

1.TYPE RSH140N03

2.STRUCTURE SILICON N-CHANNEL MOS FET

3.APPLICATIONS SWITCHING

 4.ABSOLUTE MAXIMUM RATINGS [$T_a=25^{\circ}\text{C}$]

 DRAIN-SOURCE VOLTAGE V_{DSS} ... 30V

 GATE-SOURCE VOLTAGE V_{GSS} ... $\pm 20\text{V}$

 DRAIN CURRENT CONTINUOUS I_D ... $\pm 14\text{A}$

 PULSED I_{DP} ... $\pm 56\text{A}$ PW 10 μs , Duty cycle 1%

 SOURCE CURRENT CONTINUOUS I_S ... 1.6A
 (BODY DIODE)

 PULSED I_{SP} ... 6.4A PW 10 μs , Duty cycle 1%

 POWER DISSIPATION P_D ... 2.0W
 MOUNTED ON A CERAMIC BOARD

 CHANNEL TEMPERATURE T_{ch} ... 150°C

 RANGE OF STORAGE TEMPERATURE T_{stg} ... $-55\sim 150^{\circ}\text{C}$

5.THERMAL RESISTANCE

 CHANNEL TO AMBIENT $R_{th(ch-a)}$... 62.5°C/W
 MOUNTED ON A CERAMIC BOARD

DESIGN

CHECK

APPROVAL

DATE: 23/OCT/2009

SPECIFICATION No. Q03080-RSH140N03

REV.: 0

ROHM Co.,Ltd.

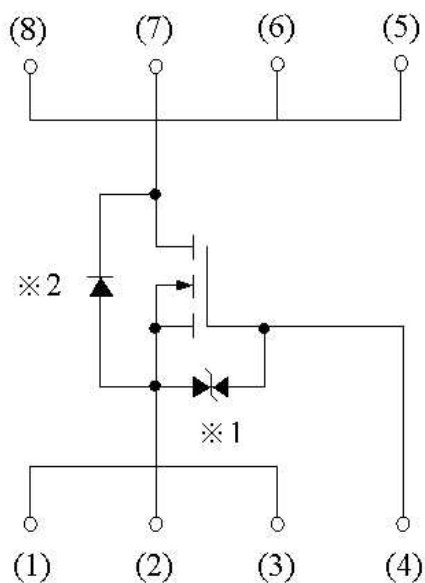
6.ELECTRICAL CHARACTERISTICS [$T_a=25^{\circ}\text{C}$]

PARAMETER	ITEM	CONDITION	MIN.	TYP.	MAX.
GATE-SOURCE LEAKAGE	I_{GSS}	$V_{GS}=\pm 20V / V_{DS}=0V$	–	–	$\pm 10 \mu A$
DRAIN-SOURCE BREAKDOWN VOLTAGE	$V_{(BR)DSS}$	$I_D=1mA / V_{GS}=0V$	30V	–	–
ZERO GATE VOLTAGE DRAIN CURRENT	I_{DSS}	$V_{DS}=30V / V_{GS}=0V$	–	–	$1 \mu A$
GATE THRESHOLD VOLTAGE	$V_{GS(th)}$	$V_{DS}=10V / I_D=1mA$	1.0V	–	2.5V
STATIC DRAIN-SOURCE ON-STATE RESISTANCE	$R_{DS(on)}$ *PULSED	$I_D=14A / V_{GS}=10V$	–	4.9m Ω	6.9m Ω
		$I_D=14A / V_{GS}=4.5V$	–	6.0m Ω	8.4m Ω
		$I_D=14A / V_{GS}=4.0V$	–	6.5m Ω	9.1m Ω
FORWARD TRANSFER ADMITTANCE	$ Y_{fs} $ *PULSED	$V_{DS}=10V / I_D=14A$	13S	–	–
INPUT CAPACITANCE	C_{iss}	$V_{DS}=10V$ $V_{GS}=0V$ $f=1MHz$	–	3150pF	–
OUTPUT CAPACITANCE	C_{oss}		–	830pF	–
REVERSE TRANSFER CAPACITANCE	C_{rss}		–	500pF	–
TURN-ON DELAY TIME	$t_{d(on)}$ *PULSED	$V_{DD} \approx 15V$ $I_D=7.0A$ $V_{GS}=10V$ $R_L=2.15 \Omega$ $R_G=10 \Omega$ See Fig.1-1,1-2	–	16ns	–
RISE TIME	t_r *PULSED		–	52ns	–
TURN-OFF DELAY TIME	$t_{d(off)}$ *PULSED		–	125ns	–
FALL TIME	t_f *PULSED		–	78ns	–
TOTAL GATE CHARGE	Q_g *PULSED	$V_{DD} \approx 15V$ $I_D=14A$ $V_{GS}=5.0V$ See Fig.2-1,2-2	–	37nC	52nC
GATE-SOURCE CHARGE	Q_{gs} *PULSED		–	6.2nC	–
GATE-DRAIN CHARGE	Q_{gd} *PULSED		–	13.5nC	–

