

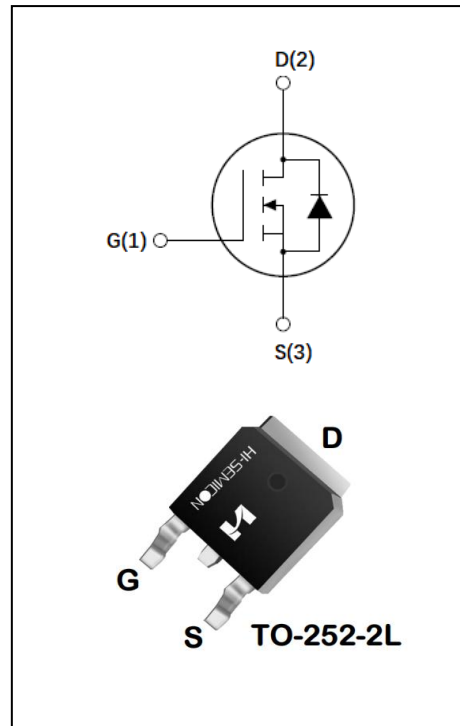
150A,30V N-CHANNEL MOSFET

GENERAL DESCRIPTION

The SFD3015T uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications. Such as: PWM Applications, Power Management, etc.

FEATURES

- ◆ $R_{DS(on)}=2.6m\Omega(Typ)@V_{GS}=10V$
- ◆ $R_{DS(on)}=4.1m\Omega(Typ)@V_{GS}=4.5V$
- ◆ $V_{DS}=30V, I_D=150A$
- ◆ Low $C_{rss}:320pF(Typ)@V_{DS}=25V$
- ◆ Advance Trench Technology
- ◆ Fast Switching and High efficiency
- ◆ Lead Free and Green Devices Available:Rohs Compliant



ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
SFD3015T	TO-252-2L	SFD3015T	Pb Free	Reel

ABSOLUTE MAXIMUM RATINGS (T_C=25°C unless otherwise noted)

Characteristics	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current	I _D	T _C = 25°C	150
		T _C = 100°C	100
Drain Current Pulsed(Note 1)	I _{DM}	400	A
Power Dissipation(T _C =25°C)	P _D	115	W
Single Pulsed Avalanche Energy (Note 2)	E _{AS}	663	mJ
Operation Junction Temperature Range	T _J	-55~+175	°C
Storage Temperature Range	T _{stg}	-55~+175	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	MAX	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	1.5	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	62.5	°C/W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain -Source Breakdown Voltage	B _{VDS}	V _{GS} =0V, I _D =250μA	30	--	--	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	--	--	1.0	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =20V, V _{DS} =0V	--	--	100	nA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =-20V, V _{DS} =0V	--	--	-100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D =250μA	1.0	--	2.5	V
Static Drain- Source On State Resistance(Note 3)	R _{DS(on)}	V _{GS} =10V, I _D =30A	--	2.6	3.0	mΩ
		V _{GS} =4.5V, I _D =20A	--	4.1	6.0	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =10A	--	26	--	s
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V f=1.0MHZ	--	3210	--	pF
Output Capacitance	C _{oss}		--	333	--	
Reverse Transfer Capacitance	C _{rss}		--	320	--	
Total Gate Charge	Q _g	V _{DS} =15V I _D =30A V _{GS} =10V	--	72	--	nC
Gate-Source Charge	Q _{gs}		--	13	--	
Gate-Drain Charge	Q _{gd}		--	17	--	
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DS} =15V, V _{GS} =4.5V R _G =1.8Ω, I _D =60A	--	15	--	ns
Turn-on Rise Time	t _r		--	125	--	
Turn-off Delay Time	t _{d(off)}		--	40	--	

Turn-off Fall Time	t_f	$V_{DS}=15V, V_{GS}=4.5V$ $R_G=1.8\Omega, I_D=60A$	--	88	--	ns
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SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	Integral Reverse P-N Junction Diode in the MOSFET	--	--	150	A
Pulsed Source Current	I_{SM}		--	--	400	
Diode Forward Voltage	V_{SD}	$I_S=20A, di/dt=100A/\mu S$	--	--	1.2	V

