Description

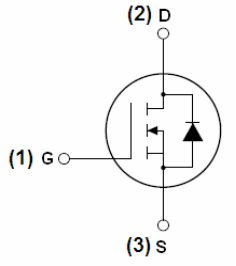
General Features

V_{DSS}	$R_{DS(ON)}$ @10V(Typ)	$R_{DS(ON)}$ @4.5V(Typ)	I_D
30V	4.2mΩ	7.1mΩ	48A

- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- RoHS Compliant

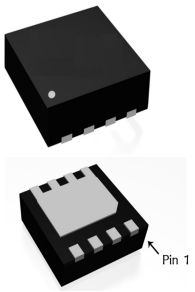
Application

- Load Switch
- PWM Application
- Power management



Schematic diagram

Marking and pin assignment



DFN3*3-8L

Ordering Information

Part Number	Marking	Case	Packaging
G48N03D3	G48N03	DFN3*3-8L	3000pcs/Reel

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

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	48	A
		T_C = 100℃	30	A
I_{DM}	Pulsed Drain Current note1		192	A
E_{AS}	Single Pulsed Avalanche Energy note2		60	mJ
P_D	Power Dissipation	T_C = 25℃	50	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		2.5	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃

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	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =30V, V_{GS} = 0V,	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V,V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	1.1	1.55	2.4	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS} =10V, I_D =20A	-	4.2	4.5	mΩ
		V_{GS} =4.5V, I_D =20A	-	7.1	8	
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=15A	-	28	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =15V, V_{GS} =0V, f = 1.0MHz	-	1950	-	pF
C_{oss}	Output Capacitance		-	320	-	pF
C_{rss}	Reverse Transfer Capacitance		-	240	-	pF
Q_g	Total Gate Charge	V_{DS} =25V, I_D=20A, V_{GS} =10V	-	42	-	nC
Q_{gs}	Gate-Source Charge		-	4	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	14	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=15V, R_l=0.75Ω, R_{GEN}=3Ω, V_{GS}=10V	-	13	-	ns
t_r	Turn-on Rise Time		-	36	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	43	-	ns
t_f	Turn-off Fall Time		-	16	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	48	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	192	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S=20A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=20A,dI/dt=100A/μs	-	16	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	5	-	nC

