

10V Drive Nch MOSFET

R6020ANJ

●Structure

Silicon N-channel MOSFET

●Features

- 1) Low on-resistance.
- 2) Fast switching speed.
- 3) Gate-source voltage (V_{GS}) guaranteed to be $\pm 30V$.
- 4) Drive circuits can be simple.
- 5) Parallel use is easy.

●Applications

Switching

●Packaging specifications

<LPTS>

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	1000
R6020ANJ		○

<LPTL>

Type	Package	Taping
	Code	TLL
	Basic ordering unit (pieces)	1000
R6020ANJ		○

●Absolute maximum ratings ($T_a=25^\circ C$)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DS}	600	V
Gate-source voltage		V_{GS}	± 30	V
Drain current	Continuous	I_D *3	± 20	A
	Pulsed	I_{DP} *1	± 80	A
Source current (Body Diode)	Continuous	I_S *3	20	A
	Pulsed	I_{SP} *1	80	A
Avalanche Current		I_{AS} *2	10	A
Avalanche Energy		E_{AS} *2	26.7	mJ
Total power dissipation ($T_c=25^\circ C$)		P_D	100	W
Channel temperature		T_{ch}	150	$^\circ C$
Range of storage temperature		T_{stg}	-55 to $+150$	$^\circ C$

*1 $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$

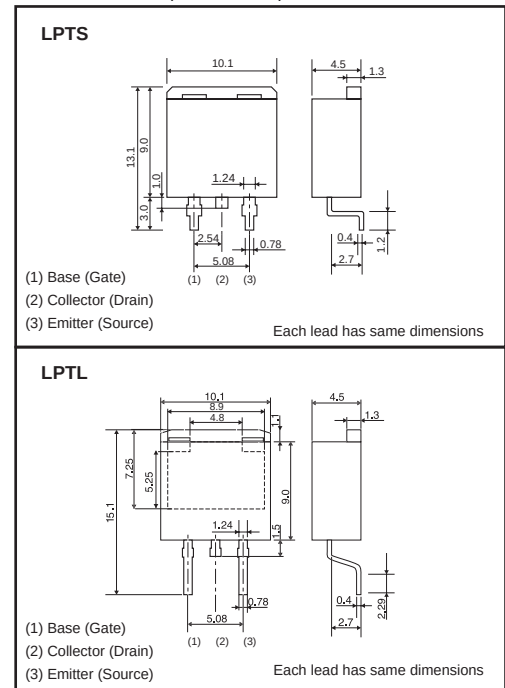
*2 $L = 500\mu H$, $V_{DD} = 50V$, $R_G = 25\Omega$, Starting, $T_{ch} = 25^\circ C$

*3 Limited only by maximum temperature allowed

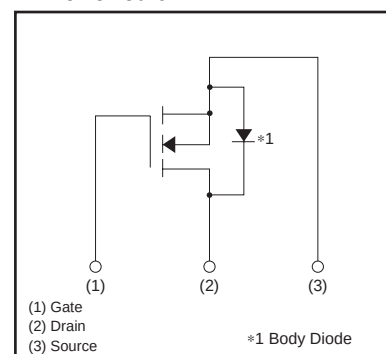
●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to case	$R_{th(ch-c)}$	1.25	$^\circ C/W$

●Dimensions (Unit : mm)



●Inner circuit



●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	—	—	±100	nA	$V_{GS}=\pm 30V$, $V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	600	—	—	V	$I_D=1mA$, $V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}	—	—	100	μA	$V_{DS}=600V$, $V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	2.5	—	4.5	V	$V_{DS}=10V$, $I_D=1mA$
Static drain-source on-state resistance	$R_{DS(on)}^*$	—	0.19	0.25	Ω	$I_D=10A$, $V_{GS}=10V$
Forward transfer admittance	$ Y_{fs} ^*$	7	—	—	S	$I_D=10A$, $V_{DS}=10V$
Input capacitance	C_{iss}	—	2040	—	pF	$V_{DS}=25V$
Output capacitance	C_{oss}	—	1660	—	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{rss}	—	70	—	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}^*$	—	40	—	ns	$I_D=10A$, $V_{DD}\approx 300V$
Rise time	t_r^*	—	60	—	ns	$V_{GS}=10V$
Turn-off delay time	$t_{d(off)}^*$	—	230	—	ns	$R_L=30\Omega$
Fall time	t_f^*	—	70	—	ns	$R_G=10\Omega$
Total gate charge	Q_g^*	—	65	—	nC	$V_{DD}\approx 300V$
Gate-source charge	Q_{gs}^*	—	10	—	nC	$I_D=20A$
Gate-drain charge	Q_{gd}^*	—	25	—	nC	$V_{GS}=10V$ $R_L=15\Omega / R_G=10\Omega$

