

FH3079GSB

N-Channel Enhancement Mode Power MOSFET

Description

The FH3079GSB 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

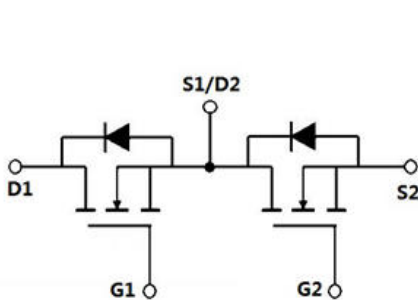
General Features

$V_{DS}=30V$; $ID=59A / 79A$

$R_{DS(ON)}=4.8m\Omega$ (typ) @ $V_{GS}=10V$

$R_{DS(ON)}=6.5m\Omega$ (typ) @ $V_{GS}=4.5V$

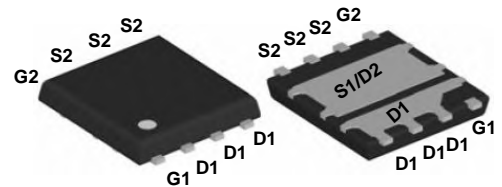
- High density cell design for ultra low R_{ds}
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation



Schematic diagram



Marking and pin assignment



PDFN5x6-8L Pin assignment and Top / Bottom View

Absolute Maximum Ratings

Symbol	Parameter	Channel 1	Channel 2	Unit	
Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)					
V_{DSS}	Drain-Source Voltage	30	30	V	
V_{GSS}	Gate-Source Voltage	± 20	± 20	V	
T_J	Maximum Junction Temperature	150	150	$^\circ\text{C}$	
T_{STG}	Storage Temperature Range	-55 to 150	-55 to 150	$^\circ\text{C}$	
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$	30	30	A
Mounted on Large Heat Sink					
$I_{DM}^{①}$	300 μs Pulsed Source Current	$T_C=25^\circ\text{C}$	118	158	A
$I_D^{②}$	Continuous Drain Current@ T_C ($V_{GS}=10V$)	$T_C=25^\circ\text{C}$	59	79	A
		$T_C=100^\circ\text{C}$	37	51	
$I_D^{③}$	Continuous Drain Current@ T_A ($V_{GS}=10V$) ^③	$T_A=25^\circ\text{C}$	19	27	A
		$T_A=70^\circ\text{C}$	15	21	
P_D	Maximum Power Dissipation@ T_C	$T_C=25^\circ\text{C}$	28	40	W
		$T_C=100^\circ\text{C}$	12	16	
	Maximum Power Dissipation@ T_A ^③	$T_A=25^\circ\text{C}$	4.2	4.2	
		$T_A=70^\circ\text{C}$	2.7	2.7	

