FMB6080G N-Channel Trench Power MOSFET

FMB6080G Description

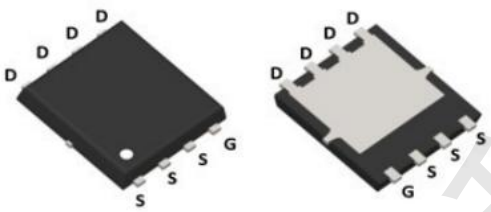
Features

- 60V,80A
- $R_{DS(ON)}$=5.9mΩ (Typ.) @ V_{GS} =10V
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge

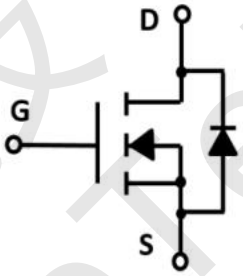
Application

- LCD TV
- Notebook
- Elevator
- Inductive heating
- Power tools

Package



PDFN-8（5*6）



Schematic diagram

FMB6080G Package Marking and Ordering Information

Product ID	PACK	Qty（pcs）
FMB6080G	PDFN-8(5*6)	4000

FMB6080G Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±25	V
I_D	Continuous Drain Current	T_C = 25℃	80	A
		T_C = 100℃	36	A
I_{DM}	Pulsed Drain Current note1		170	A
E_{AS}	Single Pulsed Avalanche Energy note2		380	mJ
P_D	Power Dissipation	T_C = 25℃	33.2	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		3.77	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

FMB6080G Electrical Characteristics (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =48V, V_{GS} = 0V,	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V,V_{GS} = ±25V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	2.0	2.9	4.0	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS} =10V, ID =20A	-	5.9	7.6	mΩ
g_{FS}	Forward Transconductance	V_{DS} =10V, I_D =20A	-	19	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =30V, V_{GS} =10V, f = 1.0MHz	-	6208	-	pF
C_{oss}	Output Capacitance		-	511	-	pF
C_{rss}	Reverse Transfer Capacitance		-	438	-	pF
R_g	Gate resistance	-	-	2.2	-	Ω
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS} =30V, I_D =20A, V_{GS} =10V	-	99.1	-	nC
Q_{gs}	Gate-Source Charge		-	22.3	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	26.7	-	nC
$V_{plateau}$	Gate plateau voltage		-	4.5	-	V
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=30V, V_{GS} =10V RL=1.5Ω,R_{GEN}=3Ω	-	25.7	-	ns
t_r	Turn-on Rise Time		-	93.7	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	67.4	-	ns
t_f	Turn-off Fall Time		-	83.2	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	80	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	170	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S=10A	-	-	1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25℃,VDD=20V,VG=10V, RG=25Ω， L=0.5mH

