

# Switching ( $-30\text{V}$ , $-7.5\text{A}$ )

## RSS075P03

### ●Features

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

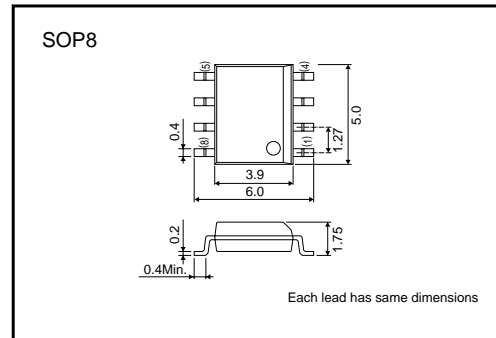
### ●Application

Power switching, DC / DC converter.

### ●Structure

Silicon P-channel  
MOS FET

### ●External dimensions (Unit : mm)



### ●Packaging specifications

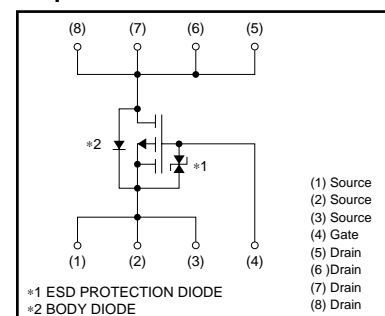
Type	Package	Taping
	Code	TB
	Basic ordering unit (pieces)	2500
RSS075P03		○

### ●Absolute maximum ratings ( $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Limits	Unit
Drain-source voltage	$V_{DS}$	$-30$	V
Gate-source voltage	$V_{GS}$	$\pm 20$	V
Drain current	Continuous	$I_D$	$\pm 7.5$ A
	Pulsed	$I_{DP}$	$\pm 30$ A <sup>*1</sup>
Source current (Body diode)	Continuous	$I_S$	$-1.6$ A
	Pulsed	$I_{SP}$	$-30$ A <sup>*1</sup>
Total power dissipation	$P_D$	$2.0$	W <sup>*2</sup>
Channel temperature	$T_{ch}$	$150$	$^\circ\text{C}$
Range of Storage temperature	$T_{stg}$	$-55$ to $+150$	$^\circ\text{C}$

<sup>\*1</sup>  $P_W \leq 10\mu\text{s}$ , Duty cycle  $\leq 1\%$   
<sup>\*2</sup> Mounted on a ceramic board

### ●Equivalent circuit



### ●Thermal resistance ( $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th}(ch-a)$	$62.5$	$^\circ\text{C} / \text{W}$ *

\* Mounted on a ceramic board.

## Transistors

## ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	$I_{GSS}$	–	–	$\pm 10$	$\mu A$	$V_{GS}=\pm 20V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR) DSS}$	–30	–	–	V	$I_D=-1mA, V_{GS}=0V$
Zero gate voltage drain current	$I_{DSS}$	–	–	–1	$\mu A$	$V_{DS}=-30V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	–1.0	–	–2.5	V	$V_{DS}=-10V, I_D=-1mA$
Static drain-source on-state resistance	$R_{DS(on)}$ *	–	15	21	$m\Omega$	$I_D=-7.5A, V_{GS}=-10V$
		–	22	31	$m\Omega$	$I_D=-4.0A, V_{GS}=-4.5V$
		–	25	35	$m\Omega$	$I_D=-4.0A, V_{GS}=-4.0V$
Forward transfer admittance	$ Y_{fs} $ *	6.0	–	–	S	$V_{DS}=-10V, I_D=-4.0A$
Input capacitance	$C_{iss}$	–	2900	–	pF	$V_{DS}=-10V$
Output capacitance	$C_{oss}$	–	540	–	pF	$V_{GS}=0V$
Reverse transfer capacitance	$C_{rss}$	–	430	–	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}$ *	–	20	–	ns	$I_D=-4.0A$
Rise time	$t_r$ *	–	35	–	ns	$V_{DD}=-15V$
Turn-off delay time	$t_{d(off)}$ *	–	85	–	ns	$V_{GS}=-10V$
Fall time	$t_f$ *	–	90	–	ns	$R_L=3.75\Omega$
Total gate charge	$Q_g$	–	30	–	nC	$V_{DD}=-15V$
Gate-source charge	$Q_{gs}$	–	5.5	–	nC	$V_{GS}=-5V$
Gate-drain charge	$Q_{gd}$	–	12	–	nC	$I_D=-7.5A$

\*Pulsed

## Body diode characteristics (source-drain characteristics)

Forward voltage	$V_{SD}$	–	–	–1.2	V	$I_S=-1.6A, V_{GS}=0V$
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Transistors

