

4.5V Drive Nch MOSFET

RMW150N03

● Structure

Silicon N-channel MOSFET

● Features

- 1) High Power package(PSOP8).
- 2) High-speed switching, Low On-resistance.
- 3) Low voltage drive(4.5V drive).

● Application

Switching

● Packaging specifications

Type	Package	Taping
	Code	TB
	Basic ordering unit (pieces)	2500
RMW150N03		○

● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V_{DSS}	30	V	
Gate-source voltage	V_{GSS}	± 20	V	
Drain current	Continuous	I_D	± 15	A
	Pulsed	I_{DP} *1	± 60	A
Source current (Body Diode)	Continuous	I_S	2.5	A
	Pulsed	I_{SP} *1	60	A
Power dissipation	P_D *2	3.0	W	
Channel temperature	T_{ch}	150	°C	
Range of storage temperature	T_{stg}	-55 to +150	°C	

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

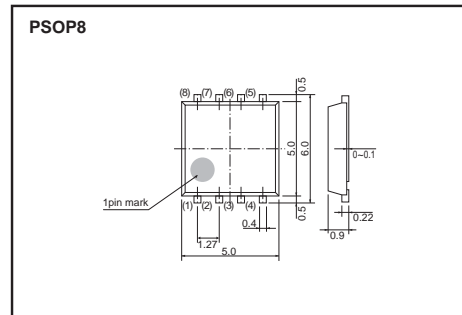
*2 MOUNTED ON 40mm x 40mm Cu BOARD

● Thermal resistance

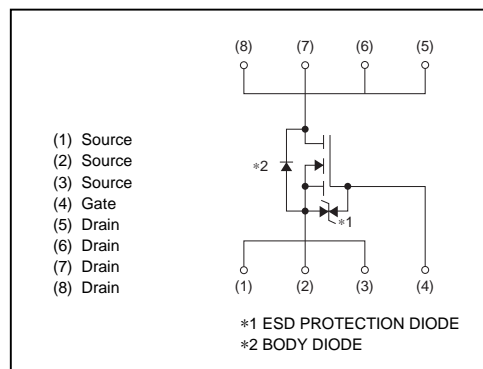
Parameter	Symbol	Limits	Unit
Channel to Ambient	$R_{th}(ch-a)$ *	41.7	°C / W

*2 MOUNTED ON 40mm x 40mm Cu BOARD

● Dimensions (Unit : mm)



● Inner circuit



● 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	$V_{(BR)DSS}$	30	-	-	V	$I_D=1mA, V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}	-	-	1	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	$R_{DS(on)}^*$	-	6.5	9.1	mΩ	$I_D=15A, V_{GS}=10V$
		-	9.0	12.6		$I_D=15A, V_{GS}=4.5V$
Forward transfer admittance	$ Y_{fs} ^f$	10	-	-	S	$I_D=15A, V_{DS}=10V$
Input capacitance	C_{ISS}	-	831	-	pF	$V_{DS}=15V$
Output capacitance	C_{OSS}	-	337	-	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{RSS}	-	95	-	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}^*$	-	12	-	ns	$I_D=7.5A, V_{DD}=15V$
Rise time	t_r^*	-	38	-	ns	$V_{GS}=10V$
Turn-off delay time	$t_{d(off)}^*$	-	34	-	ns	$R_L=2.0\Omega$
Fall time	t_f^*	-	9	-	ns	$R_G=10\Omega$
Total gate charge	Q_g^*	-	15	-	nC	$I_D=15A, V_{DD}=15V$
Gate-source charge	Q_{gs}^*	-	2.6	-	nC	$V_{GS}=10V$
Gate-drain charge	Q_{gd}^*	-	3.0	-	nC	

*Pulsed

● Body diode characteristics (Source-Drain) (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	V_{SD}^*	-	-	1.2	V	$I_S=2.5A, V_{GS}=0V$

*Pulsed

●Electrical characteristic curves (Ta=25°C)

