N-Channel 120 V (D-S) Super Junction MOSFET

RoHS COMPLIANT

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (mΩ) (Typ.)	I_D (A)[a]	Q_g (Typ.)
120	28 at V_{GS} = 10 V	35	16 nC

FEATURES

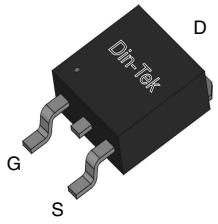
- DT-SJ Power MOSFET
- 100 % R_g and UIS tested
- EAS Guaranteed
- Fast Switching Speed

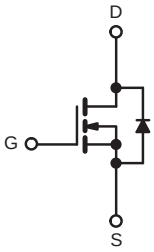
APPLICATIONS

- Power Management Switches
- On board power for server
- Synchronous Rectification

TO-252 Pin Configuration

Top View





N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_C = 25 °C, unless otherwise noted)				
PARAMETER		**SYMBOL**	**LIMIT**	**UNIT**
Drain-Source Voltage		V_{DS}	120	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current (T_J = 175 °C)[a]	T_C = 25 °C	I_D	35	A
	T_C = 100 °C		25	
Pulsed Drain Current[b]		I_{DM}	120	
Single Avalanche Energy		E_{AS}	56	mJ
Maximum Power Dissipation[c]	T_C = 25 °C	P_D	38	W
	T_C = 100 °C		19	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to +175	°C

THERMAL RESISTANCE RATINGS			
PARAMETER	**SYMBOL**	**LIMIT**	**UNIT**
Junction-to-Ambient (PCB Mount)[d]	R_{thJA}	100	°C/W
Junction-to-Case (Drain)	R_{thJC}	3.9	

Notes

a. Calculated continuous current based on maximum allowablejunction temperature.
b. Repetitive rating; pulse width limited by max. junction temperature.
c. Pd is based on max. junction temperature, using junction-case thermal resistance.
d. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper,in a still air environment with Ta=25 °C.

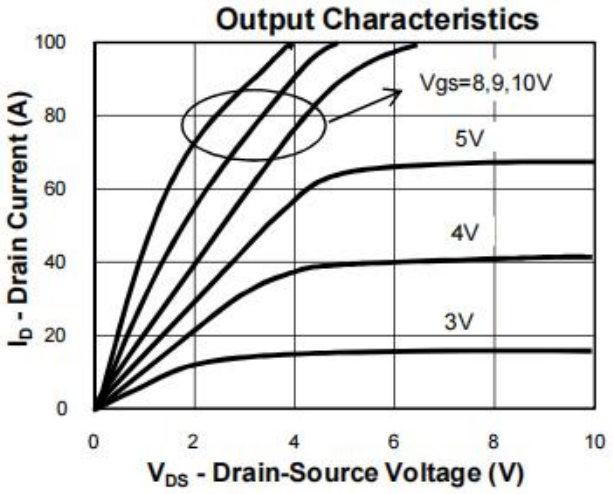
SPECIFICATIONS (T_C = 25 °C, unless otherwise noted)						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = 250 µA	120	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	2	-	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V	-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 120 V, V_{GS} = 0 V	-	-	1	µA
		V_{DS} = 96 V, V_{GS} = 0 V, T_J = 100 °C	-	-	100	
On-State Drain Current [a]	$I_{D(on)}$	V_{DS} ≥ 5 V, V_{GS} = 10 V	35	-	-	A
Drain-Source On-State Resistance [a]	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 20 A	-	28	40	mΩ
Forward Transconductance [a]	g_{fs}	V_{DS} = 10 V, I_D = 20 A	-	52	-	S
Dynamic [b]						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 60 V, f = 1 MHz	-	890	-	pF
Output Capacitance	C_{oss}		-	103	-	
Reverse Transfer Capacitance	C_{rss}		-	6	-	
Total Gate Charge [c]	Q_g	V_{DS} = 96 V,V_{GS} = 10 V, I_D = 35 A	-	16	-	nC
Gate-Source Charge [c]	Q_{gs}		-	5	-	
Gate-Drain Charge [c]	Q_{gd}		-	3.5	-	
Gate Resistance	R_g	f = 1 MHz	-	1.7	-	Ω
Turn-On Delay Time [c]	$t_{d(on)}$	V_{DD} = 60 V, I_D = 35 A,R_g = 1.7Ω V_{GS} = 10 V	-	5	-	ns
Rise Time [c]	t_r		-	31	-	
Turn-Off Delay Time [c]	$t_{d(off)}$		-	14	-	
Fall Time [c]	t_f		-	7	-	
Drain-Source Body Diode Ratings and Characteristics [b] (T_C = 25 °C)						
Continuous Source-Drain Diode Current	I_S	T_C = 25 °C	-	-	35	A
Pulsed Current	I_{SM}		-	-	120	A
Forward Voltage [a]	V_{SD}	I_F = 20 A, V_{GS} = 0 V	-	-	1.2	V
Reverse Recovery Time	t_{rr}	I_F = 35 A, di/dt = 100 A/µs	-	19	-	ns
Reverse Recovery Charge	Q_{rr}		-	11	-	nC

