

FH3030BG6

N-Channel Enhancement Mode Power MOSFET

Description

The FH3030BG6 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.

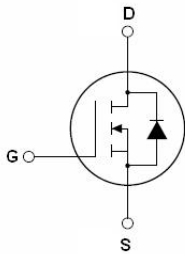
Application

- Motor drivers
- Power switching application
- DC/DC Converters In Computing
- LCD TV appliances

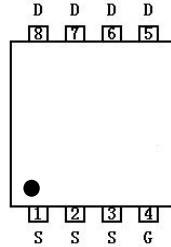
General Features

V_{DSS}	I_D	$R_{DS(ON)} (MAX)$	
		$V_{GS}=10V$	$V_{GS}=4.5V$
30V	27A	13 m Ω	18 m Ω

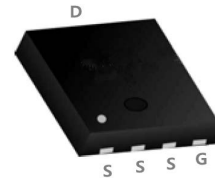
- High density cell design for ultra low R_{ds}
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation



Schematic diagram



Marking and pin Assignment



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

Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	30	V
V_{GS}	Gate-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	± 20	V
I_D^*	Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	27	A
		$T_A = 100\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$		18	A
I_{DM}^{***}	Pulsed Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	82	A
P_{tot}	Total Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	-	22	W
T_{stg}	Storage Temperature		-55	150	$^\circ\text{C}$
T_J	Junction Temperature		-55	150	$^\circ\text{C}$
I_S	Diode Forward Current	$T_A = 25\text{ }^\circ\text{C}$	-	27	A
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	66.5	$^\circ\text{C} / \text{W}$

Notes :

* Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$

** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
Static Characteristics							
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	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	μA	
		$T_J = 85\text{ }^\circ\text{C}$			30	μA	
I_{GSS}	Gate Leakage Current	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	-	-	± 100	nA	
$R_{DS(on)}^a$	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 10\text{ A}$		9.5	13	m Ω	
		$V_{GS} = 4.5\text{ V}, I_{DS} = 5\text{ A}$	-	13	18		
Diode Characteristics							
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		μC
Dynamic Characteristics ^b							
C_{iss}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 15\text{ V}$ Frequency = 1 MHz	-	1085	-	pF	
C_{oss}	Output Capacitance		-	101	-		
C_{riss}	Reverse Transfer Capacitance		-	82	-		
$t_d(on)$	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		-	17	-		
t_f	Turn-off Fall Time		-	18	-		
Gate Charge Characteristics ^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 :

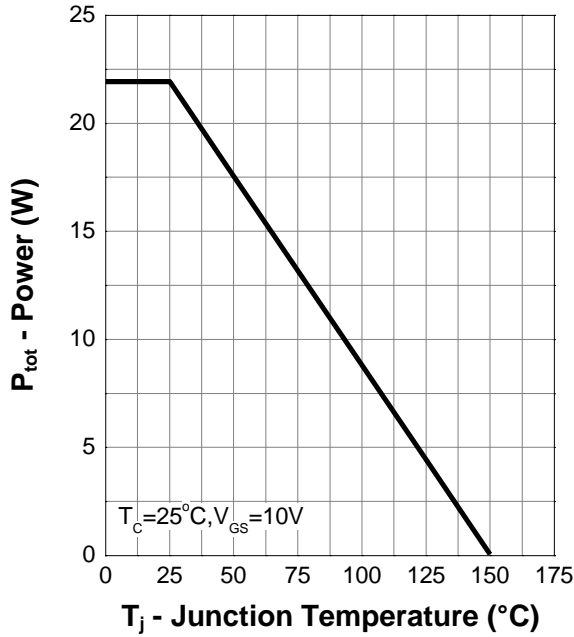
a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

