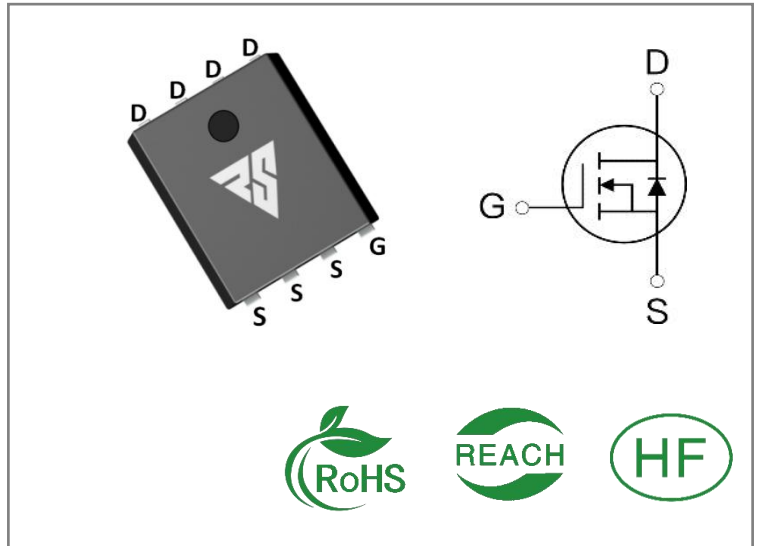


ID	R <sub>DS(ON)</sub> (Typ)	VDSS
130A	2.1mΩ	60V


**Applications:**

- Load Switch
- PWM Applications
- Power Management

**Features:**

- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability

**Ordering Information**

Part Number	Package	Marking	Packing	Qty.
RS60N130G	DFN5*6	RS60N130G	Tape&reel	5000 PCS

**Absolute Maximum Ratings** T<sub>c</sub>= 25°C unless otherwise specified

Symbol	Parameter	RS60N130G	Units
VDSS	Drain-to-Source Voltage	60	V
ID	Continuous Drain Current TC=25°C	130	A
ID	Continuous Drain Current TC=100°C	75	
IDM	Pulsed Drain Current (Note*1)	420	
PD	Power Dissipation	120	W
VGS	Gate- to- Source Voltage	±20	V
EAS	Single Pulse Avalanche Energy L =0.5mH, VDD = 50V, R <sub>G</sub> = 25 Ω, TC=25°C	500	mJ
TL TPKG	Maximum Temperature for Soldering	300 260	°C
	Leads at 0.063in(1.6mm)from Case for 10 seconds Package Body for 10 seconds		
TJ and TSTG	Operating Junction and Storage Temperature Range	-55 to 150	

\* Drain Current Limited by Maximum Junction Temperature

Caution: Stresses greater than those listed in the“ Absolute Maximum Ratings” Table may cause permanent damage to the device.

**Thermal Resistance**

Symbol	Parameter	RS60N130G	Units	Test Conditions
R $\theta$ JC	Junction-to-Case	1.04	°C / W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 150 °C
R $\theta$ JA	Junction-to-Ambient	20		1 cubic foot chamber, free air.

**OFF Characteristics** T<sub>J</sub>= 25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	60	--	--	V	VGS=0V, ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=60V, VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	VGS=20V, VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-100		VGS=-20V, VDS=0V

**ON Characteristics** T<sub>J</sub>=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance(Note*2)	--	2.1	2.5	mΩ	VGS=10V, ID=20A
		--	2.7	3.4	mΩ	VGS=4.5V, ID=15A
VGS(TH)	Gate Threshold Voltage	1	--	2.5	V	VGS=VDS, ID=250μA

**Resistive Switching Characteristics** Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	22.5	--	nS	VDS=30V ID=25A RG=2Ω VGS=10V
trise	Rise Time	--	6.7	--		
td(OFF)	Turn- OFF Delay Time	--	80.3	--		
tfall	Fall Time	--	26.9	--		

