

FH3050G3B

N-Channel Enhancement Mode Power MOSFET

Description

The FH3050G3B 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

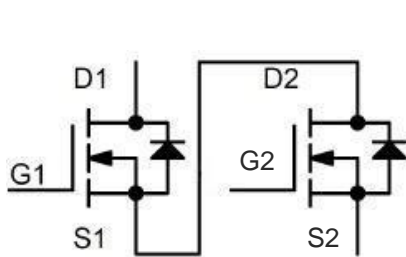
General Features

$V_{DS}=30V$; $ID=52A$

$R_{DS(ON)}= 5.2 m\Omega$ (typ) @ $V_{GS}=10V$

$R_{DS(ON)}= 7.5 m\Omega$ (typ) @ $V_{GS}=4.5V$

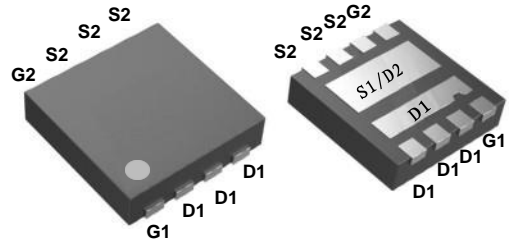
- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation



Schematic diagram



Marking and pin assignment



DFN3x3-8L Pin assignment and Top / 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	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	52	A
		$T_A = 100\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	33	A
I_{DM}^{***}	Pulsed Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	156	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	$T_A = 25\text{ }^\circ\text{C}$	-	52	A
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	60.7	$^\circ\text{C} / \text{W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	5.8	

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)