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

2. EAS condition: T_J=25℃,VDD=30V,VG=10V，RG=25Ω

Typical Performance Characteristics

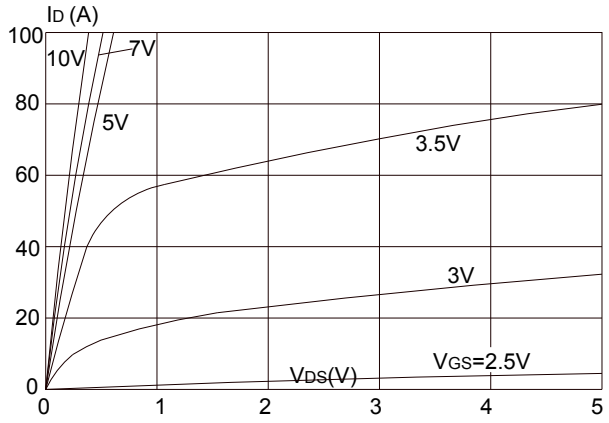


Figure1: Output Characteristics

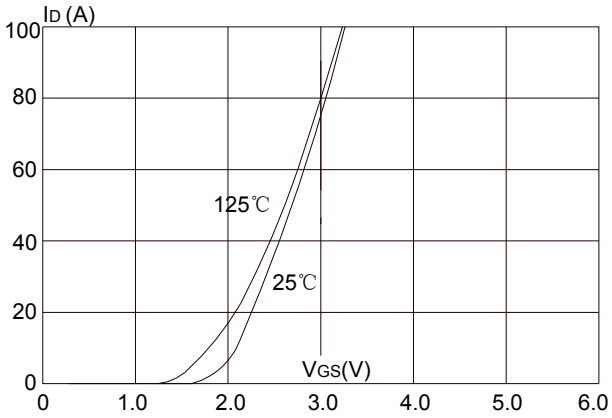


Figure 2: Typical Transfer Characteristics

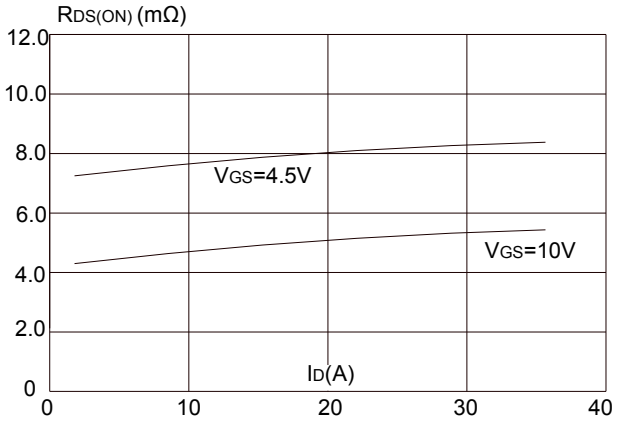


Figure 3: On-resistance vs. Drain Current

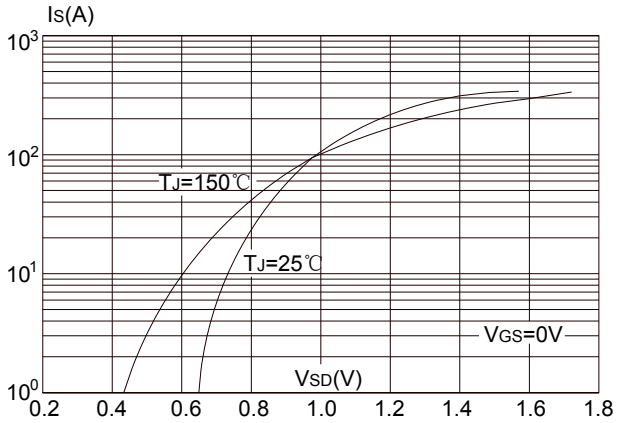


Figure 4: Body Diode Characteristics

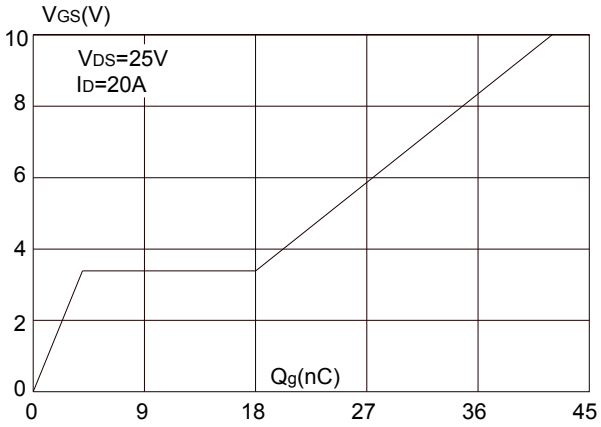


Figure 5: Gate Charge Characteristics