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

FMB6080G Typical Performance Characteristics

Figure1: On-Region Characteristics

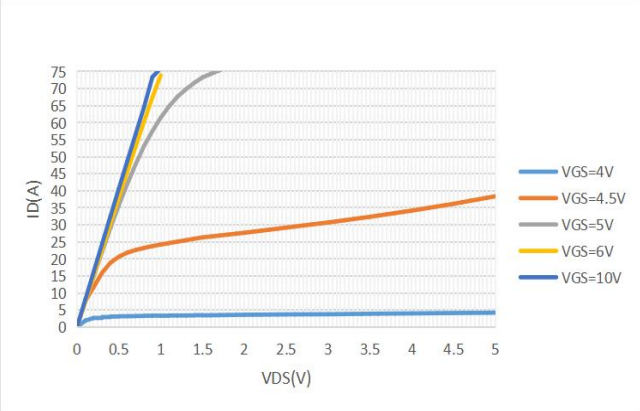


Figure 2: Transfer Characteristics

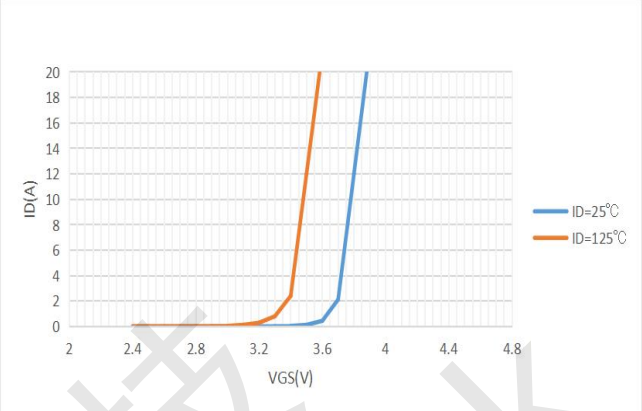


Figure 3: On-resistance vs. Drain Current and Gate Voltage

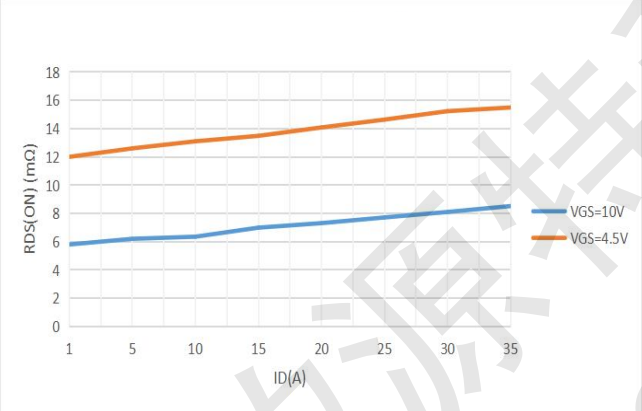


Figure 4: On-Resistance vs. Gate-Source Voltage

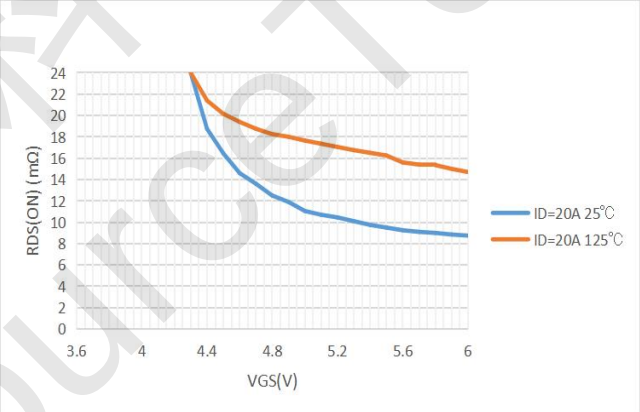


Figure 5: On-Resistance vs. Junction Temperature

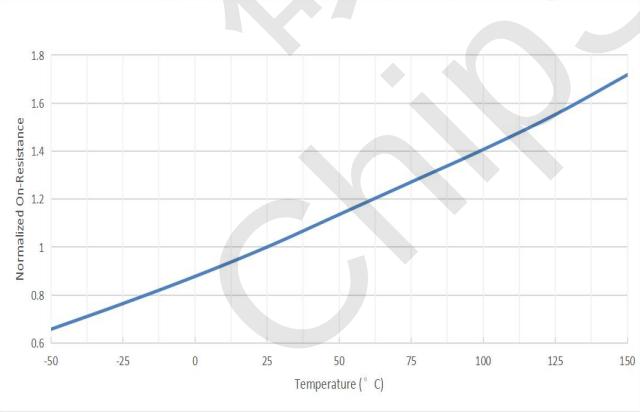
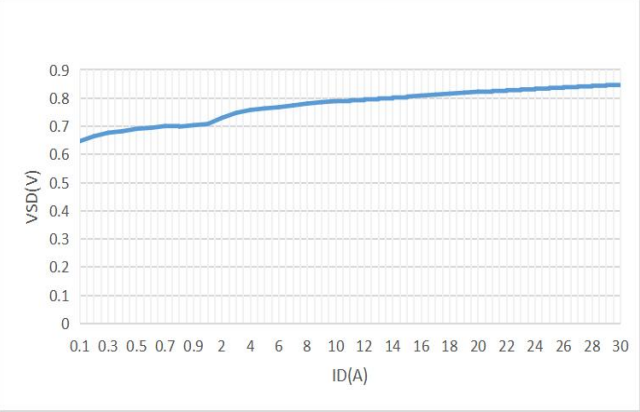