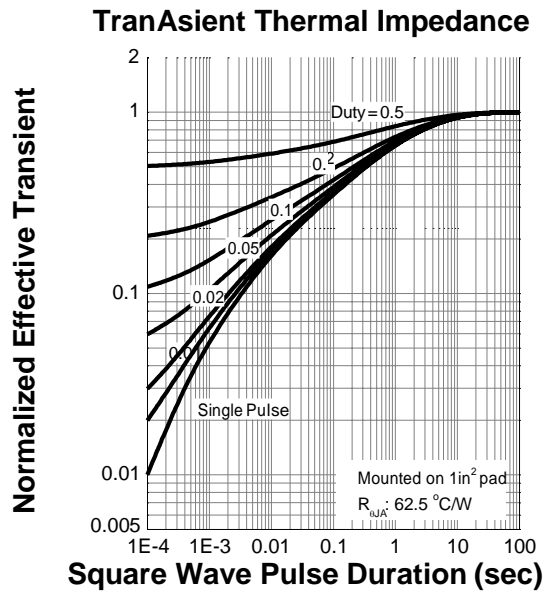
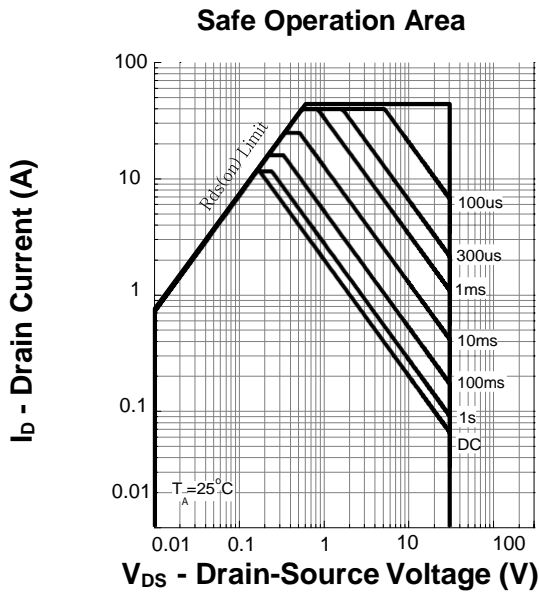
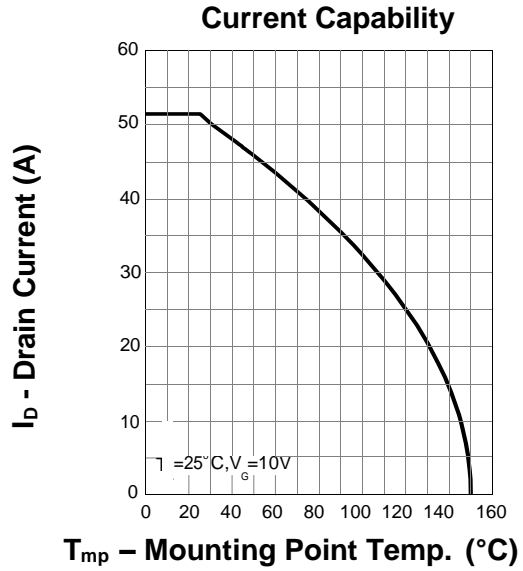
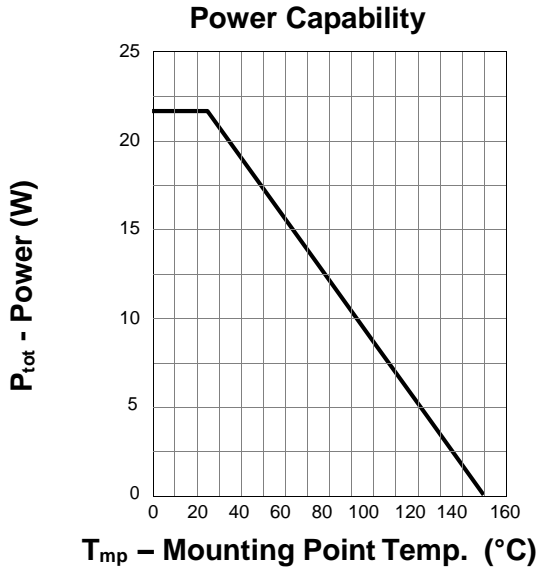
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}$, $I_{DS} = 250\text{ }\mu\text{A}$	30	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_{DS} = 250\text{ }\mu\text{A}$	1.0	-	2.0	V
I_{DSS}	Drain Leakage Current	$V_{DS} = 30\text{ V}$, $V_{GS} = 0\text{ V}$ $T_J = 85\text{ }^\circ\text{C}$	-	-	1	μA
			-	-	50	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	$V_{GS} = 10\text{ V}$, $I_{DS} = 10\text{ A}$	-	5.2	6.5	m Ω
		$V_{GS} = 4.5\text{ V}$, $I_{DS} = 10\text{ A}$	-	7.5	9	
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	$I_{DS} = 10\text{ A}$, $V_{GS} = 0\text{ V}$ $di_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	36	-	ns
Q_{rr}	Reverse Recovery Charge		-	8.2	-	μC
Dynamic Characteristics ^b						
C_{iss}	Input Capacitance	$V_{GS} = 0\text{ V}$, $V_{DS} = 15\text{ V}$ Frequency = 1 MHz	-	735	-	pF
C_{oss}	Output Capacitance		-	201	-	
C_{rss}	Reverse Transfer Capacitance		-	27	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 15\text{ V}$, $V_{GEN} = 10\text{ V}$, $R_G = 4.5\text{ }\Omega$, $R_L = 1.5\text{ }\Omega$, $I_{DS} = 10\text{ A}$	-	8	-	ns
t_r	Turn-on Rise Time		-	22	-	
$t_d(off)$	Turn-off Delay Time		-	25	-	
t_f	Turn-off Fall Time		-	21	-	
Gate Charge Characteristics ^b						
Q_g	Total Gate Charge	$V_{GS} = 15\text{ V}$, $V_{DS} = 10\text{ V}$, $I_{DS} = 10\text{ A}$	-	15	-	nC
Q_{gs}	Gate Source Charge		-	5	-	
Q_{gd}	Gate-Drain Charge		-	3.3	-	

Notes :