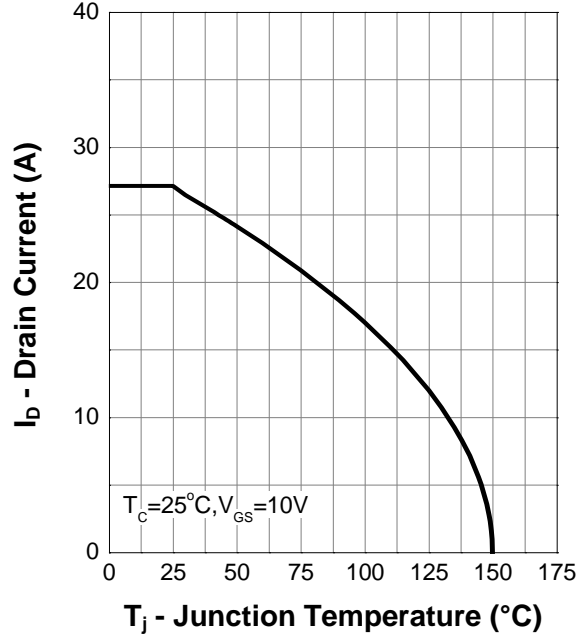
c: NHCX defines "Green" as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC / JEDEC J-STD-020C)