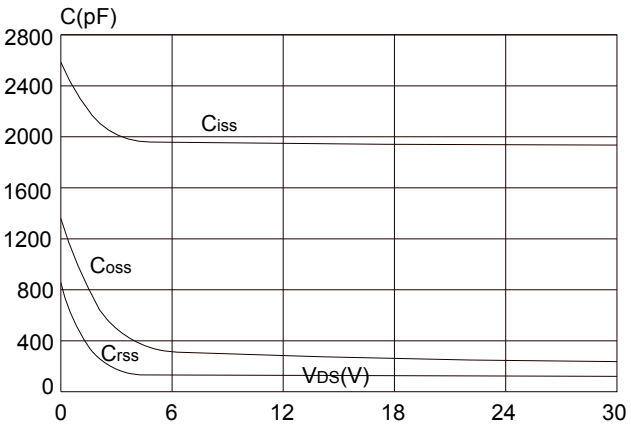


Figure 6: Capacitance Characteristics

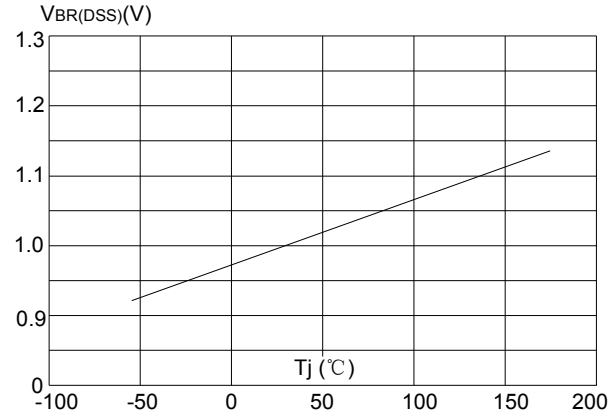


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

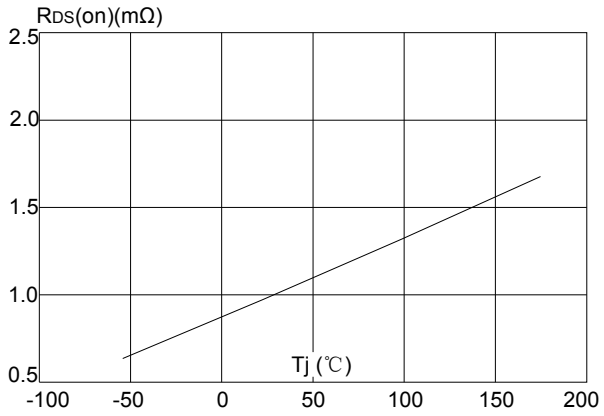


Figure 8: Normalized on Resistance vs. Junction Temperature

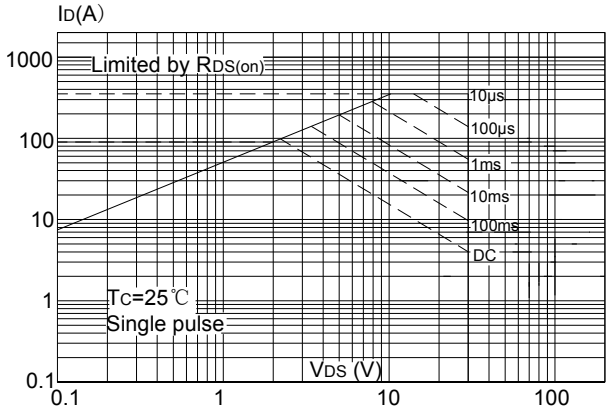


Figure 9: Maximum Safe Operating Area

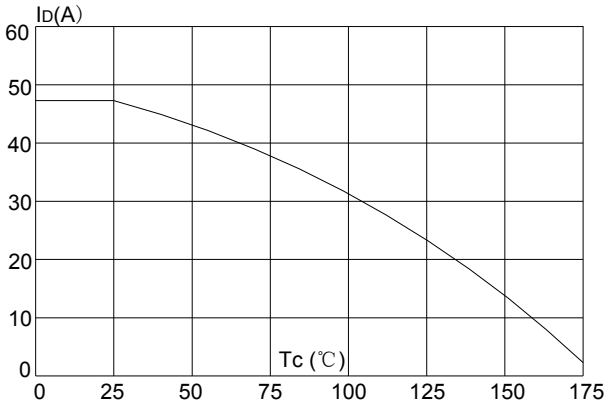


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

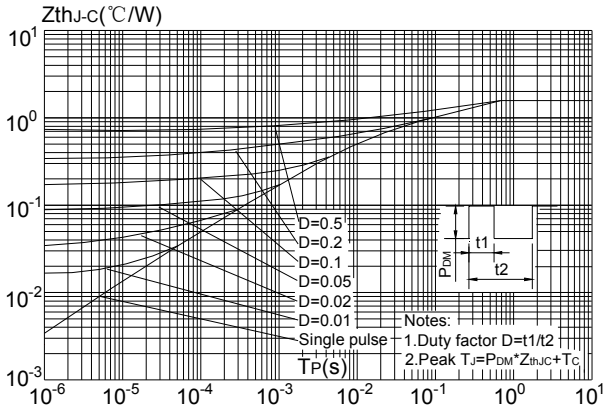


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case (TO-252)

