

Features

- Uses advanced SGT technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent gate charge x $R_{DS(on)}$ product(FOM)

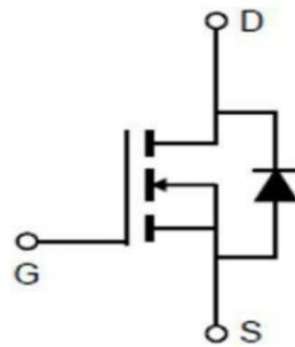
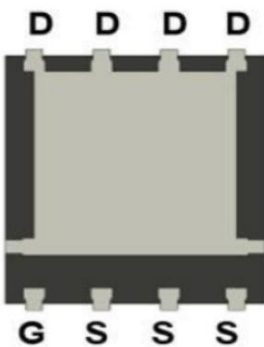
Application

- Motor control and drive
- Battery management
- DC/DC

Product Summary

Package	PDFN5*6
V_{DS}	90V
$R_{DS(on)}@V_{GS}=10V$	2.9mΩ
I_D	160A

Package Marking



Type	Package	Marking	Reel Size	Tape Width	Packing	Qty
LR032N09XD8	PDFN5*6	LR032N09XD8	330*16.5mm	12mm	Reel&Tape	5000

Maximum Ratings (TC=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	90	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous drain current $T_c=25^\circ\text{C}$ (Silicon limit) $T_c=100^\circ\text{C}$ (Silicon limit)	I_D	160 102	A
Pulsed Drain Current	I_{DM}	640	A
Maximum Power Dissipation	P_d	164	W
Single pulse avalanche energy	E_{AS}	784	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C

Thermal Characteristic

Thermal Resistance,Junction-to-Case	R_{thJC}	0.76	°C/W
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Electrical Characteristics (T_c=25°C unless otherwise noted)

Parameter	Symbol	Condition	min	typ	max	Unit
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Static Characteristic

Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	90	100	-	V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	
Zero gate voltage drain current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$	-	-	1	μA
Gate-source leakage current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	±100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D=30A, V_{GS}=10V$	-	2.9	3.2	mΩ

Dynamic Characteristic

Input Capacitance	C_{iss}	$V_{DS}=40V, V_{GS}=0V,$ $f=1MHz$	-	5159	-	pF
Output Capacitance	C_{oss}		-	1707	-	
Reverse Transfer Capacitance	C_{rss}		-	36	-	
Gate resistance	R_g	$f=1MHz$	-	0.8	-	Ω
Gate Total Charge	Q_g	$V_{DS}=40V, I_D=65A,$ $V_{GS}=10V$	-	88	-	nC
Gate-Source charge	Q_{gs}		-	22	-	
Gate-Drain charge	Q_{gd}		-	25	-	
Turn-on delay time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=40V,$ $R_G=3\Omega$	-	18	-	ns
Rise time	t_r		-	11	-	
Turn-off delay time	$t_{d(off)}$		-	38	-	
Fall time	t_f		-	9	-	

Body Diode Characteristic

Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=40A$	-	0.85	1.2	v
Reverse Recovery Time	t_{rr}	$I_F = 65A$ $di/dt = 100A/\mu s$	-	72	-	ns
Reverse Recovery Charge	Q_{rr}		-	102	-	nC

