

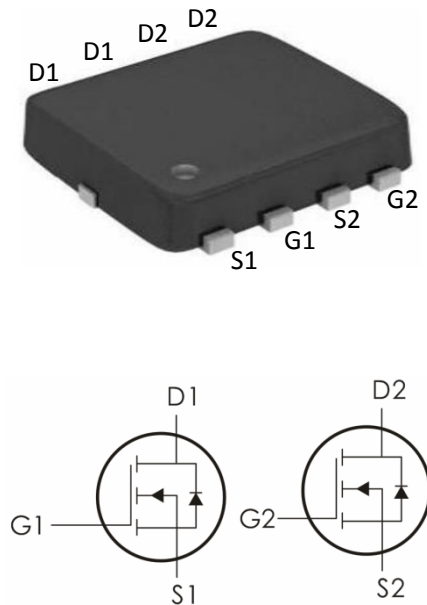
Description:

This Dual N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=100V, I_D=15A, R_{DS(ON)}<50m\ \Omega @V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
NH050DNG	H050DN	DFN5*6-8D	5000 pcs/Reel

Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	15	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	10	
I_{DM}	Pulsed Drain Current ¹	72	
P_D	Power Dissipation	28	W
E_{AS}	Single pulse avalanche energy ²	36	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	4.46	$^\circ\text{C}/\text{W}$

$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	50	$^{\circ}C/W$
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Electrical Characteristics: ($T_C=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250 \mu A$	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=100V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics ^(Note3)						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250 \mu A$	1	1.5	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance ³	$V_{GS}=10V, I_D=10A$	---	37	50	m Ω
		$V_{GS}=4.5V, I_D=5A$	---	42	55	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, f=1MHz$	---	1980	---	pF
C_{oss}	Output Capacitance		---	95	--	
C_{rss}	Reverse Transfer Capacitance		---	78	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=50V, I_D=15A,$ $R_G=3 \Omega, V_{GS}=10V$	---	10	---	ns
t_r	Rise Time		---	92	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	40	---	ns
t_f	Fall Time		---	67	---	ns
Q_g	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=50V,$ $I_D=15A$	---	20	---	nc
Q_{gs}	Gate-Source Charge		---	3	---	nc
Q_{gd}	Gate-Drain "Miller" Charge		---	15	---	nc
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage ¹	$V_{GS}=0V, I_{SD}=15A$	---	0.85	1.2	V
I_S	Continuous Drain Current ³	$V_D=V_G=0V$	---	---	15	A
I_{SM}	Pulsed Drain Current		---	---	72	A
T_{rr}	Reverse Recovery Time	$I_F=30A, T_J=25^{\circ}C$	---	64	---	ns

Qrr	Reverse Recovery Charge	$di/dt=100A/us$	---	150	---	nc
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Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting $T_J=25C$, $V_{DD}=30V$, $V_G=10V$, $R_G=25ohm$, $L=0.5mH$, $I_{AS}=12A$
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.