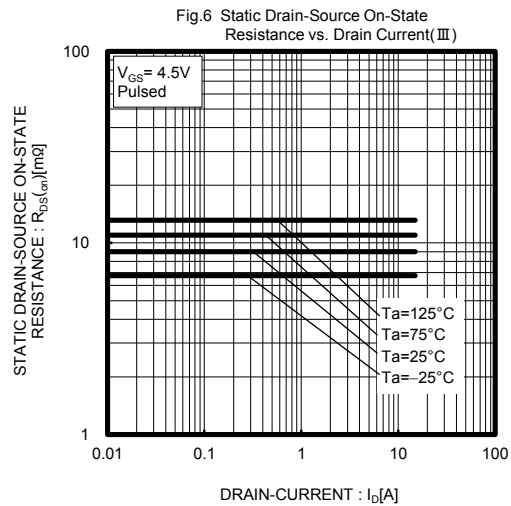
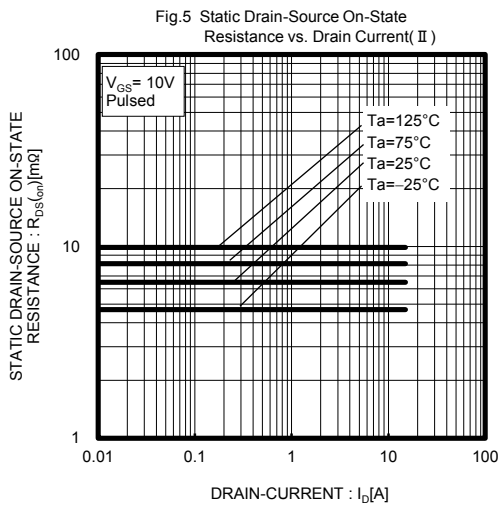
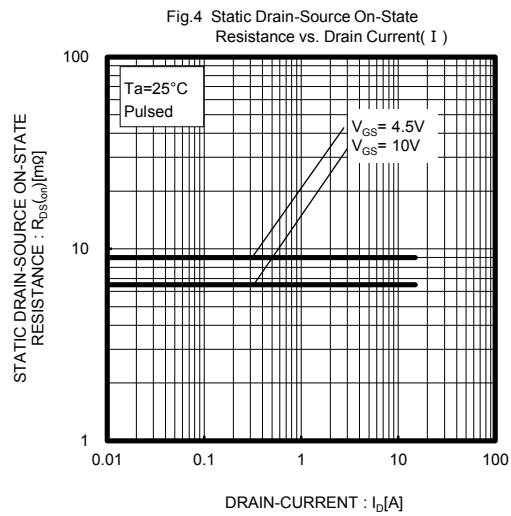
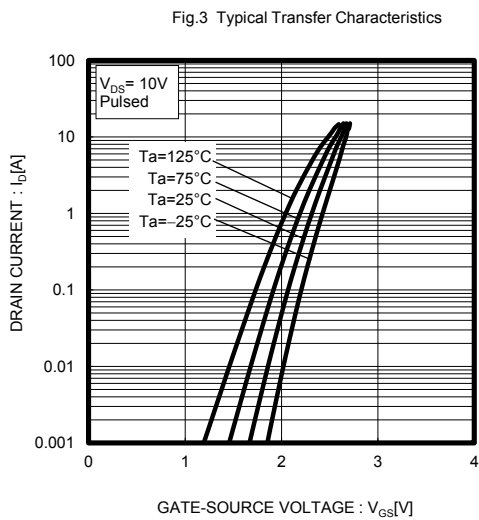
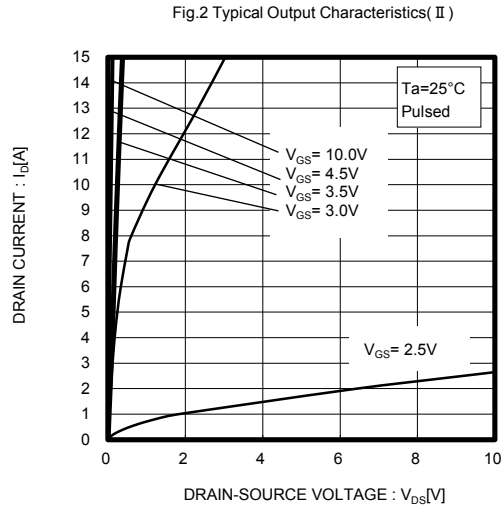
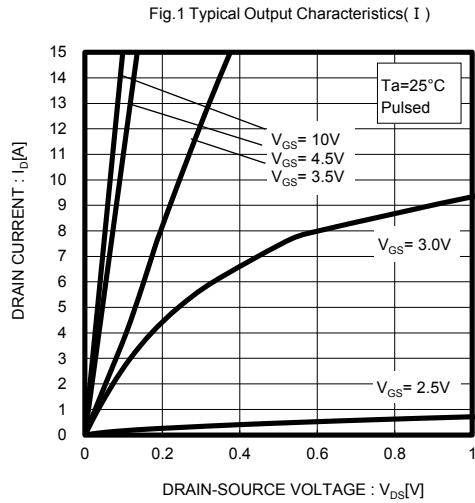