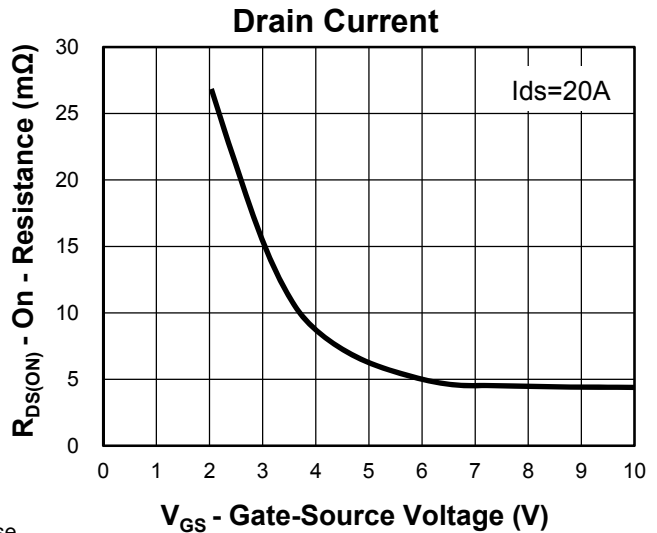
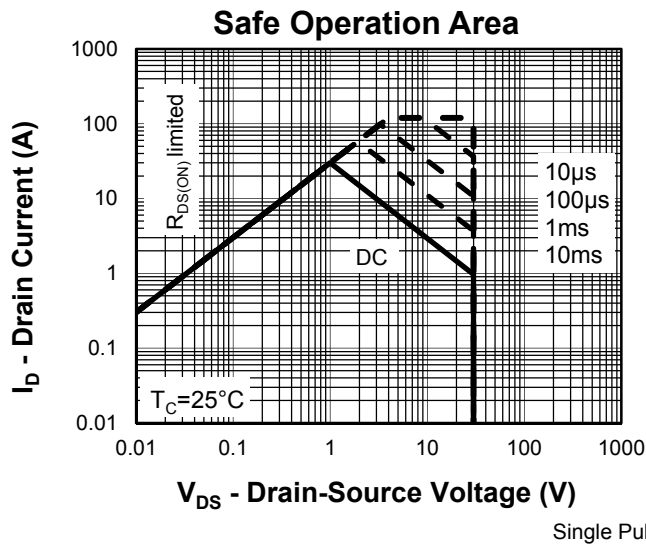
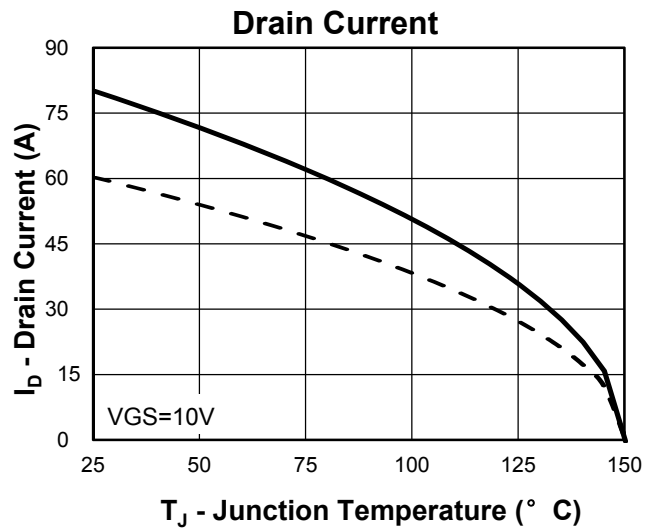
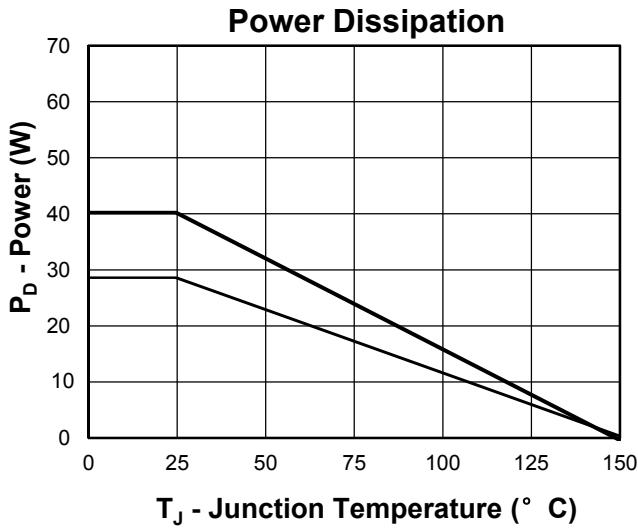
Symbol	Parameter	Channel 1	Channel 2	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	6.2	4.6	°C/W
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient	78	59	°C/W
E_{AS} ④	Avalanche Energy, Single Pulsed	64		mJ

Electrical Characteristics (T_C=25°C Unless Otherwise Noted)

