

4V Drive Nch MOSFET

RHP020N06

●Structure

Silicon N-channel MOSFET

●Features

- 1) Low On-resistance.
- 2) High speed switching.
- 3) Wide SOA.

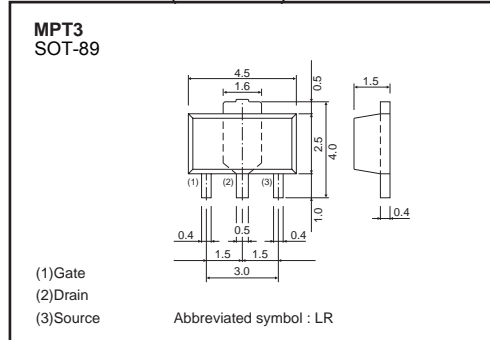
●Applications

Switching

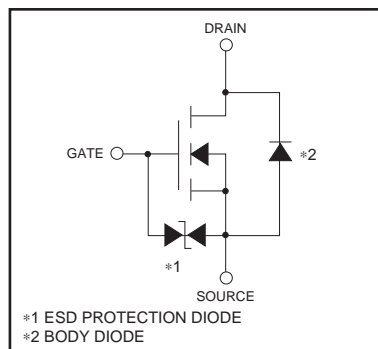
●Packaging specifications and hFE

Type	Package	Taping
	Code	T100
	Basic ordering unit (pieces)	1000
RHP020N06		○

●Dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DSS}	60	V
Gate-source voltage	V_{GSS}	± 20	V
Drain current	Continuous	I_D	± 2 A
	Pulsed	I_{DP} *1	± 8 A
Source current	Continuous	I_S	2 A
	Pulsed	I_{SP} *1	8 A
Total power dissipation	P_D	500	mW
		2	W *2
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

●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}	60	–	–	V	I _D = 1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	–	–	1	μA	V _{DS} = 60V, 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)} *	–	150	200	mΩ	I _D = 2A, V _{GS} = 10V
		–	200	280	mΩ	I _D = 2A, V _{GS} = 4.5V
		–	240	340	mΩ	I _D = 2A, V _{GS} = 4V
Forward transfer admittance	Y _{fs} *	2.0	–	–	S	V _{DS} = 10V, I _D = 2A
Input capacitance	C _{iss}	–	140	–	pF	V _{DS} = 10V
Output capacitance	C _{oss}	–	50	–	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	–	40	–	pF	f=1MHz
Turn-on delay time	t _{d (on)} *	–	7	–	ns	V _{DD} ≐ 30V
Rise time	t _r *	–	10	–	ns	I _D = 1A
Turn-off delay time	t _{d (off)} *	–	22	–	ns	V _{GS} = 10V
Fall time	t _f *	–	18	–	ns	R _L =30Ω
Total gate charge	Q _g *	–	7	14	nC	V _{DD} ≐ 30V
Gate-source charge	Q _{gs} *	–	1	–	nC	V _{GS} = 10V
Gate-drain charge	Q _{gd} *	–	2	–	nC	I _D = 2A

*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 = 2A, V _{GS} =0V

●Electrical characteristics curves

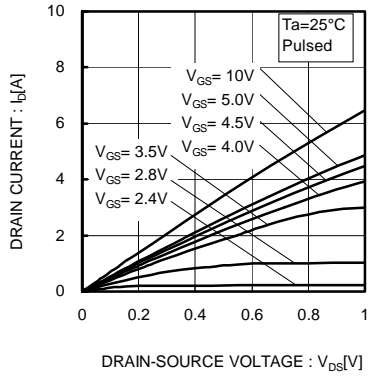


Fig.1 Typical Output Characteristics (I)

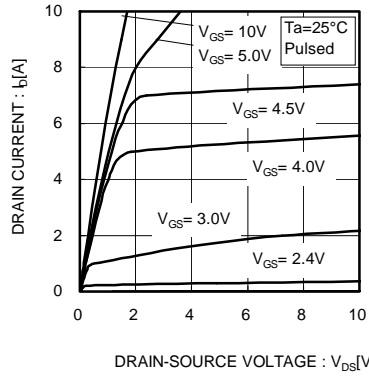


Fig.2 Typical Output Characteristics (II)

