AEC-Q101 Qualified

2.5V Drive Nch MOSFET

RJU003N03FRA

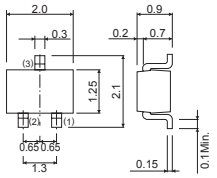
●Structure
Silicon N-channel MOSFET

●Features
1) Low On-resistance.
2) Low voltage drive (2.5V drive).

●Applications
Switching

●Dimensions (Unit : mm)

UMT3



(1) Source
(2) Gate
(3) Drain

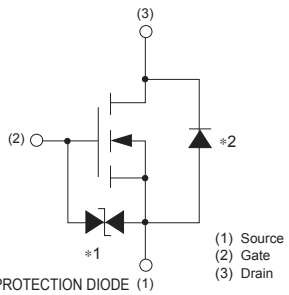
Each lead has same dimensions

Abbreviated symbol : LP

●Packaging specifications and hFE

Type	Package	Taping
	Code	T106
	Basic ordering unit (pieces)	3000
RJU003N03FRA		○

●Inner circuit



(1) Source
(2) Gate
(3) Drain

*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}	±12	V
Drain current	Continuous	I_D	±300	mA
	Pulsed	I_{DP} *1	±1.2	A
Total power dissipation		P_D *2	200	mW
Channel temperature		Tch	150	°C
Range of storage temperature		Tstg	−55 to +150	°C

*1 Pw≤10μs, Duty cycle≤1%
*2 Each terminal mounted on a recommended land

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth(ch-a) *	625	°C/W

* Each terminal mounted on a recommended land

●**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	$V_{GS\ (th)}$	0.8	–	1.5	V	V_{DS}= 10V, I_D= 1mA
Static drain-source on-state resistance	$R_{DS\ (on)}$*	–	0.8	1.1	Ω	I_D= 300mA, V_{GS}= 4.5V
		–	0.9	1.3	Ω	I_D= 300mA, V_{GS}= 4V
		–	1.4	1.9	Ω	I_D= 300mA, V_{GS}= 2.5V
Forward transfer admittance	$\|Y_{fs}\|$ *	0.4	–	–	S	V_{DS}= 10V, I_D= 300mA
Input capacitance	C_{iss}	–	24	–	pF	V_{DS}= 10V
Output capacitance	C_{oss}	–	11	–	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	–	5	–	pF	f=1MHz
Turn-on delay time	$t_{d\ (on)}$ *	–	6	–	ns	V_{DD}≒ 15V I_D= 150mA V_{GS}= 4V R_L=100Ω R_G=10Ω
Rise time	t_r *	–	4	–	ns	
Turn-off delay time	$t_{d\ (off)}$ *	–	9	–	ns	
Fall time	t_f *	–	32	–	ns	

*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= 200mA, V_{GS}=0V

●Electrical characteristics curves

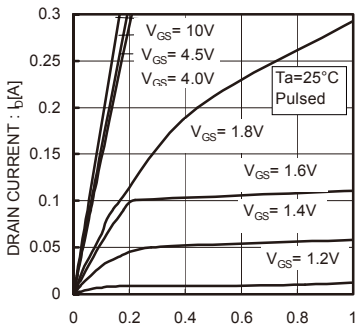


Fig.1 Typical Output Characteristics(Ⅰ)

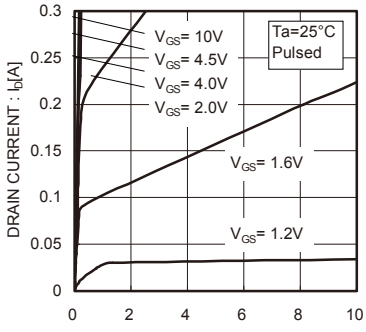


Fig.2 Typical Output Characteristics(Ⅱ)

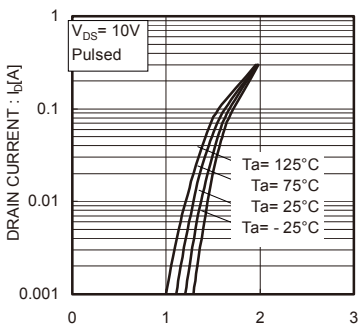


Fig.3 Typical Transfer Characteristics

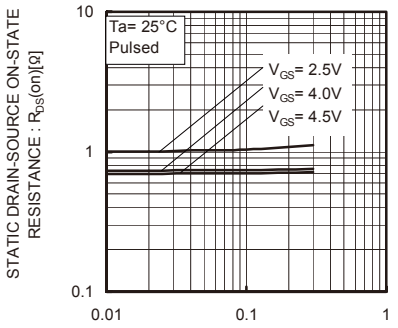


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(Ⅰ)