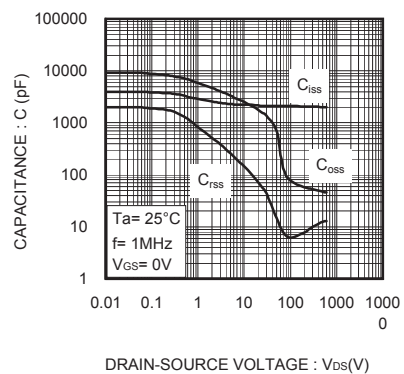
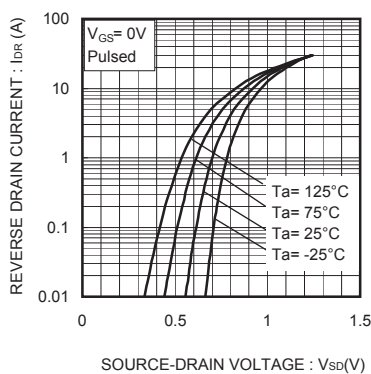
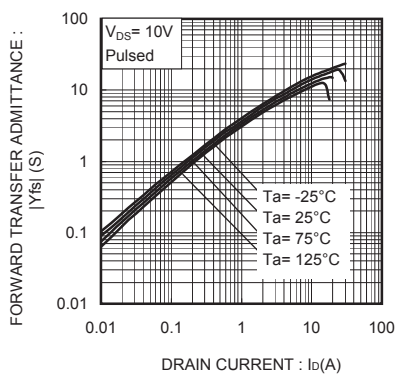
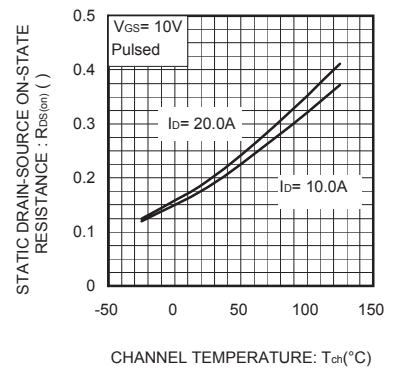
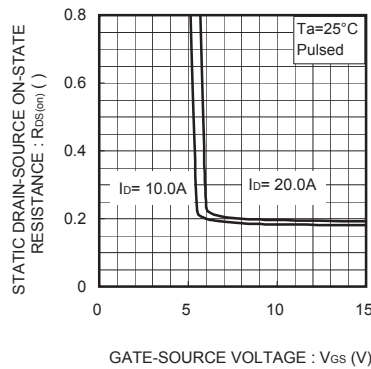
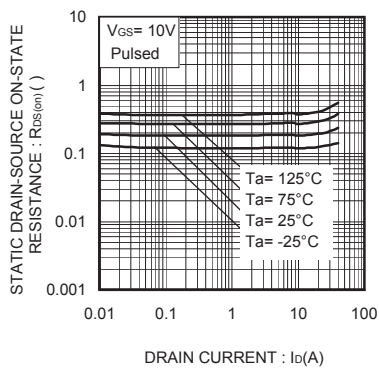
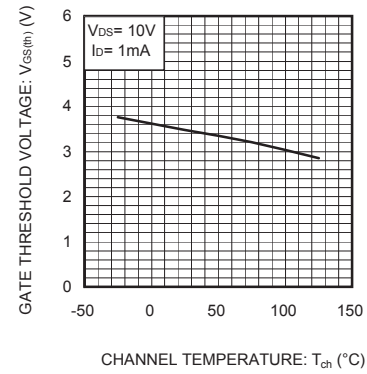
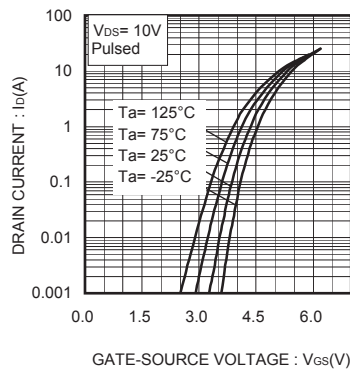
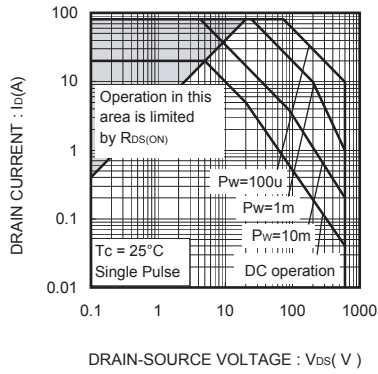
* Pulsed