Typical Characteristics

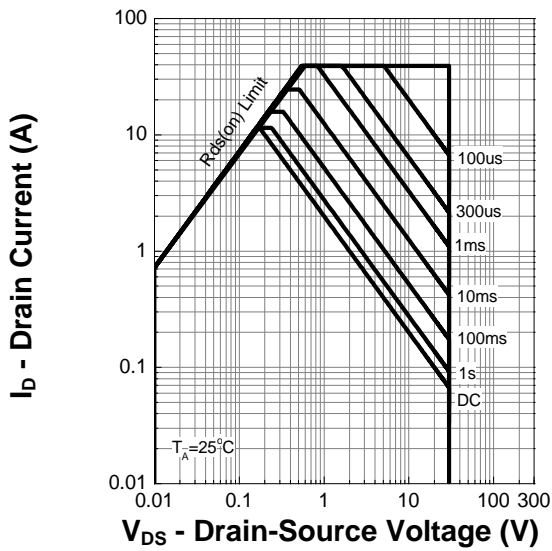
Power Capability



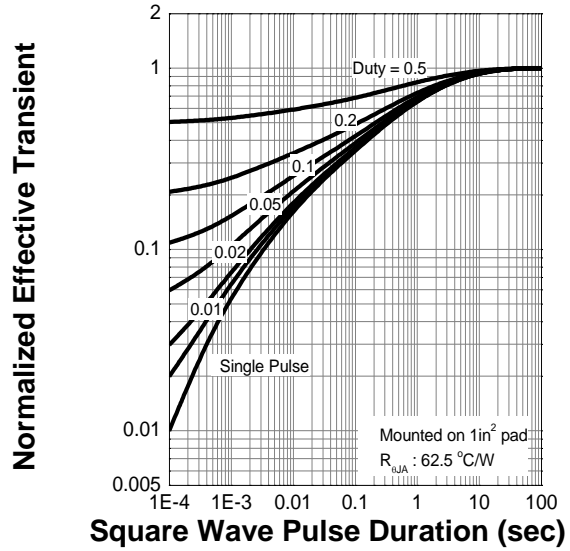
Current Capability



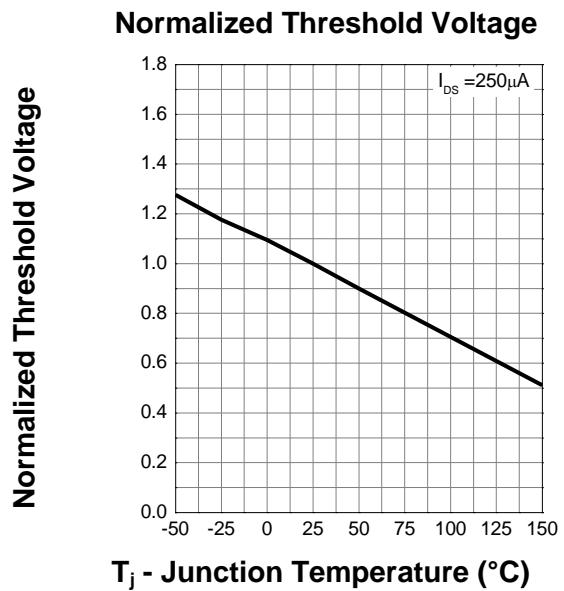
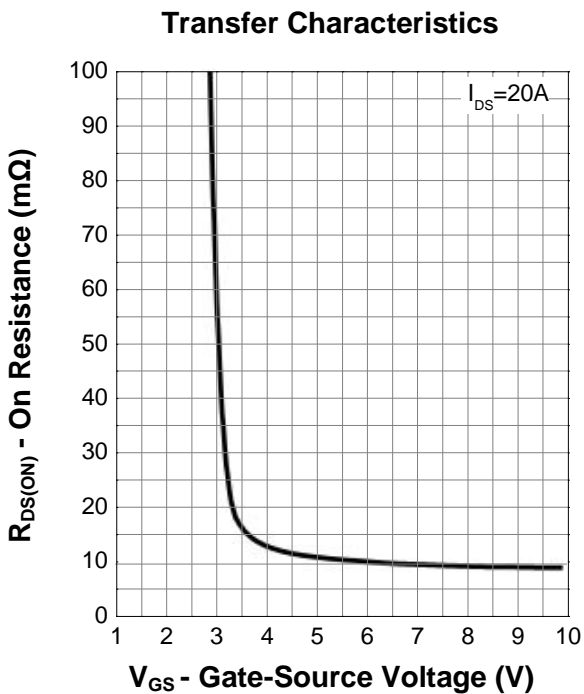
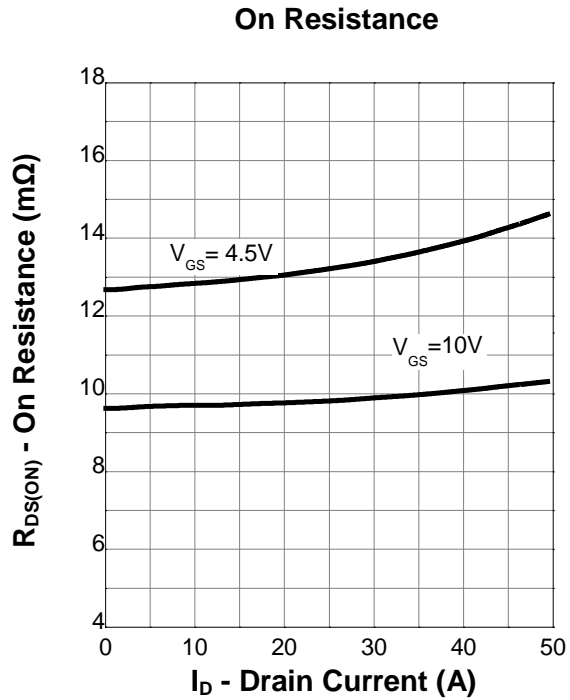
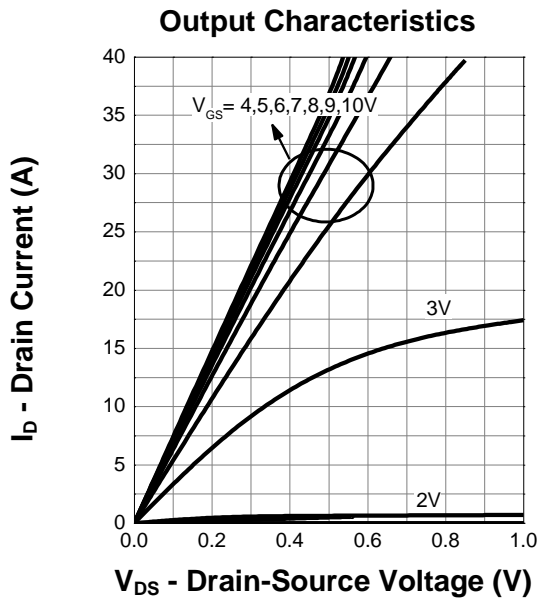
Operating