BODY DIODE (SOURCE-DRAIN)

PARAMETER	ITEM	CONDITION	MIN.	TYP.	MAX.
FORWARD VOLTAGE	V_{SD} *PULSED	$I_S=6.4A / V_{GS}=0V$	–	–	1.2V

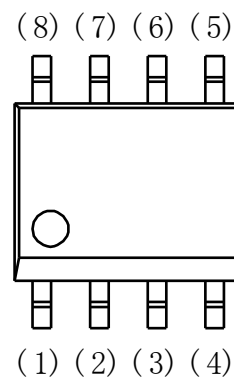
7. INNER CIRCUIT



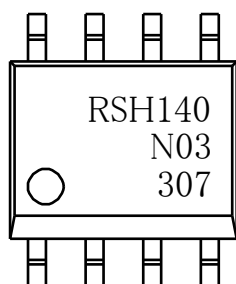
- (1) SOURCE
- (2) SOURCE
- (3) SOURCE
- (4) GATE
- (5) DRAIN
- (6) DRAIN
- (7) DRAIN
- (8) DRAIN

※1 ESD PROTECTION DIODE

※2 BODY DIODE



8. MARKING



" 307 " MEANS PRODUCTION YEAR AND WEEK.

" ○ " MEANS 1pin MARK.

9. MEASUREMENT CIRCUIT

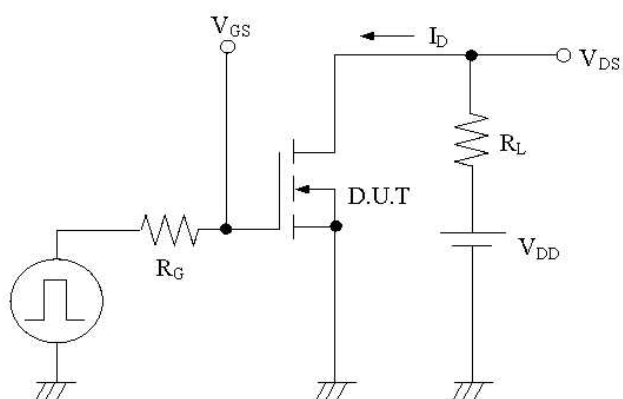


Fig.1-1 SWITCHING TIME MEASUREMENT CIRCUIT

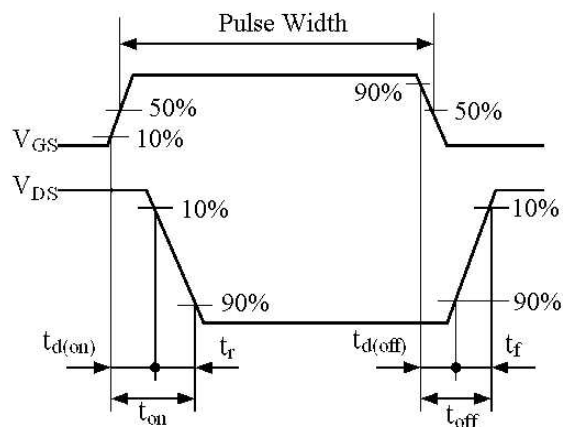


Fig.1-2 SWITCHING WAVEFORMS

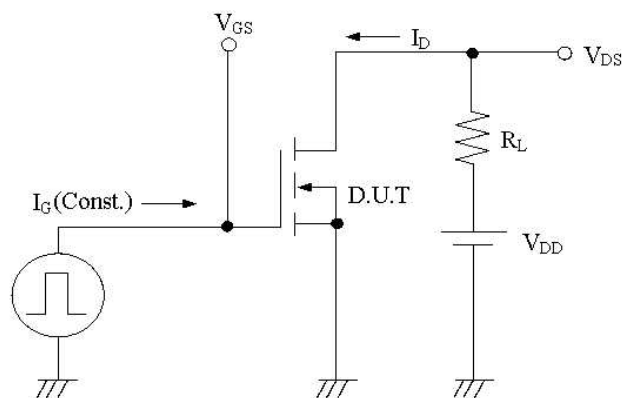


Fig.2-1 GATE CHARGE MEASUREMENT CIRCUIT

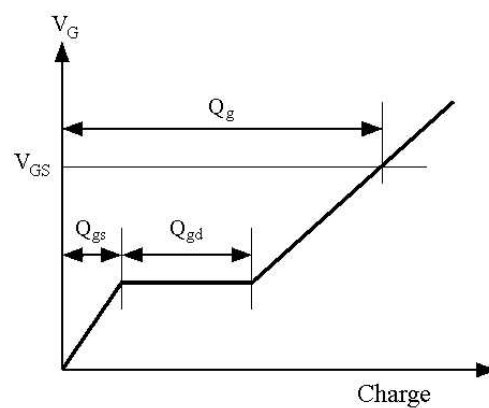


Fig.2-2 GATE CHARGE WAVEFORM