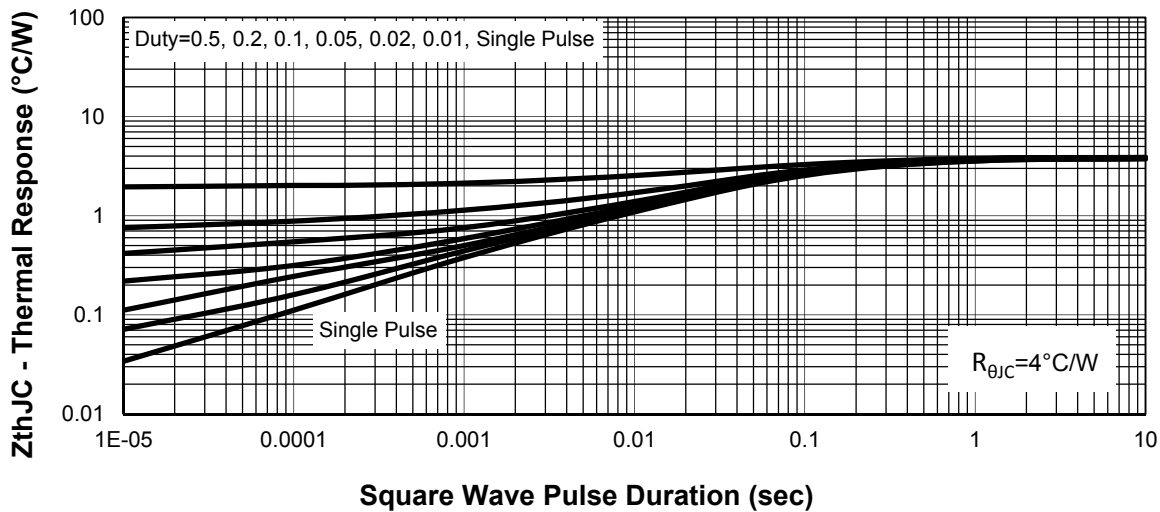
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	30			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$			1	μA
		$T_J=125^\circ C$			100	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1.0		2.0	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}$ ⑤	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=20A$		4.8	6.5	m Ω
		$V_{GS}=4.5V, I_{DS}=15A$		6.5	8.5	m Ω
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	$I_{SD}=20A, V_{GS}=0V$			1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=20A, di_{SD}/dt=100A/\mu s$		20		ns
Q_{rr}	Reverse Recovery Charge			13		nC
Dynamic Characteristics ⑥						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		5.6		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=15V,$ Frequency=1.0MHz		835		pF
C_{oss}	Output Capacitance			246		
C_{riss}	Reverse Transfer Capacitance			24		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=15V, R_L=1.00\Omega,$ $I_{DS}=20A, V_{GEN}=10V,$ $R_G=3\Omega$		8.8		ns
t_r	Turn-on Rise Time			22		
$t_{d(OFF)}$	Turn-off Delay Time			23.6		
t_f	Turn-off Fall Time			6		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V,$ $I_{DS}=20A$		18.4		nC
Q_{gs}	Gate-Source Charge			3.64		
Q_{gd}	Gate-Drain Charge			4.8		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature.
 - ③ When mounted on 1 inch square copper board, $t \leq 10$ sec.
 - ④ Limited by T_{Jmax}, I_{AS} =16A, V_{DD} = 15V, R_G = 25 Ω , L=0.5mH, Starting T_J = 25°C.
 - ⑤ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

