

ROHM SEMICONDUCTOR		PRODUCTS TO220AB	TYPE RX1L18BGN	PAGE 1/4
1. TYPE RX1L18BGN				
2. STRUCTURE SILICON N-CHANNEL MOSFET				
3. APPLICATIONS Switching				
4. ABSOLUTE MAXIMUM RATINGS [T _a =25°C,unless otherwise specified]				
DRAIN-SOURCE VOLTAGE			V _{DSS} ... 60V	
GATE-SOURCE VOLTAGE			V _{GSS} ... ±20V	
DRAIN CURRENT		CONTINUOUS	I _D ^{*1} ... ±180A (V _{GS} =10V)	
		PULSED	I _{DP} ^{*2} ... ±360A	
SOURCE CURRENT		CONTINUOUS	I _S ... 138A	
(BODY DIODE)		PULSED	I _{SP} ^{*2} ... 360A	
AVALANCHE CURRENT, SINGLE PULSE			I _{AS} ^{*3} ... 40A	
AVALANCHE ENERGY, SINGLE PULSE			E _{AS} ^{*3} ... 61mJ	
POWER DISSIPATION			P _D ^{*1} ... 166W	
JUNCTION TEMPERATURE			T _j ... 150°C	
OPERATING JUNCTION AND STORAGE TEMPERATURE RANGE			T _{stg} ... -55~150°C	
5. THERMAL RESISTANCE				
JUNCTION TO CASE			R _{th(j-c)} ^{*1} ... 0.75°C/W	
REMARK		*1 T _c =25°C, Limited only by maximum temperature allowed. *2 P _w ≤10μs , Duty cycle≤1% *3 L≈0.05mH, V _{DD} =30V, R _G =25Ω, STARTING T _j =25°C Fig.3-1,3-2		
DESIGN	CHECK	APPROVAL	DATE: 2016/03/15	SPECIFICATION No.:TSQ03346-RX1L18BGN
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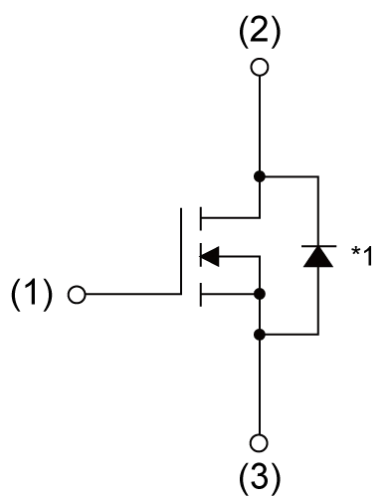
6.ELECTRICAL CHARACTERISTICS [T_a=25°C]

PARAMETER	ITEM	CONDITION		MIN.	TYP.	MAX.
GATE-SOURCE LEAKAGE CURRENT	I _{GSS}	V _{GS} = ±20V/V _{DS} = 0V		-	-	±500nA
DRAIN-SOURCE BREAKDOWN VOLTAGE	V _{(BR)DSS}	I _D = 1mA/V _{GS} = 0V		60V	-	-
ZERO GATE VOLTAGE DRAIN CURRENT	I _{DSS}	V _{DS} = 60V/V _{GS} = 0V		-	-	5μA
GATE THRESHOLD VOLTAGE	V _{GS(th)}	V _{DS} = V _{GS} /I _D = 200μA		1.0V	-	2.5V
STATIC DRAIN-SOURCE ON-STATE RESISTANCE	R _{DS(on)} *PULSED	I _D = 180A/V _{GS} = 10V		-	2.00mΩ	2.70mΩ
		I _D = 90A/V _{GS} = 4.5V		-	2.77mΩ	4.16mΩ
FORWARD TRANSFER ADMITTANCE	Y _{fs} *PULSED	V _{DS} = 5V/I _D = 90A		60S	-	-
INPUT CAPACITANCE	C _{iss}	V _{DS} = 30V V _{GS} = 0V f = 1MHz		-	7100pF	-
OUTPUT CAPACITANCE	C _{oss}			-	1380pF	-
REVERSE TRANSFER CAPACITANCE	C _{rss}			-	350pF	-
GATE RESISTANCE	R _G	f= 1MHz,open drain		-	1.5Ω	-
TURN-ON DELAY TIME	t _{d(on)} *PULSED	V _{DD} ≐ 30V I _D = 50A V _{GS} = 10V R _L = 0.6Ω R _G = 10Ω See Fig.1-1, 1-2		-	33ns	-
RISE TIME	t _r *PULSED			-	48ns	-
TURN-OFF DELAY TIME	t _{d(off)} *PULSED			-	180ns	-
FALL TIME	t _f *PULSED			-	250ns	-
TOTAL GATE CHARGE	Q _g *PULSED	V _{DD} ≐ 30V I _D = 50A See Fig.2-1, 2-2	V _{GS} = 10V	-	139nC	-
				-	74nC	-
GATE-SOURCE CHARGE	Q _{gs} *PULSED		V _{GS} = 4.5V	-	30nC	-
GATE-DRAIN CHARGE	Q _{gd} *PULSED			-	27nC	-

