

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).

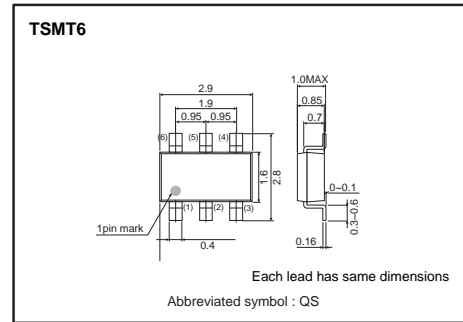
●Applications

Switching

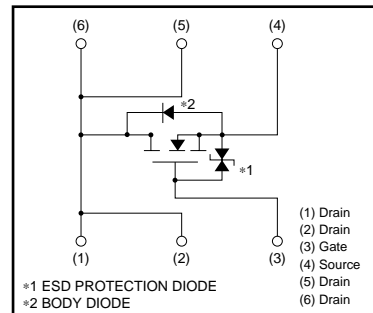
●Packaging specifications

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_{DSS}	30	V	
Gate-source voltage	V_{GSS}	12	V	
Drain current	Continuous	I_D	± 2.0	A
	Pulsed	I_{DP} *1	± 8.0	A
Source current (Body diode)	Continuous	I_S	1.0	A
	Pulsed	I_{SP} *1	8.0	A
Total power dissipation	P_D *2	1.25	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	$R_{th(ch-a)}$ *	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	μA	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	μA	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	mΩ	I _D = 2A, V _{GS} = 4.5V
		–	94	132	mΩ	I _D = 2A, V _{GS} = 4V
		–	138	194	mΩ	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 =15Ω
Total gate charge	Q _g *	–	2.4	3.3	nC	R _G =10Ω
Gate-source charge	Q _{gs} *	–	0.5	–	nC	V _{DD} ≐ 15V
Gate-drain charge	Q _{gd} *	–	0.7	–	nC	V _{GS} = 4.5V
						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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