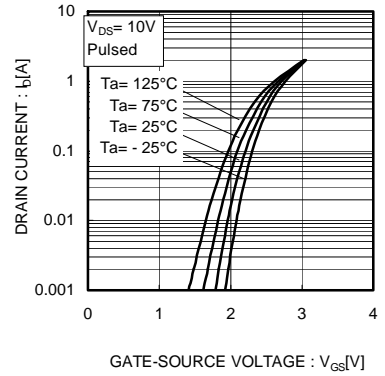


Fig.3 Typical Transfer Characteristics

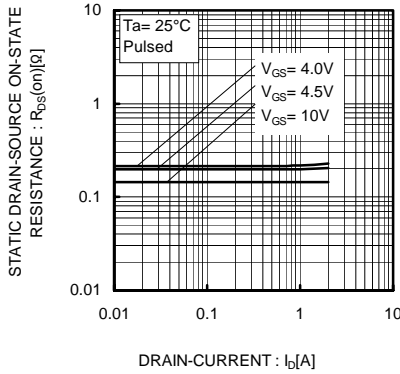


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (I)

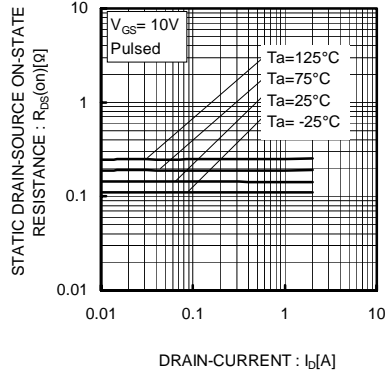


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (II)

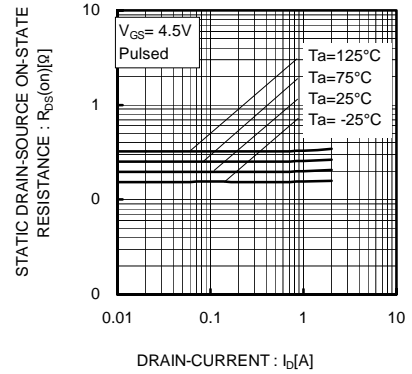


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current (III)

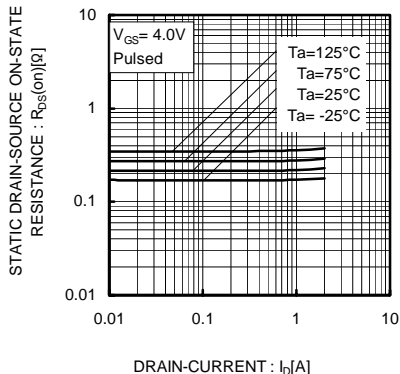


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current (IV)

