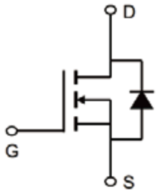
General Features

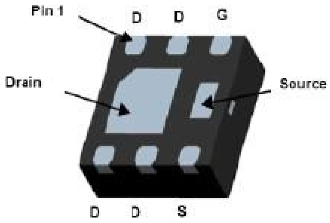
- 20V, 12A
  $R_{DS(ON)} < 22m\Omega$ @ $V_{GS} = 4.5V$
  $R_{DS(ON)} < 28m\Omega$ @ $V_{GS} = 2.5V$
- Avanced Trench Technology
- Excellent RDS(ON) and Low Gate Charge
- Lead Free



Equivalent Circuit

Applications

- Load Switch
- PWM Application
- Power Management



DFN2X2-6L

Ordering information

Product ID	Pack	Naming rule	Marking	Qty(PCS)
WLQ2408	DFN2X2-6L	WLQ2408 产品名称 product name	2408	3000

Absolute Maximum Ratings (TA=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±8	V
I_D@T_A=25℃	Continuous Drain Current	12	A
I_D@T_A=100℃		6	A
I_{DM}	Pulsed Drain Current[1]	30	A
E_{AS}	Single Pulsed Avalanche Energy[2]	30	mJ
P_D@T_A=25℃	Power Dissipation	2.7	W
$R_{\theta JA}$	Thermal Resistance Junction-ambient[3]	46	℃/W
T_J,T_{STG}	Junction & Storage Temperature Range	-55 to 150	℃

Electrical Characteristics (T_A=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	20	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V, V_{GS}=0V	---	---	1.0	uA
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=±8V	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.5	0.75	1.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance^4	V_{GS}=4.5V , I_D=10A	---	13	22	mΩ
		V_{GS}=2.5V , I_D=5A	---	18	28	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=10V, f=1MHz	---	665	---	pF
C_{oss}	Output Capacitance		---	90	---	
C_{rss}	Reverse Transfer Capacitance		---	80	---	
Q_g	Total Gate Charge	V_{GS}=0 to 4.5V V_{DD}=10V, I_D=5A	---	13	---	nC
Q_{gs}	Gate-Source Charge		---	2	---	
Q_{gd}	Gate Drain("Miller") Charge		---	3	---	
Switching Characteristics						
$T_{d(on)}$	Turn-On Delay Time	V_{GS}=4.5V, V_{DD}=10V I_D=5A, R_{GEN}=3W	---	7	---	ns
T_r	Rise Time		---	25	---	
$T_{d(off)}$	Turn-Off Delay Time		---	34	---	
T_f	Fall Time		---	13	---	
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		---	---	12	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		---	---	30	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=10A	---	---	1.2	V
t_{rr}	Body Diode Reverse Recovery Time	I_F=5A, di/dt=100A/us	---	10	---	ns
Q_{rr}	Body Diode Reverse Recovery Charge		---	2.7	---	nC

Note :

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25℃, V_{DD}=10V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=11A.
3. $R_{\theta JA}$ is measured with the device mounted on a 1inch2 pad of 2oz copper FR4 PCB.
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Characteristics

