★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology
★ 100% EAS Guaranteed

Product Summary

RoHS

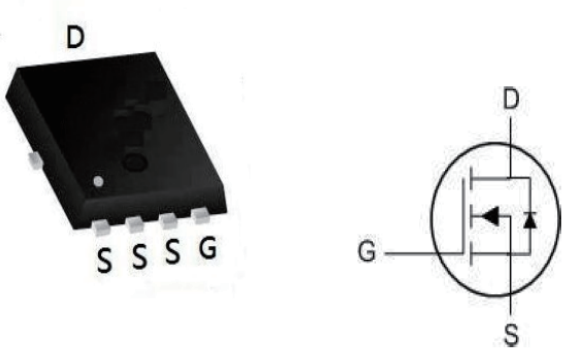
BVDSS	RDSON	ID
30V	3.8mΩ	80A

Description

The 80N03F is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The 80N03F meet the RoHS and Green Product, requirement 100% EAS guaranteed with full function reliability approved.

PRPAK5*6 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current-Continuous	80	A
I_D (100℃)	Drain Current-Continuous(T_C=100°C)	46	A
I_{DM}	Pulsed Drain Current(Note 1)	200	A
P_D	Maximum Power Dissipation	65	W
	Derating factor	0.52	W/℃
E_{AS}	Single pulse avalanche energy (Note 5)	150	mJ
T_J,T_{STG}	Operating Junction and Storage	-55 To 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance,Junction-to-Case(Note 2)	-	0. 56	℃/W

Electrical Characteristics (T_J =25 °C unless otherwise specified)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1	1.6	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A	-	3.8	5.0	mΩ
		V_{GS}=4.5V, I_D=20A	-	6.9	11.0	
g_{FS}	Forward Transconductance	V_{DS}=5V,I_D=20A	20	-	-	S
Dynamic Characteristics (Note4)						
C_{lss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, F=1.0MHz	-	1400	-	PF
C_{oss}	Output Capacitance		-	205	-	PF
C_{rss}	Reverse Transfer Capacitance		-	177	-	PF
Switching Characteristics (Note 4)						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=15V,I_D=20A V_{GS}=10V,R_{GEN}=6.0Ω	-	9	-	nS
t_r	Turn-on Rise Time		-	8	-	nS
$t_{d(off)}$	Turn-Off Delay Time		-	28	-	nS
t_f	Turn-Off Fall Time		-	5	-	nS
Q_g	Total Gate Charge	V_{DS}=15V,I_D=20A, V_{GS}=10V	-	32.3	-	nC
Q_{gs}	Gate-Source Charge		-	4.9	-	nC
Q_{gd}	Gate-Drain Charge		-	6.9	-	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage (Note 3)	V_{GS}=0V,I_S=20A	-	0.85	1.2	V
I_S	Diode Forward Current (Note 2)		-	-	65	A
t_{rr}	Reverse Recovery Time	TJ = 25°C, IF = 20A di/dt = 100A/μs(Note3)	-	-	27	nS
Qrr	Reverse Recovery Charge		-	-	20	nC
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Note :
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ⩽ 10 sec.
3. Pulse Test: Pulse Width ⩽ 300μs, Duty Cycle ⩽ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition：Tj=25°C,V_{DD}=15V,V_G=10V,L=0.5mH,Rg=25Ω.

Typical Electrical and Thermal Characteristics (Curves)