Test Circuit

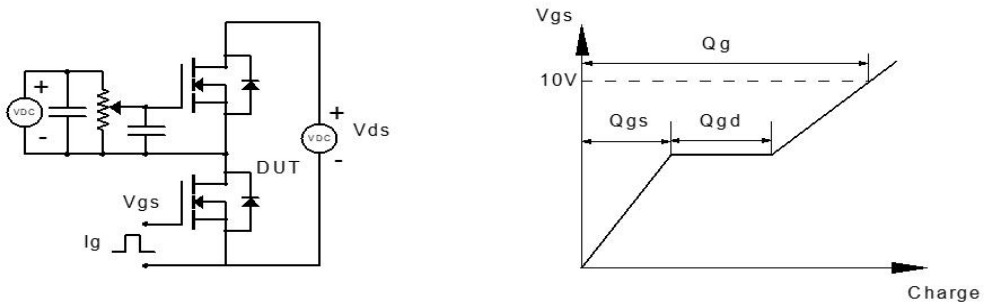


Figure 1: Gate Charge Test Circuit & Waveform

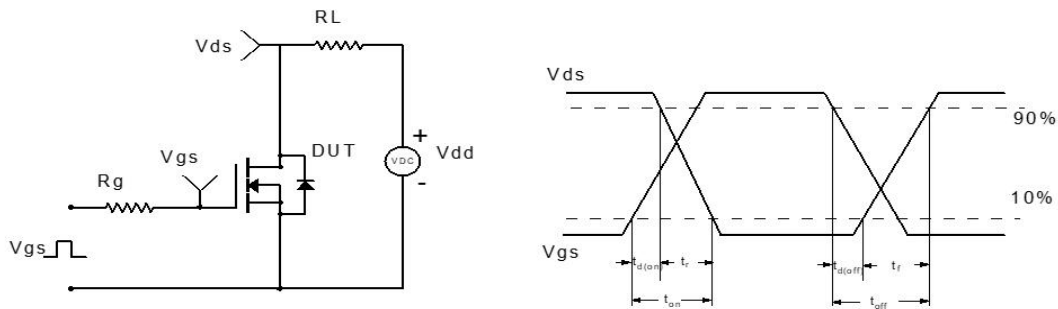


Figure 2: Resistive Switching Test Circuit & Waveform

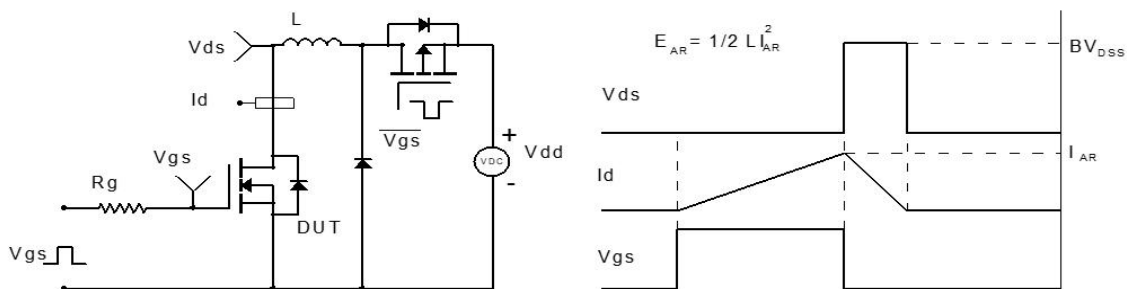


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

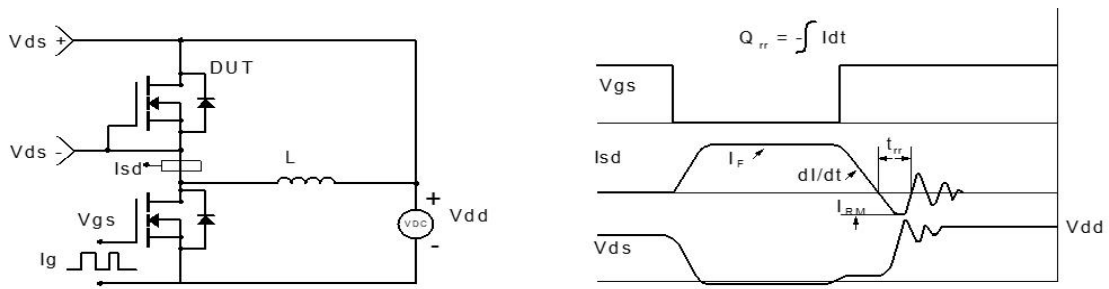
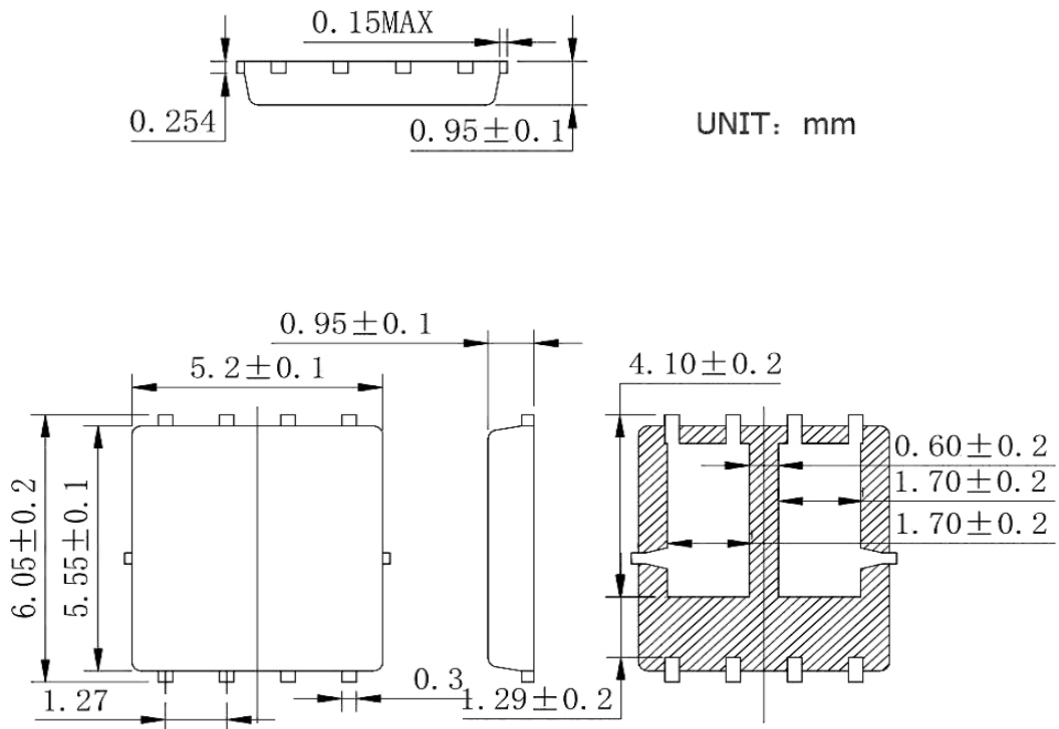


Figure 4: Diode Recovery Test Circuit & Waveform

DFN5x6-8D Package Information:



Marking Information:

①. Doingter LOGO

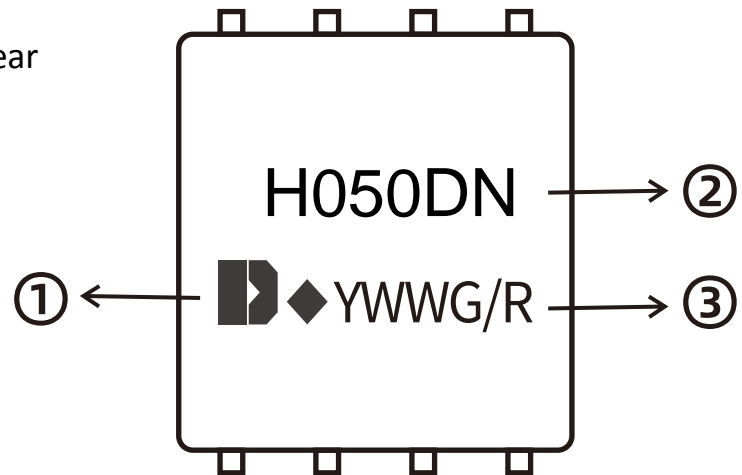
②. Part NO.


③. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)

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