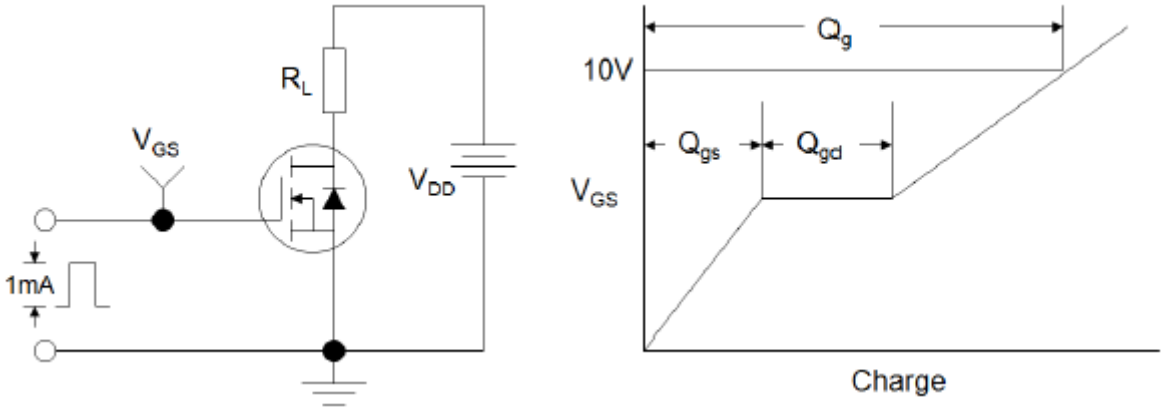


Figure1:Gate Charge Test Circuit & Waveform

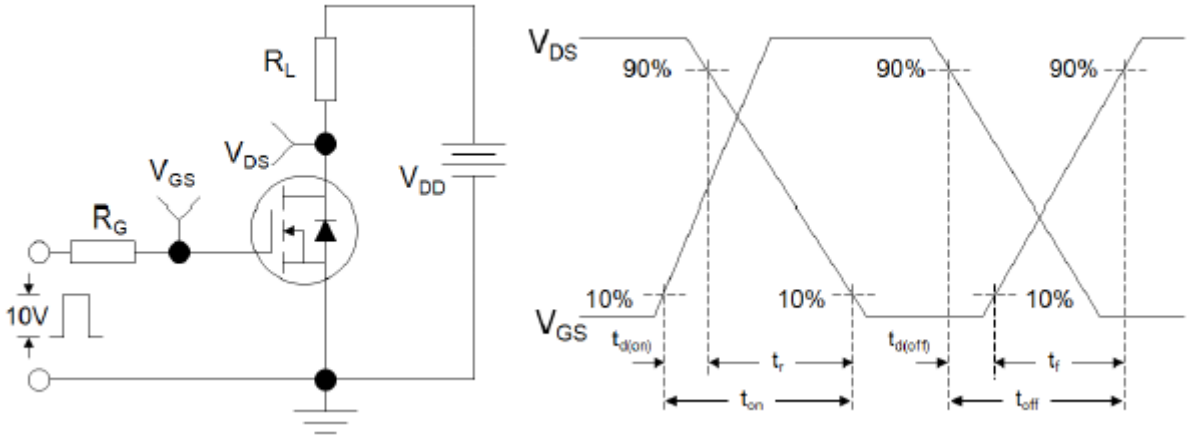


Figure 2: Resistive Switching Test Circuit & Waveforms

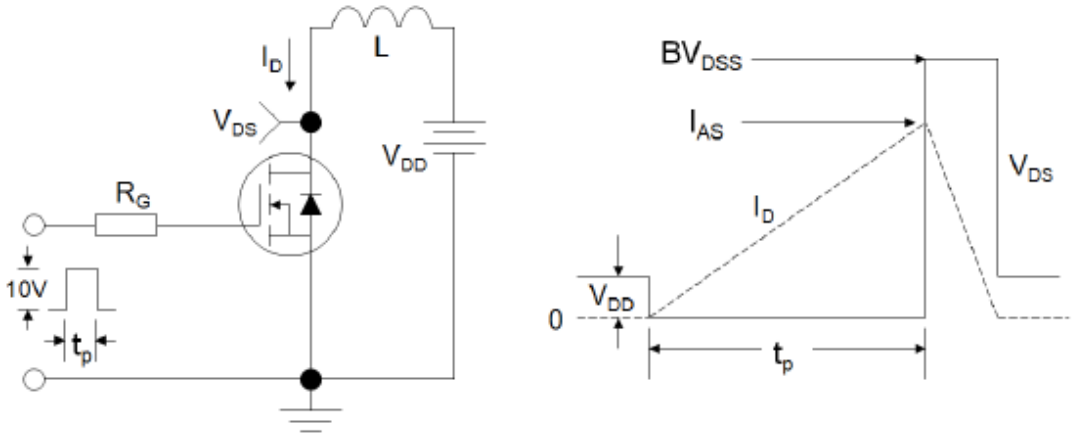


