4V Drive Pch MOSFET

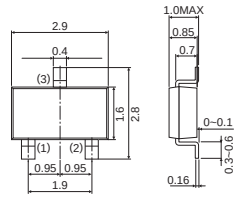
RRR030P03

●Structure
Silicon P-channel MOSFET

●Features
1) Low On-resistance
2) Space saving-small surface mount package (TSMT3)
3) 4V drive

●Dimensions (Unit : mm)

TSMT3



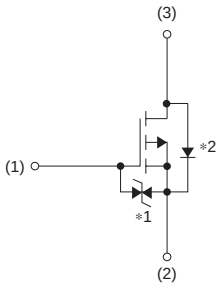
(1) Gate
(2) Source
(3) Drain

Each lead has same dimensions

Abbreviated symbol : UA

●Applications
Switching

●Inner circuit



*1 ESD PROTECTION DIODE
*2 BODY DIODE

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

●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RRR030P03		◯

●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	±3	A
	Pulsed	I_{DP} *1	±12	A
Source current (Body diode)	Continuous	I_S	−0.8	A
	Pulsed	I_{SP} *1	−12	A
Total power dissipation		P_D *2	1.0	W
Channel temperature		Tch	150	°C
Range of storage temperature		Tstg	−55 to +150	°C

*1 Pw≤10μs, Duty cycle≤1%
*2 When mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth(ch-a)*	125	°C/W

* When 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	$R_{DS\ (on)}$*	–	55	75	mΩ	I_D= –3A, V_{GS}= –10V
		–	85	115	mΩ	I_D= –1.5A, V_{GS}= –4.5V
		–	95	125	mΩ	I_D= –1.5A, V_{GS}= –4V
Forward transfer admittance	$\|Y_{fs}\|$ *	2.4	–	–	S	V_{DS}= –10V, I_D= –3A
Input capacitance	C_{iss}	–	480	–	pF	V_{DS}= –10V
Output capacitance	C_{oss}	–	70	–	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	–	70	–	pF	f=1MHz
Turn-on delay time	$t_{d\ (on)}$ *	–	7	–	ns	V_{DD} ≒ –15V
Rise time	t_r *	–	18	–	ns	I_D= –1.5A
Turn-off delay time	$t_{d\ (off)}$ *	–	50	–	ns	V_{GS}= –10V R_L ≒ 10Ω
Fall time	t_f *	–	35	–	ns	R_{GS}=10Ω
Total gate charge	Q_g *	–	5.2	–	nC	V_{DD} ≒ –15V, I_D= –3A
Gate-source charge	Q_{gs} *	–	1.6	–	nC	V_{GS}= –5V
Gate-drain charge	Q_{gd} *	–	1.6	–	nC	R_L ≒ 5Ω, 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= –3A, V_{GS}=0V

*Pulsed

●Electrical characteristic curves

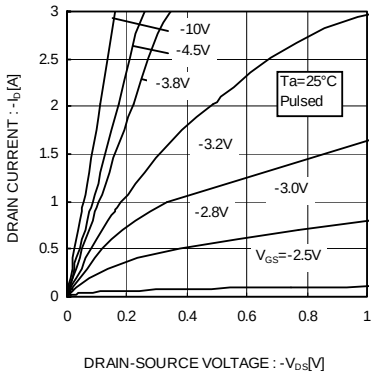


Fig.1 Typical output characteristics(Ⅰ)

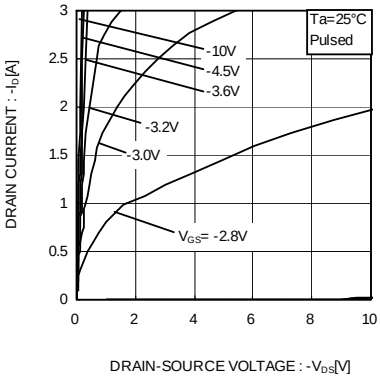


Fig.2 Typical output characteristics(Ⅱ)