**Dynamic Characteristics** Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	5950	--	pF	VGS=0V VDS=25V f=100KHz
Coss	Output Capacitance	--	1250	--		
Crss	Reverse Transfer Capacitance	--	85	--		
Qg	Total Gate Charge	--	93	--	nC	VDS=50V ID=50A VGS=10V
Qgs	Gate- to- Source Charge	--	17	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	14	--		

**Source- Drain Diode Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	130	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	420	A	
VSD	Diode Forward Voltage	--	--	1.2	V	IS=20A,VGS=0V
trr	Reverse Recovery Time	--	68	--	nS	IS=25A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	73	--	nC	

**Notes:**

- \* 1. Repetitive rating, pulse width limited by maximum junction temperature.
- \* 2. Pulse Test: Pulse width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 1\%$

**Typical Feature Curve**

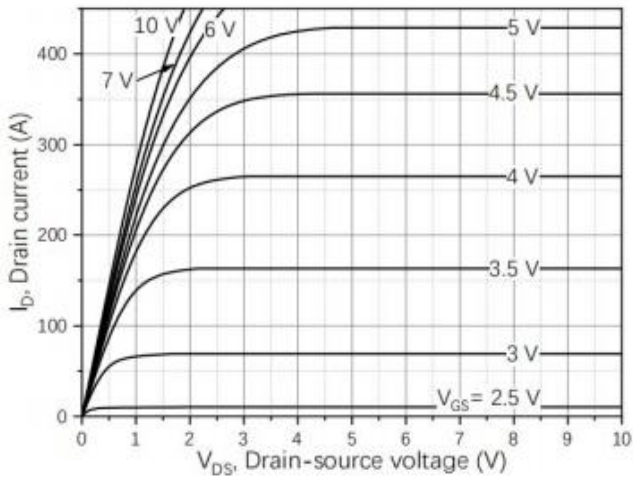


