

10V Drive Nch MOSFET

R5019ANJ

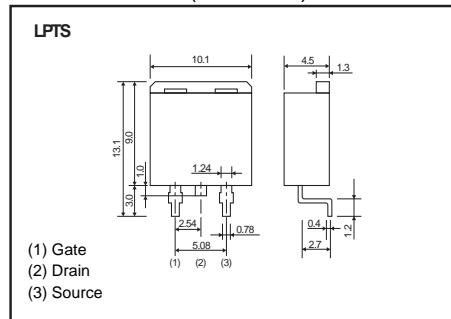
● Structure

Silicon N-channel MOSFET

● Features

- 1) Low on-resistance.
- 2) High-speed switching.
- 3) Wide SOA.
- 4) Drive circuits can be simple.
- 5) Parallel use is easy.

● Dimensions (Unit : mm)



● Application

Switching

● Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	1000
R5019ANJ	O	

● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V _{DSS}	500	V
Gate-source voltage	V _{GSS}	±30	V
Drain current	Continuous	I _D *3	A
	Pulsed	I _{DP} *1	A
Source current (Body Diode)	Continuous	I _S *3	A
	Pulsed	I _{SP} *1	A
Avalanche current	I _{AS} *2	9.5	A
Avalanche energy	E _{AS} *2	24.3	mJ
Power dissipation	P _D *4	100	W
Channel temperature	T _{ch}	150	°C
Range of storage temperature	T _{stg}	-55 to +150	°C

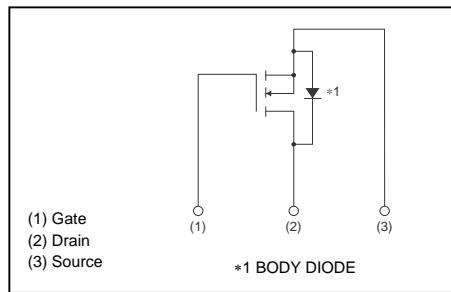
*1 P_w≤10μs, Duty cycle≤1%

*2 L=500μH, V_{DD}=50V, R_G=25Ω, T_{ch}=25°C

*3 Limited only by maximum temperature allowed.

*4 T_C=25°C

● Inner circuit



● Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to Case	R _{th} (ch-c)	1.25	°C / W

● Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I _{GSS}	-	-	±100	nA	V _{GS} =±30V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR)DSS}	500	-	-	V	I _D =1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	-	-	100	μA	V _{DS} =500V, V _{GS} =0V
Gate threshold voltage	V _{GS (th)}	2.5	-	4.5	V	V _{DS} =10V, I _D =1mA
Static drain-source on-state resistance	R _{DS (on)} *	-	0.18	0.24	Ω	I _D =9.5A, V _{GS} =10V
Forward transfer admittance	Y _{fs} *	6.5	-	-	S	V _{DS} =10V, I _D =9.5A
Input capacitance	C _{iss}	-	2050	-	pF	V _{DS} =25V
Output capacitance	C _{oss}	-	1200	-	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	-	50	-	pF	f=1MHz
Turn-on delay time	t _{d(on)} *	-	40	-	ns	V _{DD} =250V, I _D =9.5A
Rise time	t _r *	-	115	-	ns	V _{GS} =10V
Turn-off delay time	t _{d(off)} *	-	165	-	ns	R _L =26.3Ω
Fall time	t _f *	-	100	-	ns	R _G =10Ω
Total gate charge	Q _g *	-	55	-	nC	V _{DD} =250V
Gate-source charge	Q _{gs} *	-	11	-	nC	I _D =19A
Gate-drain charge	Q _{gd} *	-	24	-	nC	V _{GS} =10V

*Pulsed

● Body diode characteristics (Source-Drain)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	V _{SD} *	-	-	1.5	V	I _S =19A, V _{GS} =0V

*Pulsed

● Electrical characteristic curves

Fig.1 Typical Output Characteristics (I)

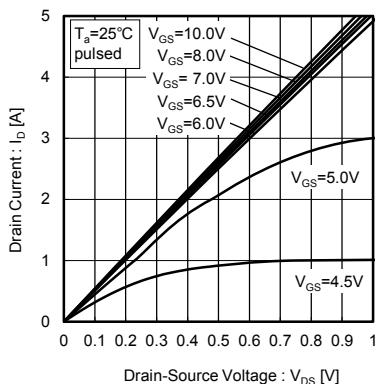


Fig.2 Typical Output Characteristics (II)