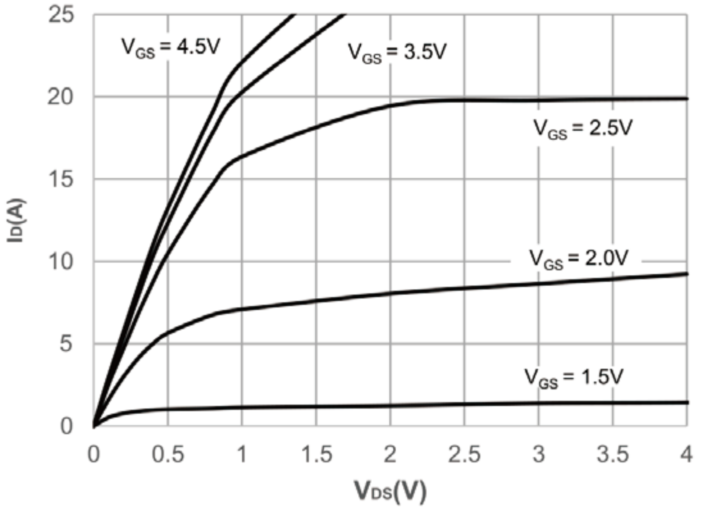


Figure1: Output Characteristics

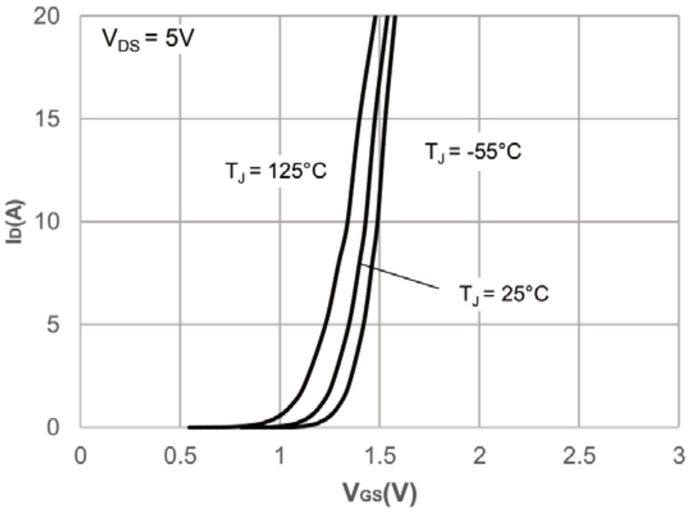


Figure 2: Typical Transfer Characteristics

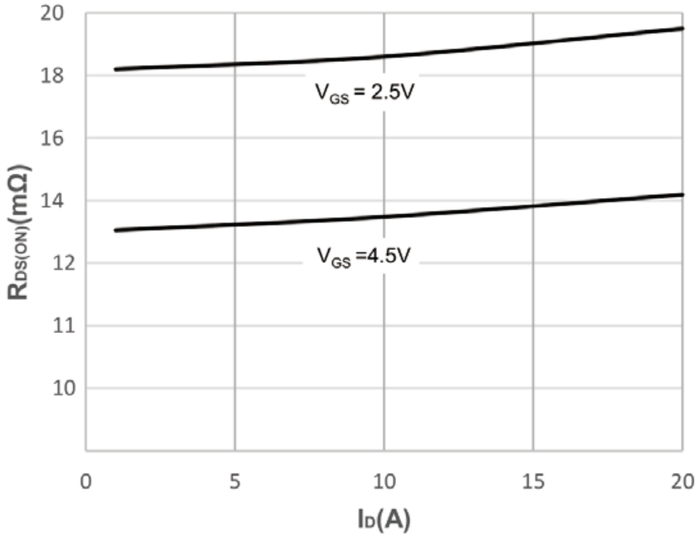


Figure 3:On-resistance vs. Drain Current

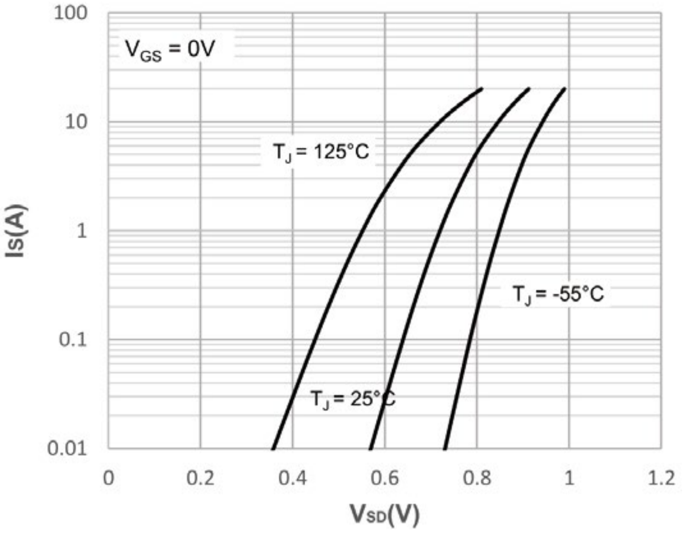