Figure1: Output Characteristics

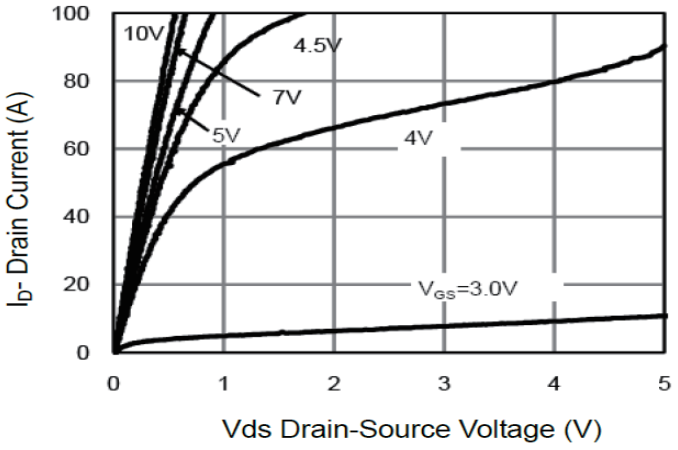


Figure 4: Rdson-JunctionTemperature

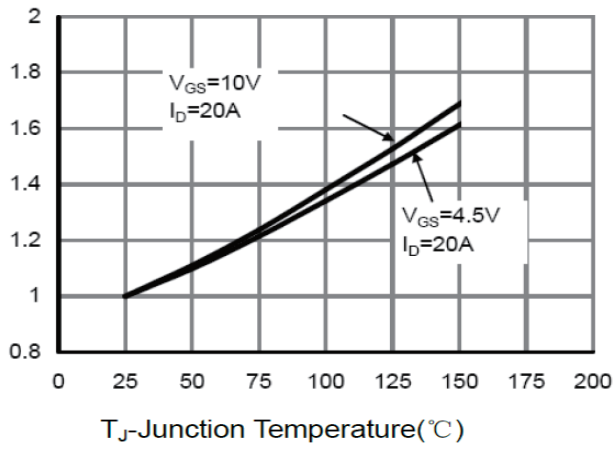


Figure 2:Transfer Characteristics