Figure 6: Body-Diode Characteristics



FMB6080G Typical Performance Characteristics

Figure7: Capacitance Characteristics C(pF)

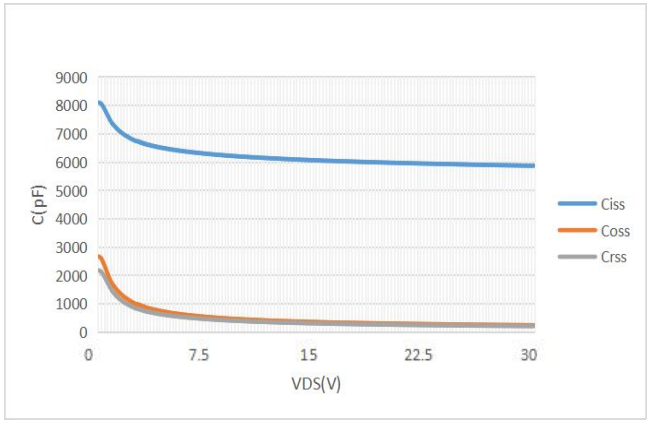


Figure 8: Current De-rating

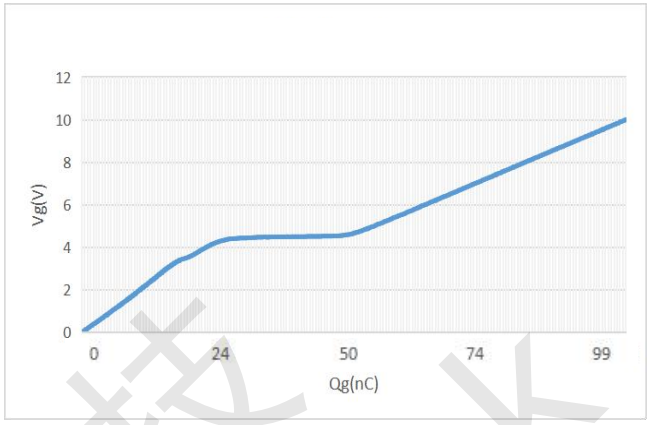


Figure9: Maximum Forward Biased Safe Operating Area

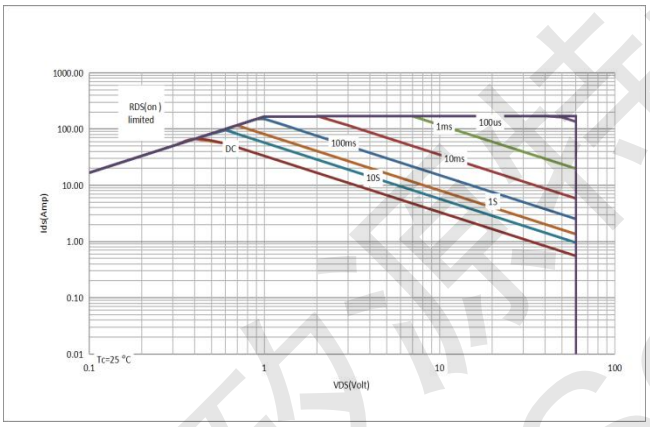
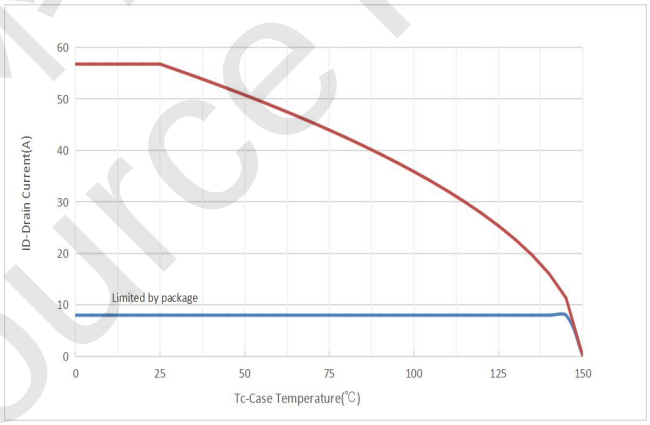