Typical Performance Characteristics

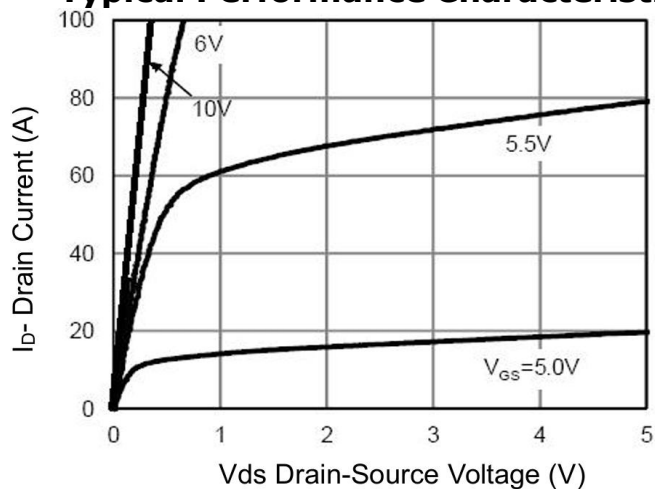


Figure 1 Output Characteristics

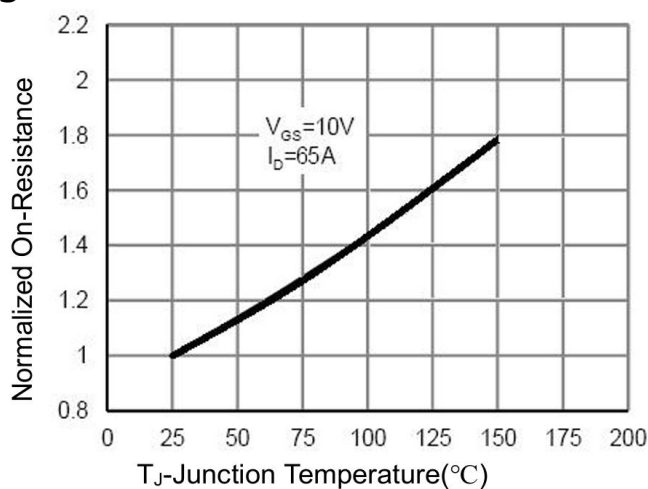


Figure 4 Rdson-Junction Temperature

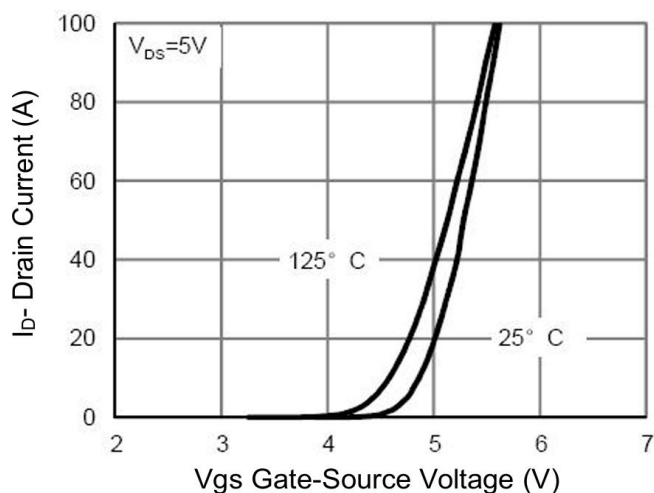


Figure 2 Transfer Characteristics

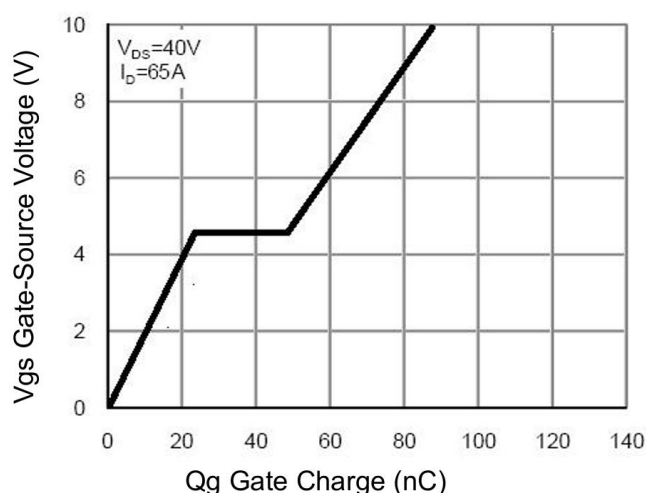