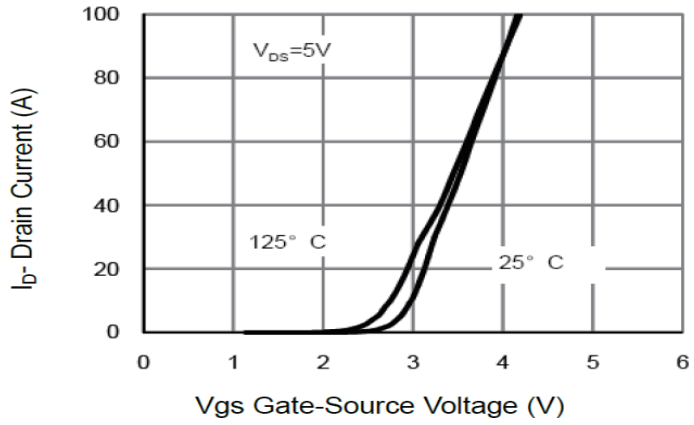


Figure 5: Gate Charge

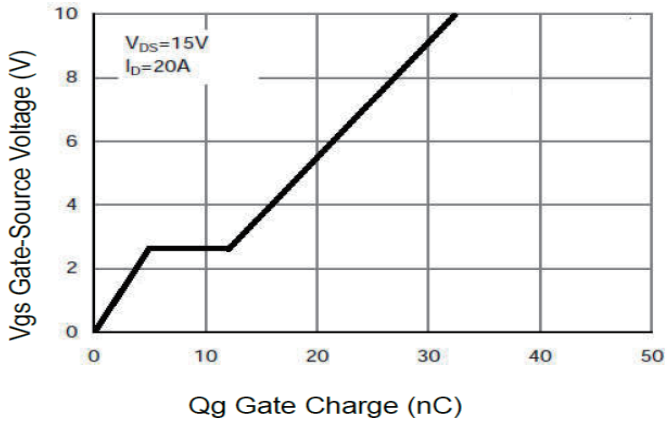


Figure 3: Rdson- Drain Current

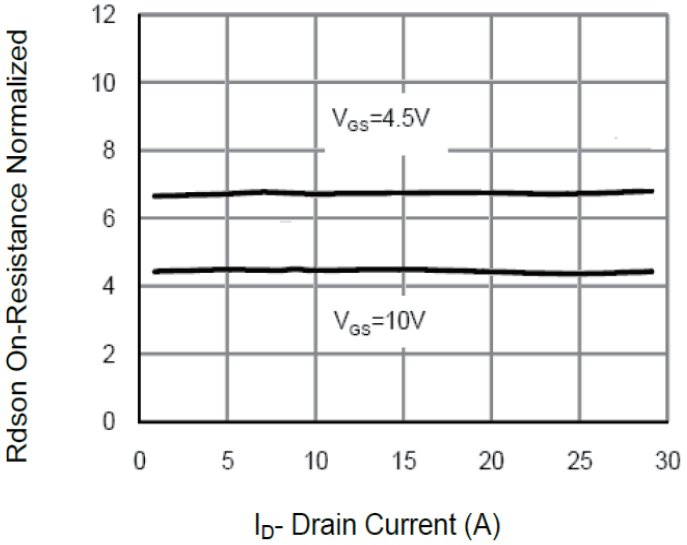
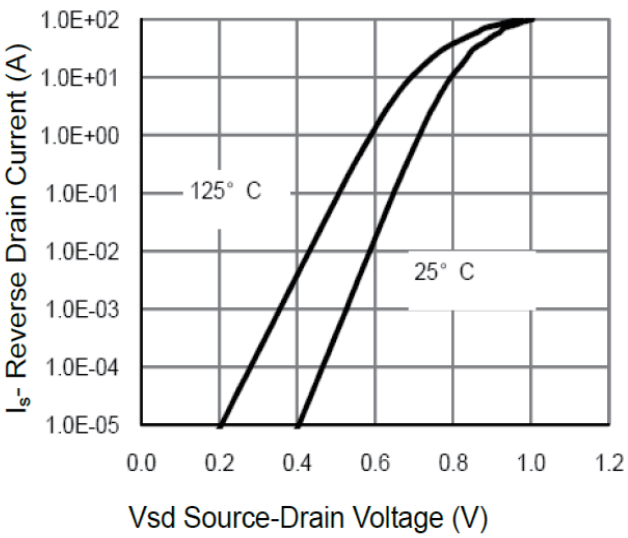