Figure 8: Current De-rating



FMB6080G Test Circuit

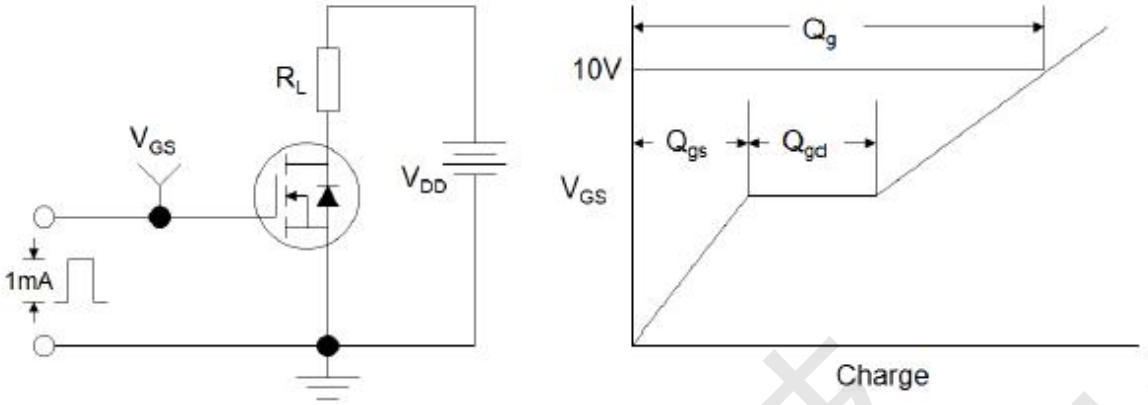


Figure1:Gate Charge Test Circuit & Waveform

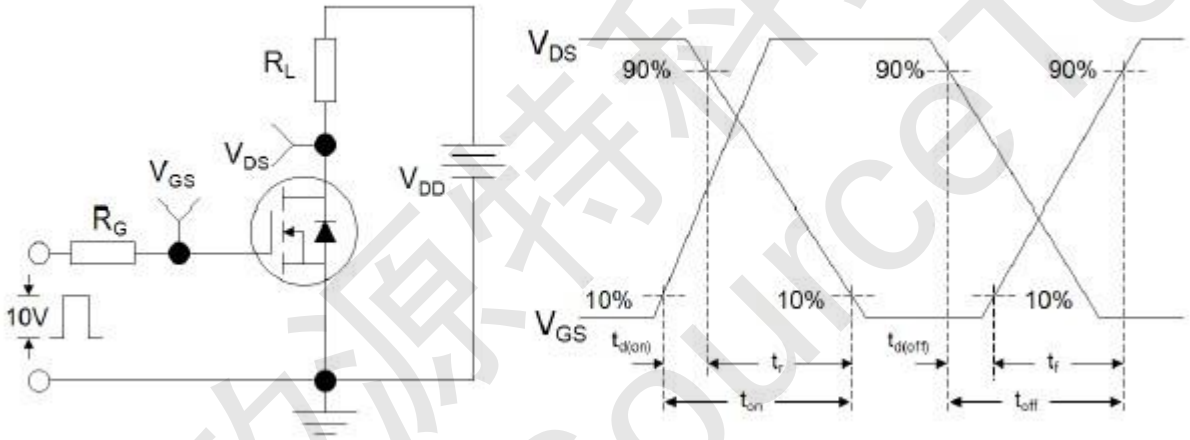


Figure 2: Resistive Switching Test Circuit & Waveforms

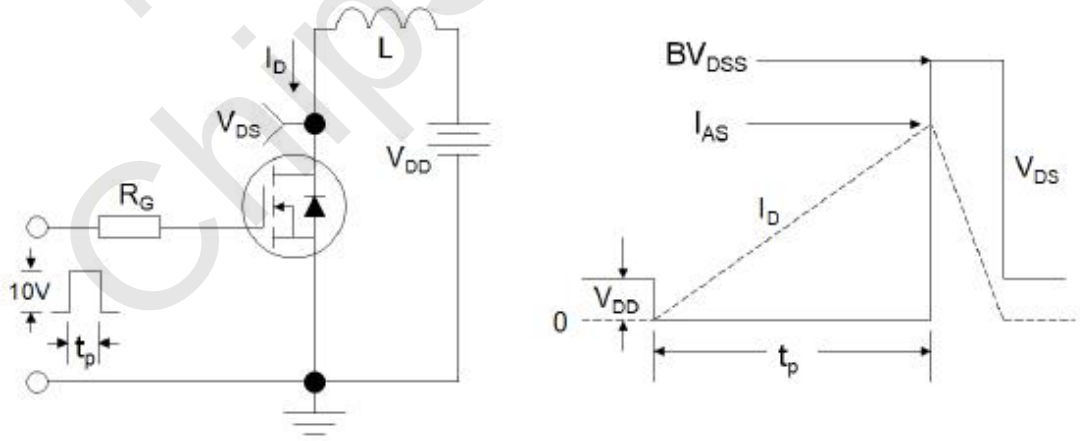