Fig.7 Forward Transfer Admittance vs. Drain Current

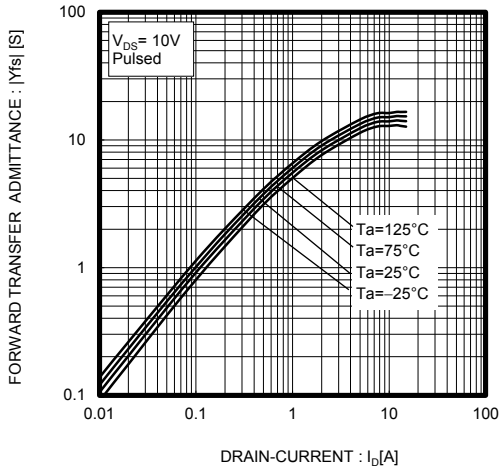


Fig.8 Reverse Drain Current vs. Source-Drain Voltage

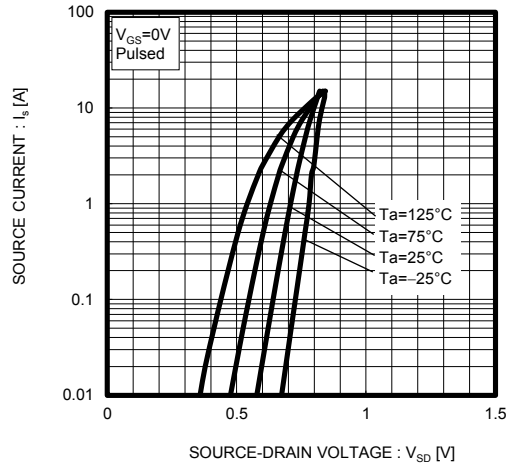


Fig.9 Static Drain-Source On-State Resistance vs. Gate Source Voltage

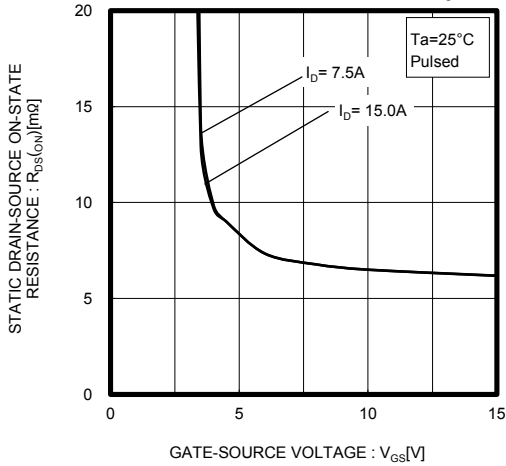


Fig.10 Switching Characteristics

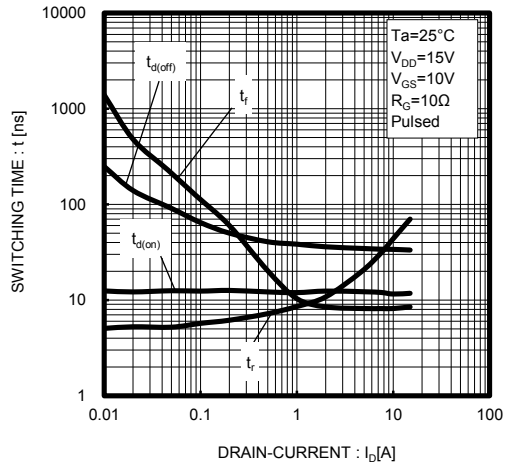


Fig.11 Dynamic Input Characteristics

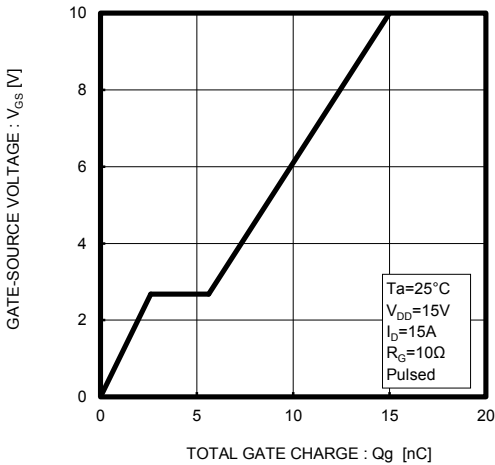


Fig.12 Typical Capacitance vs. Drain-Source Voltage

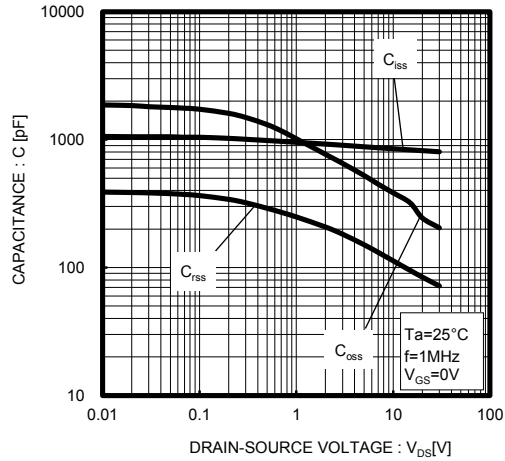


Fig.13 Maximum Safe Operating Area

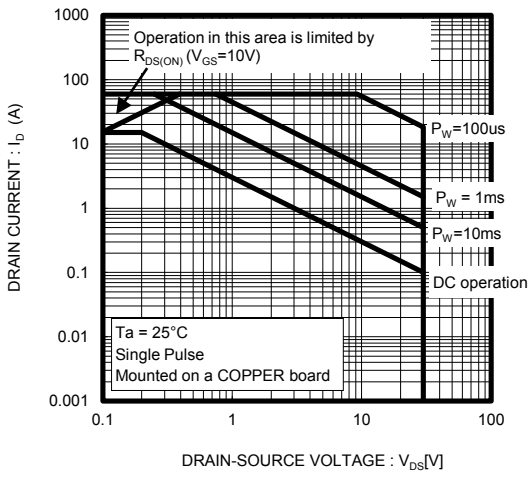