BODY DIODE (SOURCE-DRAIN)

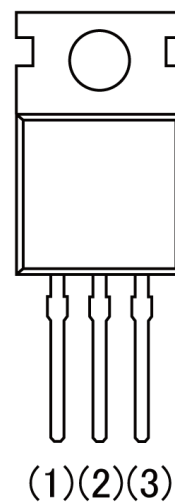
PARAMETER	ITEM	CONDITION	MIN.	TYP.	MAX.
FORWARD VOLTAGE	V _{SD} *PULSED	I _S = 138A/V _{GS} = 0V	-	-	1.2V
REVERSE RECOVERY TIME	t _{rr} *PULSED	I _S = 50A/V _{GS} = 0V di/dt = 100A/μs	-	58ns	-
REVERSE RECOVERY CHARGE	Q _{rr} *PULSED		-	84nC	-

7. INNER CIRCUIT

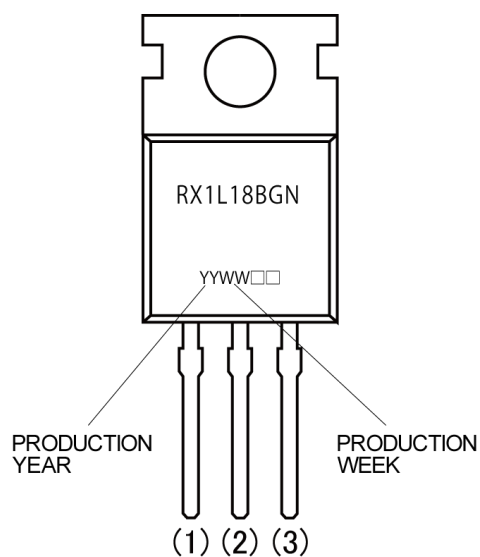


(1) Gate
(2) Drain
(3) Source

*1 Body Diode



8. MARKING



9. MEASUREMENT CIRCUIT