Figure 6: Source- Drain Diode Forward



Typical Performance Characteristics

Figure 7: Capacitance vs Vds

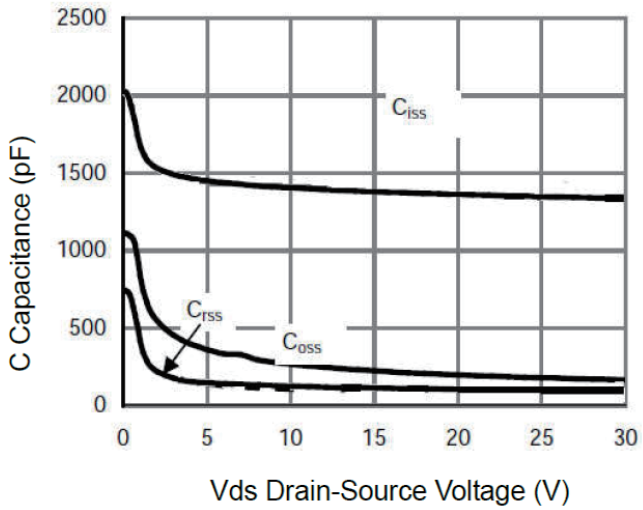


Figure 9: BVDSS vs Junction Temperature

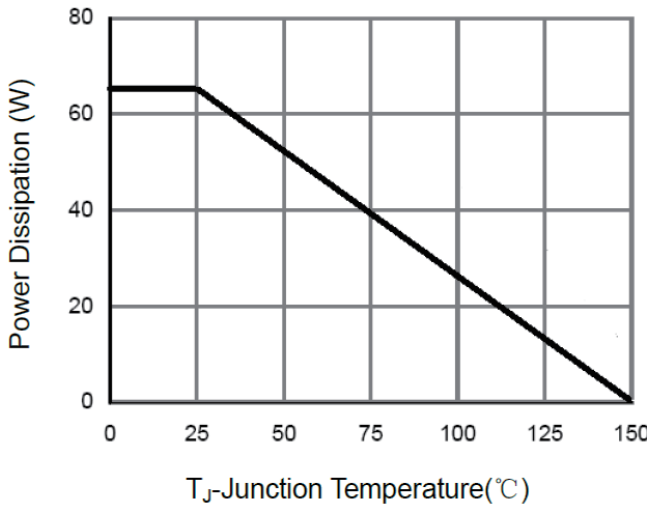


Figure 8: Safe Operation Area

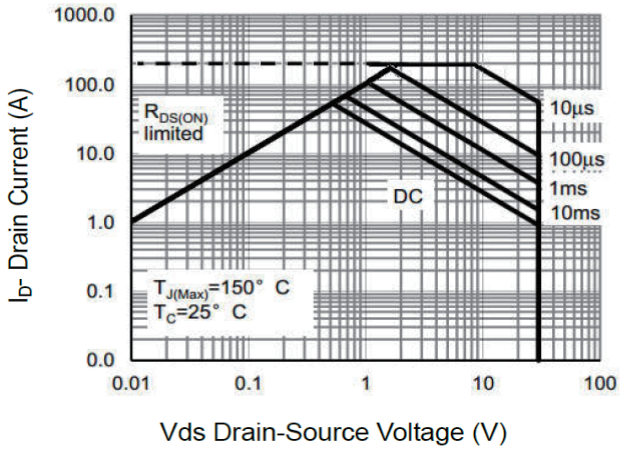


Figure 10: VGS(th) vs Junction Temperature

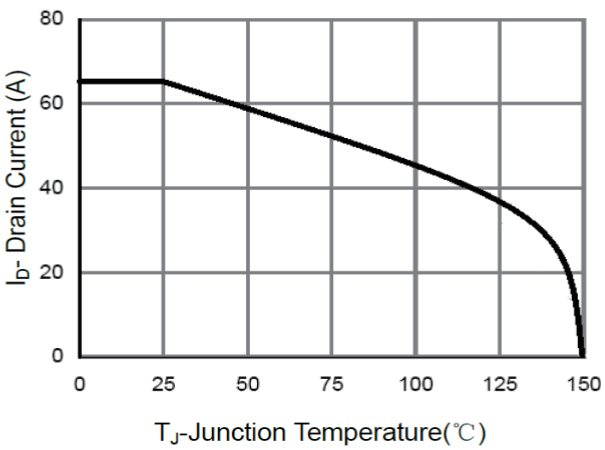
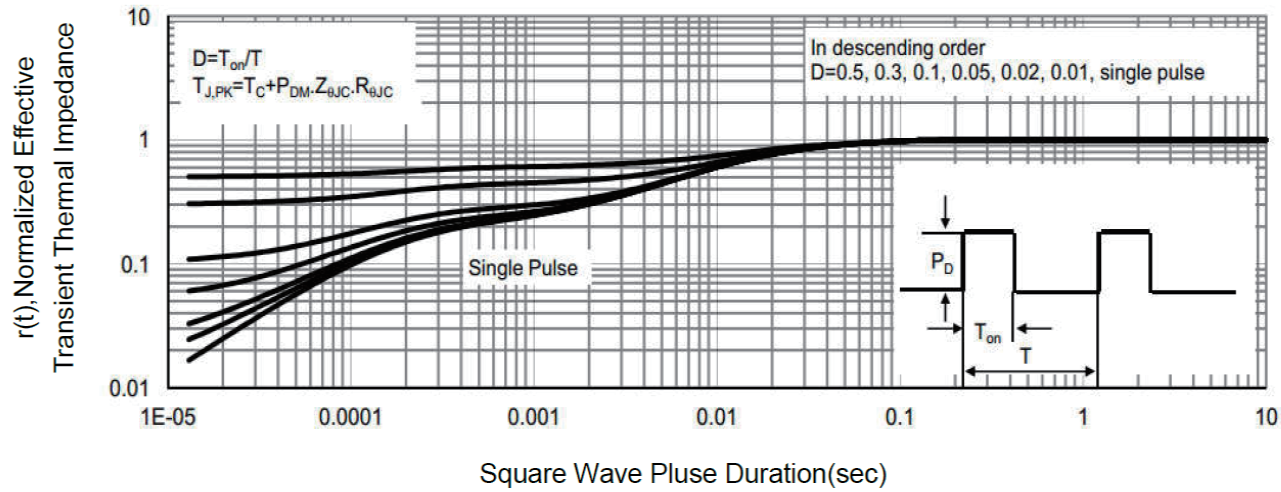


