1.TYPE RD3G500GN

2.STRUCTURE SILICON N-CHANNEL MOS FET

3.APPLICATIONS SWITCHING

4.ABSOLUTE MAXIMUM RATINGS [T_a=25℃]

DRAIN-SOURCE VOLTAGE		V_{DSS}	・・・	40V	
GATE-SOURCE VOLTAGE		V_{GSS}	・・・	±20V	
DRAIN CURRENT	CONTINUOUS	I_D	・・・	±50A	
	PULSED	I_{DP}	・・・	±100A	Pw≤10μs, Duty cycle≤1%
SOURCE CURRENT (BODY DIODE)	CONTINUOUS	I_S	・・・	29A	
	PULSED	I_{SP}	・・・	100A	Pw≤10μs, Duty cycle≤1%
AVALANCHE CURRENT		I_{AS}	・・・	50A	L≒50uH, V_{DD}=20V, R_G=25Ω STARTING T_{ch}=25℃ See Fig.3-1, 3-2
AVALANCHE ENERGY		E_{AS}	・・・	94mJ	L≒50uH, V_{DD}=20V, R_G=25Ω STARTING T_{ch}=25℃ See Fig.3-1, 3-2
POWER DISSIPATION		P_D	・・・	35W	T_c=25℃
CHANNEL TEMPERATURE		T_{ch}	・・・	150℃	
RANGE OF STORAGE TEMPERATURE		T_{stg}	・・・	-55~150℃	

5.THERMAL RESISTANCE

CHANNEL TO CASE		$R_{th(ch-c)}$	・・・	3.5℃/W	T_c=25℃

*Limited only by maximum channel temperature allowed.

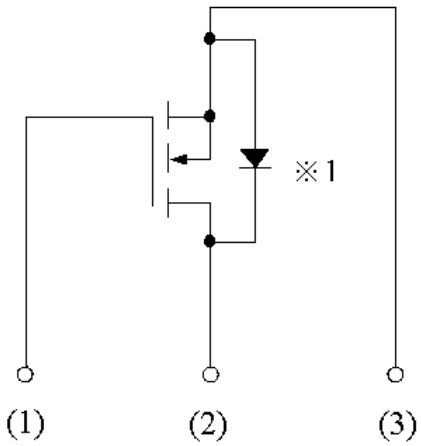
6.ELECTRICAL CHARACTERISTICS [T_a=25℃]

PARAMETER	ITEM	CONDITION		MIN.	TYP.	MAX.
GATE-SOURCE-LEAKAGE	I_{GSS}	V_{GS}=±20V / V_{DS}=0V		-	-	±500nA
DRAIN-SOURCE BREAKDOWN VOLTAGE	$V_{(BR)DSS}$	I_D=1mA / V_{GS}=0V		40V	-	-
ZERO GATE VOLTAGE DRAIN CURRENT	I_{DSS}	V_{DS}=40V / V_{GS}=0V		-	-	1uA
GATE THRESHOLD VOLTAGE	$V_{GS(th)}$	V_{GS}=V_{DS} / I_D=1mA		1.0V	-	2.5V
STATIC DRAIN-SOURCE ON-STATE RESISTANCE	$R_{DS(on)}$ *PULSED	I_D=50A / V_{GS}=10V		-	3.9mΩ	4.9mΩ
		I_D=50A / V_{GS}=4.5V		-	4.7mΩ	6.3mΩ
FORWARD TRANSFER ADMITTANCE	$\|Y_{fs}\|$ *PULSED	V_{DS}=5V / I_D=25A		25S	-	-
INPUT CAPACITANCE	C_{iss}	V_{DS}=20V V_{GS}=0V f=1MHz		-	2280pF	-
OUTPUT CAPACITANCE	C_{oss}			-	370pF	-
REVERSE TRANSFER CAPACITANCE	C_{rss}			-	100pF	-
TURN-ON DELAY TIME	$t_{d(on)}$ *PULSED	V_{DD}≒20V I_D=50A V_{GS}=10V R_L=0.4Ω R_G=10Ω See Fig.1-1, 1-2		-	12.5ns	-
RISE TIME	t_r *PULSED			-	7.5ns	-
TURN-OFF DELAY TIME	$t_{d(off)}$ *PULSED			-	65ns	-
FALL TIME	t_f *PULSED			-	10ns	-
TOTAL GATE CHARGE	Q_g *PULSED	V_{DD}≒20V I_D=50A See Fig.2-1, 2-2	V_{GS}=10V	-	31nC	-
			V_{GS}=4.5V	-	16nC	-
GATE-SOURCE CHARGE	Q_{gs} *PULSED			-	5.9nC	-
GATE-DRAIN CHARGE	Q_{gd} *PULSED			-	4.5nC	-

BODY DIODE (SOURCE-DRAIN)

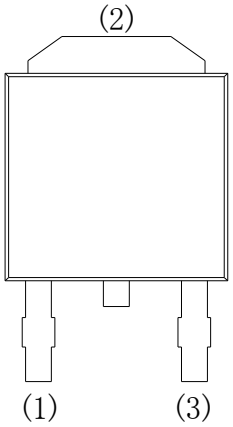
PARAMETER	ITEM	CONDITION	MIN.	TYP.	MAX.
FORWARD VOLTAGE	V_{SD} *PULSED	I_S=29A / V_{GS}=0V	-	-	1.2V