Figure 5 Gate Charge

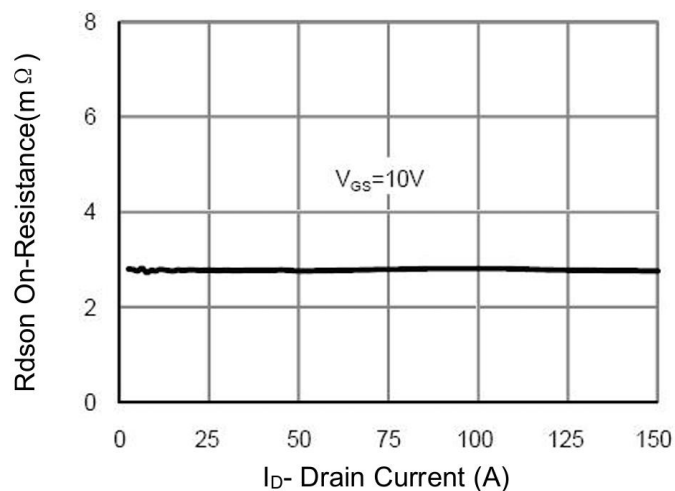


Figure 3 Rdson- Drain Current

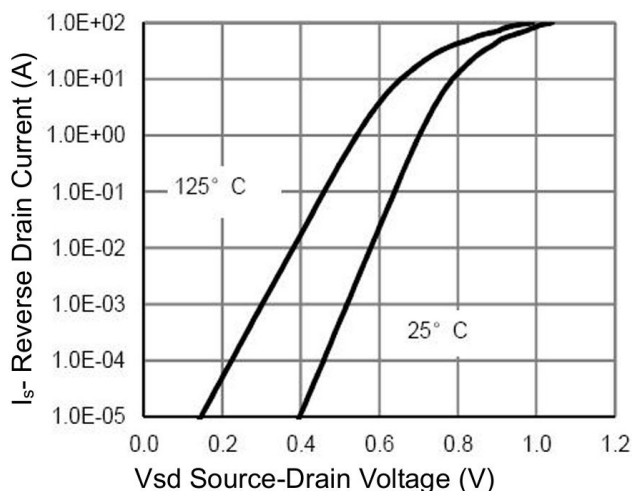


Figure 6 Source- Drain Diode Forward

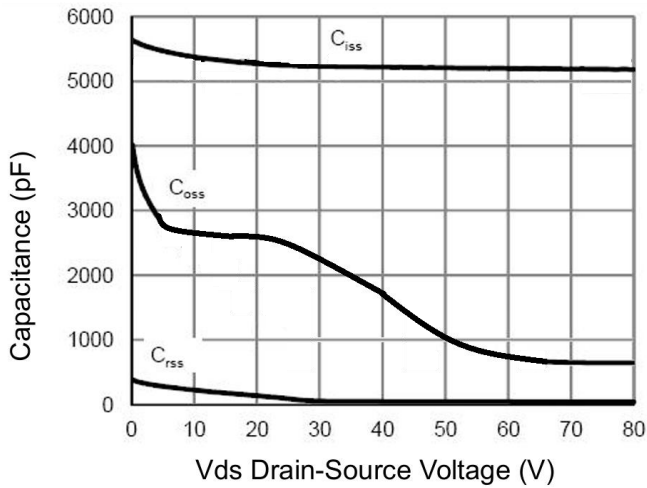


Figure 7 Capacitance vs Vds

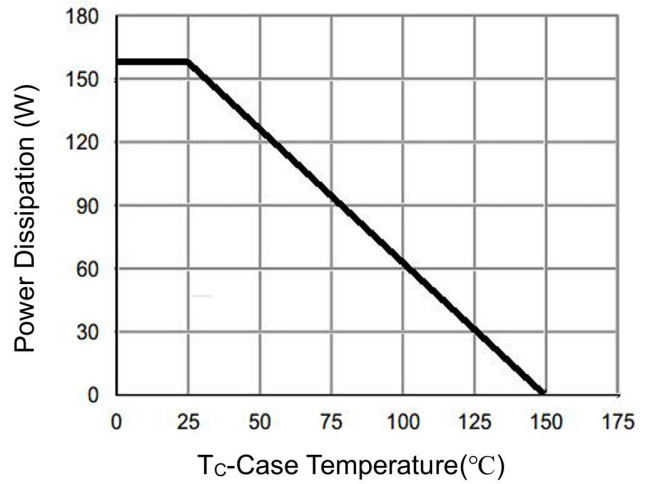