Figure 4: Body Diode Characteristics

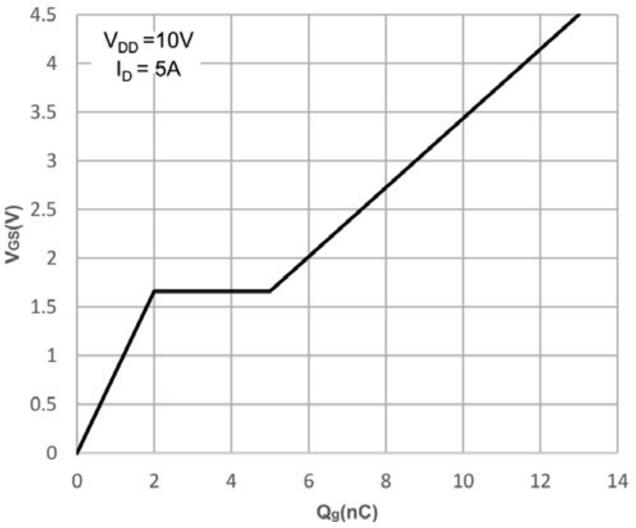


Figure 5: Gate Charge Characteristics

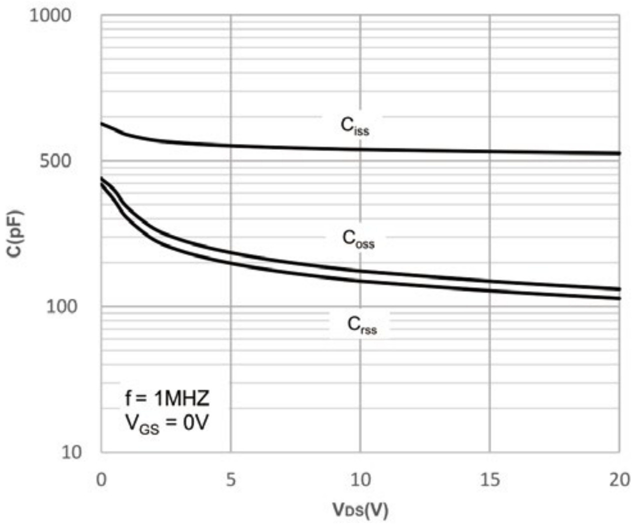


Figure 6: Capacitance Characteristics

Typical Characteristics

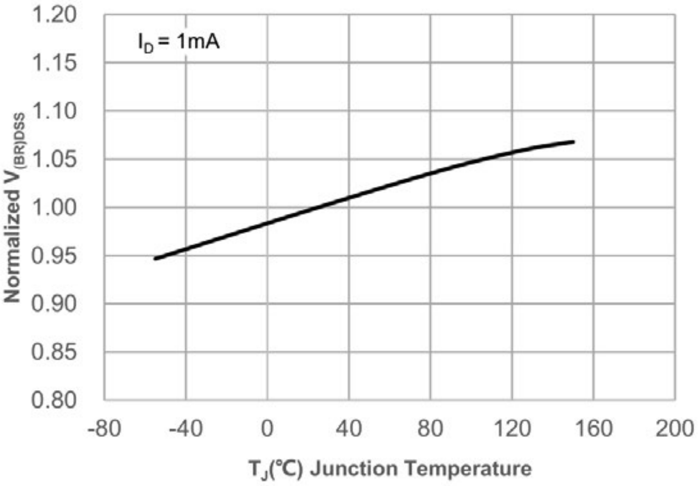


