2.5V Drive Nch MOS FET

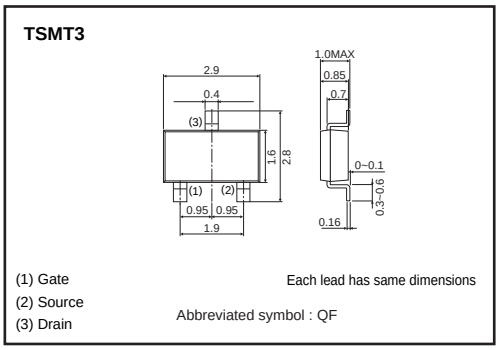
RTR020N05

●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

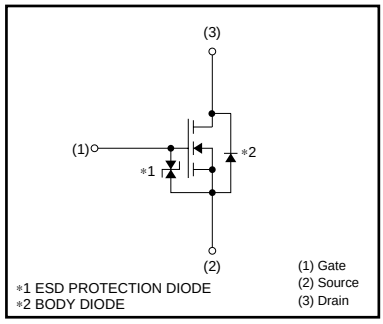
●External dimensions (Unit : mm)



●Packaging specifications and h_{FE}

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

●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		Tch	150	°C
Range of storage temperature		Tstg	−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	Rth(ch-a) *	125	°C/W

* Mounted on a ceramic board

●**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 V_{GS}= 4.5V R_L=25Ω R_G=10Ω
Rise time	t_r *	–	16	–	ns	
Turn-off delay time	$t_{d\ (off)}$ *	–	21	–	ns	
Fall time	t_f *	–	11	–	ns	
Total gate charge	Q_g *	–	2.9	4.1	nC	V_{DD}≒25V V_{GS}= 4.5V I_D= 2.0A R_L=12.5Ω R_G=10Ω
Gate-source charge	Q_{gs} *	–	0.7	–	nC	
Gate-drain charge	Q_{gd} *	–	0.9	–	nC	

*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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