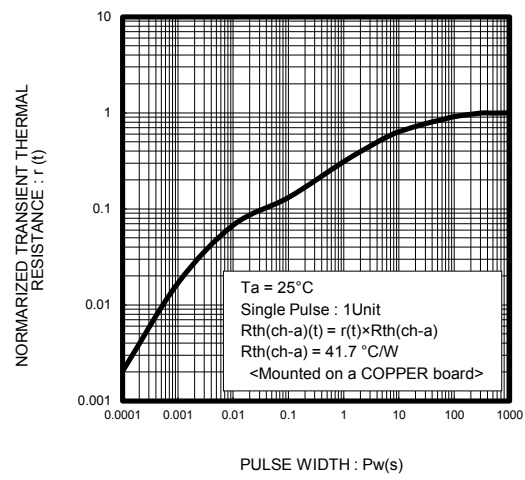


Fig.14 Normalized Transient Thermal Resistance vs. Pulse Width



● Measurement circuits

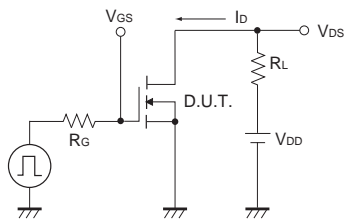


Fig.1-1 Switching Time Measurement Circuit

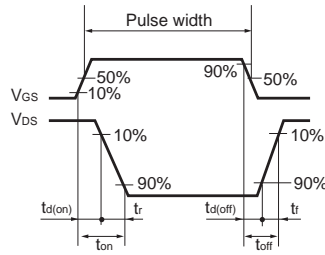


Fig.1-2 Switching Waveforms

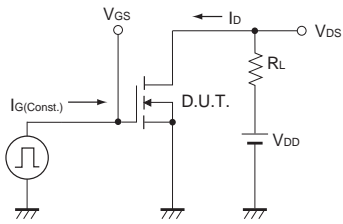


Fig.2-1 Gate Charge Measurement Circuit

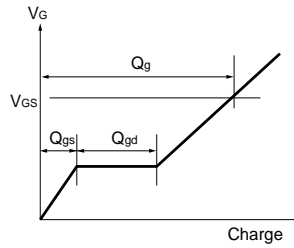


Fig.2-2 Gate Charge Waveform

● Notice

This product might cause chip aging and breakdown under the large electrified environment. Please consider to design ESD protection circuit.

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