Figure 7: Normalized Breakdown Voltage vs.
Junction Temperature

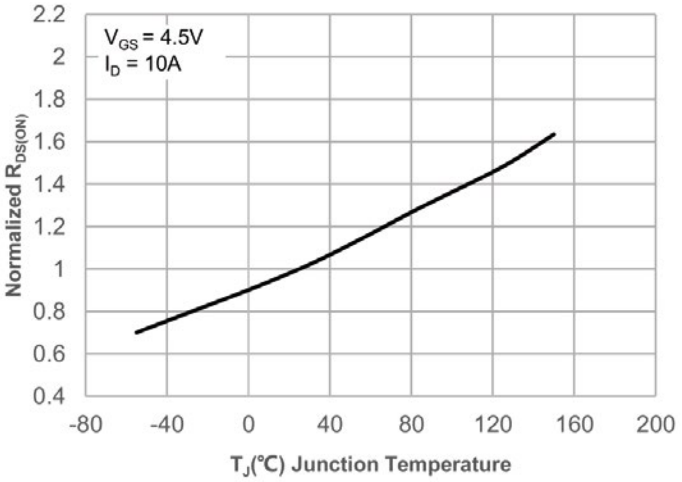


Figure 8: Normalized on Resistance vs.
Junction Temperature

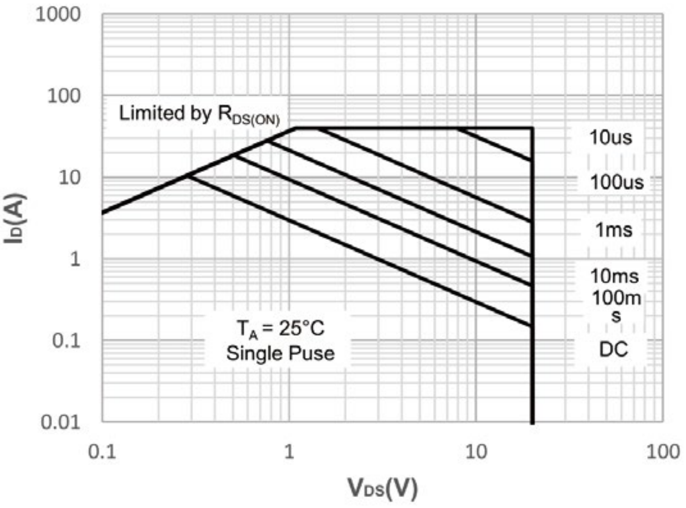


Figure 9: Maximum Safe Operating Area

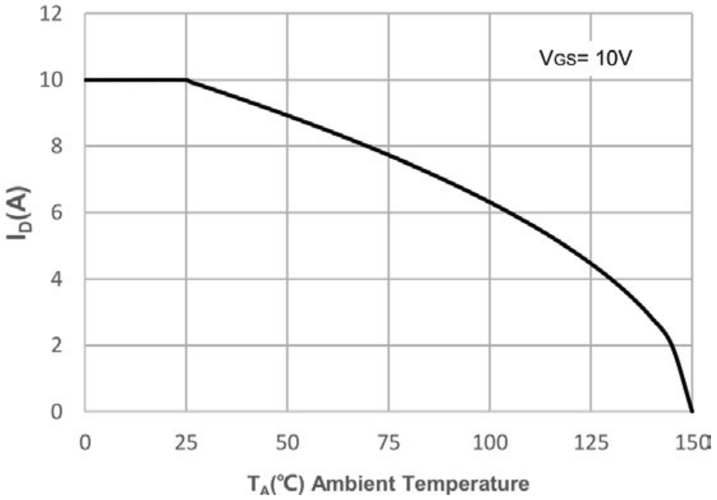