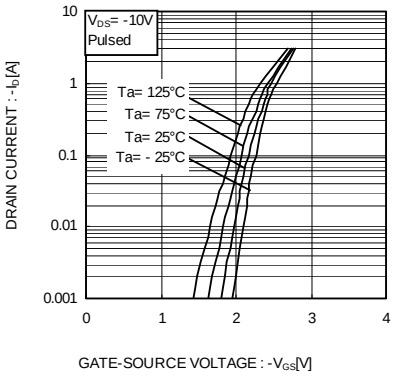


Fig.3 Typical Transfer Characteristics

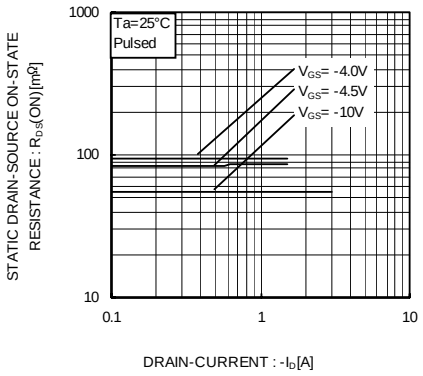


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(Ⅰ)

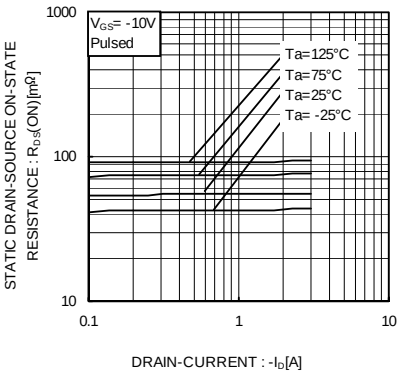


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(Ⅱ)

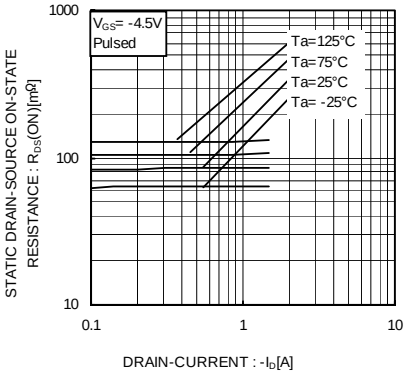


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(Ⅲ)

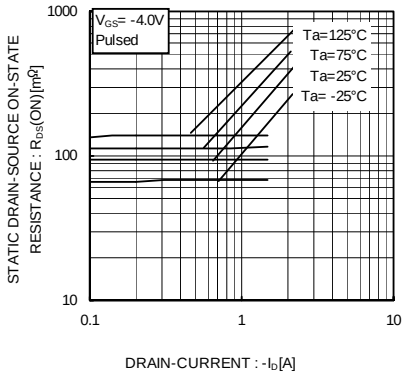


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(Ⅳ)