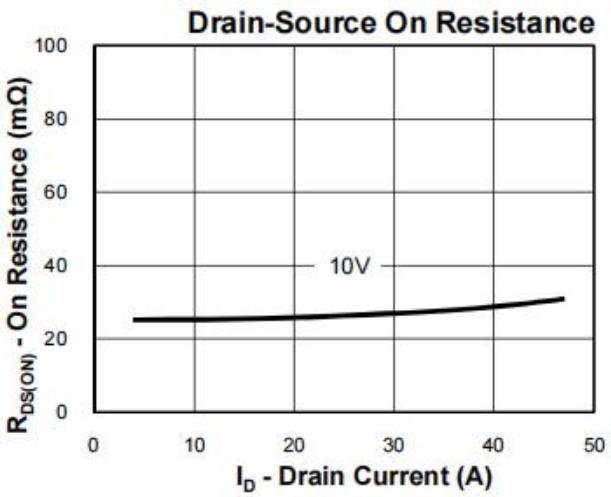
Notes

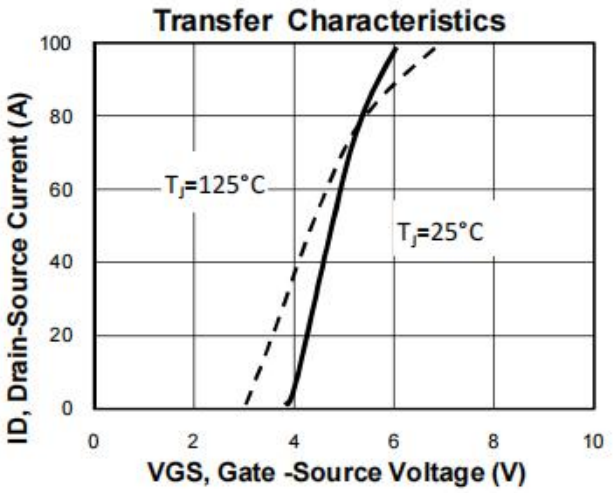
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.
c. Independent of operating temperature.

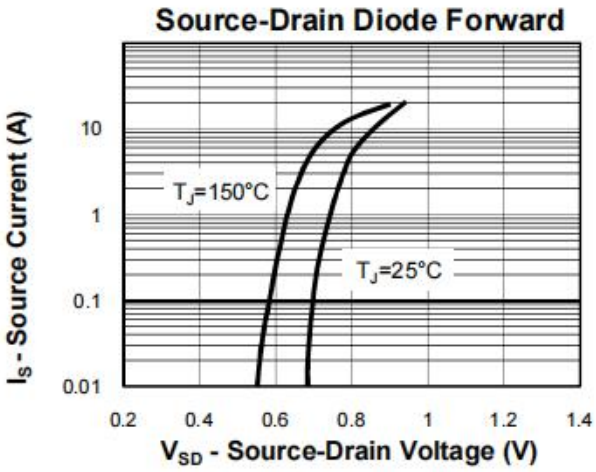
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