Figure 9 Power De-rating

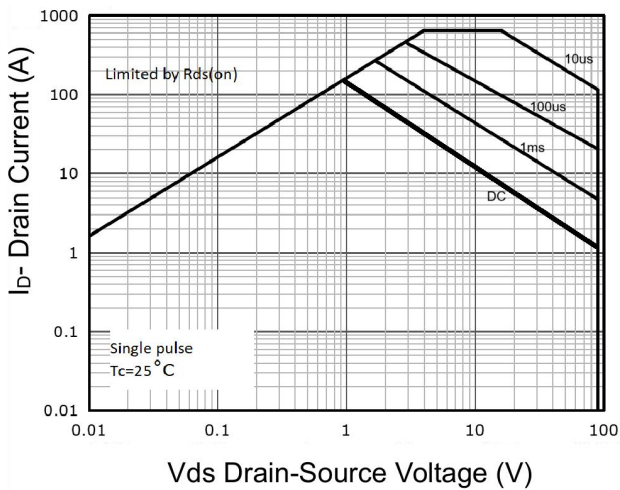


Figure 8 Safe Operation Area

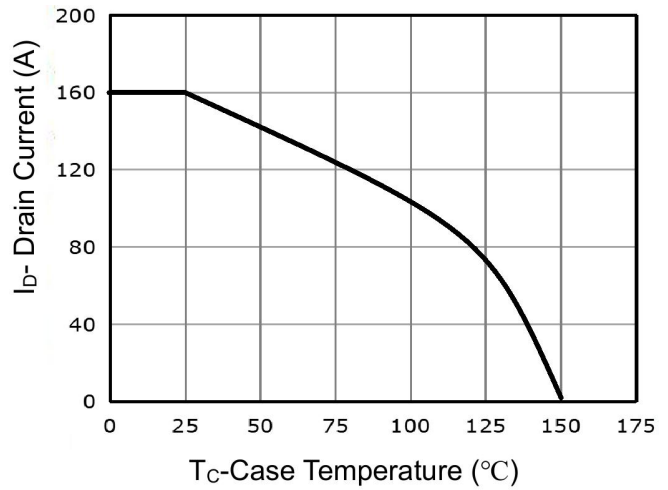


Figure 10 Current De-rating

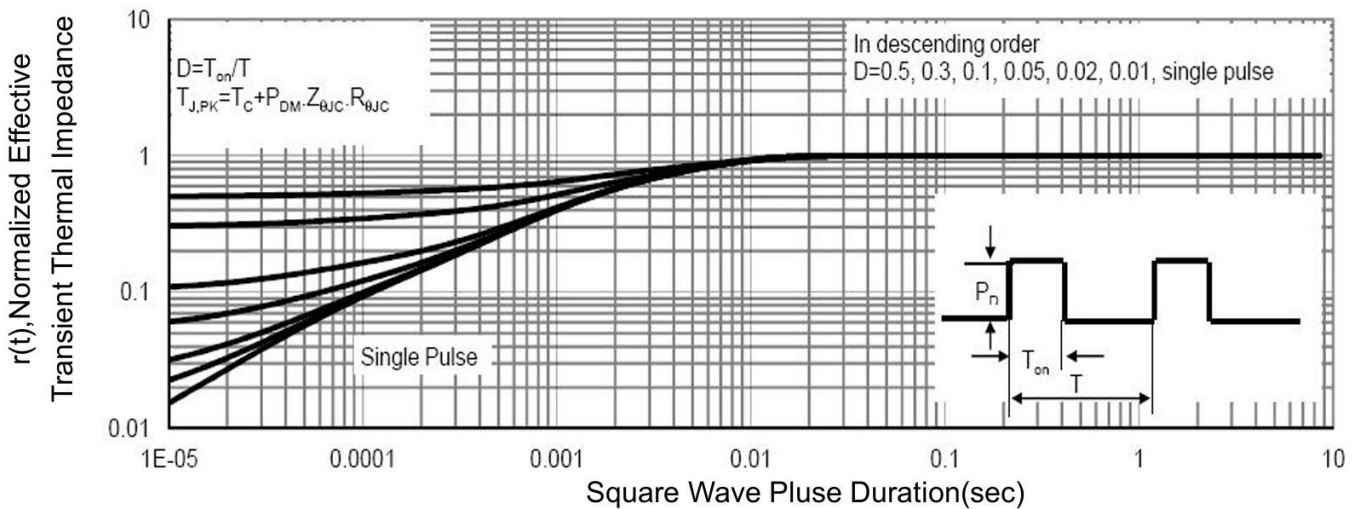
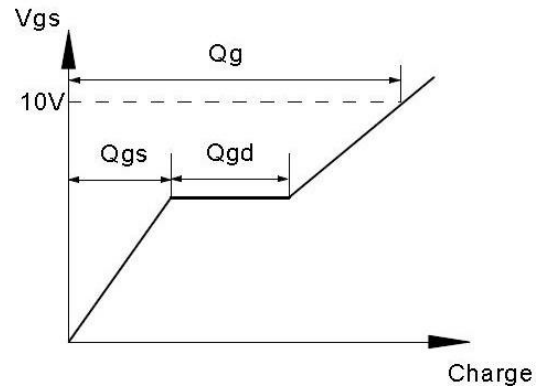
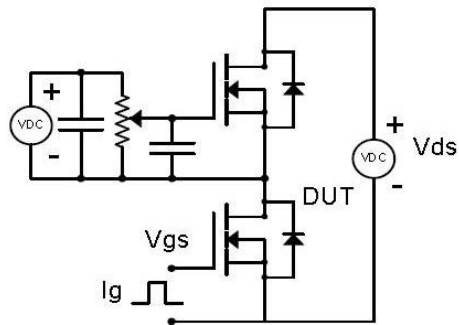