Figure1. Output Characteristics

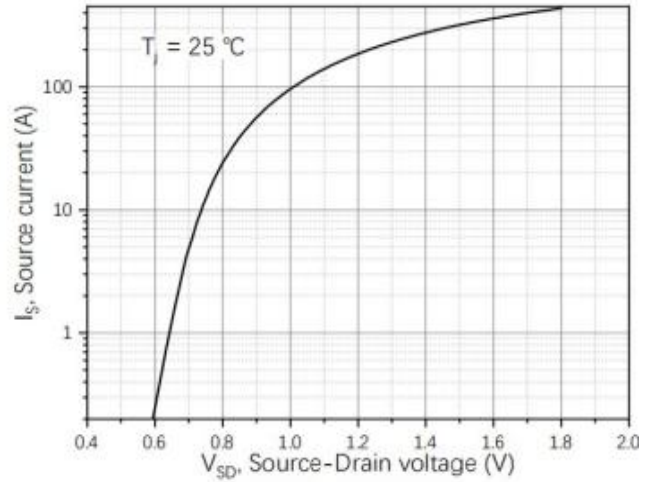


Figure2. Transfer Characteristics

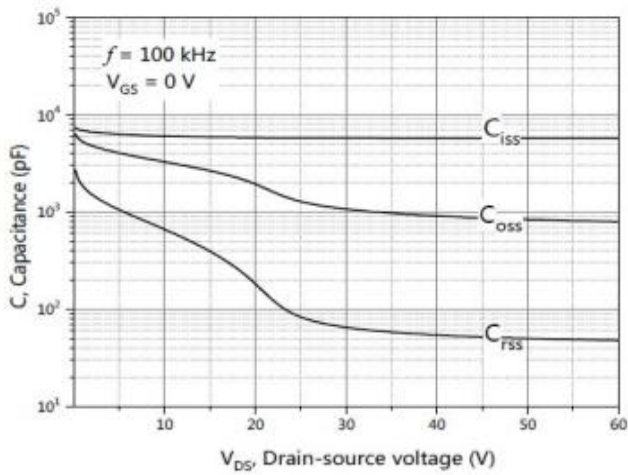


Figure3. Capacitance Characteristics

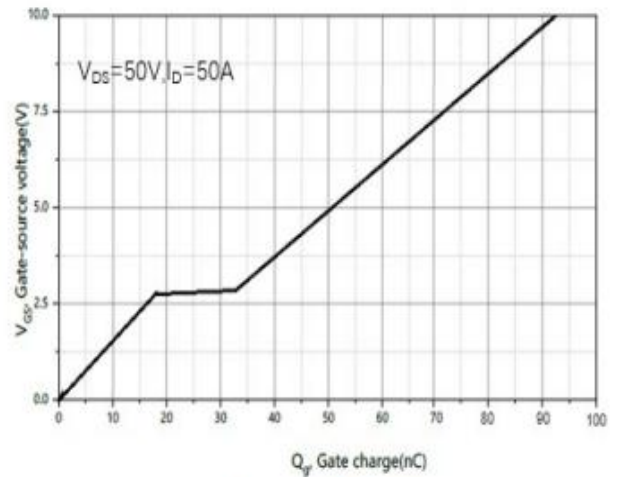


Figure4. Gate Charge

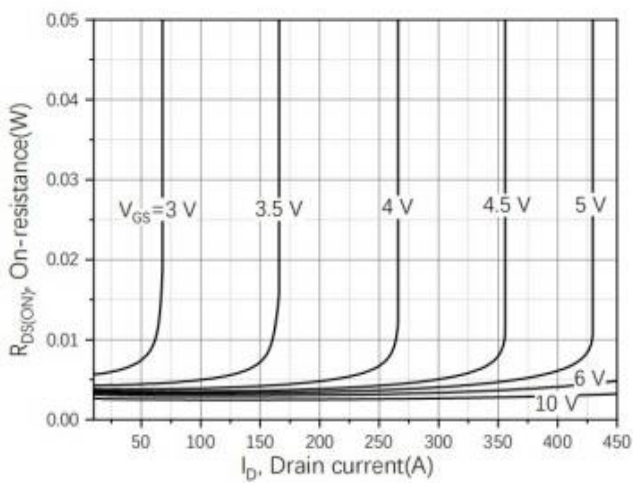


Figure5. Drain-Source on Resistance

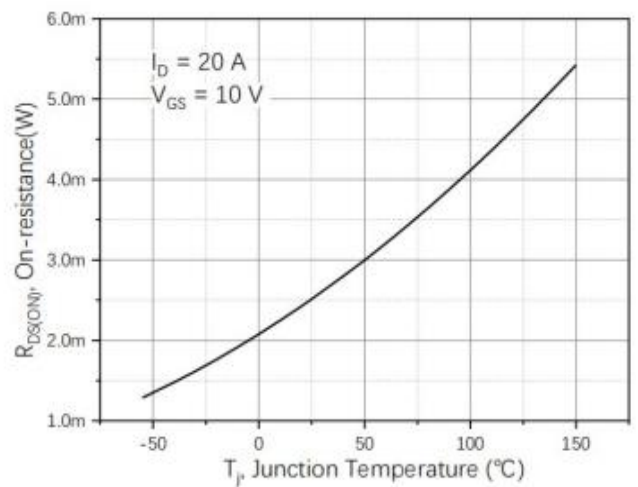


Figure6. Drain-Source on Resistance