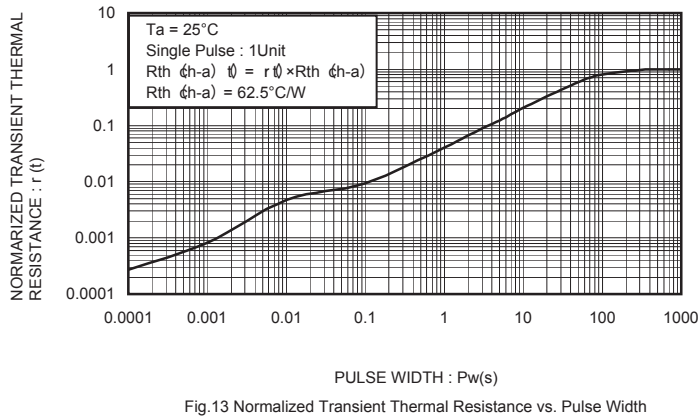
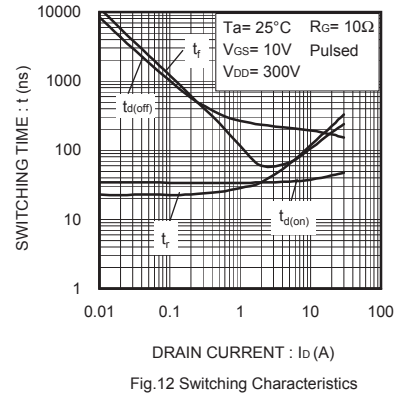
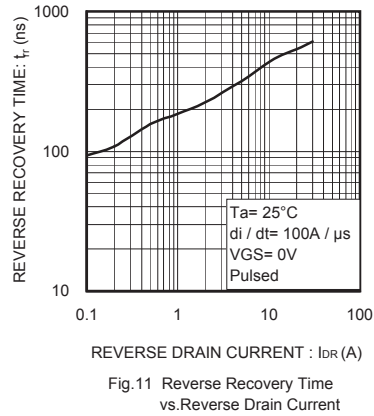
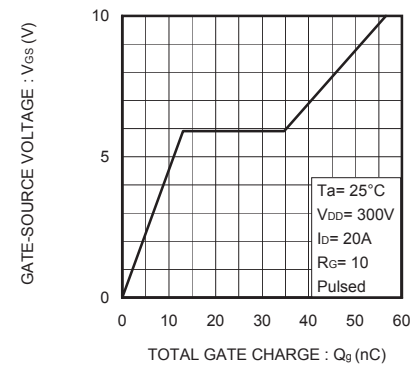
●Body diode characteristics (Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}^*	—	—	1.5	V	$I_S=10A$, $V_{GS}=0V$

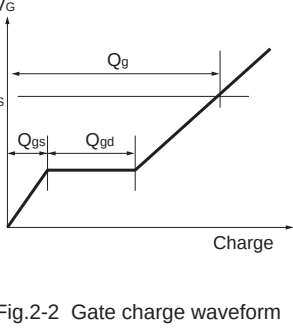
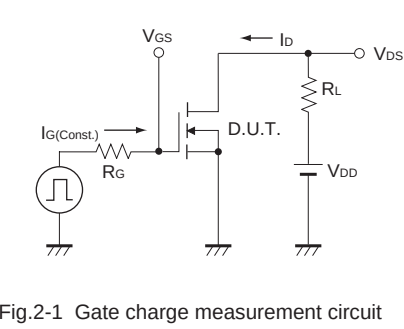
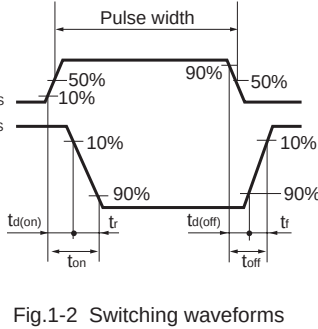
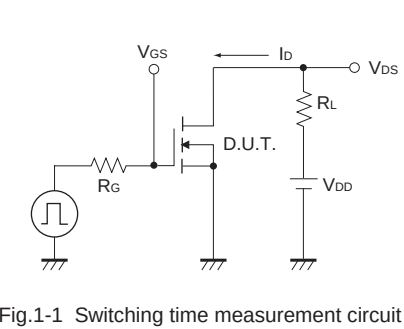
* Pulsed

●Electrical characteristics curves





●Measurement circuits



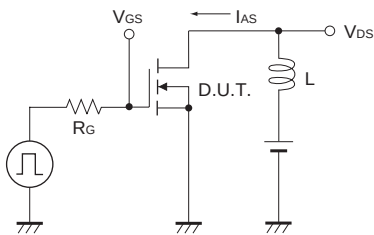


Fig.3-1 Avalanche Measurement circuit

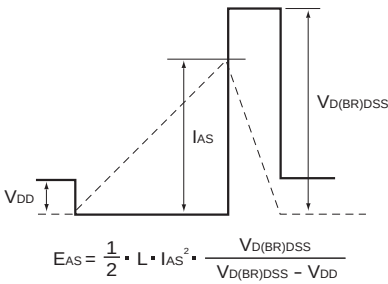


Fig.3-2 Avalanche waveform

Notes

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