

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.

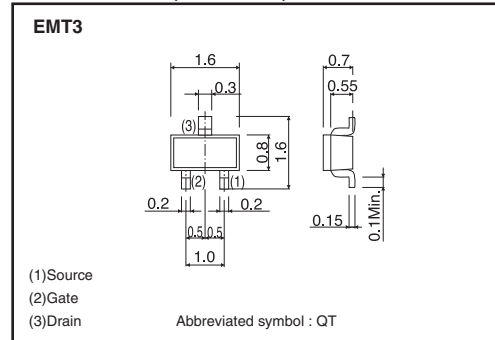
●Applications

Switching

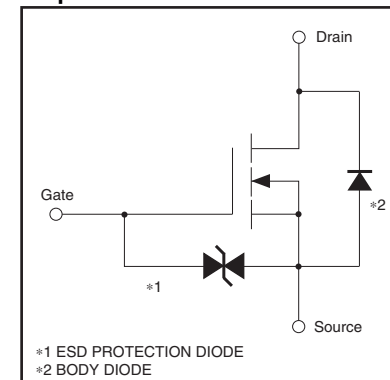
●Packaging specifications

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

●Dimensions (Unit : mm)



●Equivalent circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	± 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	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 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}	-	-	1.0	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

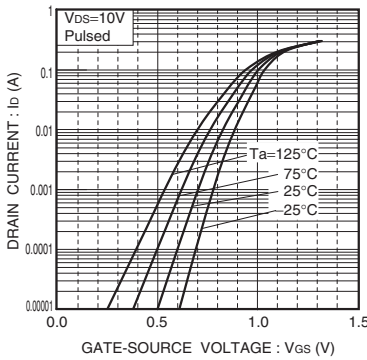


Fig.1 Typical transfer characteristics

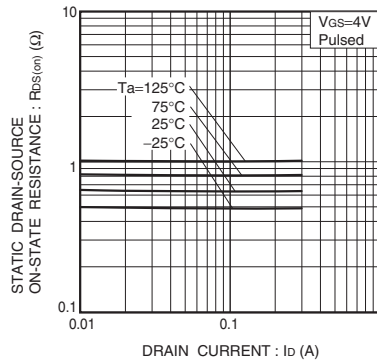


Fig.2 Static drain-source on-state resistance vs. drain current (I)

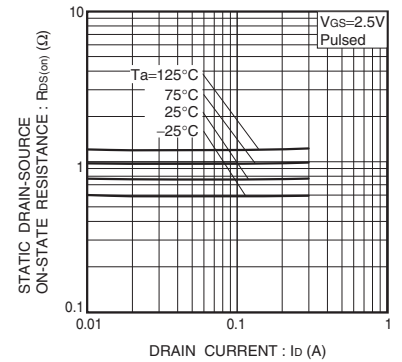


Fig.3 Static drain-source on-state resistance vs. drain current (II)

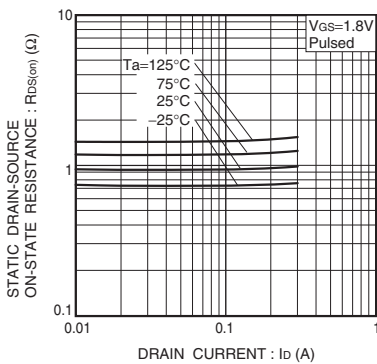


Fig.4 Static drain-source on-state resistance vs. drain current (III)

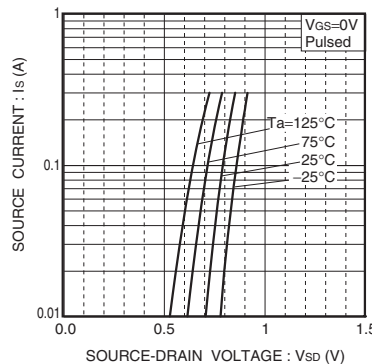


Fig.5 Source current vs. source-drain voltage

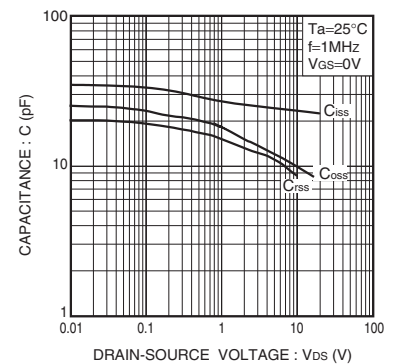


Fig.6 Typical capacitance vs. drain-source voltage

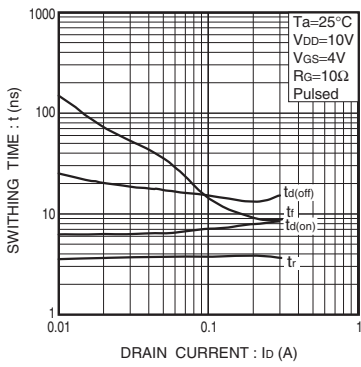


Fig.7 Switching characteristics

●Switching characteristics measurement circuit

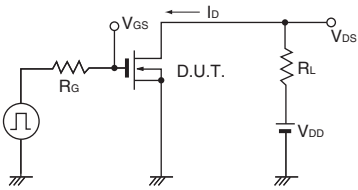


Fig.8 Switching time measurement circuit

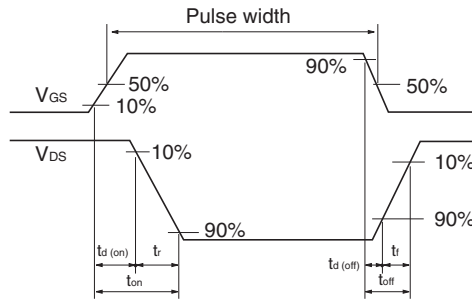


Fig.9 Switching time waveforms

Notes

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