

1.2V Drive Nch MOSFET

RUE002N02

●Structure

Silicon N-channel
MOSFET

●Applications

Switching

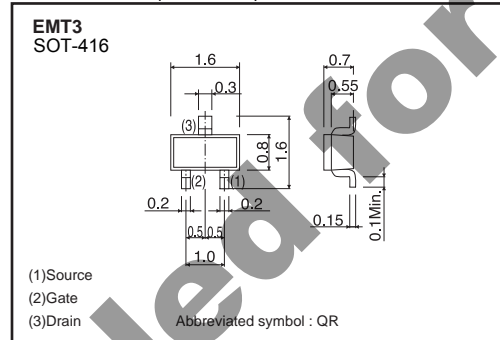
●Features

- 1) Fast switching speed.
- 2) Low voltage drive (1.2V) makes this device ideal for portable equipment.
- 3) Drive circuits can be simple.

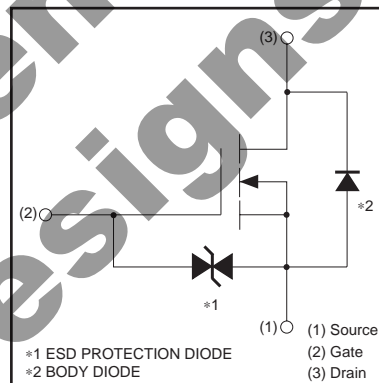
●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RUE002N02		○

●Dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V _{DSS}	20	V	
Gate-source voltage	V _{GSS}	±8	V	
Drain current	Continuous	I _D	±200	mA
	Pulsed	I _{DP} *1	±400	mA
Total power dissipation	P _D *2	150	mW	
Channel temperature	T _{ch}	150	°C	
Range of storage temperature	T _{stg}	-55 to +150	°C	

*1 Pw≤10μs, Duty cycle≤1%

*2 Each terminal mounted on a recommended land

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	R _{th(ch-a)} *	833	°C / W

* Each terminal mounted on a recommended land

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I _{GSS}	–	–	±10	μA	V _{GS} =±8V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR)DSS}	20	–	–	V	I _D =1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	–	–	1	μA	V _{DS} =20V, V _{GS} =0V
Gate threshold voltage	V _{GS(th)}	0.3	–	1	V	V _{DS} =10V, I _D =1mA
Static drain-source on-state resistance	R _{Ds(on)} *	–	0.8	1.2	Ω	I _D =200mA, V _{GS} =2.5V
		–	1.0	1.4	Ω	I _D =200mA, V _{GS} =1.8V
		–	1.2	2.4	Ω	I _D =40mA, V _{GS} =1.5V
		–	1.6	4.8	Ω	I _D =20mA, V _{GS} =1.2V
Forward transfer admittance	Y _{fs} *	200	–	–	mS	V _{DS} =10V, I _D =200mA
Input capacitance	C _{iss}	–	25	–	pF	V _{DS} =10V
Output capacitance	C _{oss}	–	10	–	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	–	10	–	pF	f=1MHz
Turn-on delay time	t _{d(on)} *	–	5	–	ns	V _{DD} ≐ 10V, I _D =150mA
Rise time	t _r *	–	10	–	ns	V _{GS} =4.0V
Turn-off delay time	t _{d(off)} *	–	15	–	ns	R _L ≐ 67Ω
Fall time	t _f *	–	10	–	ns	R _G =10Ω

* 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 =100mA, V _{GS} =0V

* Pulsed

●Electrical characteristics curves

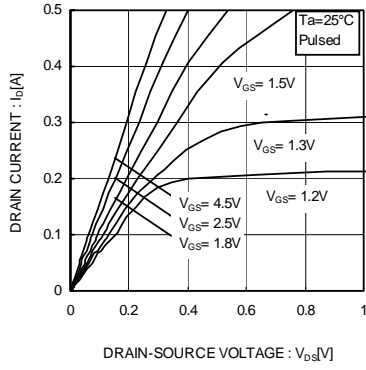


Fig.1 Typical Output Characteristics (I)

