

RTF025N03

Transistors

# 2.5V Drive Nch MOS FET

## RTF025N03

●Structure

Silicon N-channel MOS FET

●Features

- 1) Low On-resistance.
- 2) Space saving—small surface mount package (TUMT3).
- 3) Low voltage drive (2.5V drive).

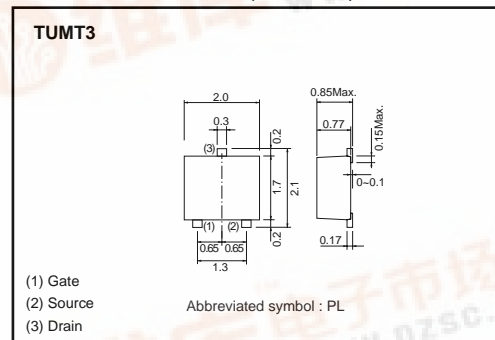
●Applications

Switching

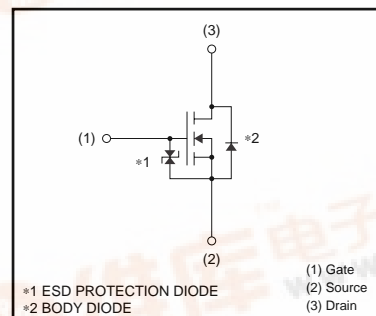
●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RTF025N03		○

●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	$I_D$	±2.5 A
	Pulsed	$I_{DP}$ *1	±10 A
Source current (Body diode)	Continuous	$I_S$	0.6 A
	Pulsed	$I_{SP}$ *1	10 A
Total power dissipation	$P_D$ *2	0.8	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	$R_{th(ch-a)}$ *	156	°C/W

\* Mounted on a ceramic board

## Transistors

## ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I <sub>GSS</sub>	–	–	10	μA	V <sub>GS</sub> =12V, V <sub>DS</sub> =0V
Drain-source breakdown voltage	V <sub>(BR) DSS</sub>	30	–	–	V	I <sub>D</sub> = 1mA, V <sub>GS</sub> =0V
Zero gate voltage drain current	I <sub>DSS</sub>	–	–	1	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> =0V
Gate threshold voltage	V <sub>GS (th)</sub>	0.5	–	1.5	V	V <sub>DS</sub> = 10V, I <sub>D</sub> = 1mA
Static drain-source on-state resistance	R <sub>DS (on)</sub> *	–	48	67	mΩ	I <sub>D</sub> = 2.5A, V <sub>GS</sub> = 4.5V
		–	50	70	mΩ	I <sub>D</sub> = 2.5A, V <sub>GS</sub> = 4V
		–	70	98	mΩ	I <sub>D</sub> = 2.5A, V <sub>GS</sub> = 2.5V
Forward transfer admittance	Y <sub>fs</sub>  *	2	–	–	S	V <sub>DS</sub> = 10V, I <sub>D</sub> = 2.5A
Input capacitance	C <sub>iss</sub>	–	270	–	pF	V <sub>DS</sub> = 10V
Output capacitance	C <sub>oss</sub>	–	70	–	pF	V <sub>GS</sub> =0V
Reverse transfer capacitance	C <sub>rss</sub>	–	40	–	pF	f=1MHz
Turn-on delay time	t <sub>d (on)</sub> *	–	8	–	ns	V <sub>DD</sub> ≐ 15V
Rise time	t <sub>r</sub> *	–	15	–	ns	I <sub>D</sub> = 1.25A
Turn-off delay time	t <sub>d (off)</sub> *	–	27	–	ns	V <sub>GS</sub> = 4.5V
Fall time	t <sub>f</sub> *	–	11	–	ns	R <sub>L</sub> =12Ω
Total gate charge	Q <sub>g</sub> *	–	3.7	5.2	nC	R <sub>θ</sub> =10Ω
Gate-source charge	Q <sub>gs</sub> *	–	0.7	–	nC	V <sub>DD</sub> ≐ 15V
Gate-drain charge	Q <sub>gd</sub> *	–	1.2	–	nC	V <sub>GS</sub> = 4.5V
						I <sub>D</sub> = 2.5A

\*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V <sub>SD</sub>	–	–	1.2	V	I <sub>S</sub> = 0.6A, V <sub>GS</sub> =0V

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