7.INNER CIRCUIT

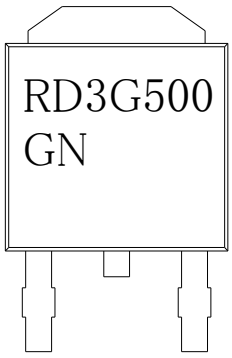


※1 BODY DIODE

(1) GATE
(2) DRAIN
(3) SOURCE



8.MARKING



9.MEASUREMENT CIRCUIT

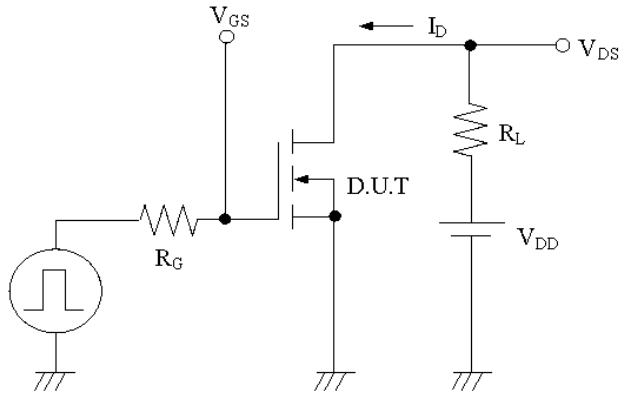


Fig.1-1 SWITCHING TIME MEASUREMENT CIRCUIT

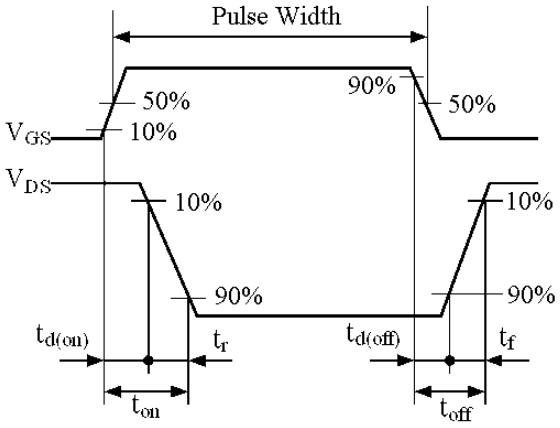


Fig.1-2 SWITCHING WAVEFORMS

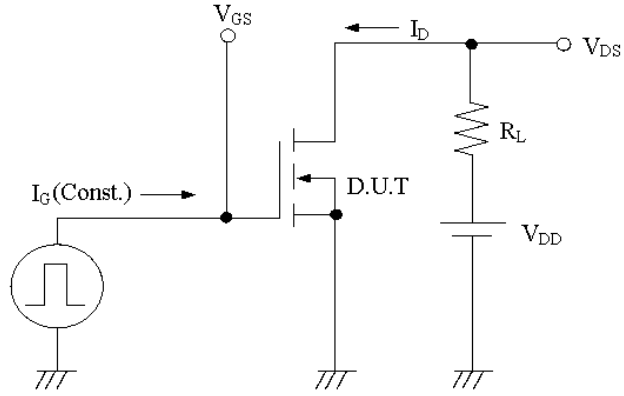


Fig.2-1 GATE CHARGE MEASUREMENT CIRCUIT

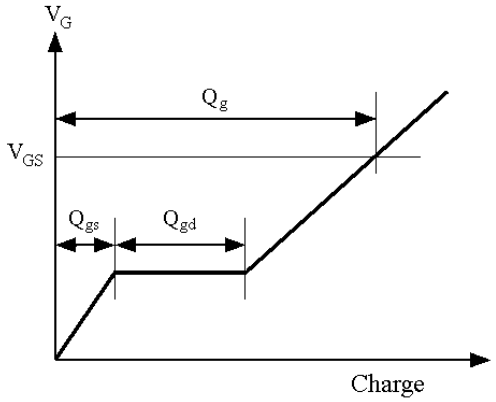


Fig.2-2 GATE CHARGE WAVEFORM

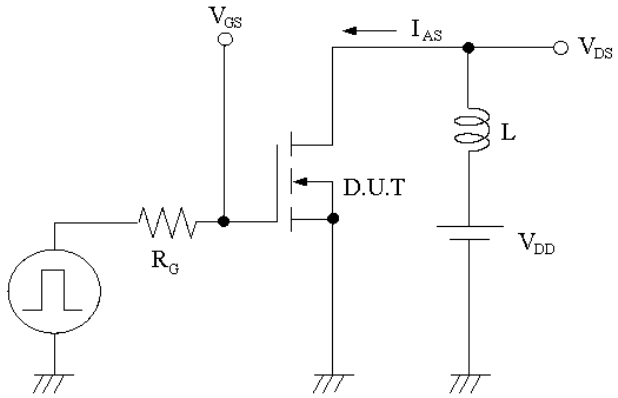


Fig.3-1 AVALANCHE MEASUREMENT CIRCUIT

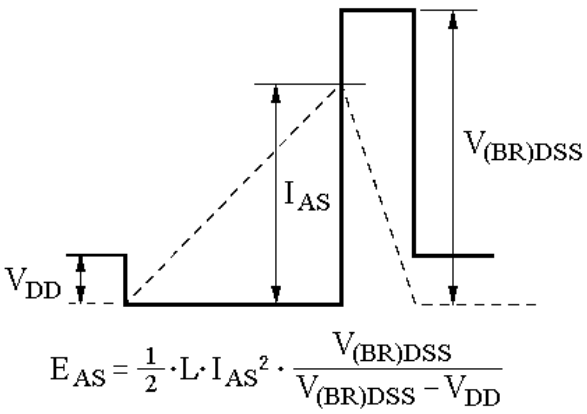


Fig.3-2 AVALANCHE WAVEFORM