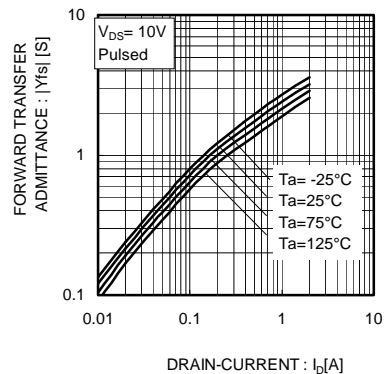


Fig.8 Forward Transfer Admittance vs. Drain Current

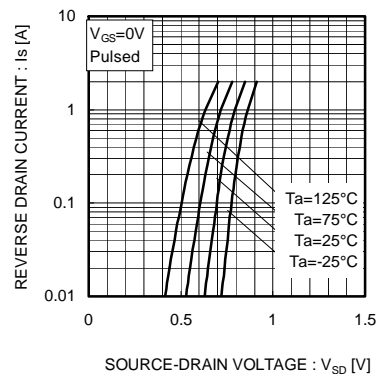


Fig.9 Reverse Drain Current vs. Source-Drain Voltage

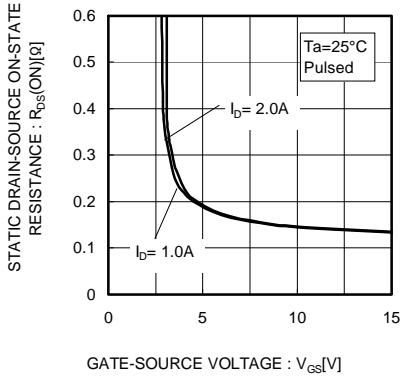


Fig.10 Static Drain-Source On-State Resistance vs. Gate Source Voltage

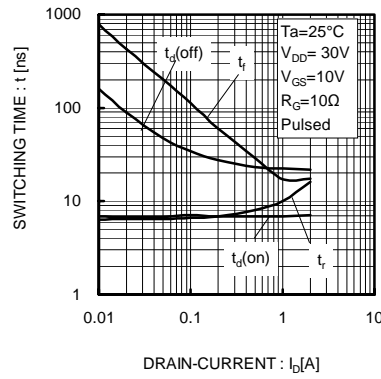


Fig.11 Switching Characteristics

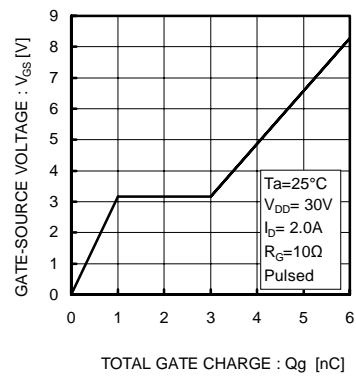


Fig.12 Dynamic Input Characteristics

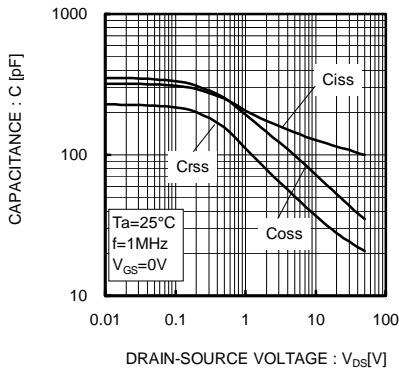


Fig.13 Typical Capacitance vs. Drain-Source Voltage

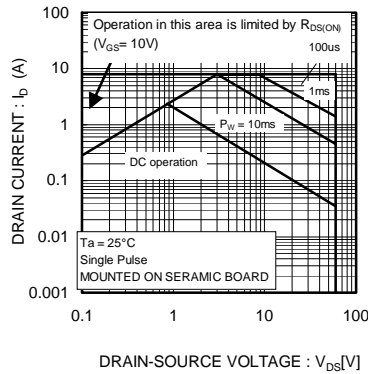


Fig.14 Maximum Safe Operating Area

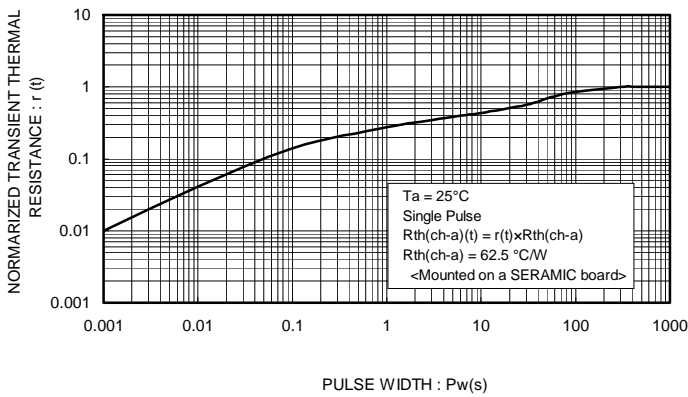


Fig.15 Normalized Transient Thermal Resistance vs. Pulse Width

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