

# FH8904G6

## Dual N-Channel Enhancement Mode MOSFET

### Features

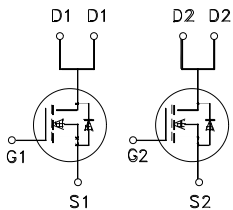
- Surface-mounted package
- Advanced trench cell design

### Applications

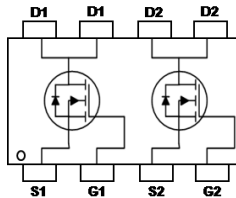
- Motor appliances
- High power inverter system

### Quick reference

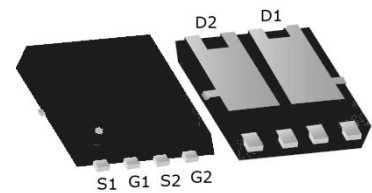
- $BV \geq 30 \text{ V}$
- $P_{\text{tot}} \leq 25 \text{ W}$
- $I_D \leq 30 \text{ A}$
  
- $R_{\text{DS(ON)}} = 8.5\text{m}\Omega @ V_{\text{GS}} = 10 \text{ V}$   
 $R_{\text{DS(ON)}} = 12 \text{ m}\Omega @ V_{\text{GS}} = 4.5 \text{ V}$



Schematic diagram



Marking and pin Assignment



PDFN3.3x3.3-8L top and bottom view

## Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{\text{DS}}$	Drain-Source Voltage	$T_A = 25 \text{ }^\circ\text{C}$	-	30	V
$V_{\text{GS}}$	Gate-Source Voltage	$T_A = 25 \text{ }^\circ\text{C}$	-	$\pm 20$	V
$I_D^*$	Drain Current	$T_A = 25 \text{ }^\circ\text{C}, V_{\text{GS}} = 10 \text{ V}$	-	30	A
		$T_A = 100 \text{ }^\circ\text{C}, V_{\text{GS}} = 10 \text{ V}$	-	20	A
$I_{\text{DM}}^{***}$	Pulsed Drain Current	$T_A = 25 \text{ }^\circ\text{C}, V_{\text{GS}} = 10 \text{ V}$	-	50	A
$P_{\text{tot}}$	Total Power Dissipation	$T_A = 25 \text{ }^\circ\text{C}$	-	25	W
$T_{\text{stg}}$	Storage Temperature		- 55	150	$^\circ\text{C}$
$T_J$	Junction Temperature		55	150	$^\circ\text{C}$
$I_S$	Diode Forward Current	$T_A = 25 \text{ }^\circ\text{C}$		50	A
$R_{\theta\text{JA}}^*$	Thermal Resistance- Junction to Ambient		-	62.5	$^\circ\text{C} / \text{W}$

### Notes :

- \* Surface Mounted on 1 in<sup>2</sup> pad area,  $t \leq 10 \text{ sec}$
- \*\* Pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2 \%$
- \*\*\* limited by bonding wire