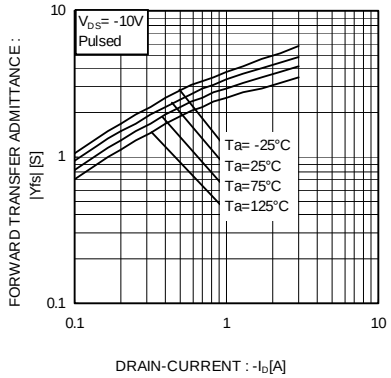


Fig.8 Forward Transfer Admittance vs. Drain Current

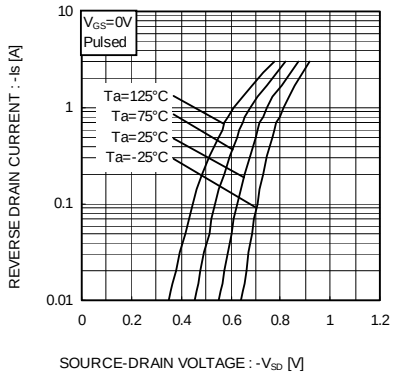


Fig.9 Reverse Drain Current vs. Sourse-Drain Voltage

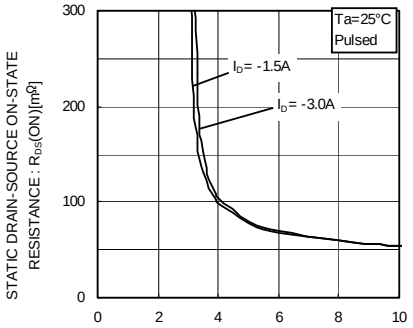


Fig.10 Static Drain-Source On-State Resistance vs. Gate Source Voltage

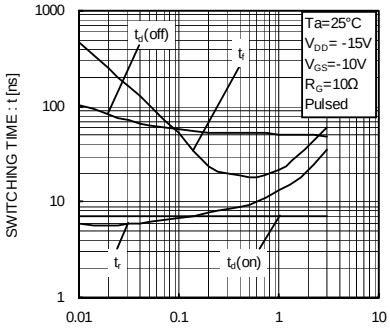


Fig.11 Switching Characteristics

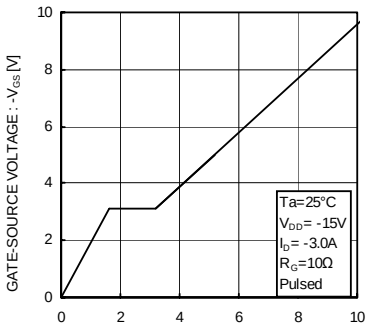


Fig.12 Dynamic Input Characteristics

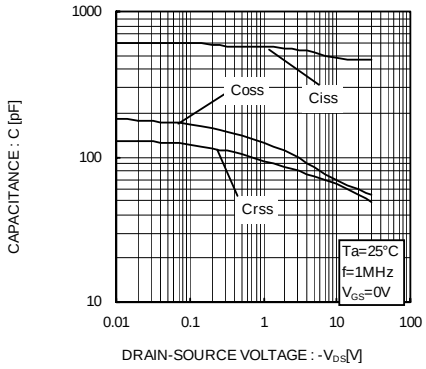


Fig.13 Typical Capacitance vs. Drain-Source Voltage

●Measurement circuit

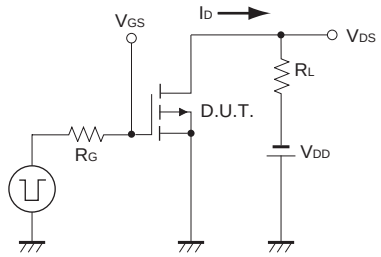


Fig.1-1 Switching Time Measurement Circuit

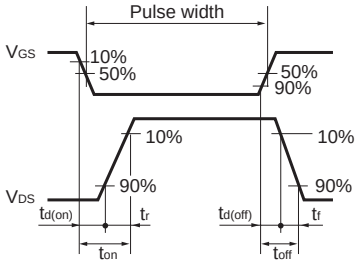


Fig.1-2 Switching Waveforms

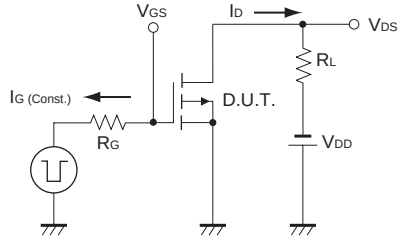


Fig.2-1 Gate Charge Measurement Circuit

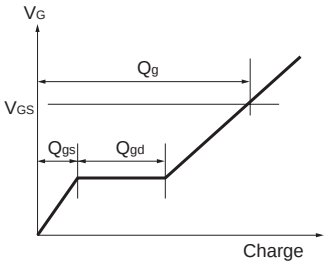


Fig.2-2 Gate Charge Waveform

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