Figure 10: Maximum Continuous Drain Current
vs. Ambient Temperature

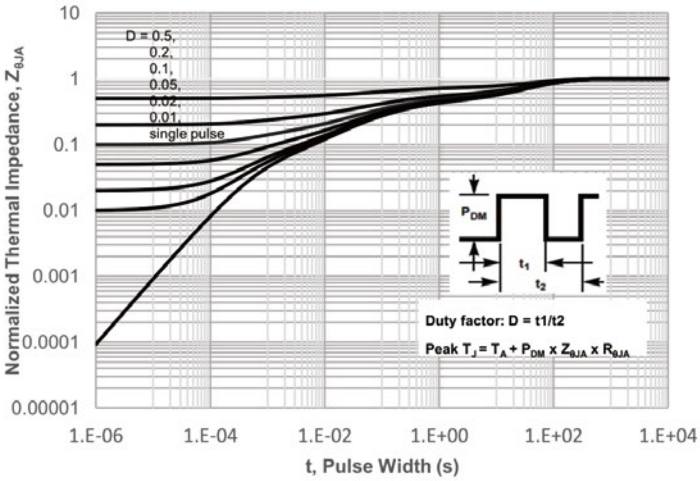


Figure 11: Normalized Maximum Transient
Thermal Impedance

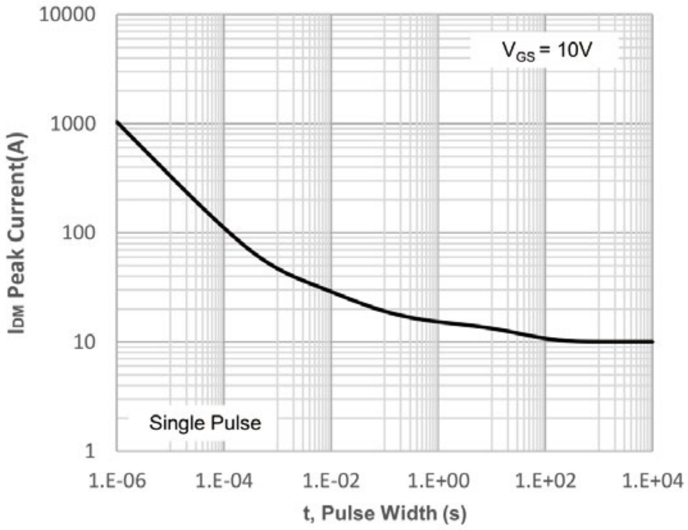
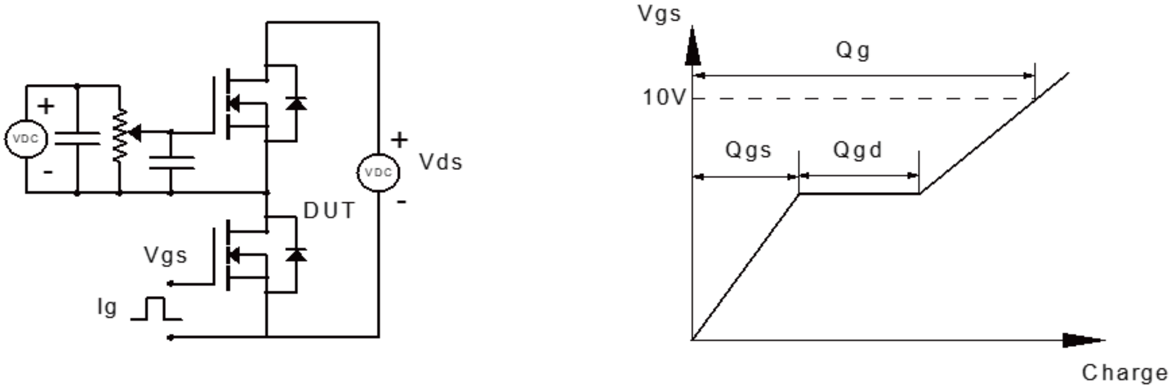
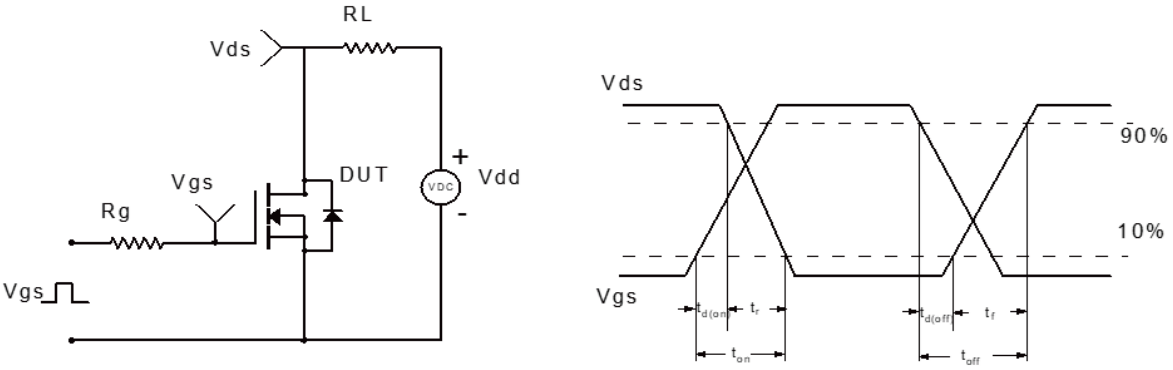