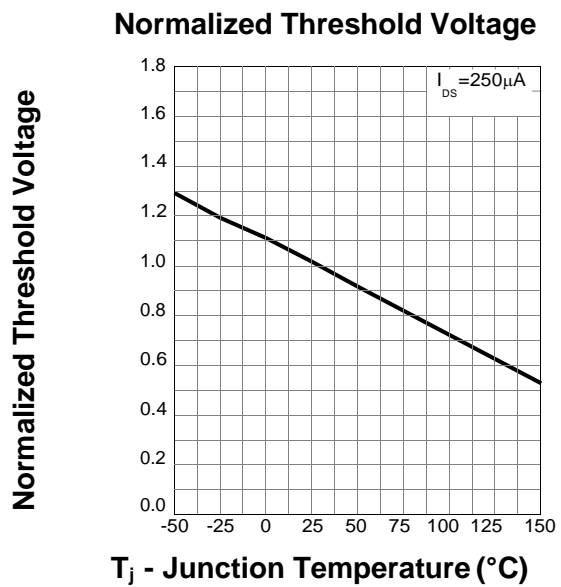
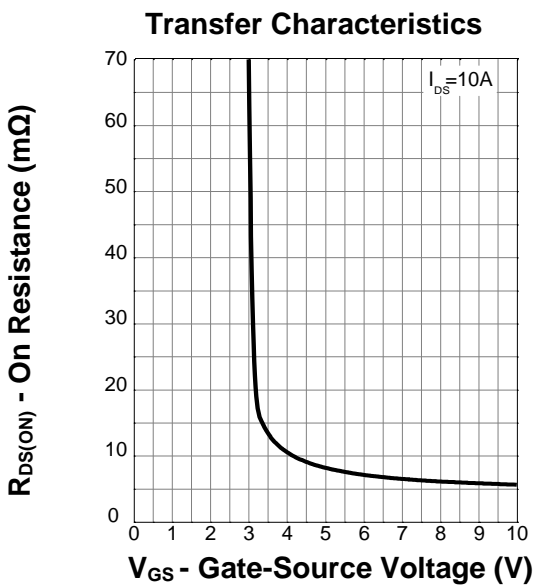
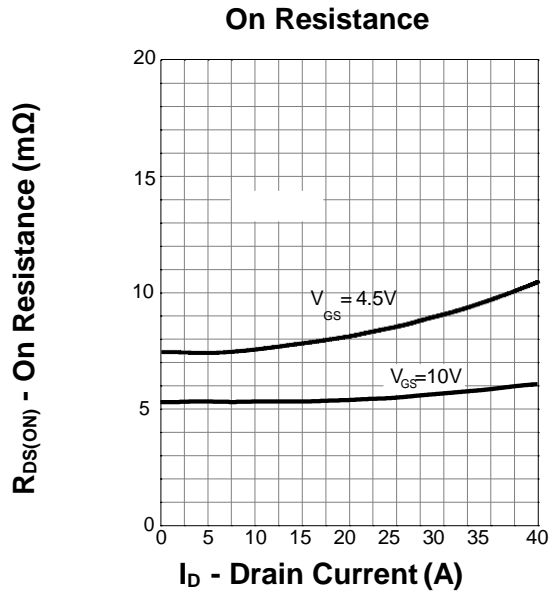
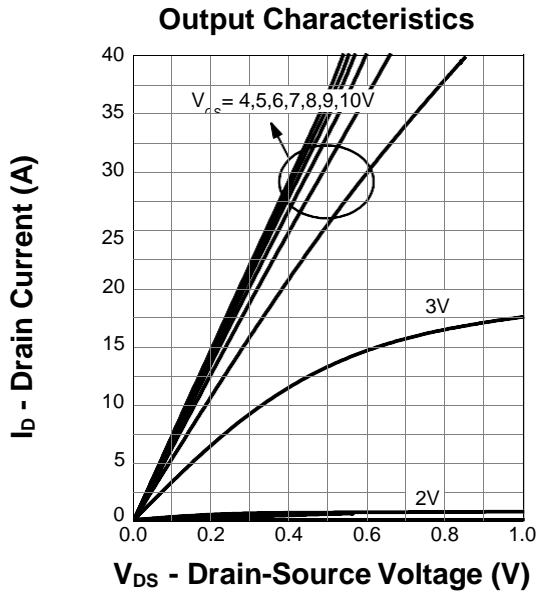
a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

