

# 4V Drive Nch MOSFET

# **RHU002N06**

#### ●Structure

Silicon N-channel MOSFET transistor

#### Features

- 1) Low on-resistance.
- 2) High ESD.
- 3) High-speed switching.
- 4) Low-voltage drive (4V).
- 5) Drive circuits can be simple.
- 6) Parallel use is easy.

#### Applications

Switching

#### Packaging specifications

	Package	Taping
	Code	T106
Туре	Basic ordering unit (pieces)	3000
RHU002N06	0	

#### ●Absolute maximum ratings (Ta=25°C)

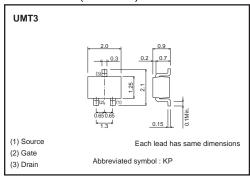
Parameter		Symbol	Limits	Unit
Drain-source voltage		Voss	60	V
Gate-source voltage		Vgss	±20	V
Drain current	Continuous	lo	±200	mA
	Pulsed	IDP *1	±800	mA
Source current (Body diode)	Continuous	Is	200	mA
	Pulsed	Isp*1	800	mA
Total power dissipation		P <sub>D</sub> *2	200	mW
Channel temperature		Tch	150	°C
Storage temperature		Tstg	-55 to +150	°C

#### ●Thermal resistance

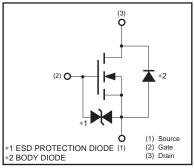
Parameter	Symbol	Limits	Unit
Channel to ambient	Rth (ch-a)*	625	°C / W

<sup>\*</sup> With each pin mounted on the recommended land.

#### ●Dimensions (Unit: mm)



### ●Equivalent circuit



\* A protection diode has been built in between the gate and the source to protect against static electricity when the product is in use. Use the protection circuit when fixed voltages are

<sup>\*1</sup> Pw≤10μs, Duty cycle≤1% \*2 Each terminal mounted on a recommended

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

Parameter	Symbol	Min.	Тур.	Max.	Unit	Test Conditions	
Gate leakage current	Igss	-	-	±10	μΑ	Vgs=±20V, Vps=0V	
Drain-source breakdown voltage	V (BR) DSS	60	_	_	V	In=1mA, Vgs=0V	
Drain cutoff current	IDSS	_	_	1	μΑ	VDS=60V, VGS=0V	
Gate threshold voltage	VGS (th)	1	_	2.5	V	Vps=10V, Ip=1mA	
5	D *	-	1.7	2.4		In=200mA, Vgs=10V	
Drain-source on-state resistance	RDS (on)	_	2.8	4.0	Ω	In=200mA, Vgs=4V	
Forward transfer admittance	I Yfs I*	0.1	-	_	S	Vps=10V, Ip=200mA	
Input capacitance	Ciss	_	15	_	pF	V <sub>DS</sub> =10V	
Output capacitance	Coss	_	8	_	pF	V <sub>GS</sub> =0V f=1MHz	
Reverse transfer capacitance	Crss	_	4	_	pF		
Turn-on delay time	td (on)*	_	6	_	ns	Ip=100mA, Vpp≒30V	
Rise time	tr*	_	5	_	ns	Vgs=10V	
Turn-off delay time	td (off)*	_	12	_	ns	RL=300Ω	
Fall time	t <sub>f</sub> *	_	95	_	ns	R <sub>G</sub> =10Ω	
Total gate charge	Qg*	-	2.2	4.4	nC	V <sub>DD</sub> ≒30V	
Gate-source charge	Q <sub>gs</sub> *	_	0.6	_	nC	Vgs=10V	
Gate-drain charge	Q <sub>gd</sub> *	_	0.3	-	nC	ID=200mA	

<sup>\*</sup> Pulsed

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

			, ,			
Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Forward voltage	V <sub>SD</sub> *	_	_	1.2	V	I <sub>S</sub> =200mA, V <sub>GS</sub> =0V

<sup>\*</sup>Pulsed

## •Electrical characteristic curves

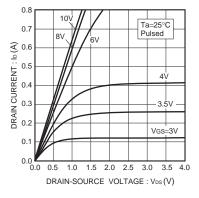


Fig.1 Typical Output Characteristics

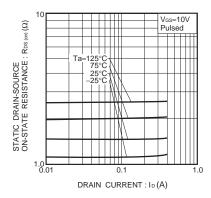


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current ( I )

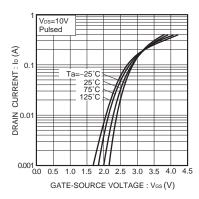


Fig.2 Typical Transfer Characteristics

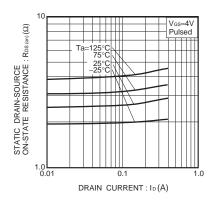


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current ( II )

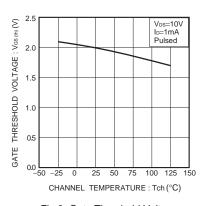


Fig.3 Gate Threshold Voltage vs. Channel Temperature

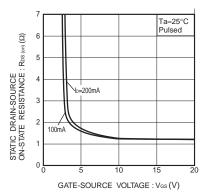


Fig.6 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

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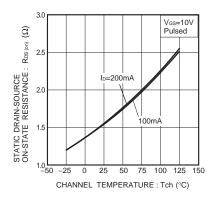


Fig.7 Static Drain-Source On-State Resistance vs. Channel Temperature

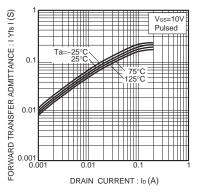


Fig.10 Forward Transfer Admittance vs. Drain Current

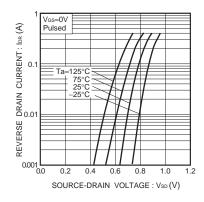


Fig.8 Reverse Drain Current vs. Source-Drain Voltage ( I )

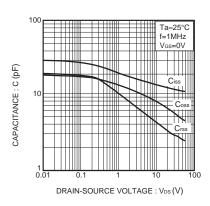


Fig.11 Typical Capacitance vs. Drain-Source Voltage

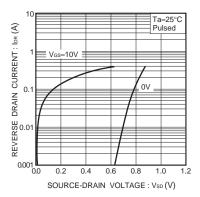


Fig.9 Reverse Drain Current vs. Source-Drain Voltage ( II )

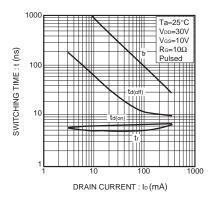


Fig.12 Switching Characteristics

#### •Switching characteristics measurement circuit

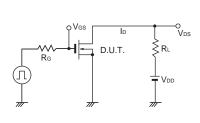


Fig.13 Switching time test circuit

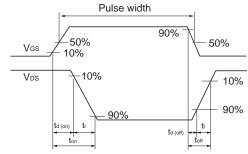


Fig.14 Switching time waveforms

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