

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).

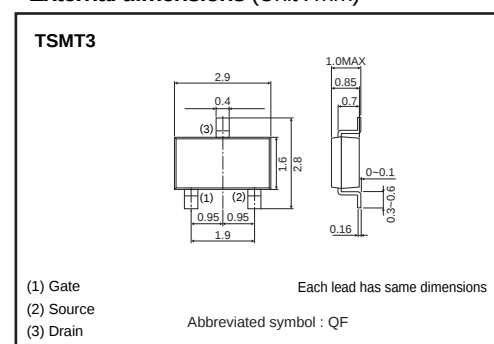
●Applications

Switching

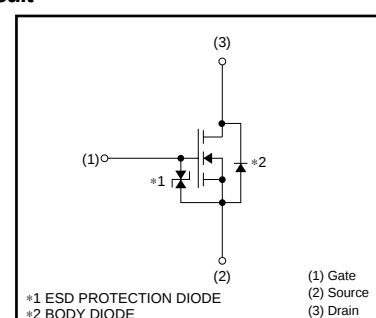
●Packaging specifications and h_{FE}

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_{DS}	45	V
Gate-source voltage		V_{GS}	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 $P_W \leq 10 \mu s$, Duty cycle $\leq 1\%$

*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	m Ω	$I_D=2.0A, V_{GS}=4.5V$
		—	135	190	m Ω	$I_D=2.0A, V_{GS}=4V$
		—	180	250	m Ω	$I_D=2.0A, V_{GS}=2.5V$
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	$V_{DD} \doteq 25V$
Rise time	t_r^*	—	16	—	ns	$I_D=1.0A$
Turn-off delay time	$t_{d(off)}^*$	—	21	—	ns	$V_{GS}=4.5V$
Fall time	t_f^*	—	11	—	ns	$R_L=25\Omega$
Total gate charge	Q_g^*	—	2.9	4.1	nC	$V_{DD} \doteq 25V \quad V_{GS}=4.5V$
Gate-source charge	Q_{gs}^*	—	0.7	—	nC	$I_D=2.0A$
Gate-drain charge	Q_{gd}^*	—	0.9	—	nC	$R_L=12.5\Omega \quad R_G=10\Omega$

*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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