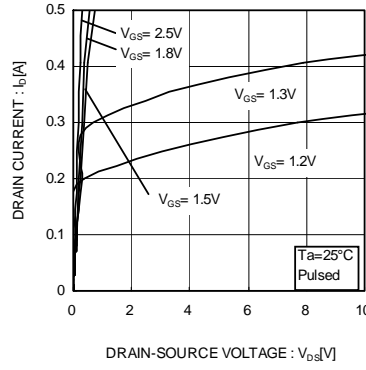


Fig.2 Typical Output Characteristics (II)

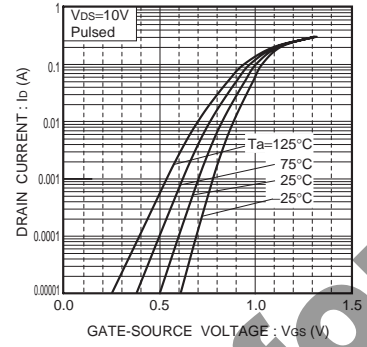


Fig.3 Typical transfer characteristics

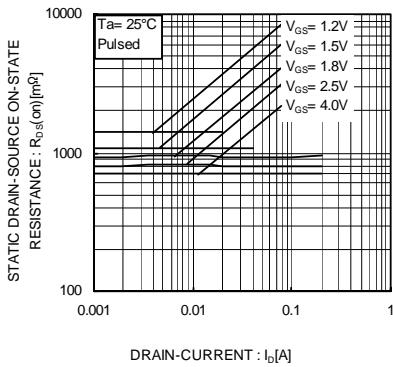


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (I)

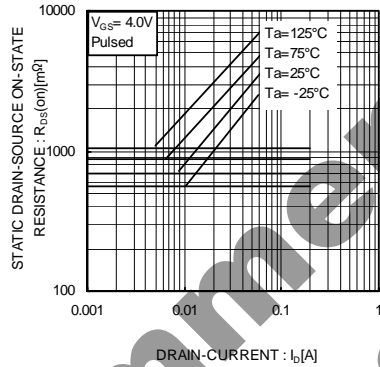


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (II)

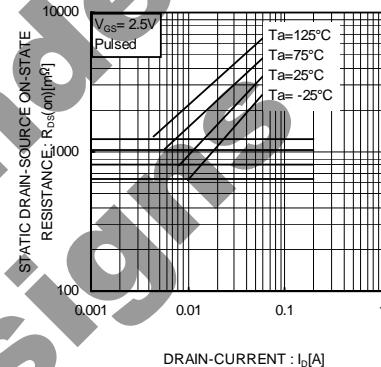


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current (II)

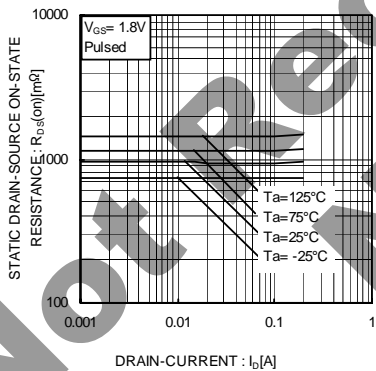


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current (III)

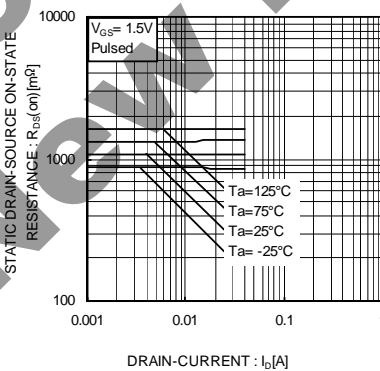


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current (IV)

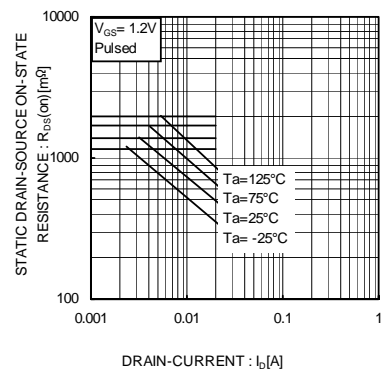


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current (V)

