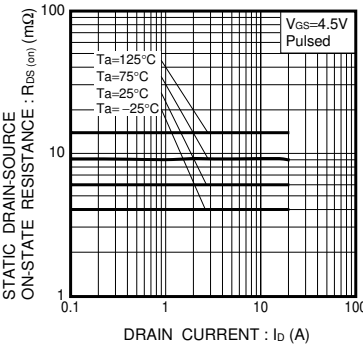


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current (II)

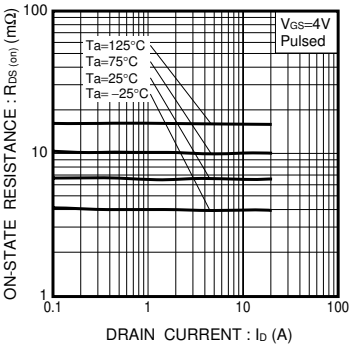


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current (III)

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