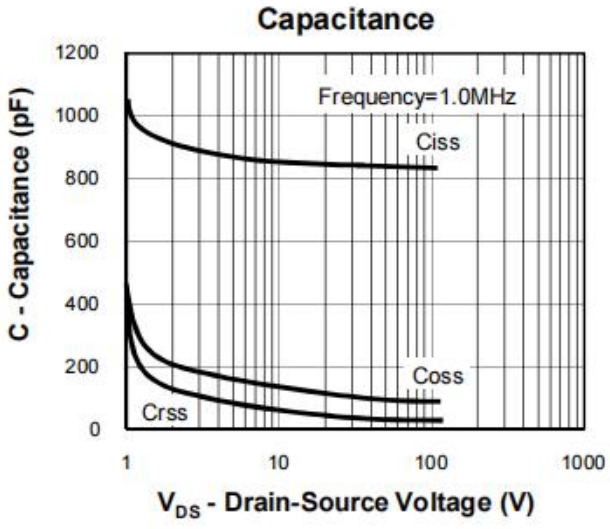
TYPICAL CHARAC TERISTICS (25 °C, unless otherwise noted)

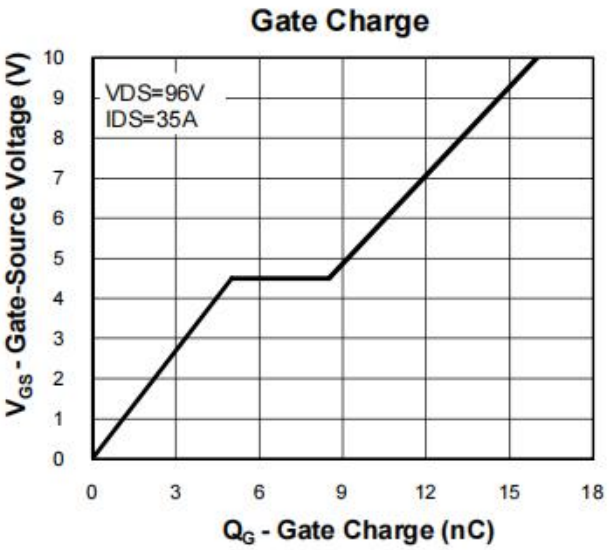












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