## Electrical Characteristics ( $T_A=25\text{ }^\circ\text{C}$ Unless Otherwise Noted )

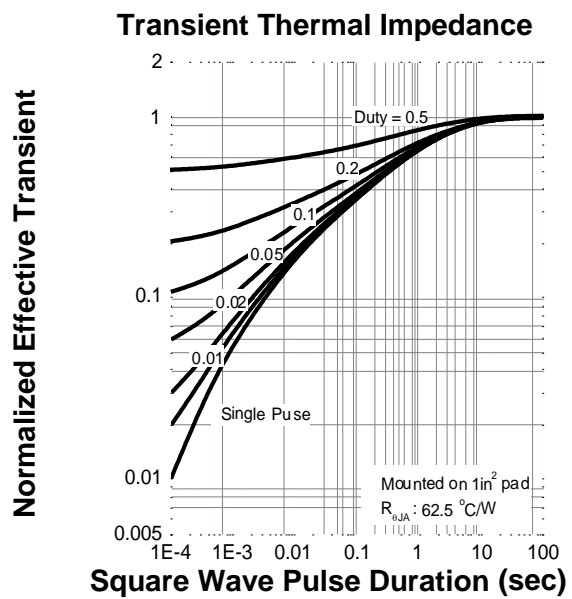
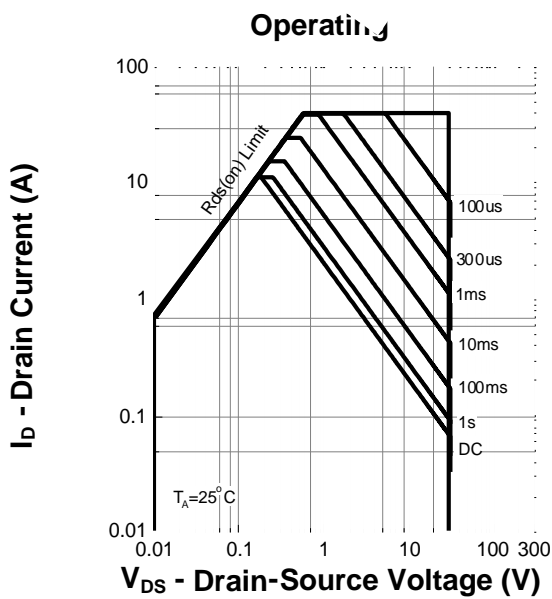
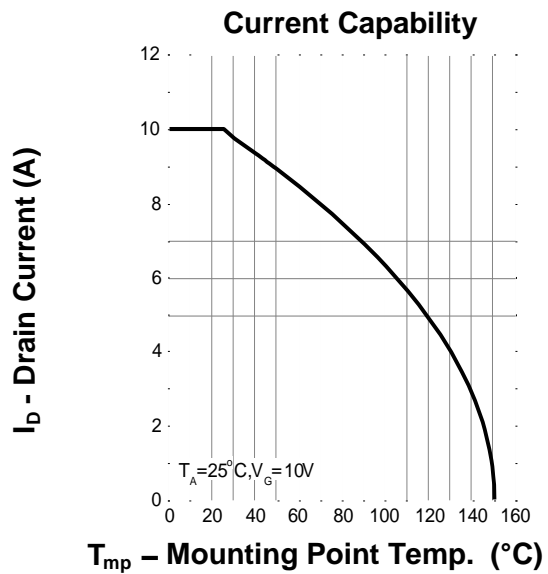
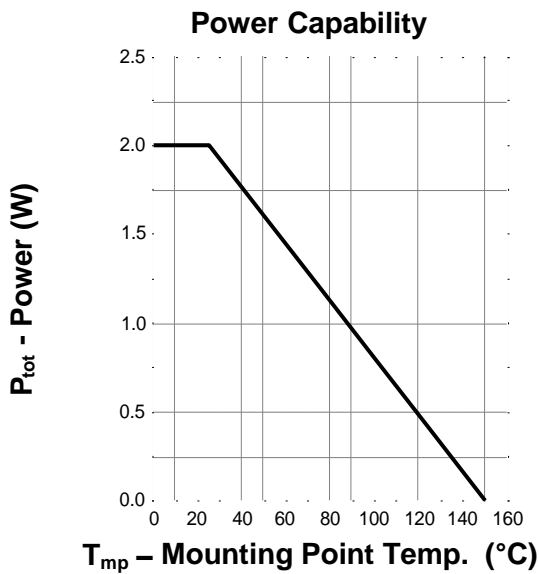
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\text{ }\mu\text{A}$	30			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\text{ }\mu\text{A}$	1.0	-	2.0	V
$I_{DSS}$	Drain Leakage Current	$V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
		$T_J = 85\text{ }^\circ\text{C}$	-	-	30	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	-	-	$\pm 100$	nA
$R_{DS(ON)}^a$	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 10\text{ A}$	-	8.5	11	m $\Omega$
		$V_{GS} = 4.5\text{ V}, I_{DS} = 5\text{ A}$	-	12	14	
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = 10\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{DS} = 10\text{ A}, V_{GS} = 0\text{ V}$ $di_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	34	-	ns
$Q_{rr}$	Reverse Recovery Charge		-	7.1	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 15\text{ V}$ Frequency = 1 MHz	-	1145	-	pF
$C_{oss}$	Output Capacitance		-	106	-	
$C_{rss}$	Reverse Transfer Capacitance			87		
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 15\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 4.5\text{ }\Omega, R_L = 1.5\text{ }\Omega,$ $I_{DS} = 10\text{ A}$	-	7	-	ns
$t_r$	Turn-on Rise Time		-	30	-	
$t_d(off)$	Turn off Delay Time			19		
$t_f$	Turn-off Fall Time		-	18	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{GS} = 15\text{ V}, V_{DS} = 10\text{ V},$ $I_{DS} = 10\text{ A}$	-	22	-	nC
$Q_{gs}$	Gate-Source Charge		-	5	-	
$Q_{gd}$	Gate-Drain Charge		-	3.3	-	

