

# 2.5V Drive Nch MOSFET

AEC-Q101 Qualified

## RTL035N03FRA

●Structure

Silicon N-channel MOSFET

●Features

- 1) Low On-resistance.
- 2) Space saving, small surface mount package (TUMT6).
- 3) Low voltage drive (2.5V drive).

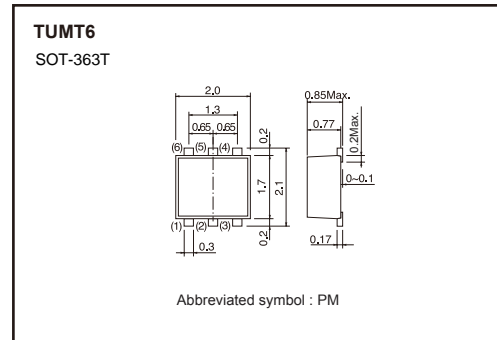
●Applications

Switching

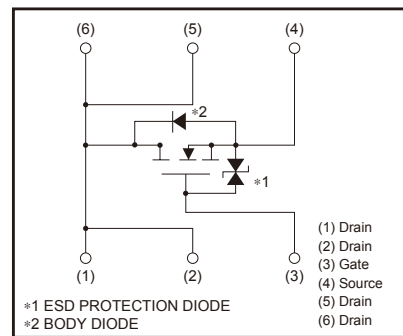
●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
RTL035N03FRA		○

●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>	±3.5	A
	Pulsed	I <sub>DP</sub> *1	±14	A
Source current (Body diode)	Continuous	I <sub>S</sub>	0.8	A
	Pulsed	I <sub>SP</sub> *1	14	A
Total power dissipation	P <sub>D</sub> *2	1.0	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> *	125	°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	$R_{DS(on)}$ *	–	40	56	$m\Omega$	$I_D=3.5A, V_{GS}=4.5V$
		–	42	59	$m\Omega$	$I_D=3.5A, V_{GS}=4V$
		–	56	79	$m\Omega$	$I_D=3.5A, V_{GS}=2.5V$
Forward transfer admittance	$ Y_{fs} $ *	3	–	–	S	$V_{DS}=10V, I_D=3.5A$
Input capacitance	$C_{iss}$	–	350	–	pF	$V_{DS}=10V$
Output capacitance	$C_{oss}$	–	90	–	pF	$V_{GS}=0V$
Reverse transfer capacitance	$C_{rss}$	–	55	–	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}$ *	–	9	–	ns	$V_{DD}\doteq 15V$
Rise time	$t_r$ *	–	25	–	ns	$I_D=1.75A$
Turn-off delay time	$t_{d(off)}$ *	–	32	–	ns	$V_{GS}=4.5V$
Fall time	$t_f$ *	–	20	–	ns	$R_L=8.6\Omega$
Total gate charge	$Q_g$ *	–	4.6	6.4	nC	$V_{DD}\doteq 15V, V_{GS}=4.5V$
Gate-source charge	$Q_{gs}$ *	–	0.8	–	nC	$I_D=3.5A$
Gate-drain charge	$Q_{gd}$ *	–	1.5	–	nC	$R_L=4.3\Omega, R_G=10\Omega$

\*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	$V_{SD}$	–	–	1.2	V	$I_S=0.8A, V_{GS}=0V$

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