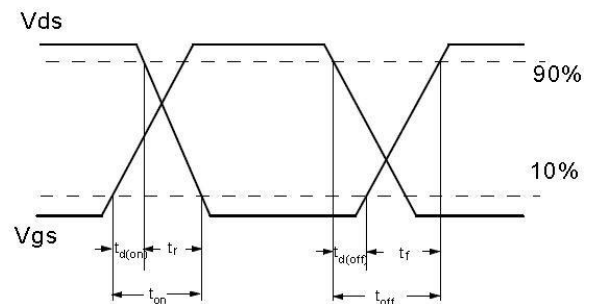
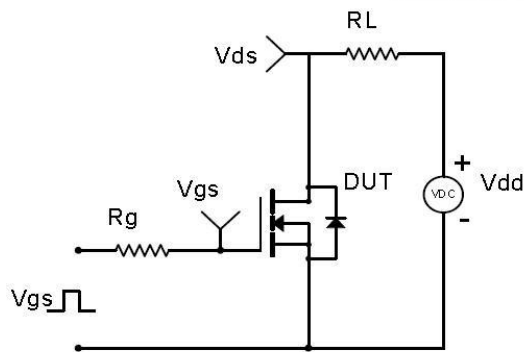
Figure 11 Normalized Maximum Transient Thermal Impedance

Test Circuit & Waveform

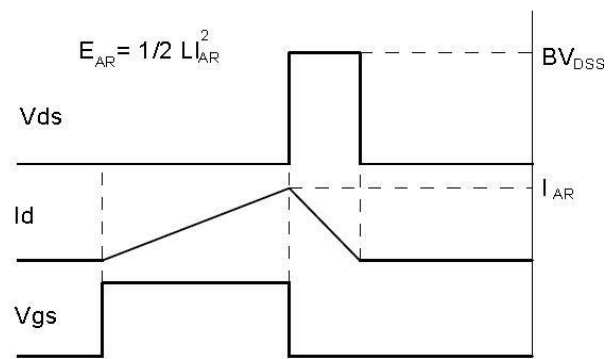
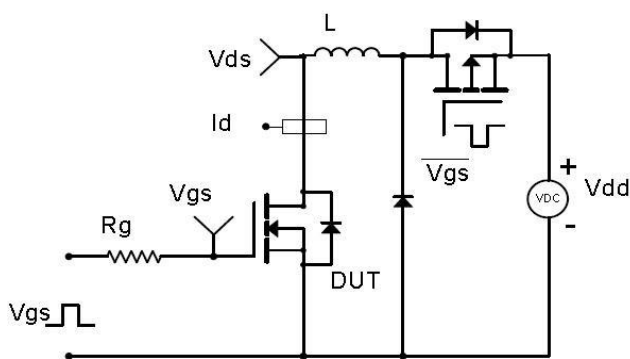
Gate Charge Test Circuit & Waveform



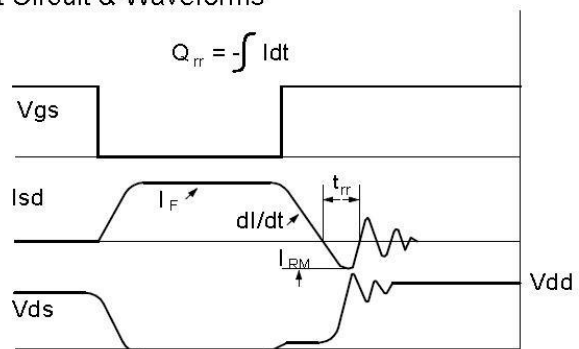
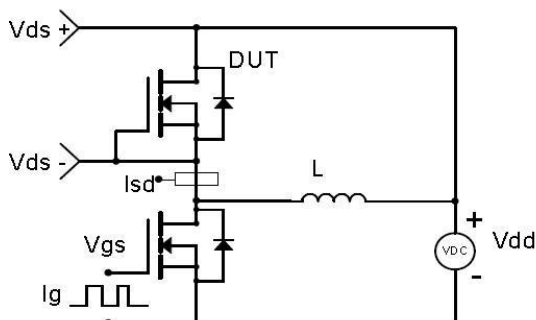
Resistive Switching Test Circuit & Waveforms



