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4V Drive Nch MOSFET

RHP030N03

●Structure

Silicon N-channel MOSFET

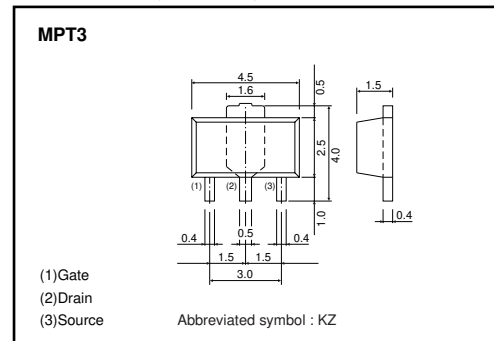
●Features

- 1) Low On-resistance.
- 2) 4V drive.

●Applications

Switching

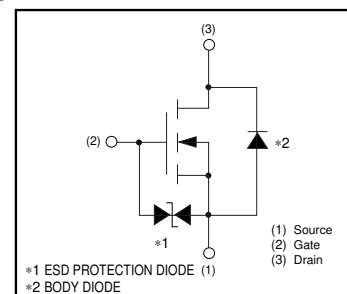
●Dimensions (Unit : mm)



●Packaging specifications

Type	Package	Taping
	Code	T100
	Basic ordering unit (pieces)	1000
RHP030N03		○

●Inner circuit



●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	3 A
	Pulsed	I_{DP} *1	10 A
Reverse drain current	Continuous	I_{DR}	3 A
	Pulsed	I_{DRP} *1	10 A
Total power dissipation	P_D	500	mW
		2 *2	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 When mounted on a 40×40×0.7mm ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th(ch-a)}$	250	°C/W
		62.5 *	°C/W

* When mounted on a 40×40×0.7mm ceramic board

Transistors

●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	$R_{DS(on)}$ *	–	90	120	mΩ	$I_D=3A, V_{GS}=10V$
		–	160	210	mΩ	$I_D=3A, V_{GS}=4V$
Forward transfer admittance	$ Y_{fs} $ *	2.0	–	–	S	$V_{DS}=10V, I_D=3A$
Input capacitance	C_{iss}	–	160	–	pF	$V_{DS}=10V$
Output capacitance	C_{oss}	–	90	–	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{rss}	–	27	–	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}$ *	–	7	–	ns	$V_{DD}\doteq 15V$
Rise time	t_r *	–	11	–	ns	$I_D=1.5A$
Turn-off delay time	$t_{d(off)}$ *	–	15	–	ns	$V_{GS}=10V$
Fall time	t_f *	–	4.5	–	ns	$R_L=10\Omega$
Total gate charge	Q_g *	–	6.5	–	nC	$V_{DD}\doteq 15V$
Gate-source charge	Q_{gs} *	–	1.0	–	nC	$V_{GS}=10V$
Gate-drain charge	Q_{gd} *	–	1.5	–	nC	$I_D=3A$

*Pulsed

Transistors

●Electrical characteristics curves

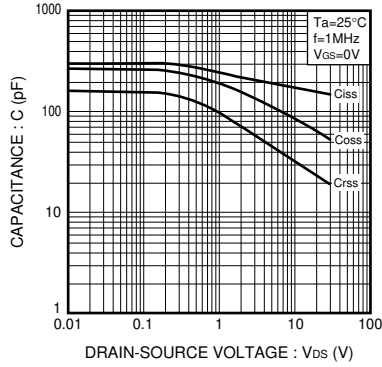


Fig.1 Typical Capacitance vs. Drain-Source Voltage

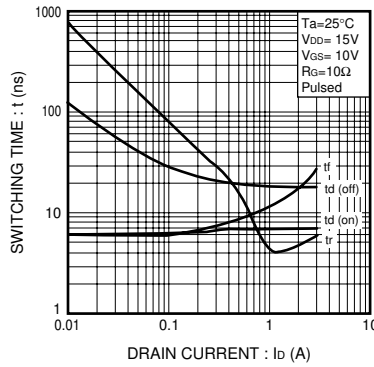


Fig.2 Switching Characteristics

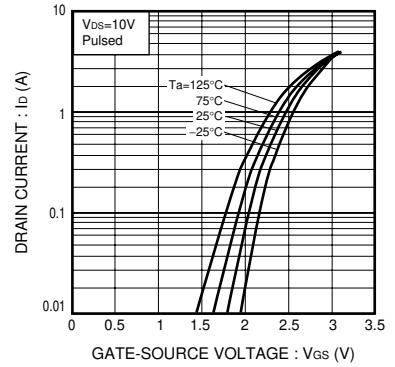


Fig.3 Typical Transfer Characteristics

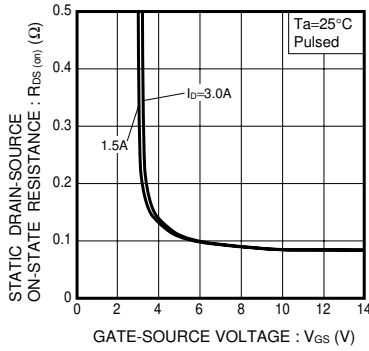


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

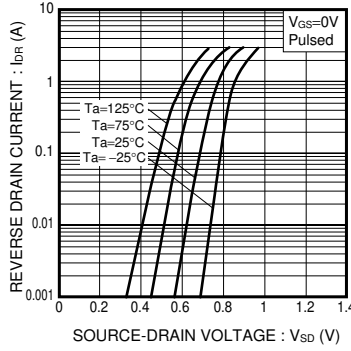


Fig.5 Reverse Drain Current vs. Source-Drain Voltage (I)

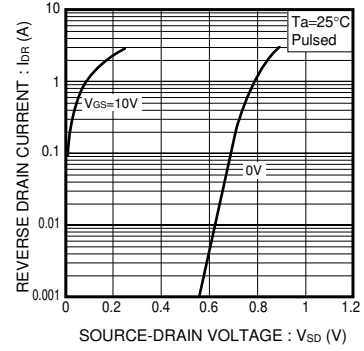


Fig.6 Reverse Drain Current vs. Source-Drain Voltage (II)

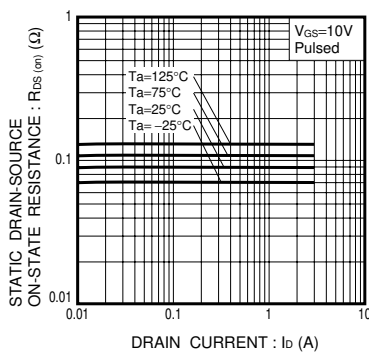


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current (I)

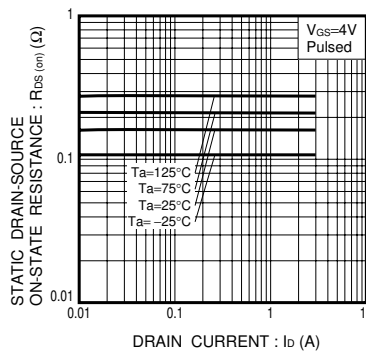


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current (II)

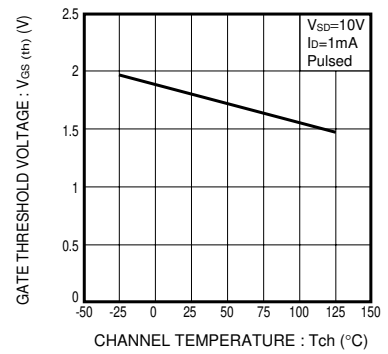


Fig.9 Gate Threshold Voltage vs. Channel Temperature

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