

Transistors

2.5V Drive Nch MOS FET

RTR020N05

●Structure

Silicon N-channel MOS FET

●Features

- 1) Low On-resistance.
- 2) Space saving, small surface mount package (TSMT3).
- 3) Low voltage drive (2.5V drive).

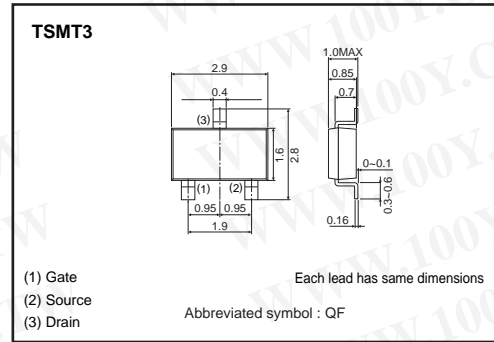
●Applications

Switching

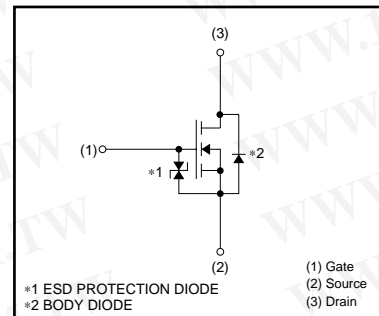
●Packaging specifications and hFE

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RTR020N05		○

●External dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V _{DSS}	45	V	
Gate-source voltage	V _{GSS}	12	V	
Drain current	Continuous	I _D	±2.0	A
	Pulsed	I _{DP} *1	±8	A
Source current (Body diode)	Continuous	I _S	0.8	A
	Pulsed	I _{SP} *1	8	A
Total power dissipation	P _D *2	1.0	W	
Channel temperature	T _{ch}	150	°C	
Range of storage temperature	T _{stg}	-55 to +150	°C	

*1 Pw≤10μs, Duty cycle≤1%
 *2 Mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	R _{th(ch-a)} *	125	°C/W

* Mounted on a ceramic board

Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I _{GSS}	–	–	10	μA	V _{GS} =12V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR)DSS}	45	–	–	V	I _D =1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	–	–	1	μA	V _{DS} =45V, V _{GS} =0V
Gate threshold voltage	V _{GS(th)}	0.5	–	1.5	V	V _{DS} =10V, I _D =1mA
Static drain-source on-state resistance	R _{DS(on)*}	–	130	180	mΩ	I _D =2.0A, V _{GS} =4.5V
		–	135	190	mΩ	I _D =2.0A, V _{GS} =4V
		–	180	250	mΩ	I _D =2.0A, V _{GS} =2.5V
Forward transfer admittance	Y _{fs} *	1.5	–	–	S	V _{DS} =10V, I _D =2.0A
Input capacitance	C _{iss}	–	200	–	pF	V _{DS} =10V
Output capacitance	C _{oss}	–	45	–	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	–	25	–	pF	f=1MHz
Turn-on delay time	t _{d(on)*}	–	11	–	ns	V _{DD} ≐25V I _D =1.0A
Rise time	t _r *	–	16	–	ns	V _{GS} =4.5V
Turn-off delay time	t _{d(off)*}	–	21	–	ns	R _L =25Ω
Fall time	t _f *	–	11	–	ns	R _G =10Ω
Total gate charge	Q _g *	–	2.9	4.1	nC	V _{DD} ≐25V V _{GS} =4.5V
Gate-source charge	Q _{gs} *	–	0.7	–	nC	I _D =2.0A
Gate-drain charge	Q _{gd} *	–	0.9	–	nC	R _L =12.5Ω 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 =0.8A, V _{GS} =0V

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