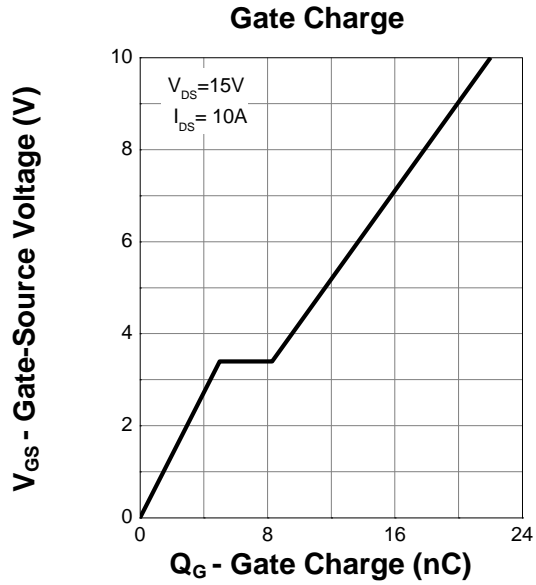
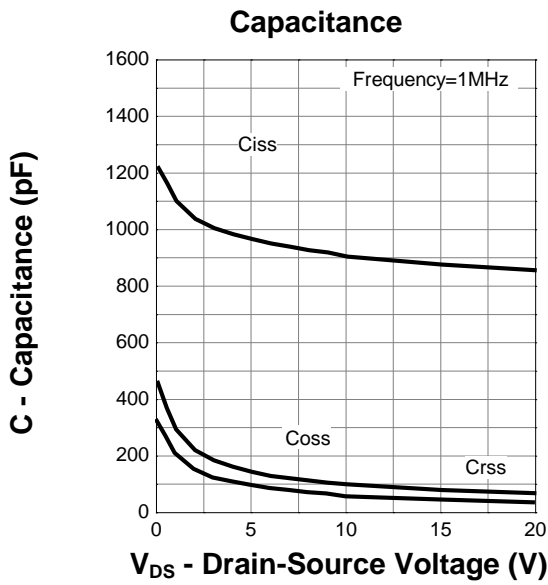
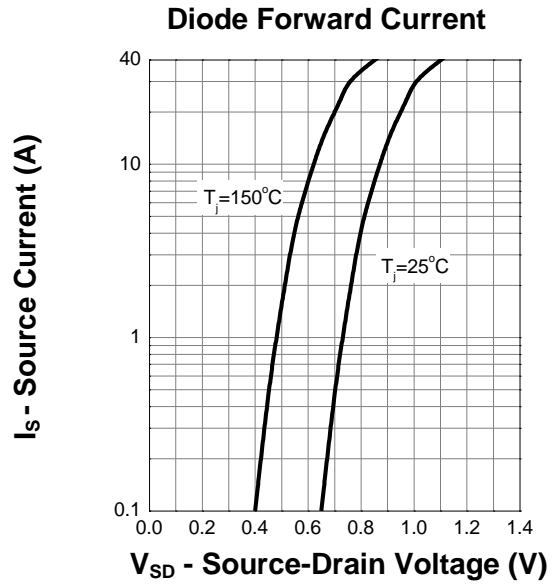
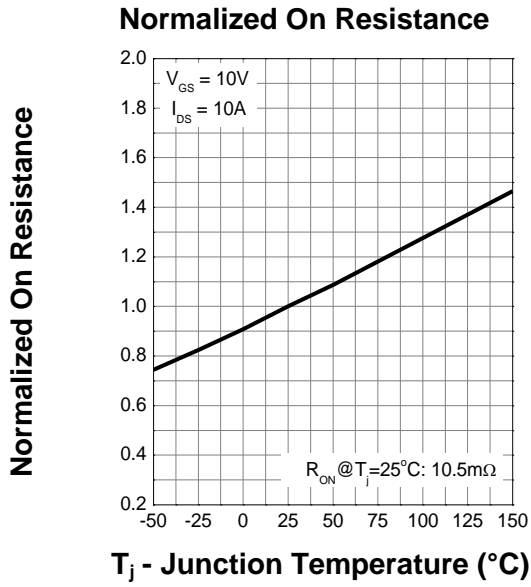
Transient Thermal Impedance