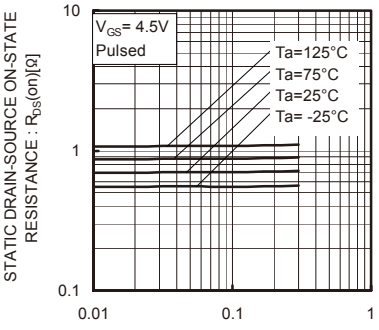


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(Ⅱ)

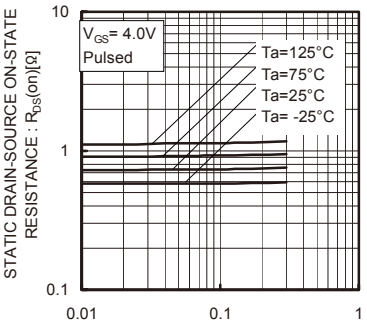


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(Ⅲ)

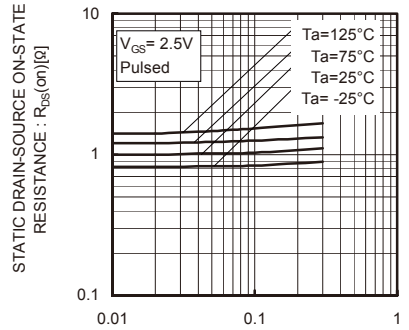


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(Ⅳ)

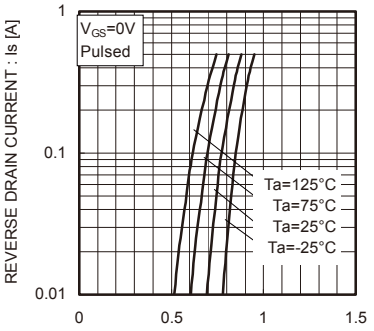


Fig.8 Reverse Drain Current vs. Sourse-Drain Voltage

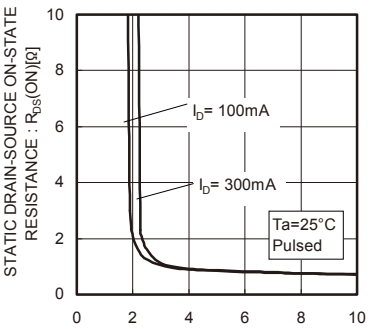


Fig.9 Static Drain-Source On-State Resistance vs. Gate Source Voltage

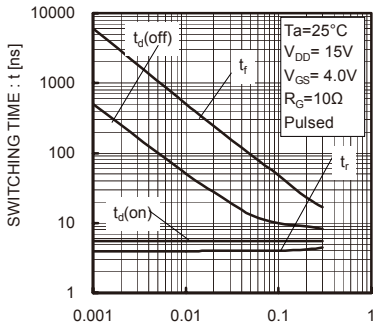


Fig.10 Switching Characteristics

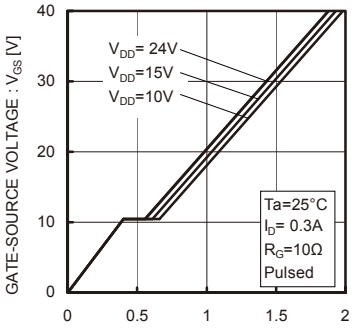


Fig.11 Dynamic Input Characteristics

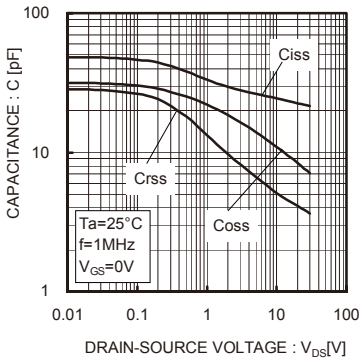


Fig.12 Typical Capacitance vs. Drain-Source Voltage

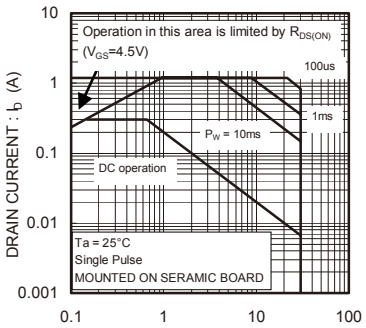


Fig.13 Maximum Safe Operating Aera

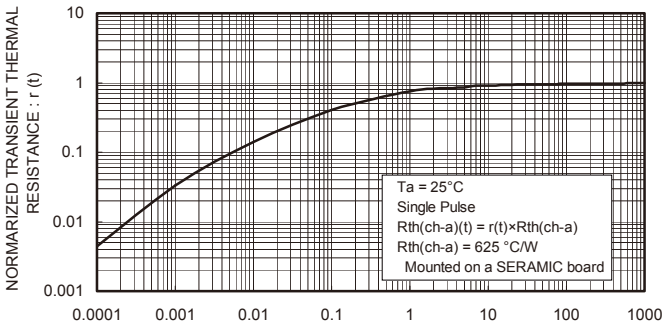


Fig.14 Normalized Transient Thermal Resistance vs. Pulse Width