4V Drive Nch MOS FET

RSQ045N03

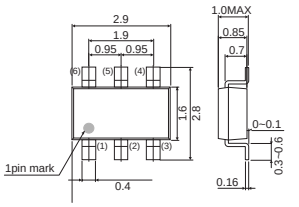
●Structure
Silicon N-channel MOS FET

●Features
1) Low On-resistance.
2) Space saving, small surface mount package (TSMT6).
3) Low voltage drive (4V drive).

●Applications
Switching

●External dimensions (Unit : mm)

TSMT6



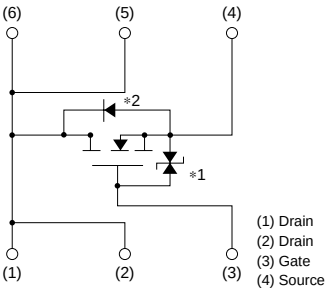
Each lead has same dimensions

Abbreviated symbol : QL

●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
RSQ045N03		○

●Inner circuit



∗1 ESD PROTECTION DIODE
∗2 BODY DIODE

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	30	V
Gate-source voltage		V_{GSS}	20	V
Drain current	Continuous	I_D	±4.5	A
	Pulsed	I_{DP} ∗1	±18	A
Source current (Body diode)	Continuous	I_S	1.0	A
	Pulsed	I_{SP} ∗1	18	A
Total power dissipation		P_D ∗2	1.25	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) ∗	100	°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}=20V, 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	$V_{GS\ (th)}$	1.0	–	2.5	V	V_{DS}= 10V, I_D= 1mA
Static drain-source on-state resistance	$R_{DS\ (on)}$*	–	27	38	mΩ	I_D= 4.5A, V_{GS}= 10V
		–	36	51	mΩ	I_D= 4.5A, V_{GS}= 4.5V
		–	40	56	mΩ	I_D= 4.5A, V_{GS}= 4V
Forward transfer admittance	$\|Y_{fs}\|$ *	3.5	–	–	S	V_{DS}= 10V, I_D= 4.5A
Input capacitance	C_{iss}	–	520	–	pF	V_{DS}= 10V
Output capacitance	C_{oss}	–	150	–	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	–	95	–	pF	f=1MHz
Turn-on delay time	$t_{d\ (on)}$ *	–	12	–	ns	V_{DD}≒ 15V I_D= 2.25A V_{GS}= 10V R_L=6.67Ω R_G=10Ω
Rise time	t_r *	–	19	–	ns	
Turn-off delay time	$t_{d\ (off)}$ *	–	41	–	ns	
Fall time	t_f *	–	14	–	ns	
Total gate charge	Q_g *	–	6.8	9.5	nC	V_{DD}≒15V V_{GS}= 5V I_D= 4.5A R_L=3.33Ω R_G=10Ω
Gate-source charge	Q_{gs} *	–	1.6	–	nC	
Gate-drain charge	Q_{gd} *	–	2.3	–	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= 1.0A, V_{GS}=0V

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