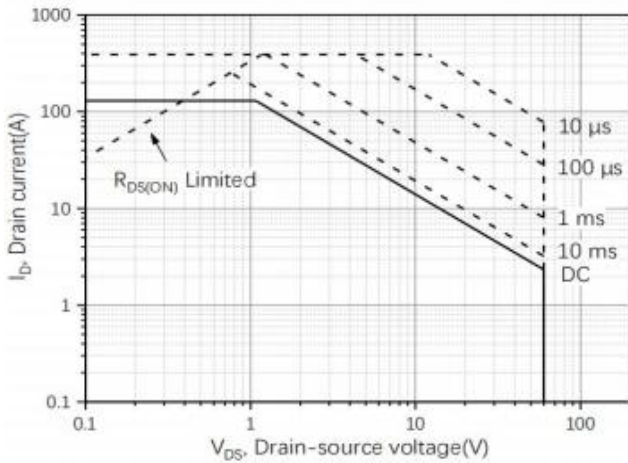


Figure 7. Safe Operation Area

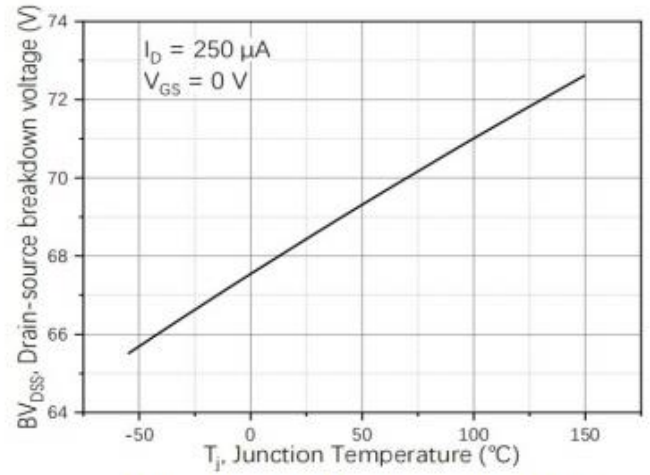


Figure 8. Drain-source breakdown voltage

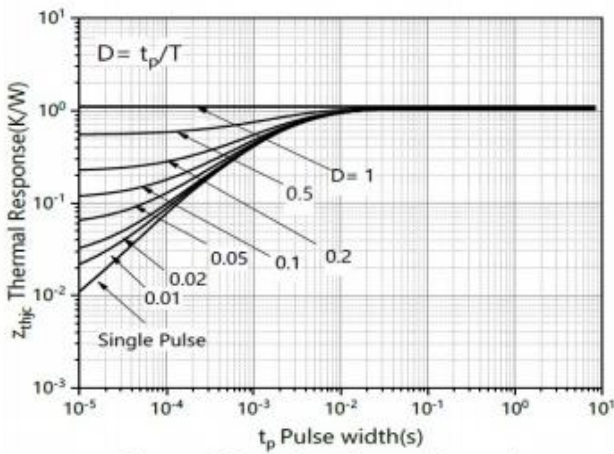


Figure 9. Transient thermal impedance

**Test Circuits and Waveforms**

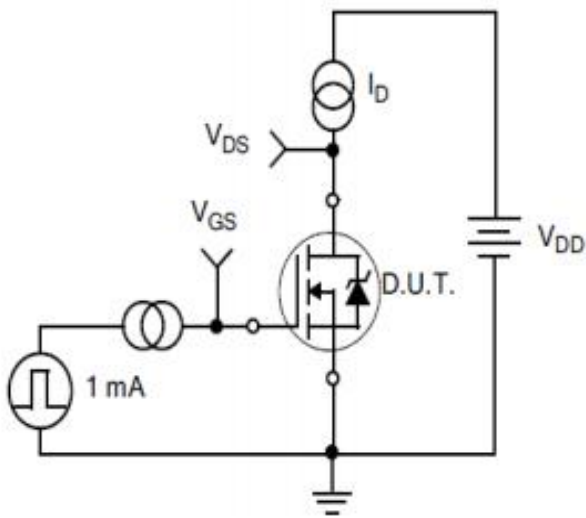


Figure A.  
Gate Charge Test Circuit

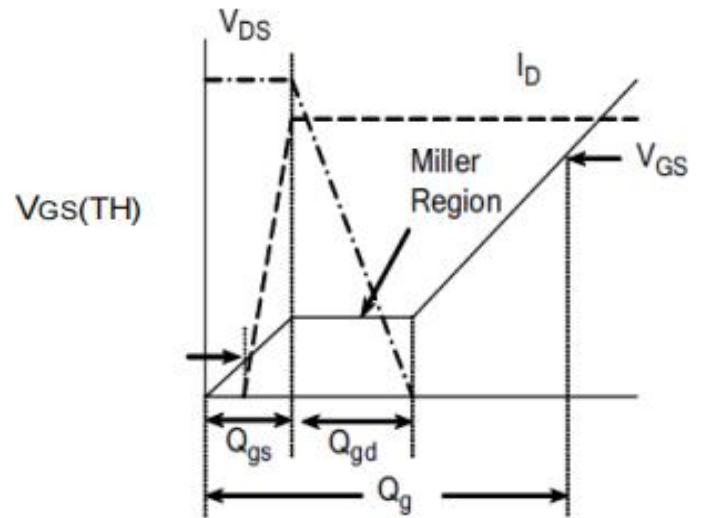


Figure B.  
Gate Charge Waveform

