

Transistors

# 2.5V Drive Nch MOS FET

## RTQ020N03

●Structure

Silicon N-channel MOS FET

●Features

- 1) Low On-resistance.
- 2) Space saving, small surface mount package (TSMT6).
- 3) Low voltage drive (2.5V drive).

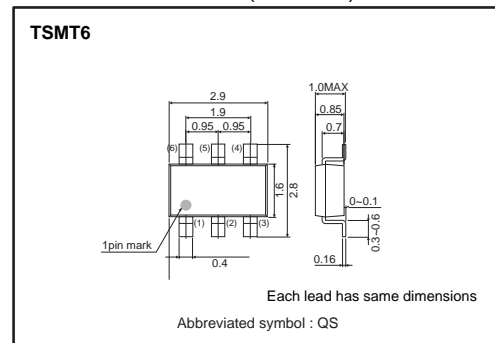
●Applications

Switching

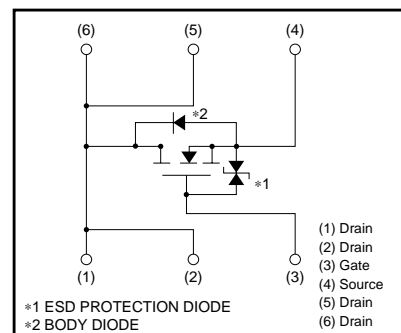
●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
RTQ020N03		○

●External dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V <sub>DSS</sub>	30	V	
Gate-source voltage	V <sub>GSS</sub>	12	V	
Drain current	Continuous	I <sub>D</sub>	±2.0	A
	Pulsed	I <sub>DP</sub> *1	±8.0	A
Source current (Body diode)	Continuous	I <sub>S</sub>	1.0	A
	Pulsed	I <sub>SP</sub> *1	8.0	A
Total power dissipation	P <sub>D</sub> *2	1.25	W	
Channel temperature	T <sub>ch</sub>	150	°C	
Range of storage temperature	T <sub>stg</sub>	-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 <sub>th(ch-a)</sub> *	100	°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	$\mu A$	$V_{GS}=12V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR) DSS}$	30	–	–	V	$I_D=1mA, V_{GS}=0V$
Zero gate voltage drain current	$I_{DSS}$	–	–	1	$\mu A$	$V_{DS}=30V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	0.5	–	1.5	V	$V_{DS}=10V, I_D=1mA$
Static drain-source on-state resistance	$R_{DS(on)}$ *	–	89	125	m $\Omega$	$I_D=2A, V_{GS}=4.5V$
		–	94	132	m $\Omega$	$I_D=2A, V_{GS}=4V$
		–	138	194	m $\Omega$	$I_D=2A, V_{GS}=2.5V$
Forward transfer admittance	$ Y_{fs} $ *	2.0	–	–	S	$V_{DS}=10V, I_D=2A$
Input capacitance	$C_{iss}$	–	135	–	pF	$V_{DS}=10V$
Output capacitance	$C_{oss}$	–	35	–	pF	$V_{GS}=0V$
Reverse transfer capacitance	$C_{rss}$	–	25	–	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}$ *	–	8	–	ns	$V_{DD}=15V$
Rise time	$t_r$ *	–	11	–	ns	$I_D=1A$
Turn-off delay time	$t_{d(off)}$ *	–	17	–	ns	$V_{GS}=4.5V$
Fall time	$t_f$ *	–	9	–	ns	$R_L=15\Omega$
Total gate charge	$Q_g$ *	–	2.4	3.3	nC	$V_{DD}=15V$
Gate-source charge	$Q_{gs}$ *	–	0.5	–	nC	$V_{GS}=4.5V$
Gate-drain charge	$Q_{gd}$ *	–	0.7	–	nC	$I_D=2A$

\*Pulsed

## ●Body diode characteristics (Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	$V_{SD}$ *	–	–	1.2	V	$I_S=4A, V_{GS}=0V$

\*Pulsed

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