Notes:

1. Pulse width limited by maximum junction temperature
2. $L=0.5mH, V_G=10V, R_G=25\Omega$, starting $T_J=25^\circ C$
3. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$;

Typical Performance Characteristics

Figure 1: Output Characteristics

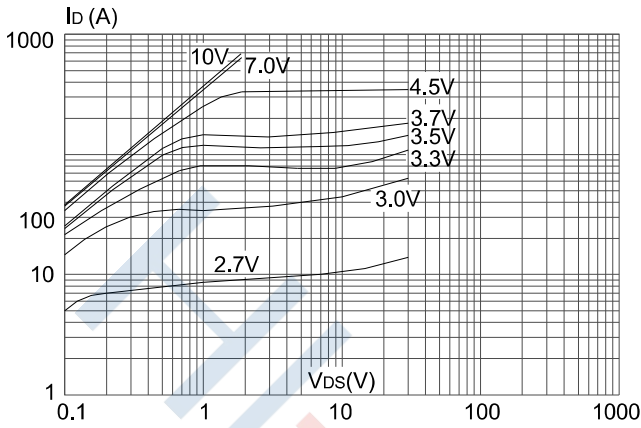


Figure 2: Typical Transfer Characteristics

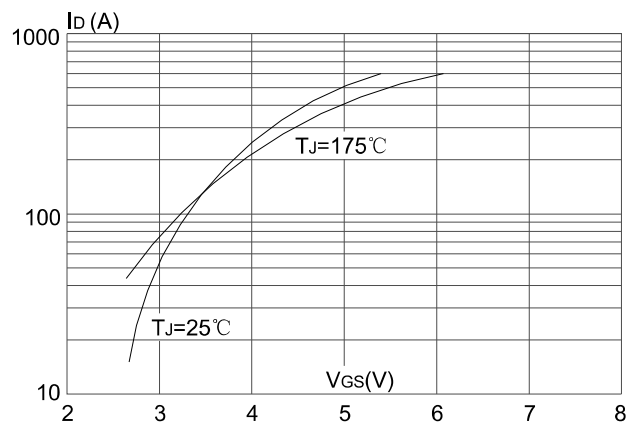


Figure 3: On-resistance vs. Drain Current

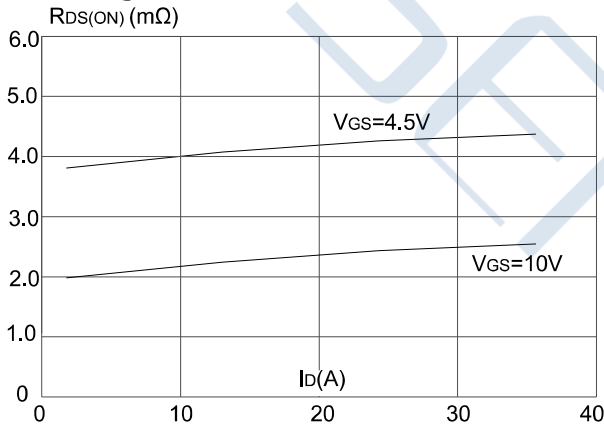