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

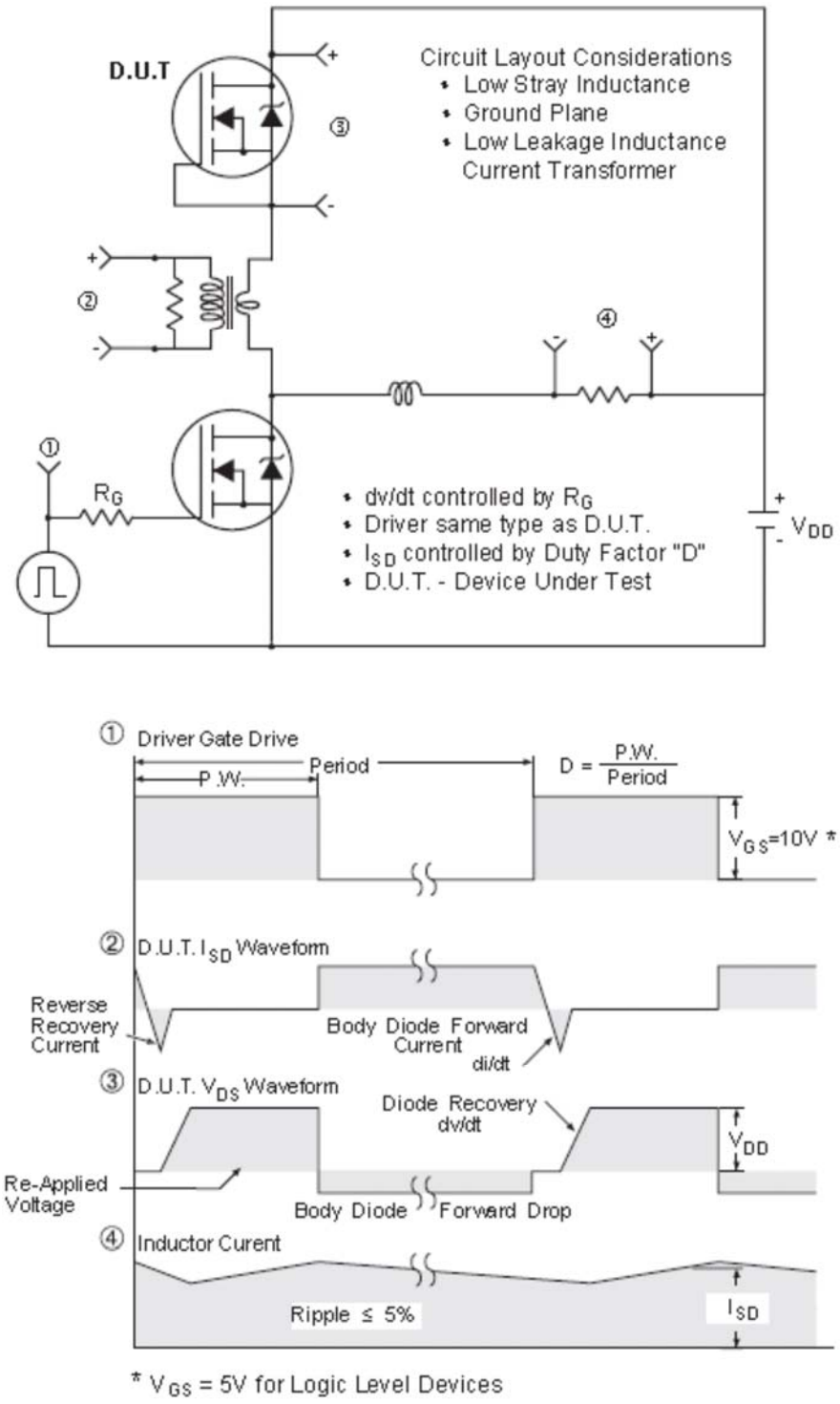
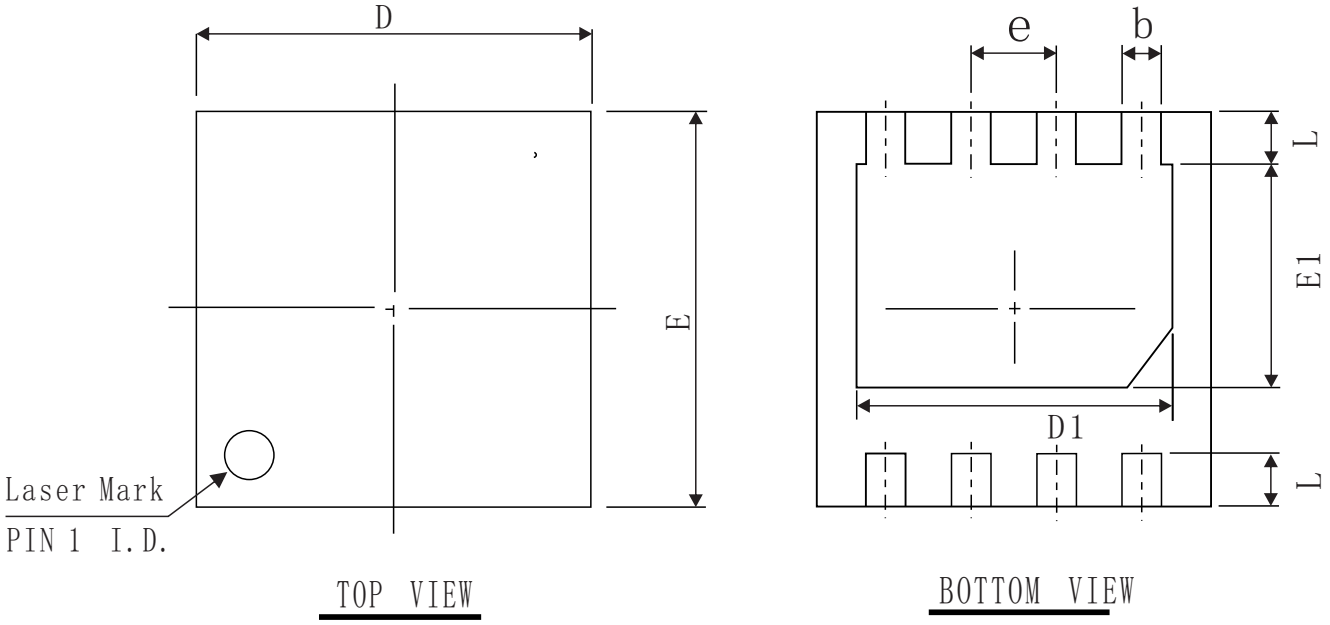
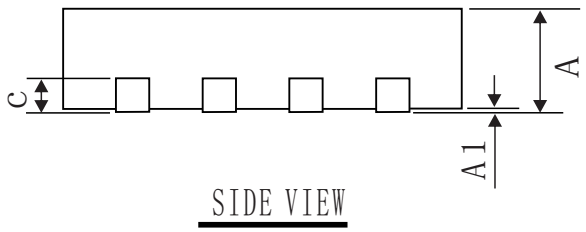


Figure 4:Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

DFN3*3-8L Package information





COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
b	0.25	0.30	0.35
c	0.18	0.20	0.30
D	2.95	3.00	3.07
E	2.95	3.00	3.07
D1	2.30	2.40	2.50
E1	1.60	1.70	1.80
L	0.30	0.40	0.50
e	0.65BSC		