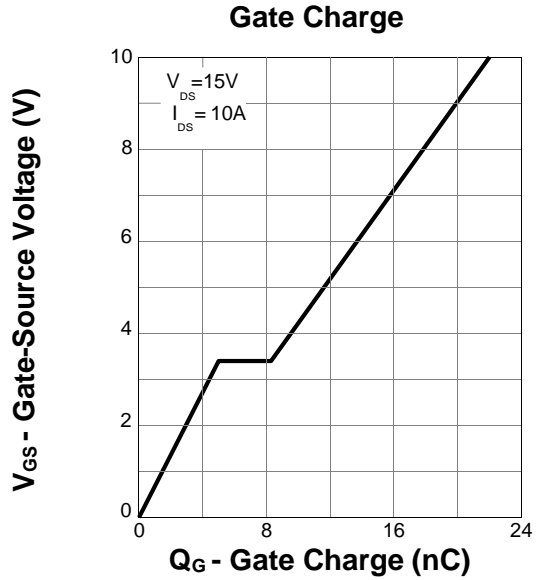
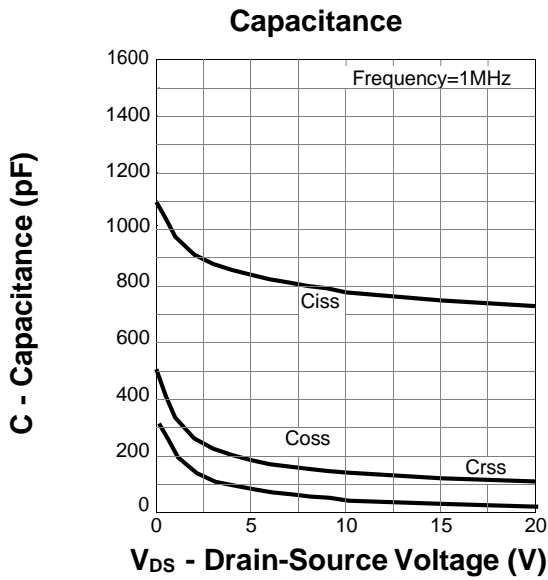
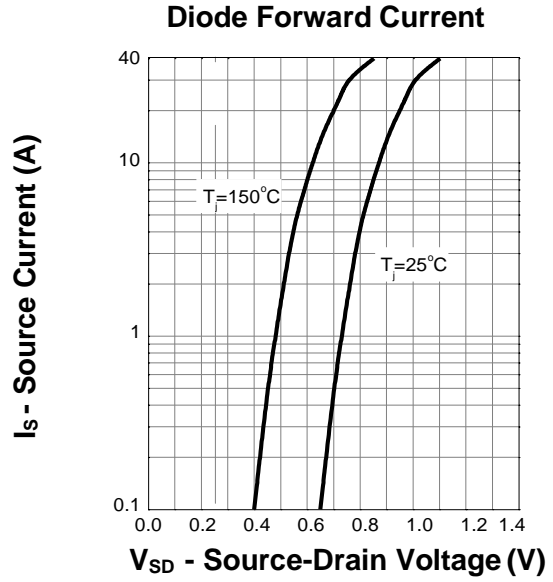
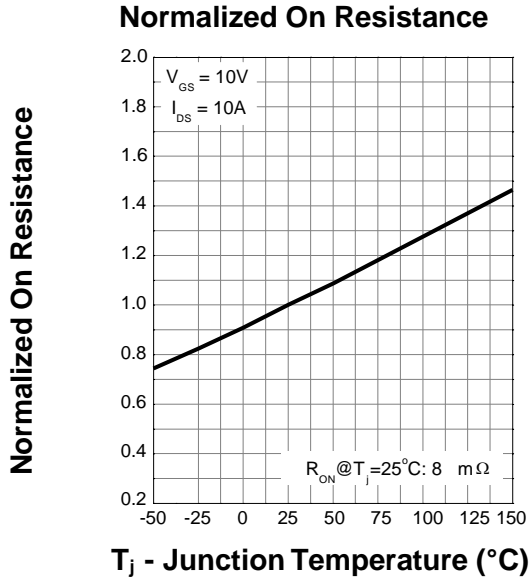
Typical Characteristics