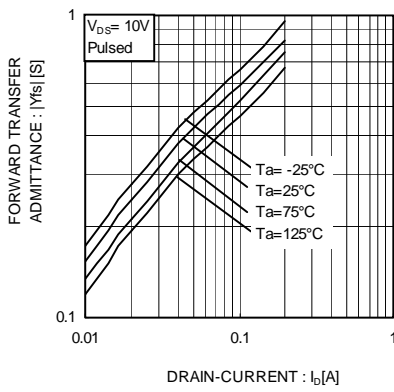


Fig.10 Forward Transfer Admittance vs. Drain Current

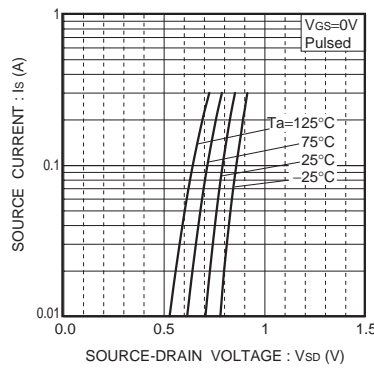


Fig.11 Source current vs. source-drain voltage

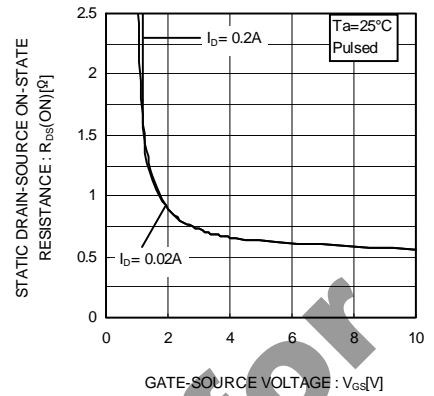


Fig.12 Static Drain-Source-On-State Resistance vs. Gate Source Voltage

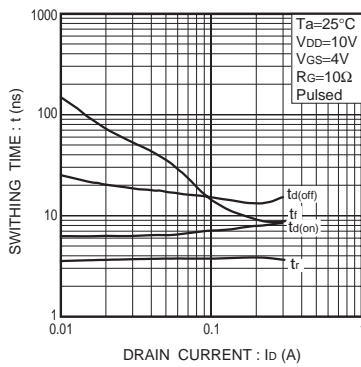


Fig.13 Switching characteristics

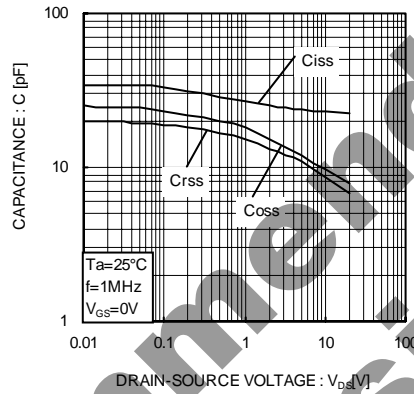


Fig.14 Typical Capacitance vs. Drain-Source Voltage

●Measurement circuit

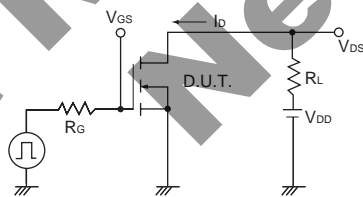


Fig.1-1 Switching time measurement circuit

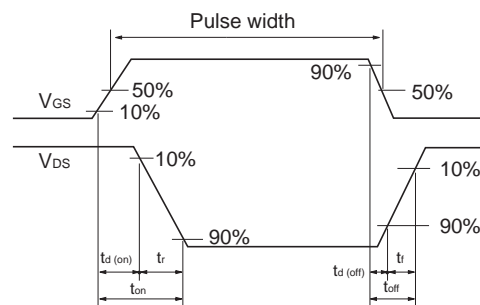


Fig.1-2 Switching waveforms

●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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