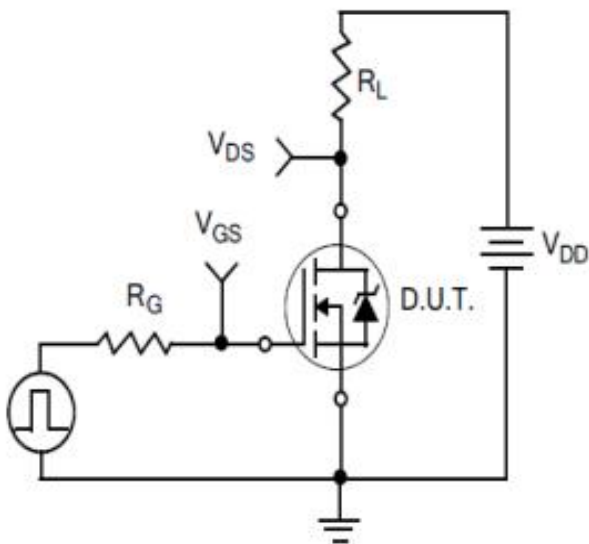


Figure C.  
Resistive Switching Test Circuit

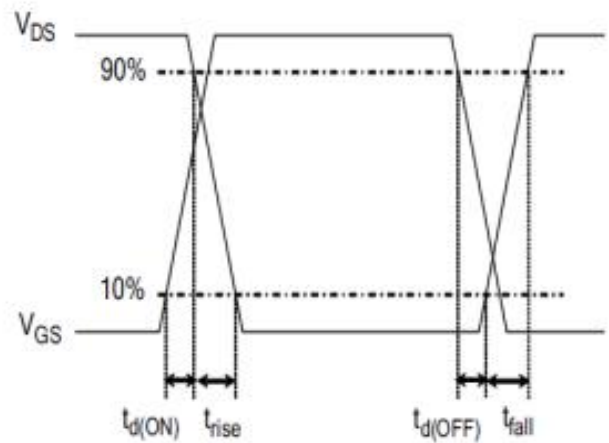


Figure D.  
Resistive Switching Waveforms

Test Circuits and Waveforms

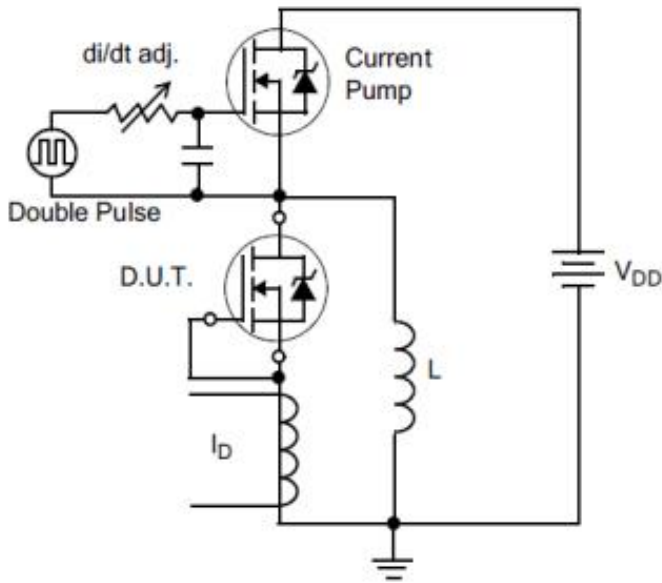


Figure E. Diode Reverse Recovery Test Circuit

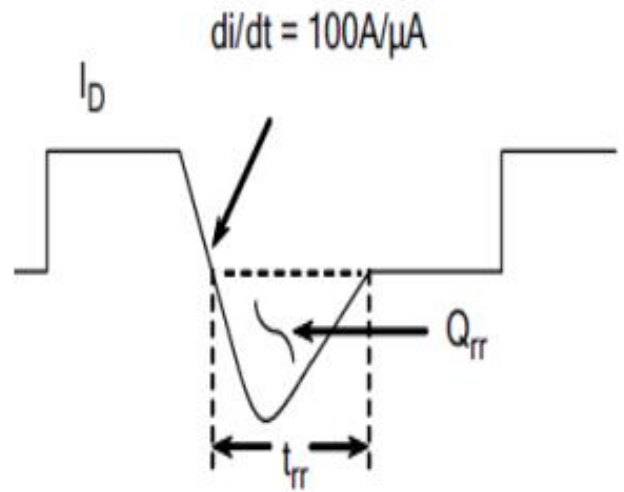


Figure F. Diode Reverse Recovery Waveform

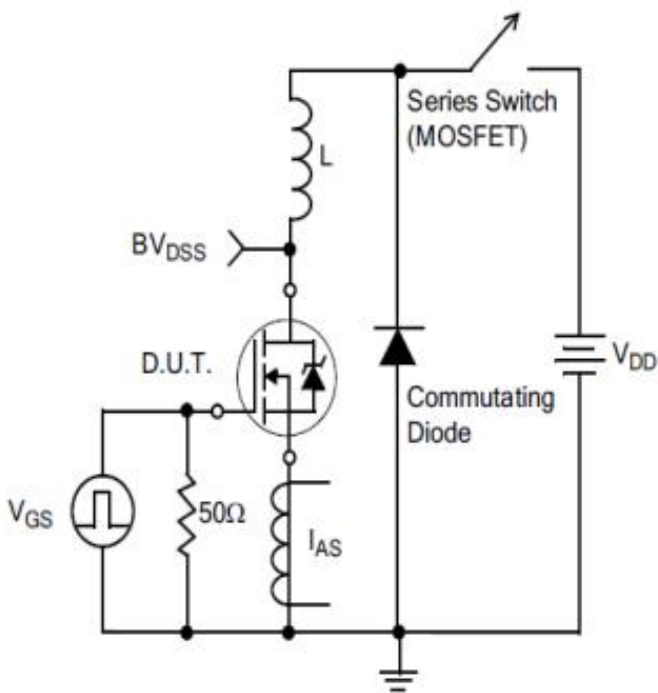
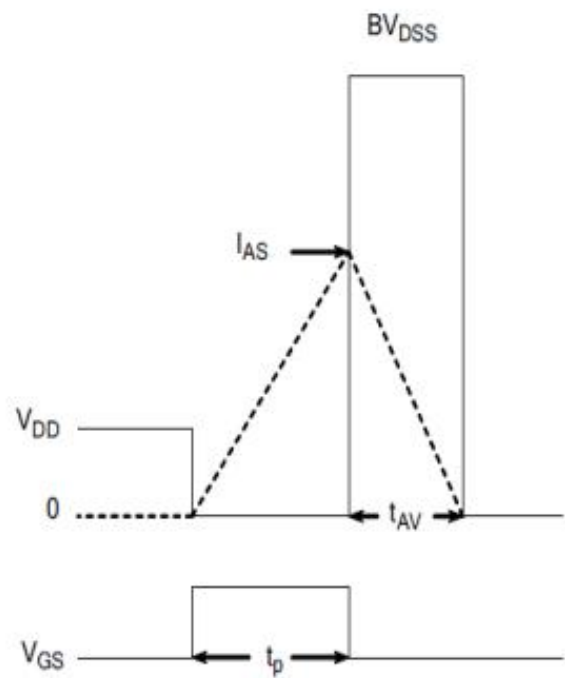


