

# Ultra-Fast Soft Recovery Diode Module

## Description

Ultra-FRD module devices are optimized to reduce losses and EMI/RFI in high frequency power conditioning electrical systems. These diode modules are ideally suited for power converters, motors drives and other applications where switching losses are significant portion of the total losses.

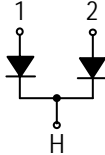

## Features

- ☞ Repetitive Reverse Voltage :  $V_{RRM} = 400V$
- ☞ Low Forward Voltage Drop :  $V_F(\text{typ.}) = 1.05V$
- ☞ Average Forward Current :  $I_{F(AV)} = 150A$  @  $T_c = 100^\circ C$
- ☞ Ultra-Fast Reverse Recovery Time :  $t_{rr}(\text{typ.}) = 100 \text{ ns}$
- ☞ Extensive Characterization of Recovery Parameters
- ☞ Reduced EMI and RFI
- ☞ Non Isolation Type Package and  $175^\circ C$  Operating Junction Temperature
- ☞ Dual FRD Construction

## Applications

High Speed & High Power Converters, Welders,  
Various Switching and Telecommunication Power Supply.

## Equivalent Circuit and Package

Equivalent Circuit
 <p>(Common Heat Sink)</p>
Package : 3DM2 -NI Series
 <p>Non Isolation Type</p>

Please see the package Out line information

## Ordering Information

Device Name	DH2F150N4S
Optional Information	Common Heat Sink Non Isolation Type

## Absolute Maximum Ratings @ $T_j=25^\circ C$ (Per Leg)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{RRM}$	Repetitive Peak Reverse Voltage		400	V
$V_{R(DC)}$	Reverse DC Voltage		320	V
$I_{F(AV)}$	Average Forward Current	@ $T_c = 25^\circ C$ @ $T_c = 100^\circ C$	Resistive Load 300 150	A A
$I_{FSM}$	Surge(non-repetitive) Forward Current	One Half Cycle at 60Hz, Peak Value	2750	A
$I^2t$	$I^2t$ for Fusing	Value for One Cycle Current, $t_w = 8.3ms, T_j = 25^\circ C$ Start	$37.5 * 10^3$	A <sup>2</sup> s
$T_j$	Junction Temperature		-40 ~ 175	$^\circ C$
$T_{stg}$	Storage Temperature		-40 ~ 150	$^\circ C$
-	Mounting Torque(M6)		4.0	N.m
-	Terminal Torque(M6)	Typical Including Screws	3.0	N.m
-	Weight		92	g

## Thermal Characteristics

Symbol	Parameter	Conditions	Values			Unit
			Min.	Typ.	Max.	
$R_{th(j-c)}$	Thermal Resistance(Non Isolation Type)	Junction to Case	-	-	0.23	°C/W

## Electrical Characteristics @ $T_j=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Conditions	Values			Unit	
			Min.	Typ.	Max.		
$V_R$	Cathode Anode Breakdown Voltage	$I_R = 100\mu\text{A}$	400	-	-	V	
$V_{FM}$	Maximum Forward Voltage	$I_{FM} = 150\text{A}, T_c = 25^\circ\text{C}$	-	1.05	1.3	V	
		$I_{FM} = 150\text{A}, T_c = 100^\circ\text{C}$	-	0.95	1.1	V	
$I_{RRM}$	Repetitive Peak Reverse Current	$T_c = 100^\circ\text{C}, V_{RRM}$ applied	-	-	1.0	mA	
$T_{rr}$	Reverse Recovery Time	$I_{FM} = 150\text{A}, V_R = 200\text{V}$ $di/dt = -100\text{A}/\mu\text{s}$	$T_c = 25^\circ\text{C}$	-	100	130	ns
			$T_c = 100^\circ\text{C}$	-	130	-	ns

## Performance Curves

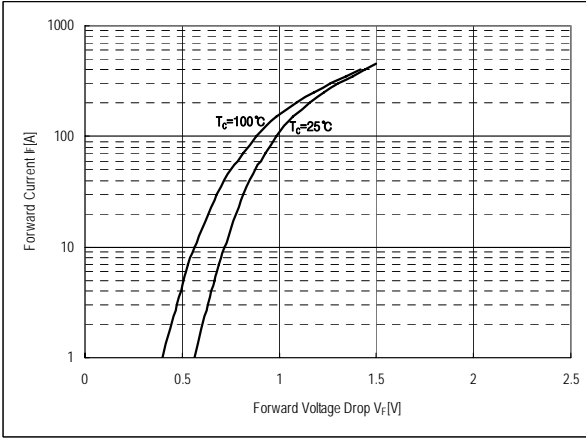


Fig. 1 : Typical Forward Voltage Drop vs. Instantaneous Forward Current

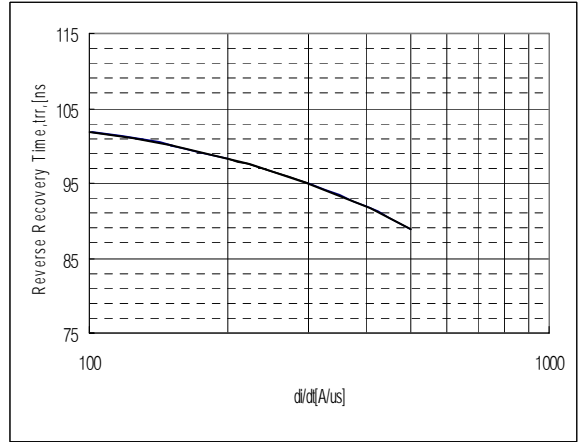


Fig. 2 : Typical Reverse Recovery Time vs.  $-di/dt$

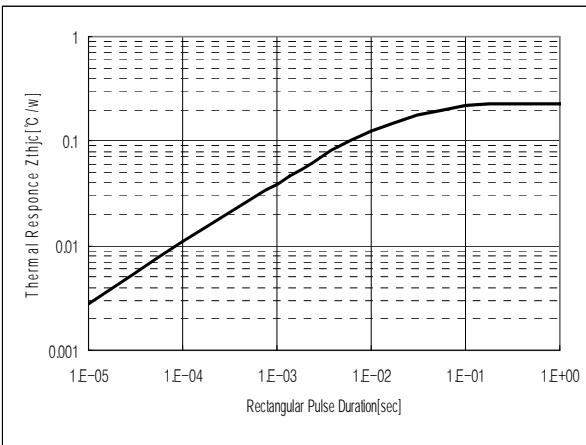


Fig. 3 : Transient Thermal Impedance ( $Z_{thjc}$ ) Characteristics

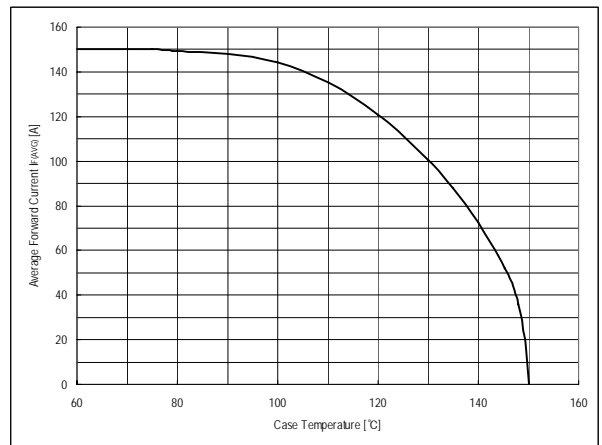


Fig. 4 : Forward Current Derating Curve

## Package Out Line Information

3DM2-NI Series



Dimensions in mm