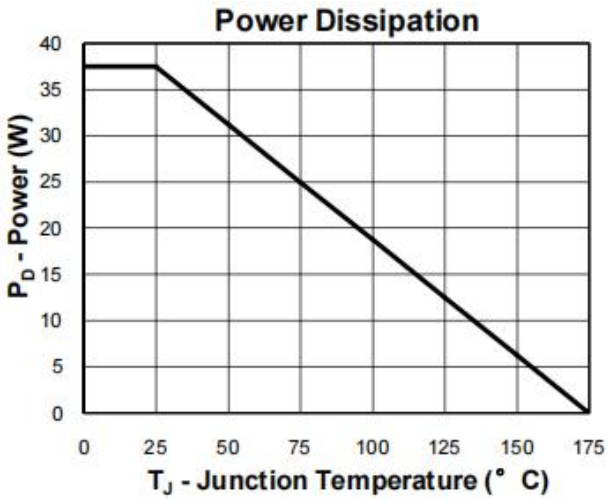
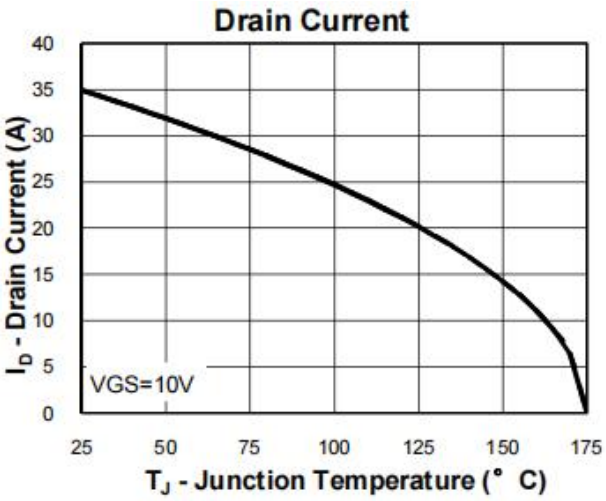
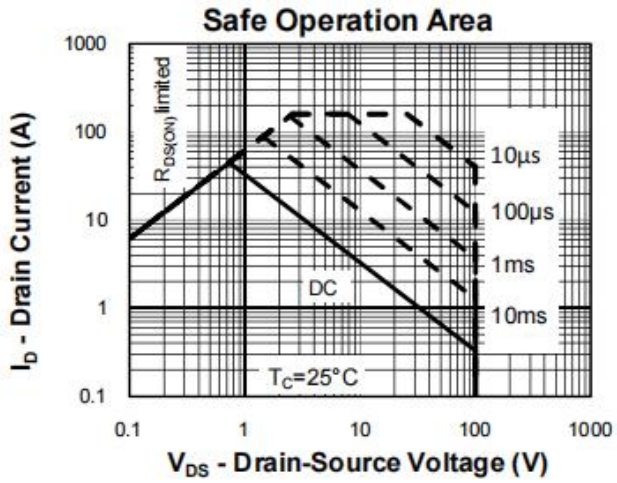
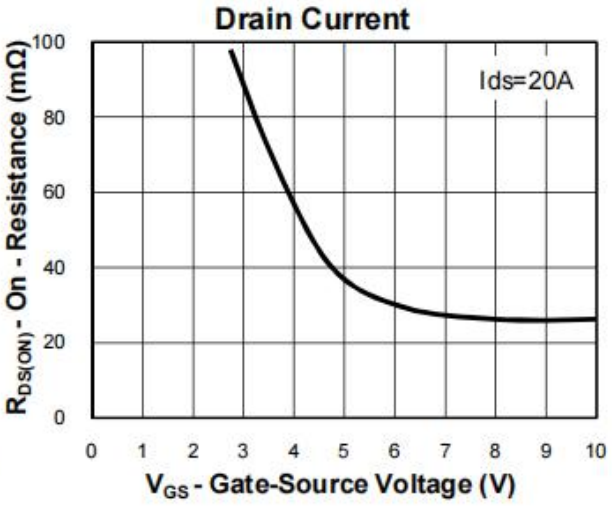
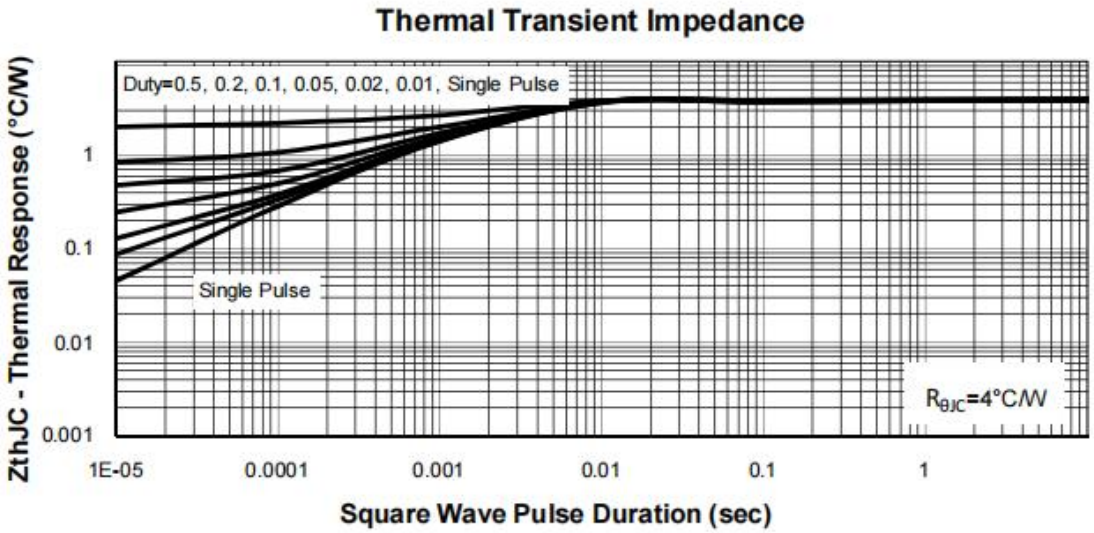