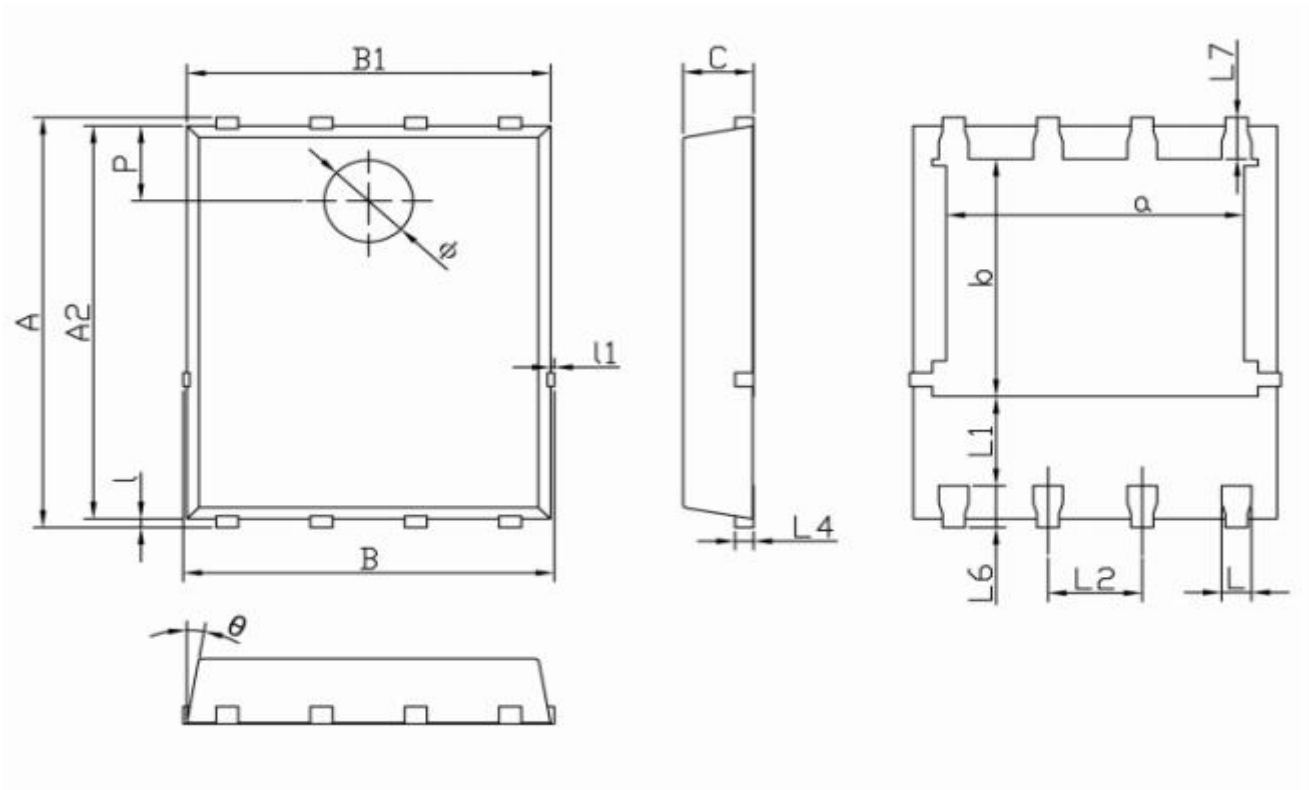
Figure G. Unclamped Inductive Switching Test Circuit



$$E_{AS} = \frac{I_{AS}^2 L}{2}$$

Figure H. Unclamped Inductive Switching Waveforms

Package outline drawing(DFN5\*6 Unit: mm )



Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	5.90	6.00	6.10
a	3.91	4.01	4.11
A2	5.70	5.75	5.80
B	4.90	5.00	5.10
b	3.37	3.47	3.57
B1	4.80	4.90	5.00
C	0.90	0.95	1.00
L	0.35	0.40	0.45
l	0.06	0.13	0.20
L1	1.10	-	-
l1	-	-	0.10
L2	1.17	1.27	1.37
L4	0.21	0.26	0.34
L6	0.51	0.61	0.71
L7	0.51	0.61	0.71
P	1.00	1.10	1.20
θ	8°	10°	12°
φ	1.10	1.20	1.30



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