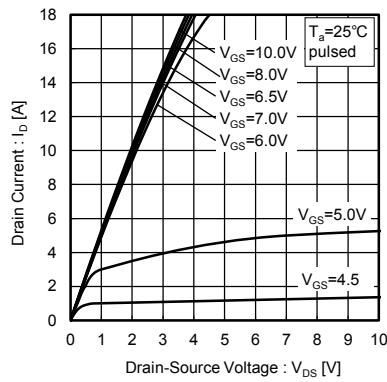


Fig.3 Typical Transfer Characteristics

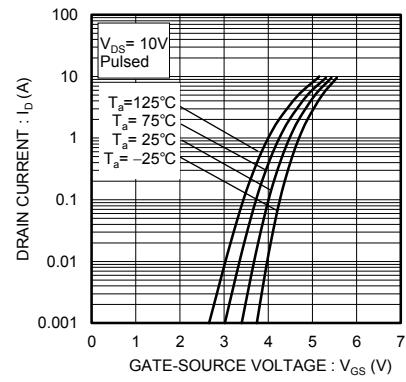


Fig.4 Gate Threshold Voltage vs. Channel Temperature

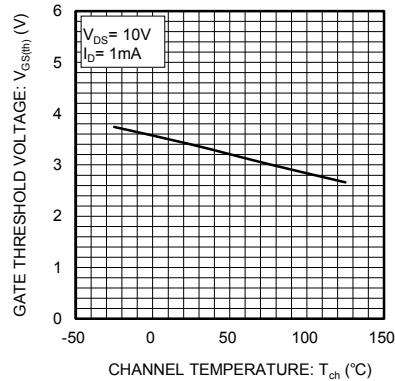


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

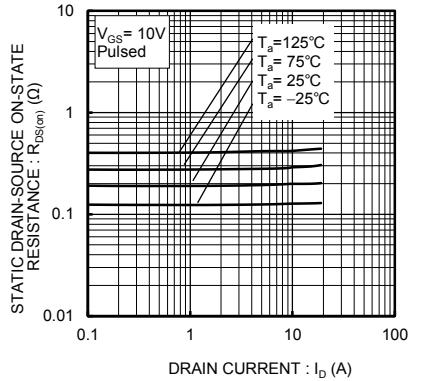


Fig.6 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

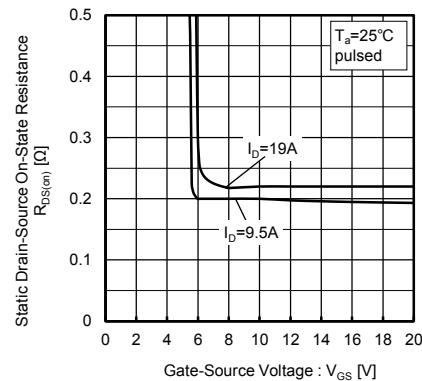


Fig.7 Static Drain-Source On-State Resistance vs. Channel Temperature

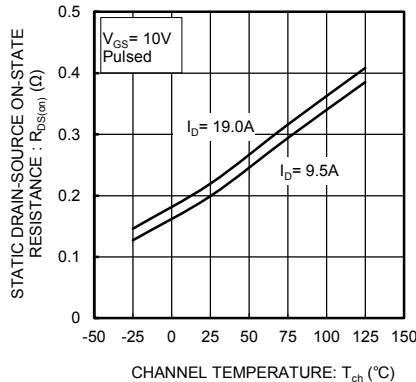


Fig.8 Forward Transfer Admittance vs. Drain Current

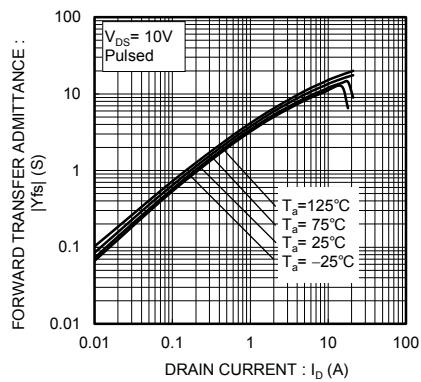
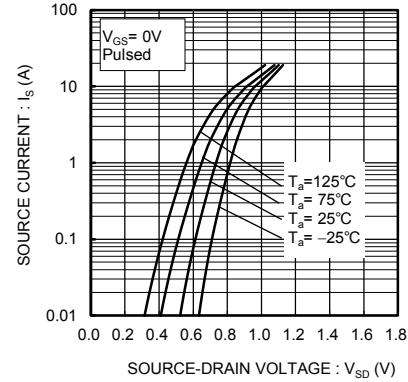
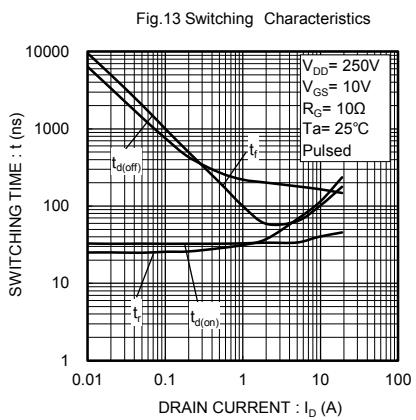