Test Circuit

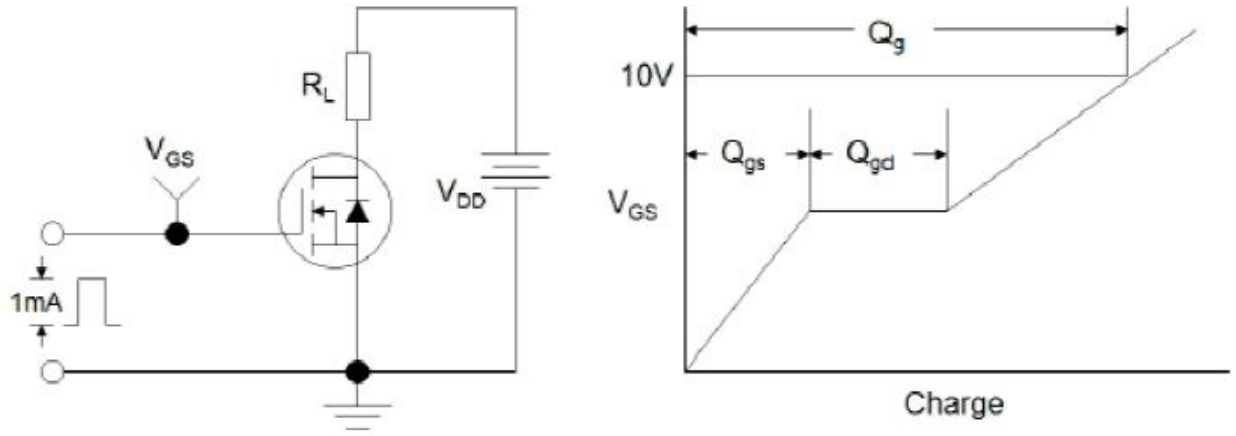


Figure1: Gate Charge Test Circuit & Waveform

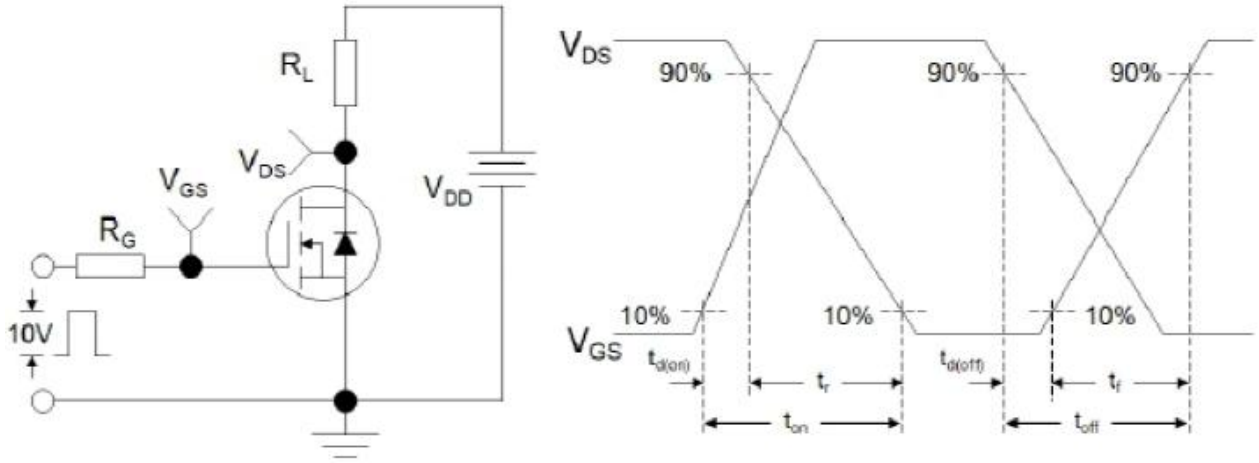


Figure 2: Resistive Switching Test Circuit & Waveforms

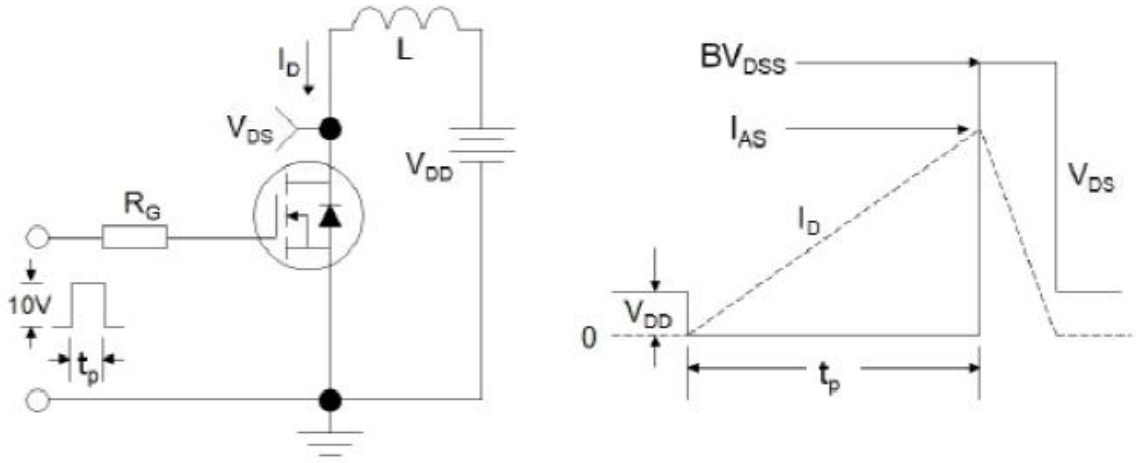
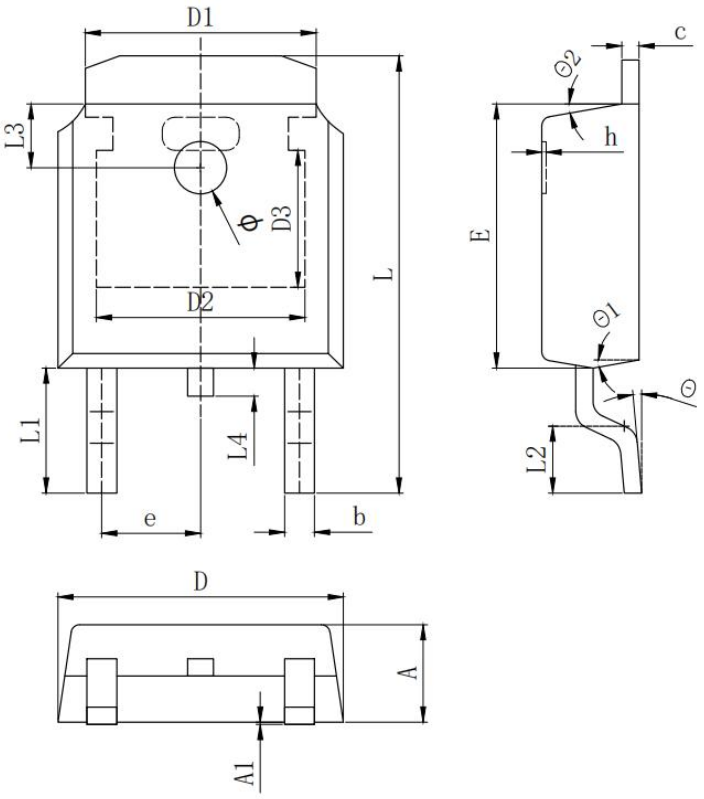


Figure 3: Unclamped Inductive Switching Test Circuit & Waveforms

TO-252-2L PACKAGE OUTLINE



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c(电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
ϕ	1.100	1.200	1.300
θ	0°		8°
θ1	9° TYP		
θ2	9° TYP		

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