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

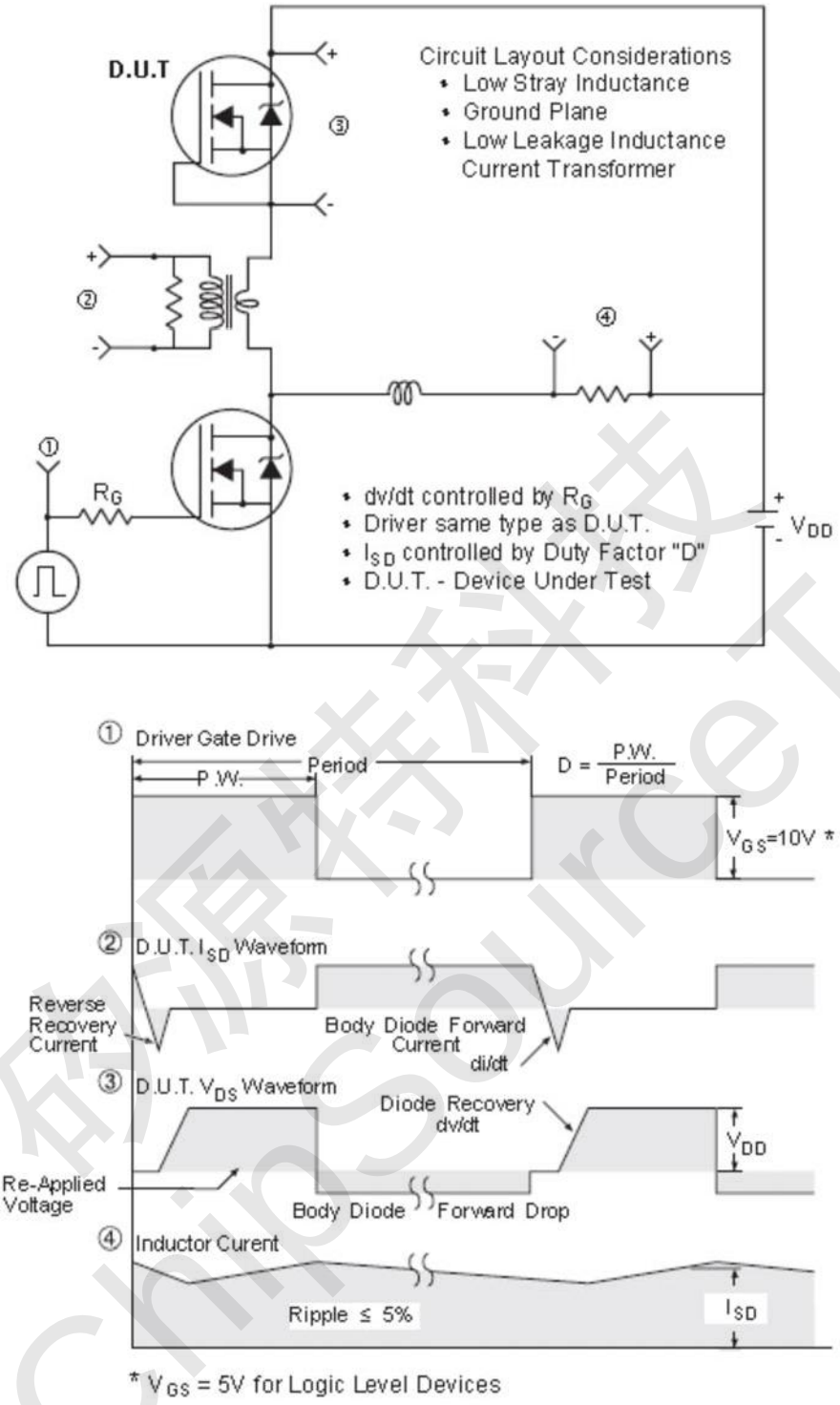
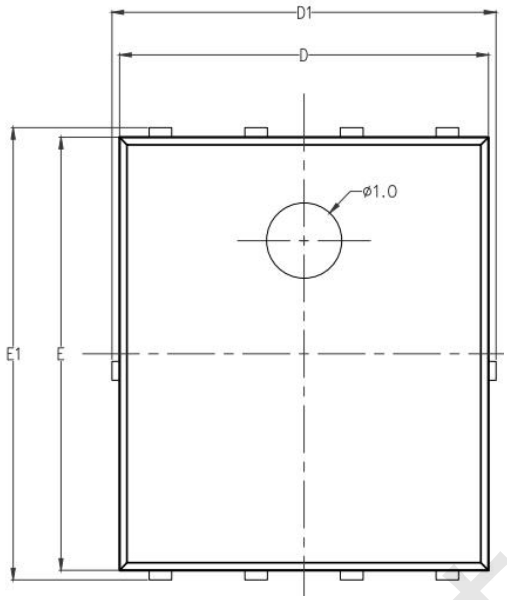
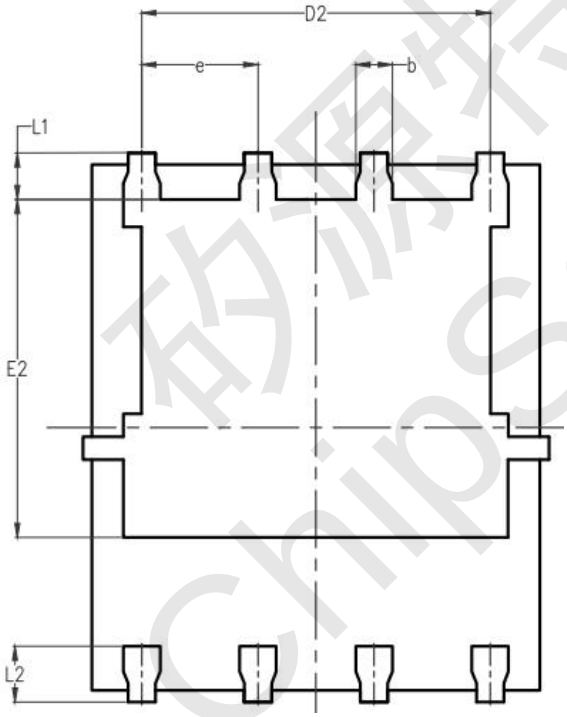


Figure 4:Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

FMB6080G PDFN5*6 Package Information





SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.95	1.00	1.05
A1	0.254REF.		
b	0.41	0.46	0.51
D	4.85	4.90	4.95
D1	4.90	5.00	5.10
D2	3.766	3.816	3.866
E	5.696	5.746	5.796
E1	5.95	6.00	6.05
E2	3.525	3.575	3.625
e	1.22	1.27	1.32
L1	0.46	0.51	0.56
L2	0.56	0.61	0.66