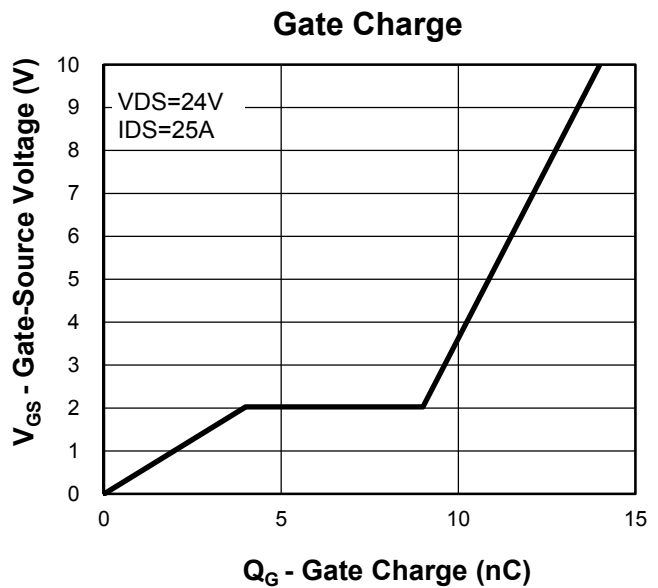
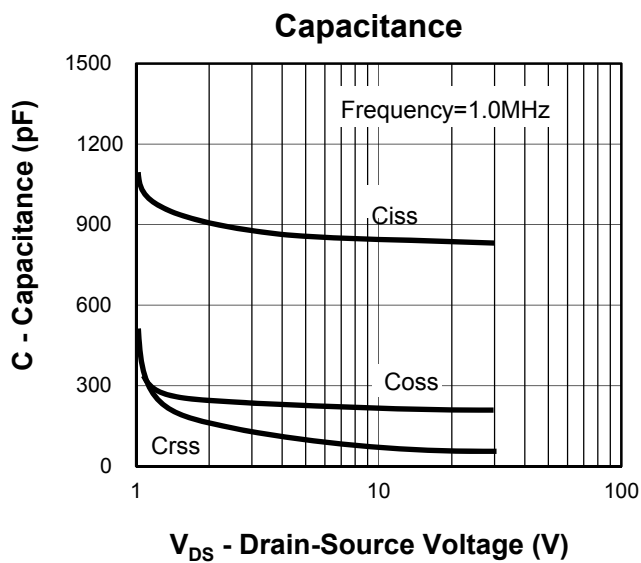
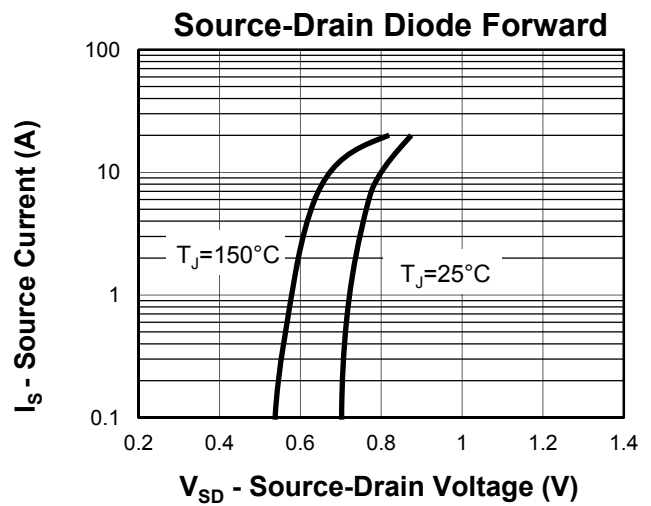