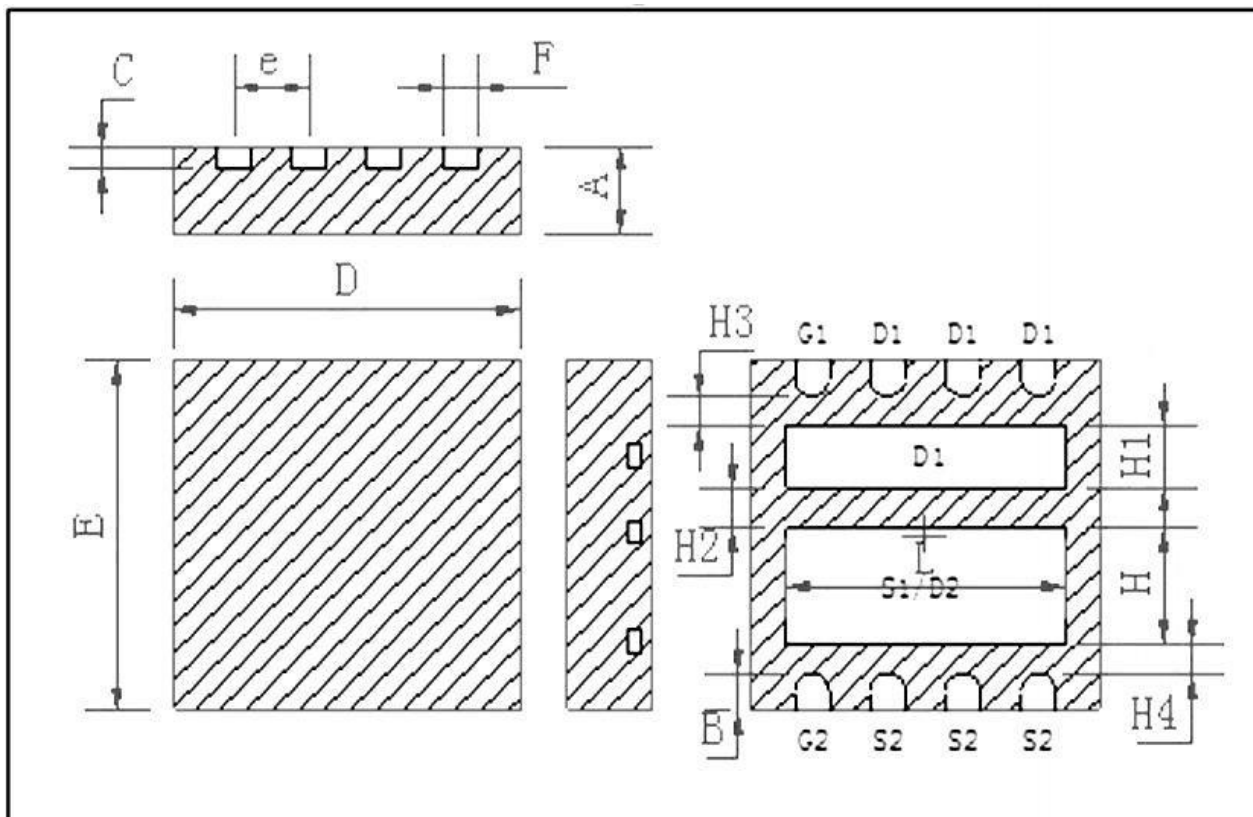
Typical Characteristics (cont.)



Typical Characteristics (cont.)



Package Information : DFN3*3-8L



Symbol	Min	Typ	Max
A	0.70	0.75	0.80
B	0.27	0.32	0.37
C	0.153	0.203	0.253
D	2.90	3.00	3.10
E	2.90	3.00	3.10
e	0.60	0.65	0.70
F	0.25	0.30	0.35
H	0.89	0.99	1.09
H1	0.42	0.52	0.62
H2	0.25	0.35	0.45
H3	0.15	0.25	0.35
H4	0.15	0.25	0.35
L	2.30	2.40	2.50