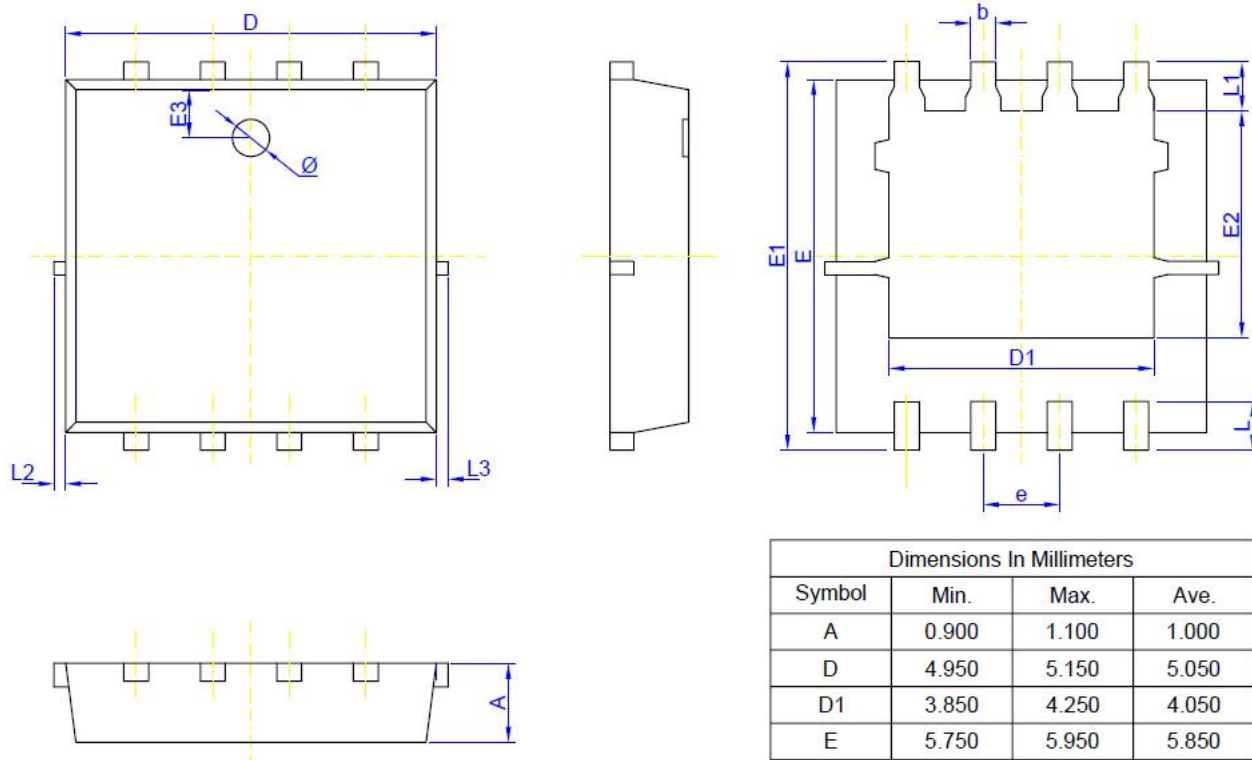
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Outline:PDFN5*6



注:

1. 未注公差 ± 0.05 , 未标注圆角 $R_{max}=0.25$
2. 标注单位mm

Dimensions In Millimeters			
Symbol	Min.	Max.	Ave.
A	0.900	1.100	1.000
D	4.950	5.150	5.050
D1	3.850	4.250	4.050
E	5.750	5.950	5.850
E1	5.950	6.350	6.150
E2	3.300	3.700	3.500
E3	0.900	1.300	1.100
b	0.250	0.350	0.300
e	1.220	1.320	1.270
L	0.585	0.785	0.685
L1	0.525	0.725	0.625
Ø	1.000	1.400	1.200
L2	0~0.100		
L3	0~0.100		

Revision History:

Revision	Date	Major changes
1.0	2025/8/4	Release of Preliminary version.