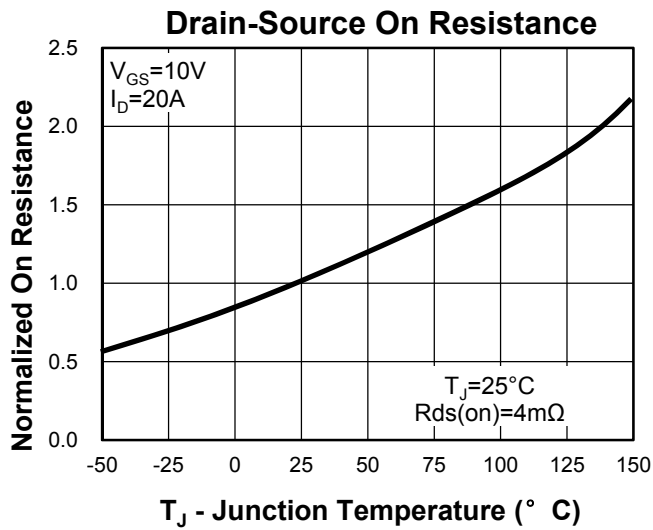
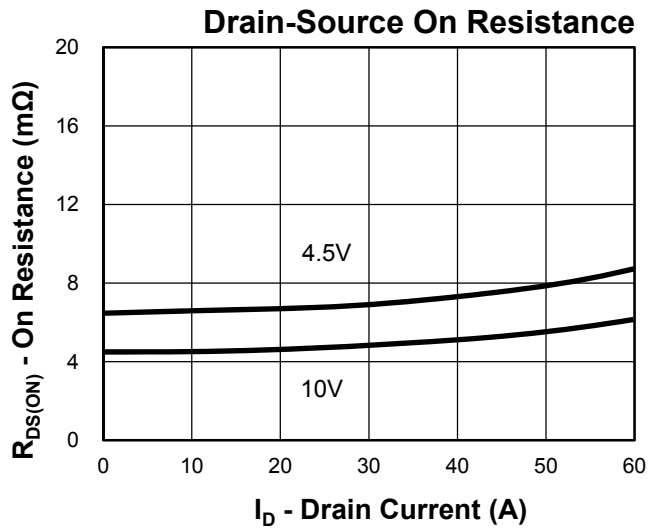
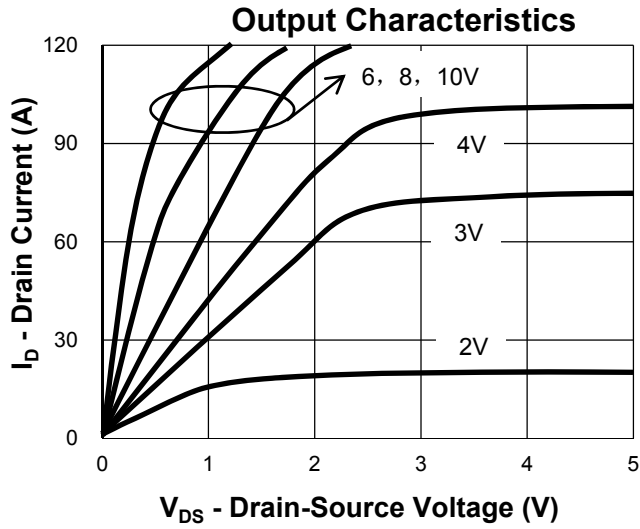
Typical Characteristics