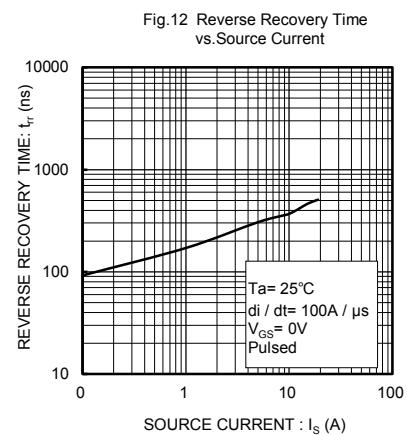
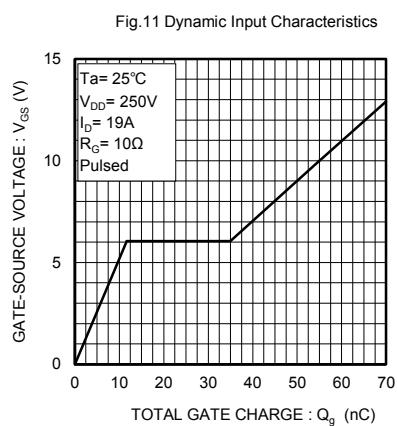
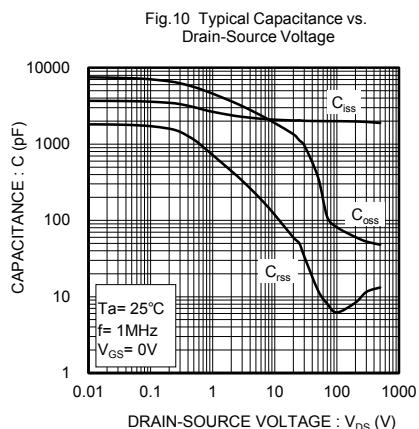


Fig.9 Source Current vs. Source-Drain Voltage





● Measurement circuits

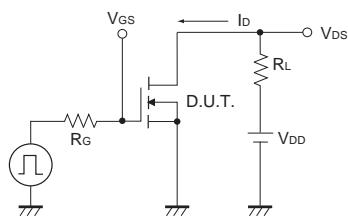


Fig.1-1 Switching Time Measurement Circuit

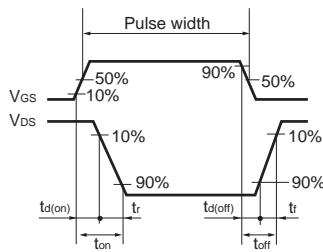


Fig.1-2 Switching Waveforms

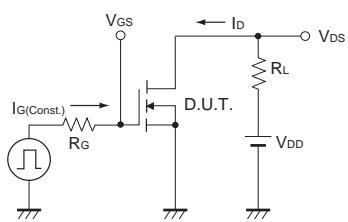


Fig.2-1 Gate Charge Measurement Circuit

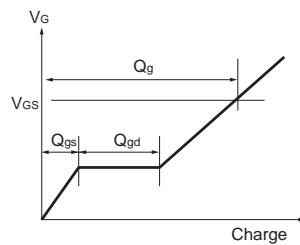


Fig.2-2 Gate Charge Waveform

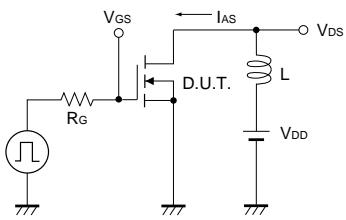


Fig.3-1 Avalanche Measurement Circuit

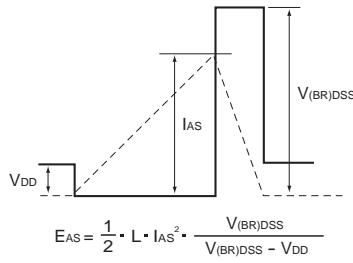


Fig.3-2 Avalanche Waveform

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