Figure 11: Normalized Maximum Transient



Test Circuit

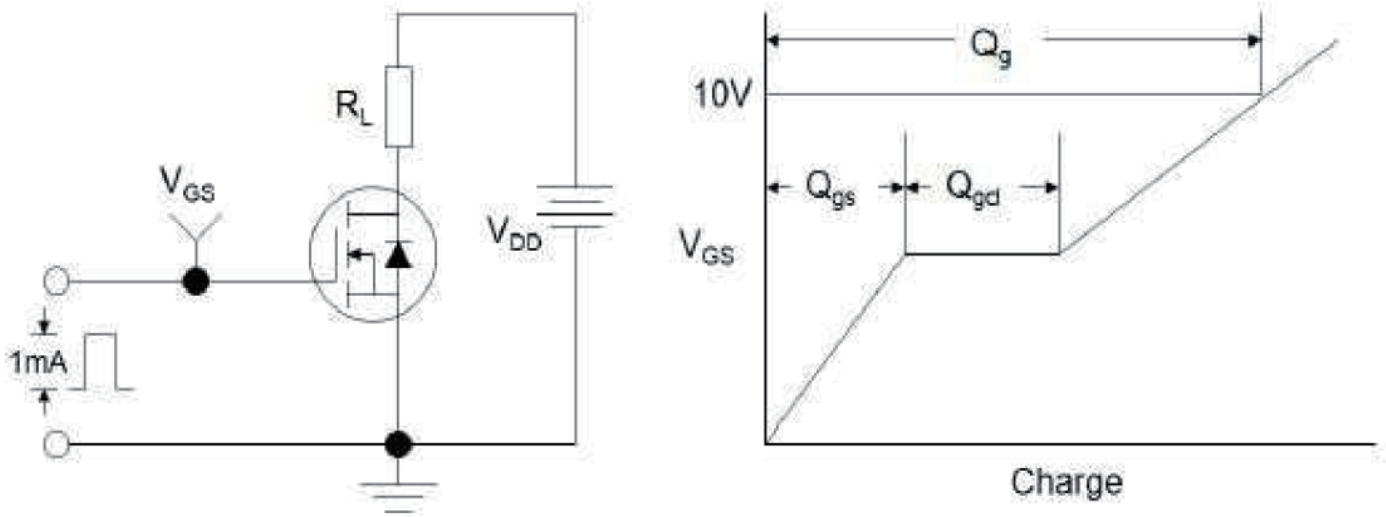


Figure1:Gate Charge Test Circuit & Waveform

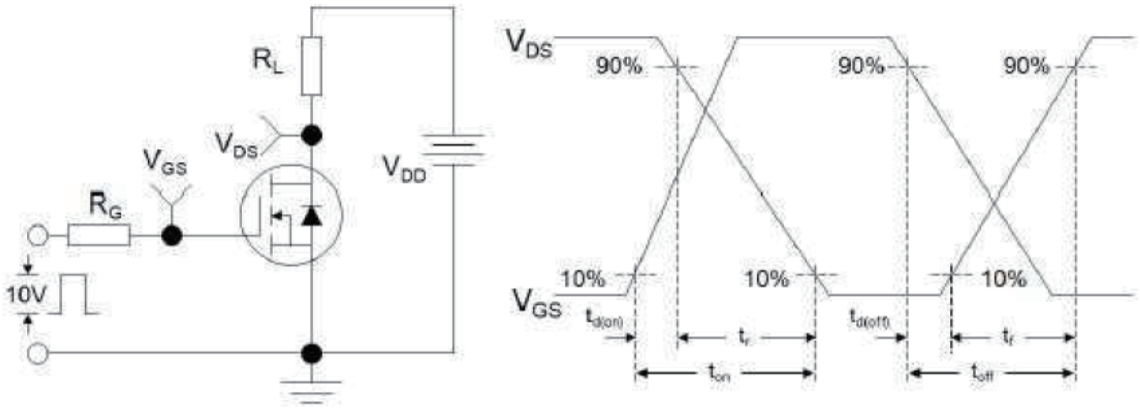


Figure 2: Resistive Switching Test Circuit & Waveforms

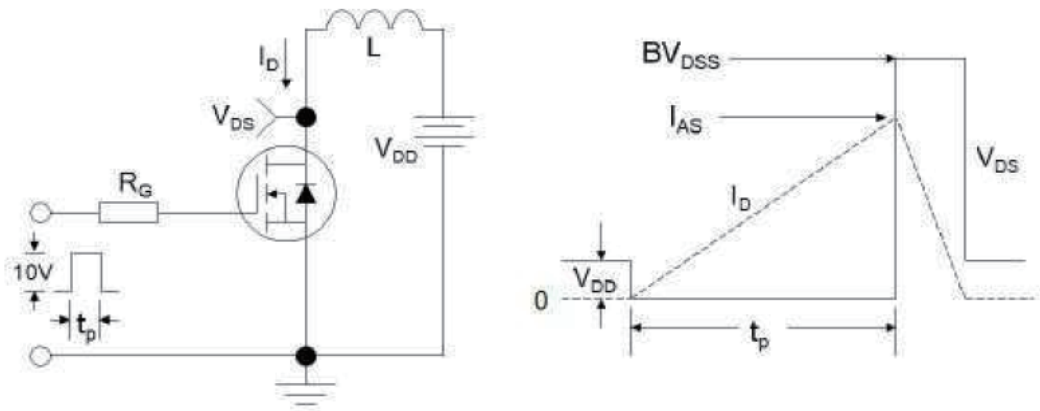
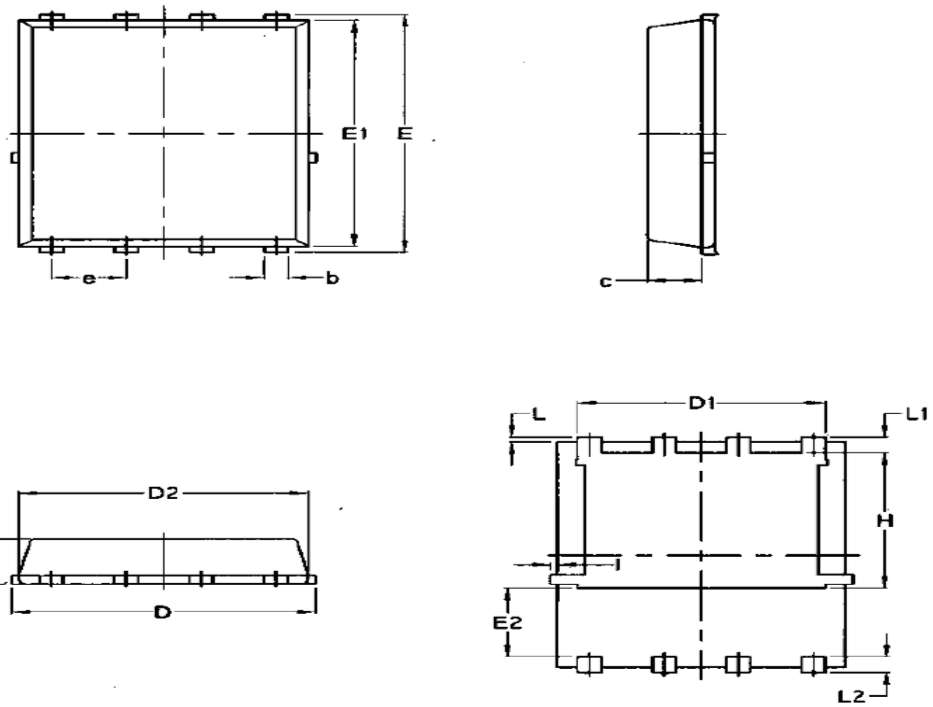


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Package Mechanical Data-DFN5*6-8L-JQ Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.097	0.0324	0.082
D	4.8	5.4	0.189	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.8	5	0.189	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.6	/	0.063	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.002	0.0098
L1	0.38	0.5	0.015	0.0197
L2	0.38	0.5	0.015	0.0197
H	3.3	3.5	0.1299	0.1378
I	/	0.18	/	0.007