



**THE DATASHEET OF
RSH140N03TB1**



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 (BODY DIODE)	CONTINUOUS	I_S	...	1.6A	
	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
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DESIGN	CHECK	APPROVAL	DATE: 23/OCT/2009	SPECIFICATION No. Q03080-RSH140N03
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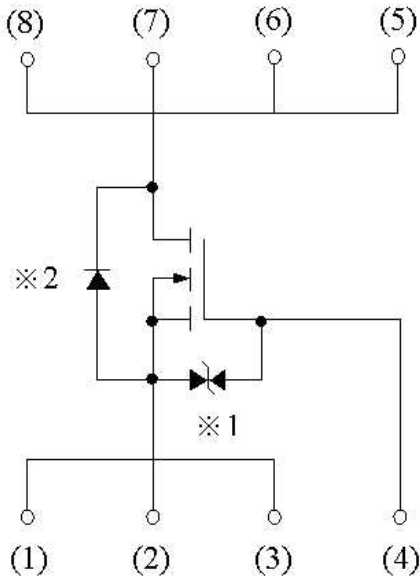
6.ELECTRICAL CHARACTERISTICS [T_a=25°C]

PARAMETER	ITEM	CONDITION	MIN.	TYP.	MAX.
GATE-SOURCE LEAKAGE	I _{GSS}	V _{GS} =±20V / V _{DS} =0V	-	-	±10 μA
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 μA
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	-	4.9mΩ	6.9mΩ
		I _D =14A / V _{GS} =4.5V	-	6.0mΩ	8.4mΩ
		I _D =14A / V _{GS} =4.0V	-	6.5mΩ	9.1mΩ
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} ≈15V I _D =7.0A V _{GS} =10V R _L =2.15Ω R _G =10Ω 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} ≈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	-

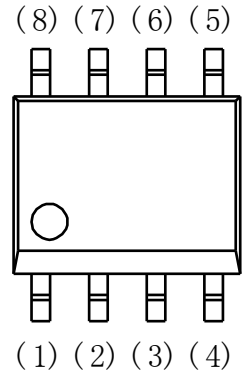
BODY DIODE (SOURCE-DRAIN)

PARAMETER	ITEM	CONDITION	MIN.	TYP.	MAX.
FORWARD VOLTAGE	V _{SD} *PULSED	I _S =6.4A / V _{GS} =0V	-	-	1.2V

7. INNER CIRCUIT

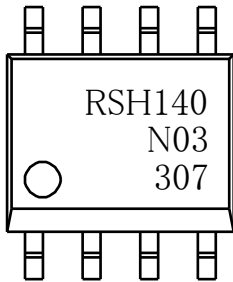


- (1) SOURCE
- (2) SOURCE
- (3) SOURCE
- (4) GATE
- (5) DRAIN
- (6) DRAIN
- (7) DRAIN
- (8) DRAIN



- ※1 ESD PROTECTION DIODE
- ※2 BODY DIODE

8. MARKING



" 307 " MEANS PRODUCTION YEAR AND WEEK.

" ○ " MEANS 1pin MARK.

9.MEASUREMENT CIRCUIT

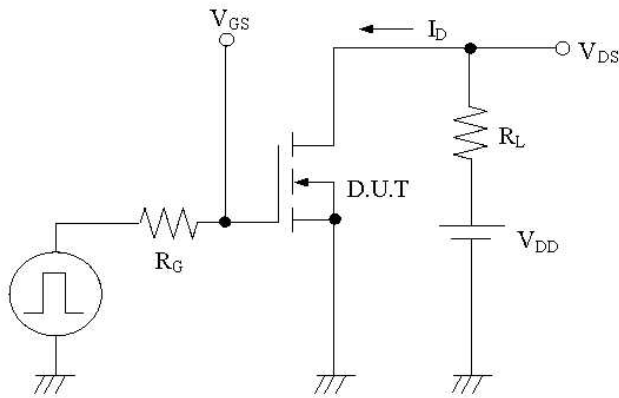


Fig.1-1 SWITCHING TIME MEASUREMENT CIRCUIT

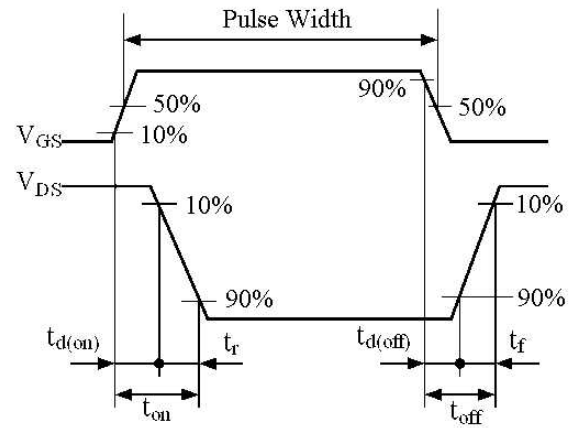


Fig.1-2 SWITCHING WAVEFORMS

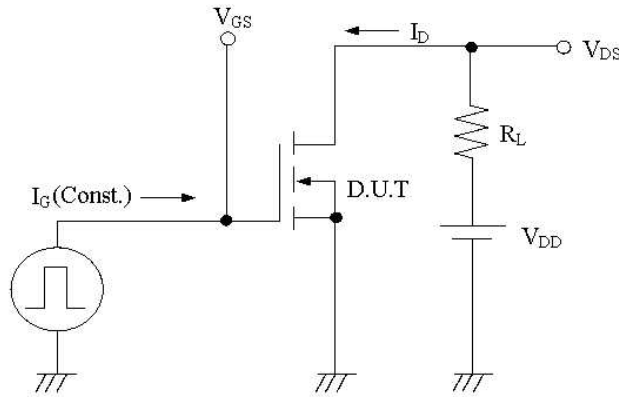


Fig.2-1 GATE CHARGE MEASUREMENT CIRCUIT

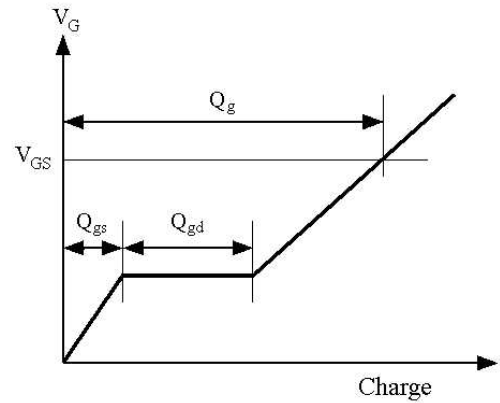




Fig.2-2 GATE CHARGE WAVEFORM

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