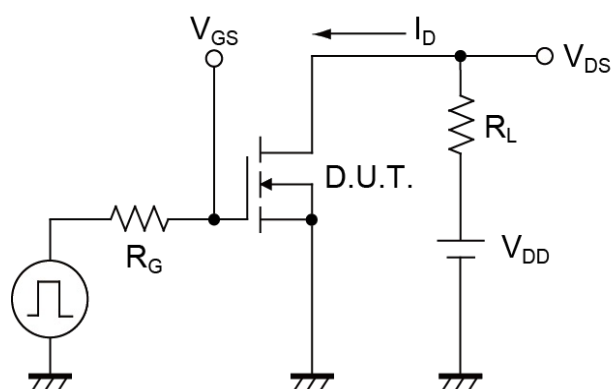


Fig.1-1 Switching Time Measurement Circuit

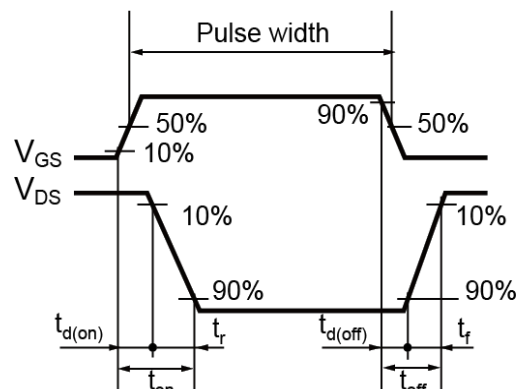


Fig.1-2 Switching Waveforms

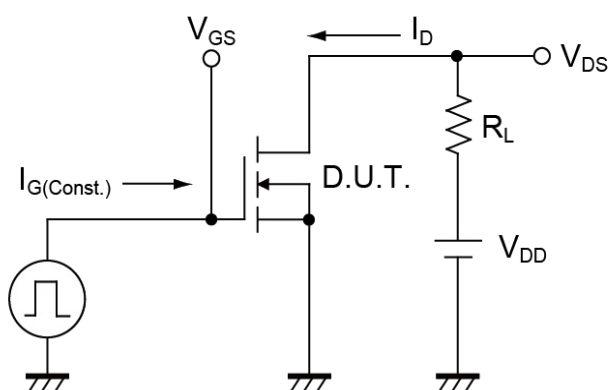


Fig.2-1 Gate Charge Measurement Circuit

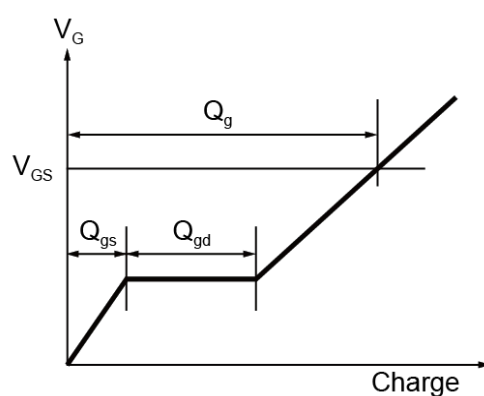


Fig.2-2 Gate Charge Waveform

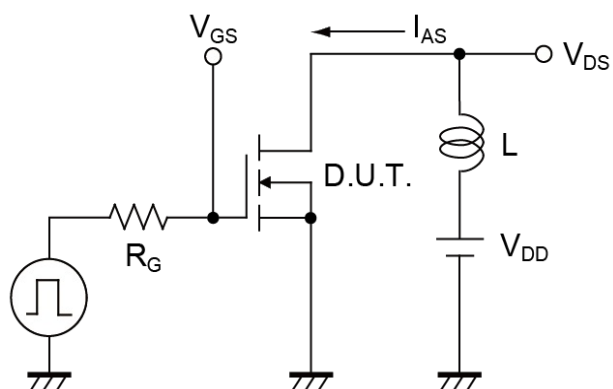


Fig.3-1 Avalanche Measurement Circuit

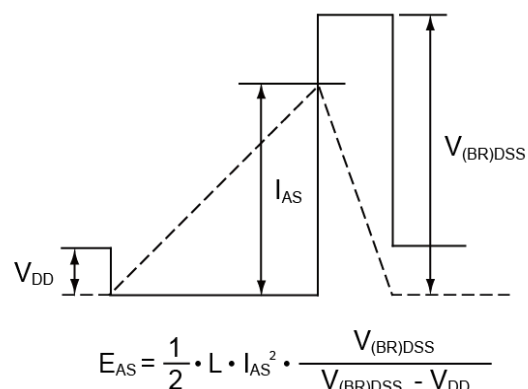


Fig.3-2 Avalanche Waveform