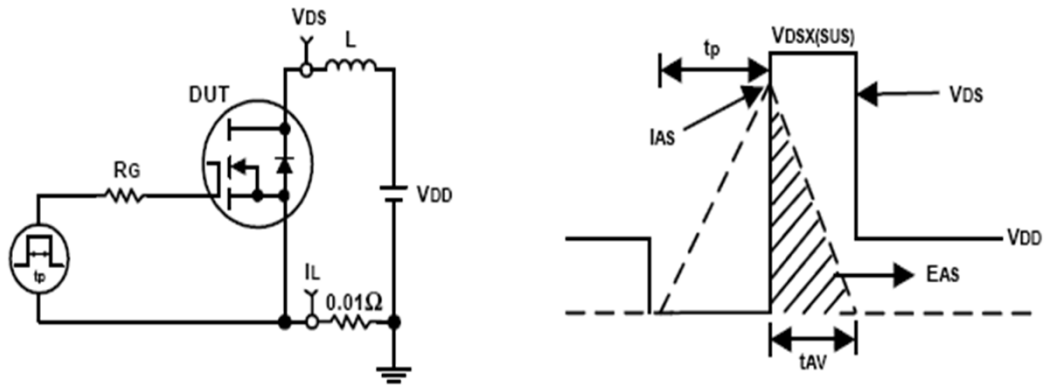
Thermal Transient Impedance



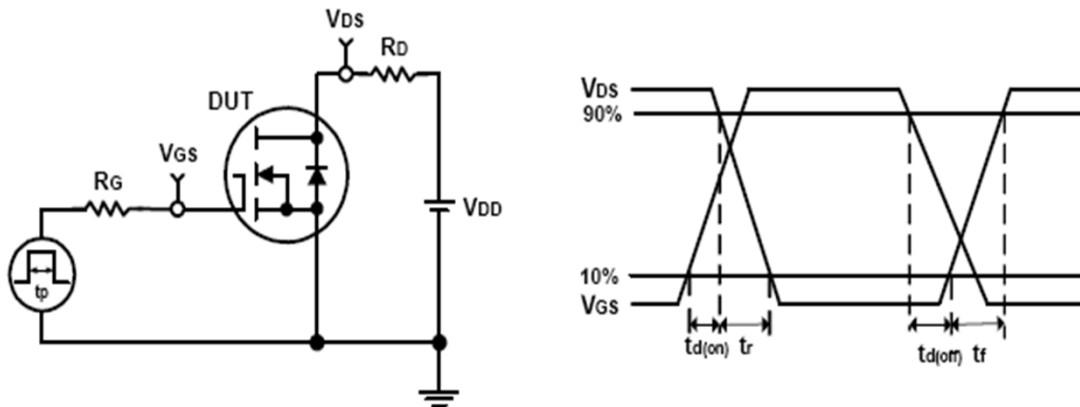
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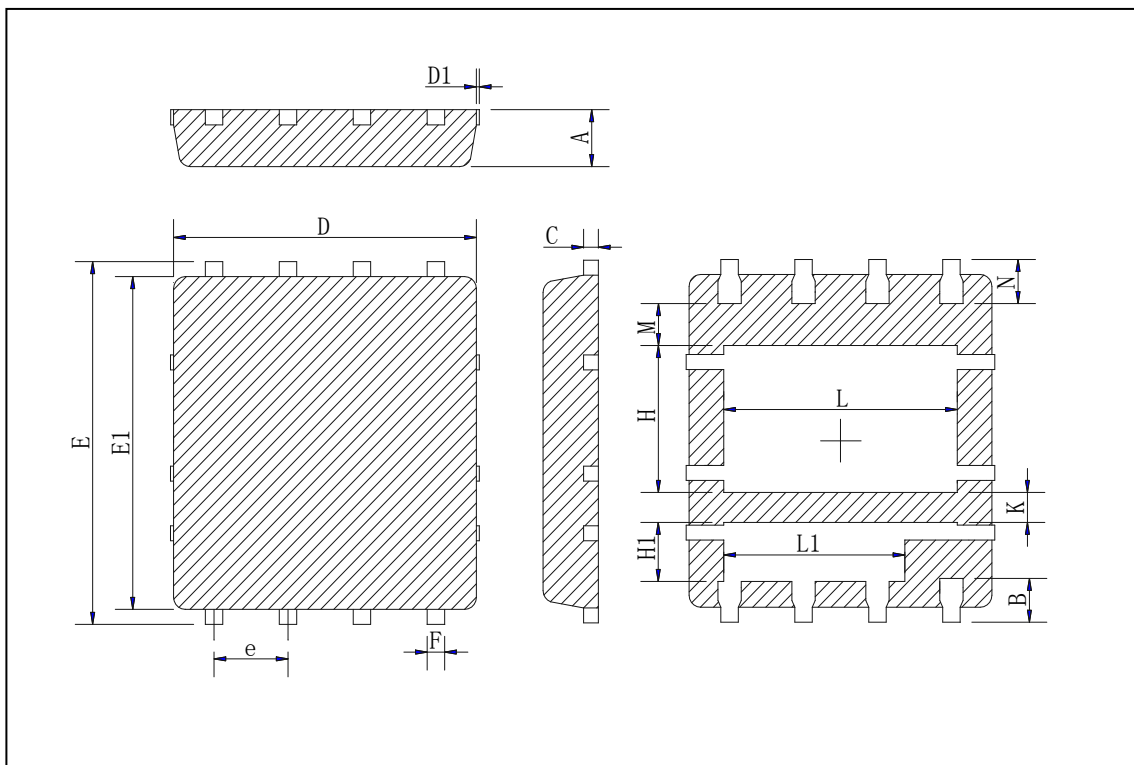
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Package Information : PDFN5x6-8L



Symbol	Min	Typ	Max
A	0.90	0.95	1.00
B	0.60	0.70	0.80
C	0.20	0.254	0.30
D	5.10	5.20	5.30
D1			0.12
E	5.95	6.05	6.15
E1	5.40	5.55	5.70
e	1.22	1.27	1.32
F	0.25	0.30	0.35
H	2.35	2.45	2.55
H1	0.88	0.98	1.08
L	3.80	4.00	4.20
L1	3.00	3.10	3.20
M	0.60	0.70	0.80
N	0.63	0.73	0.83
K	0.40	0.50	0.60