### Notes :

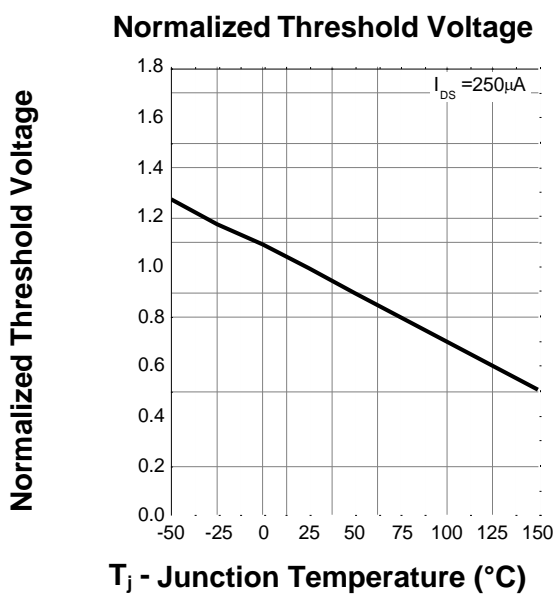
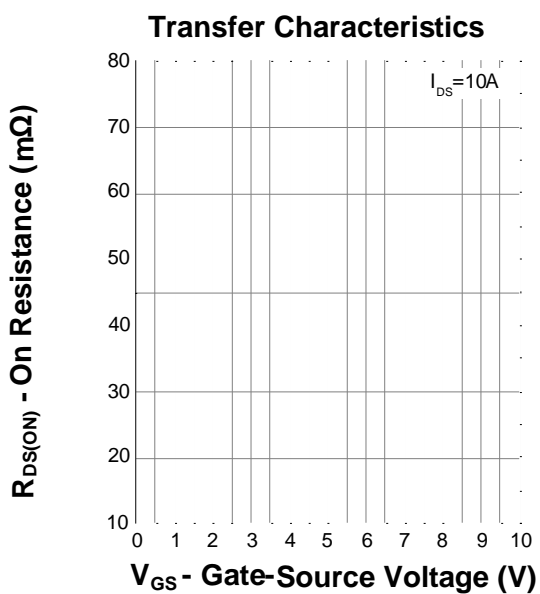
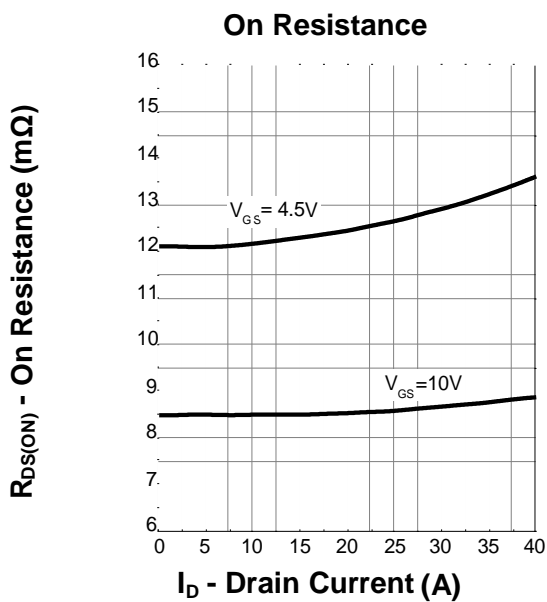
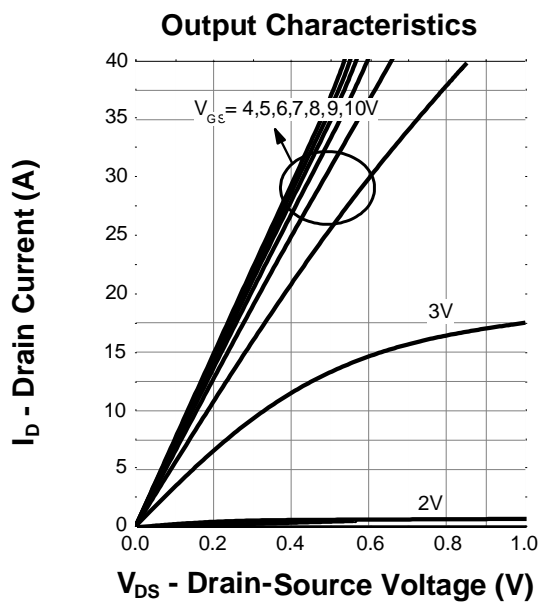
- a : Pulse test ; pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$
- b : Guaranteed by design, not subject to production testing