Figure 9: Maximum Safe Operating Area

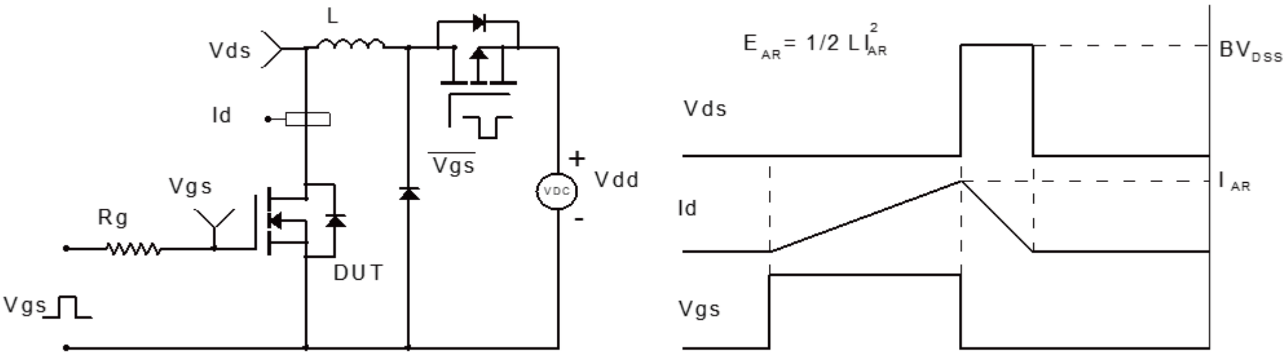
Test Circuit



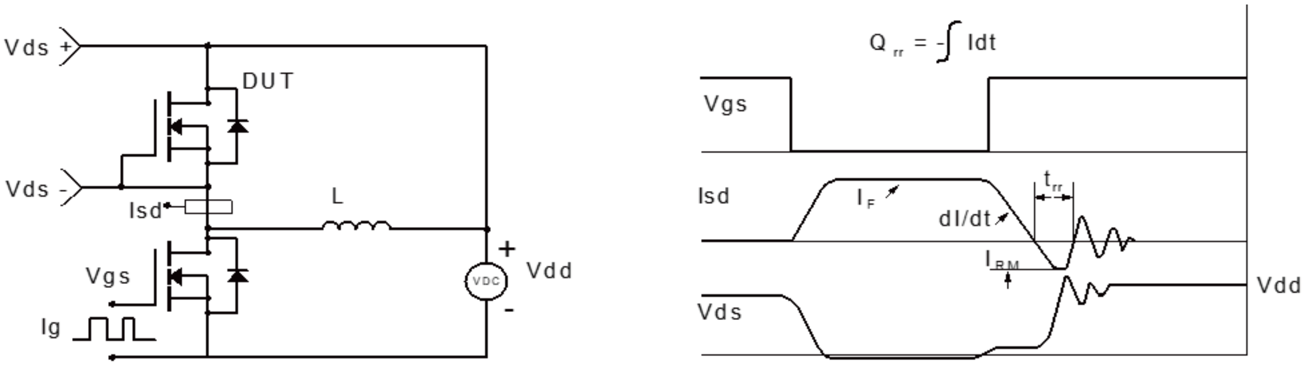
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

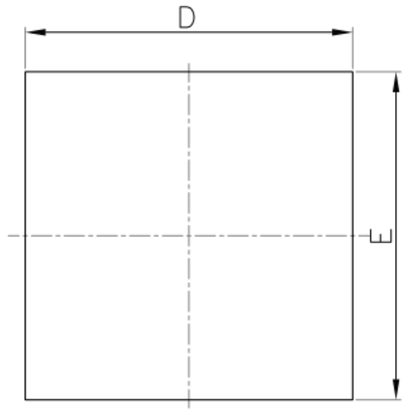


Unclamped inductive Switching (UIS) Test Circuit & Waveforms

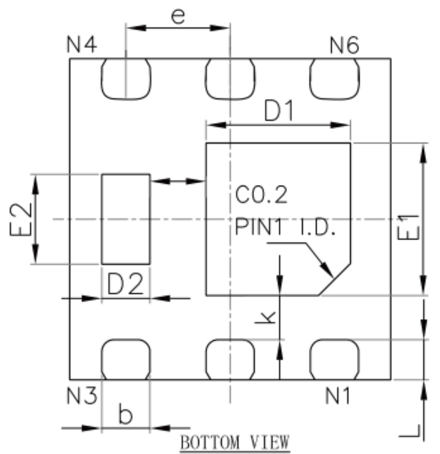


Diode Recovery Test Circuit & Waveforms

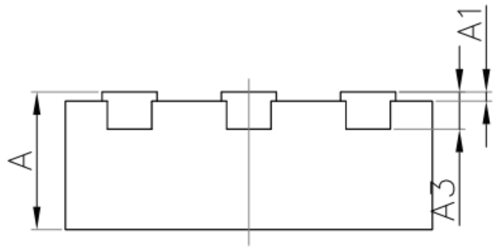
DFN2X2-6L Package Outline Dimensions



TOP VIEW
[顶视图]



BOTTOM VIEW
[背视图]



SIDE VIEW
[侧视图]

Symbol	Dimensions in Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.032
A3	0.203REF.		0.008REF.	
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
D1	0.800	1.000	0.031	0.039
E1	0.850	1.050	0.033	0.041
D2	0.200	0.400	0.008	0.016
E2	0.460	0.660	0.018	0.026
b	0.250	0.350	0.010	0.014
e	0.650BSC.		0.026BSC.	
k	0.275REF.		0.011REF.	
k1	0.350REF.		0.014REF.	
L	0.174	0.326	0.007	0.013

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