1.8V Drive Nch MOSFET

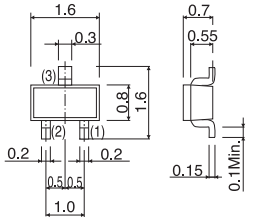
RUE003N02

●Structure
Silicon N-channel
MOSFET

●Features
1) Low on-resistance.
2) Fast switching speed.
3) Low voltage drive (1.8V) makes this device ideal for portable equipment.
4) Drive circuits can be simple.
5) Parallel use is easy.

●Dimensions (Unit : mm)

EMT3



(1)Source
(2)Gate
(3)Drain

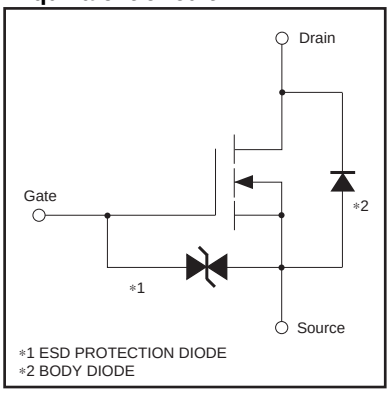
Abbreviated symbol : QT

●Applications
Switching

●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RUE003N02		◯

●Equivalent circuit



*1 ESD PROTECTION DIODE
*2 BODY DIODE

●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	±300	mA
	Pulsed	I_{DP}*1	±600	mA
Total power dissipation		P_D*2	150	mW
Channel temperature		Tch	150	°C
Range of storage temperature		Tstg	−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	Rth(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}	–	–	1.0	μA	V_{DS}=20V, V_{GS}=0V
Gate threshold voltage	$V_{GS(th)}$	0.3	–	1.0	V	V_{DS}=10V, I_D=1mA
Static drain-source on-state resistance	$R_{DS(on)}$*	–	0.7	1.0	Ω	I_D=300mA, V_{GS}=4.0V
		–	0.8	1.2	Ω	I_D=300mA, V_{GS}=2.5V
		–	1.0	1.4	Ω	I_D=300mA, V_{GS}=1.8V
Forward transfer admittance	$\|Y_{fs}\|$ *	400	–	–	ms	I_D=300mA, V_{DS}=10V
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	I_D=150mA, V_{DD} ≒10V
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 characteristic curves

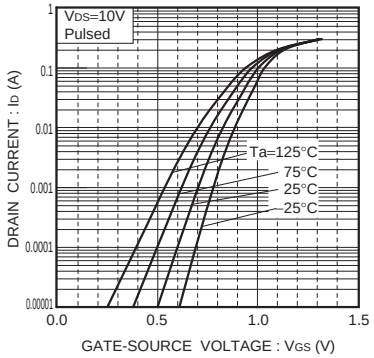


Fig.1 Typical transfer characteristics

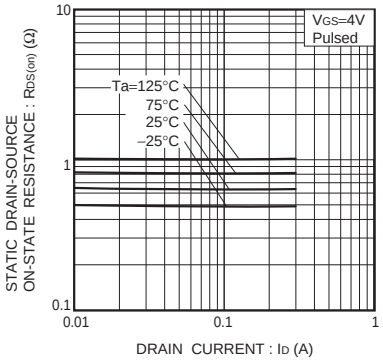


Fig.2 Static drain-source on-state resistance vs. drain current (I)

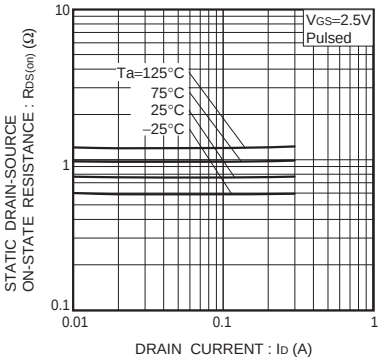


Fig.3 Static drain-source on-state resistance vs. drain current (II)

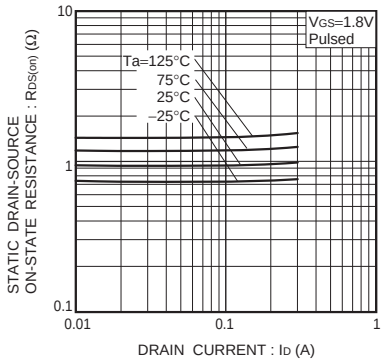


Fig.4 Static drain-source on-state resistance vs. drain current (III)

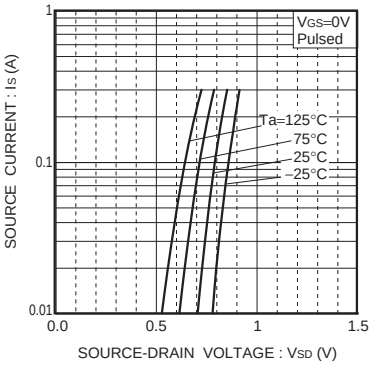


Fig.5 Source current vs. source-drain voltage

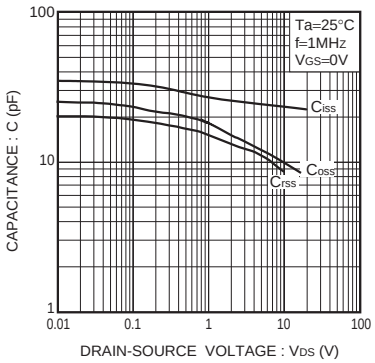


Fig.6 Typical capacitance vs. drain-source voltage

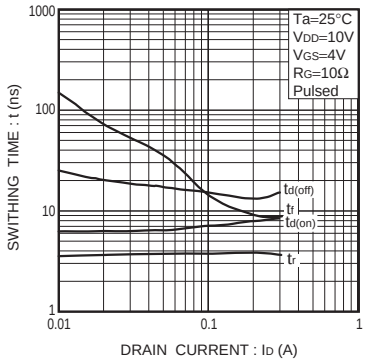


Fig.7 Switching characteristics

●Switching characteristics measurement circuit

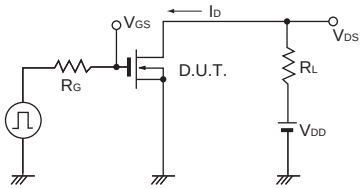


Fig.8 Switching time measurement circuit

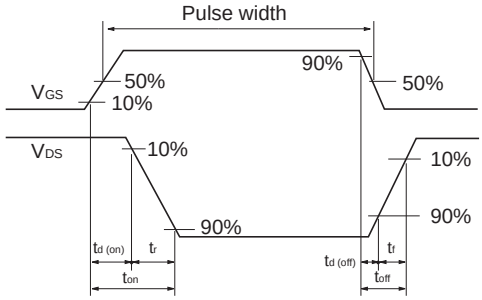


Fig.9 Switching time waveforms

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