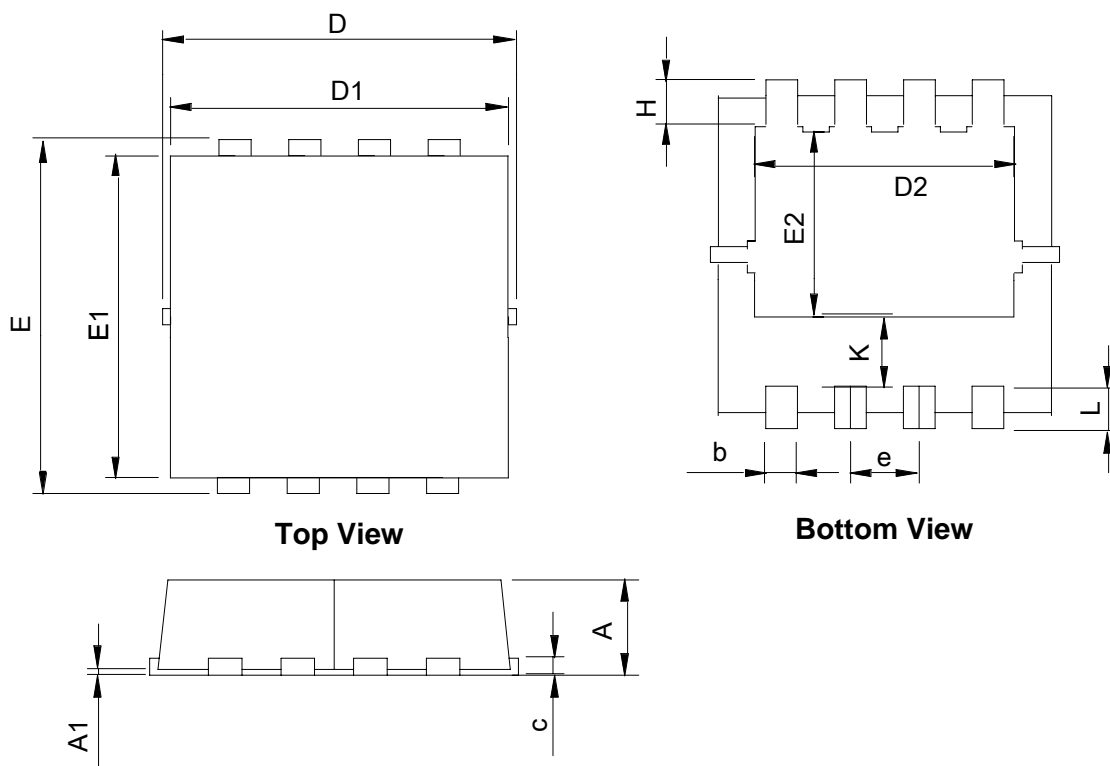
Typical Characteristics (cont.)



Typical Characteristics (cont.)



Package Information : PDFN3.3x3.3-8L



SYMBOL	PDFN3.3x3.3-8L			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.14	0.20	0.006	0.008
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.55	0.093	0.100
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.84	0.065	0.072
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022