●Electrical characteristic curves

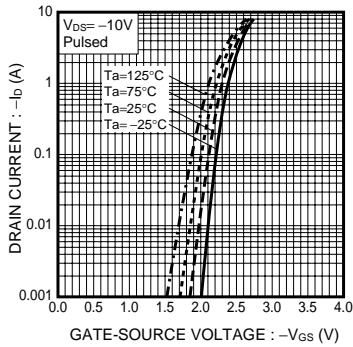


Fig.1 Typical Transfer Characteristics

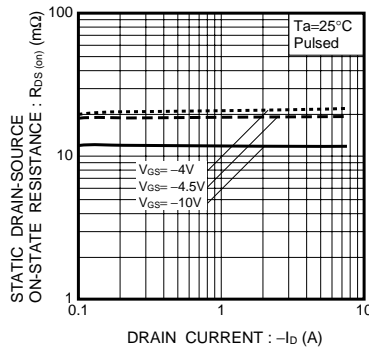


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

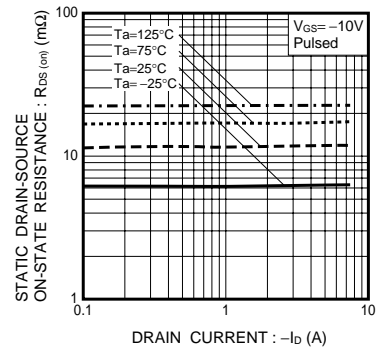


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

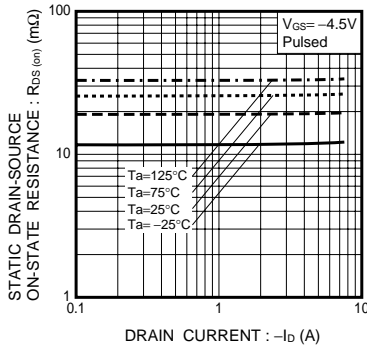


Fig.4 Static Drain-Source On-State vs. Drain Current

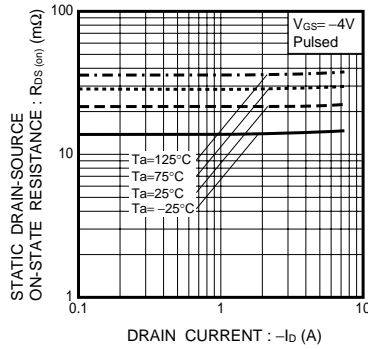


Fig.5 Static Drain-Source On-State vs. Drain Current

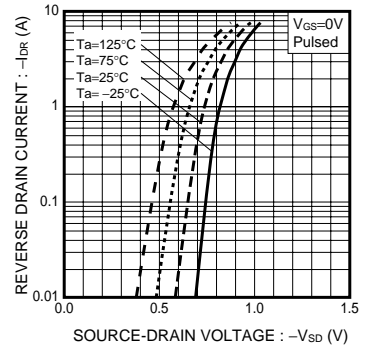


Fig.6 Reverse Drain Current Source-Drain Current

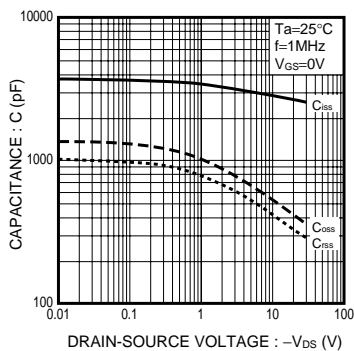


Fig.7 Typical Capacitance vs. Drain-Source Voltage

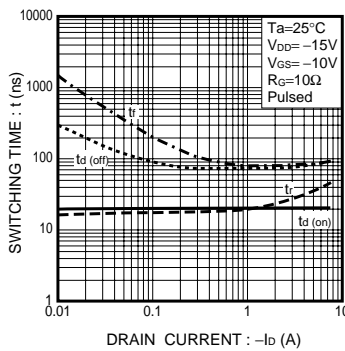


Fig.8 Switching Characteristics

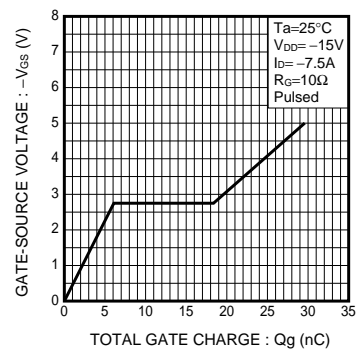


Fig.9 Dynamic Input Characteristics

Transistors

●Measurement circuits

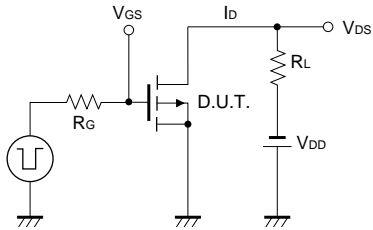


Fig.10 Switching Time Test Circuit

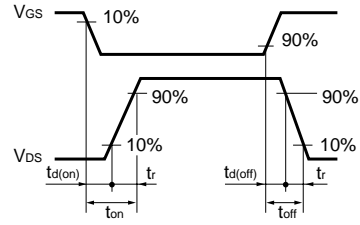


Fig.11 Switching Time Waveforms

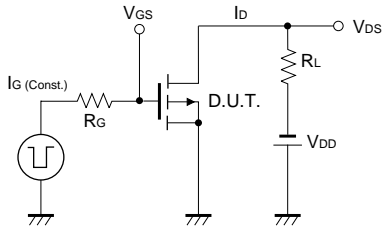


Fig.12 Gate Charge Test Circuit

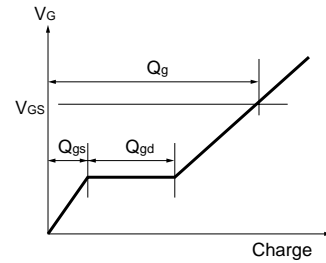


Fig.13 Gate Charge Waveform

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