

Transistors

4V Drive Nch MOSFET

RSQ045N03

●Structure

Silicon N-channel MOSFET

●Features

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

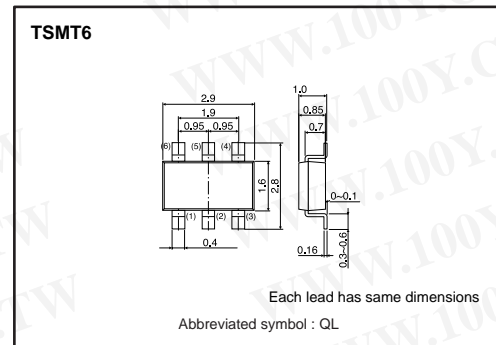
●Applications

Switching

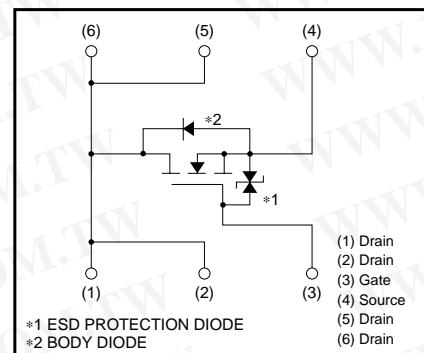
●Packaging specifications

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

●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}	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	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

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●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
Rise time	t _r *	-	19	-	ns	V _{GS} =10V
Turn-off delay time	t _{d(off)} *	-	41	-	ns	R _L =6.67Ω
Fall time	t _f *	-	14	-	ns	R _G =10Ω
Total gate charge	Q _g *	-	6.8	9.5	nC	V _{DD} =15V V _{GS} =5V
Gate-source charge	Q _{gs} *	-	1.6	-	nC	I _D =4.5A
Gate-drain charge	Q _{gd} *	-	2.3	-	nC	R _L =3.33Ω R _G =10Ω

*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

●Electrical characteristic curves

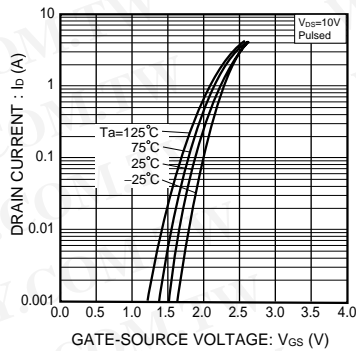


Fig.1 Typical Transfer Characteristics

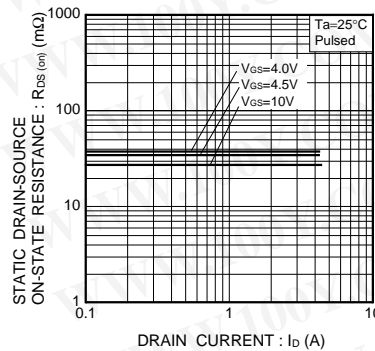


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current (I)

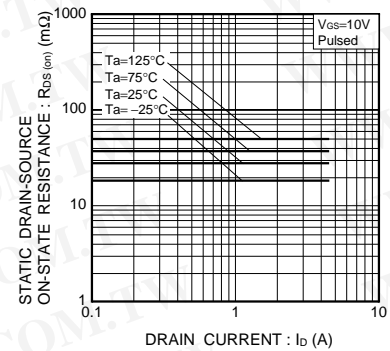


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current (II)

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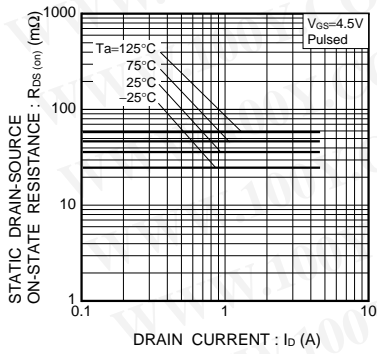


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (III)

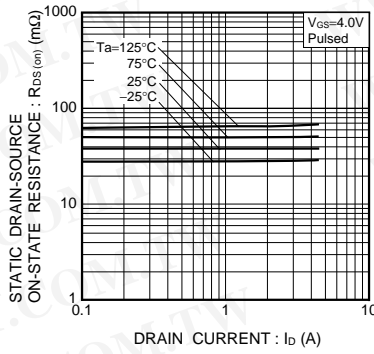


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (IV)

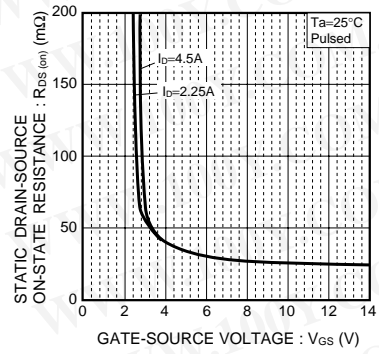


Fig.6 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

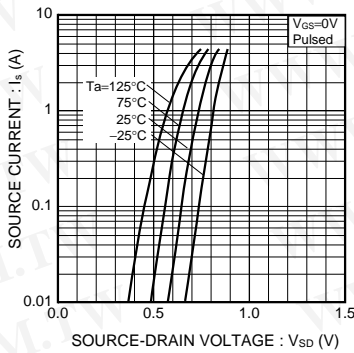


Fig.7 Source Current vs. Source-Drain Voltage

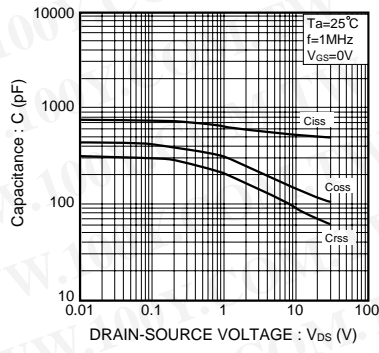


Fig.8 Typical Capacitance vs. Drain-Source Voltage

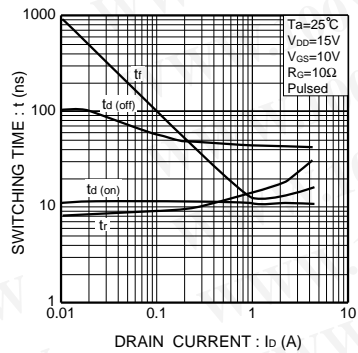


Fig.9 Switching Characteristics

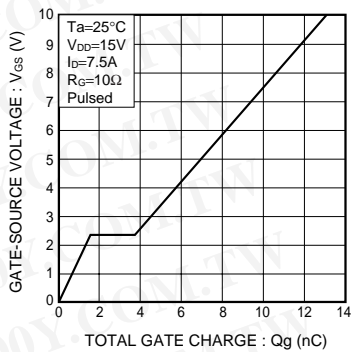


Fig.10 Dynamic Input Characteristics

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