NHCX defines "Green" as lead free ( RoHS compliant ) and halogen free ( Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249 2 21 and IPC / JEDEC J STD 020C )

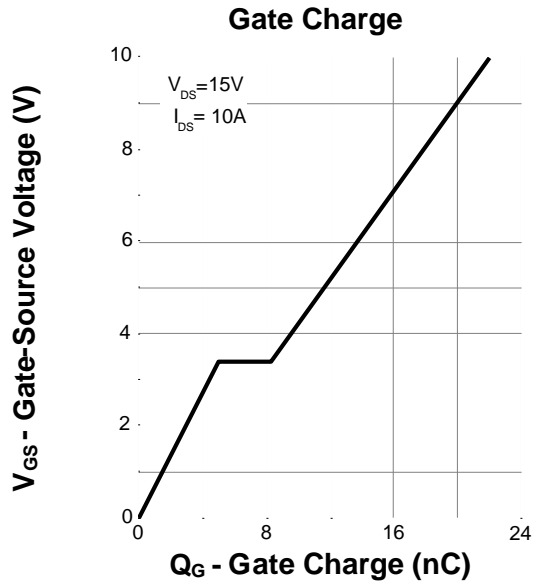
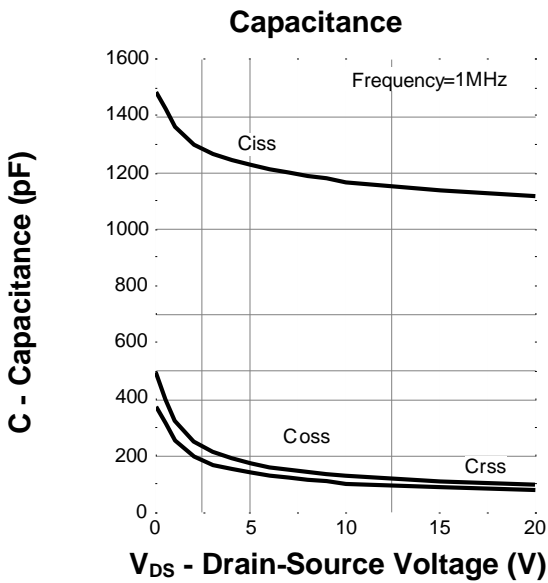
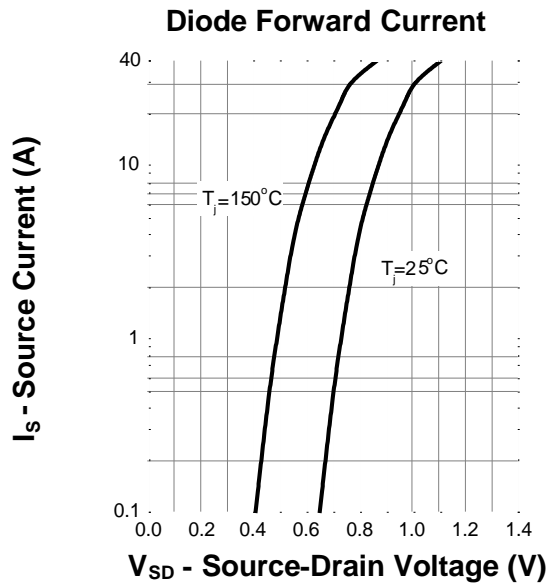
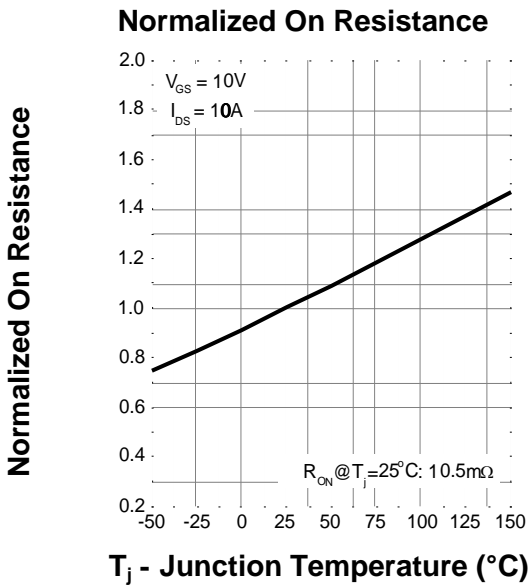
## Typical Characteristics



## Typical Characteristics (cont.)



## Typical Characteristics (cont.)



## Package Dimensions : PDFN3.3\*3.3-8L