Figure 4: Body Diode Characteristics

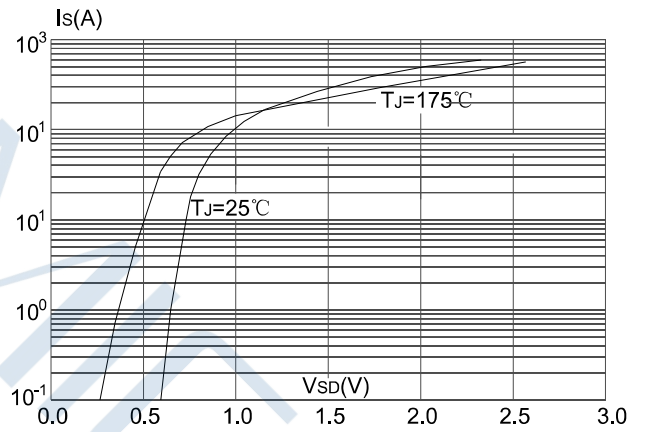


Figure 5: Gate Charge Characteristics

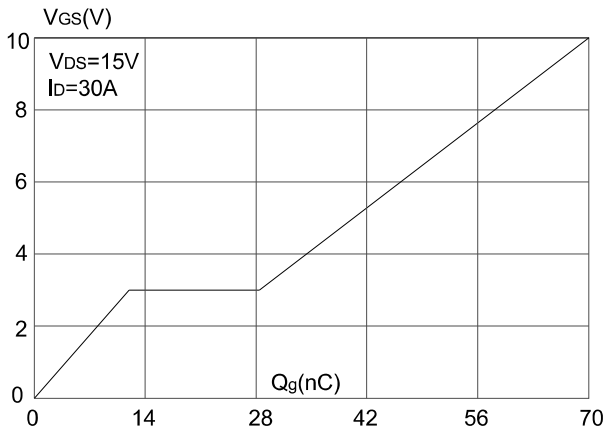
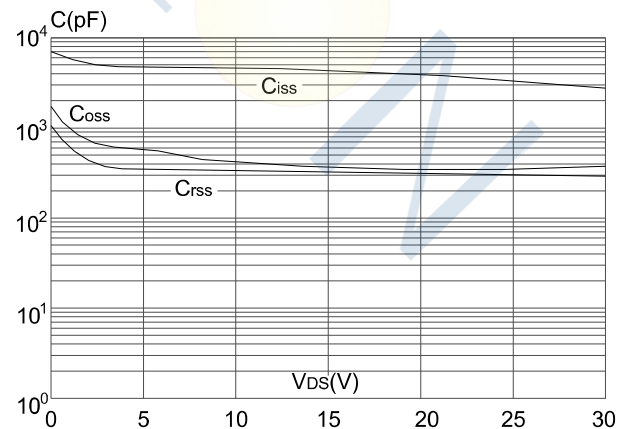


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

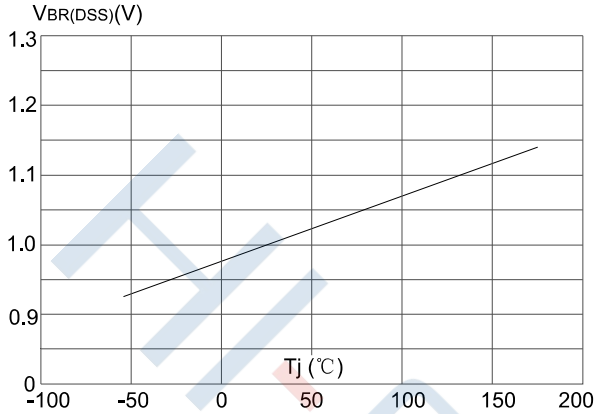


Figure 8: Normalized on Resistance vs. Junction Temperature

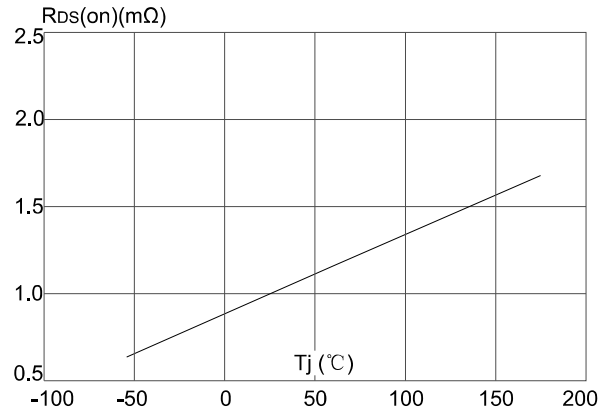


Figure 9: Maximum Safe Operating Area

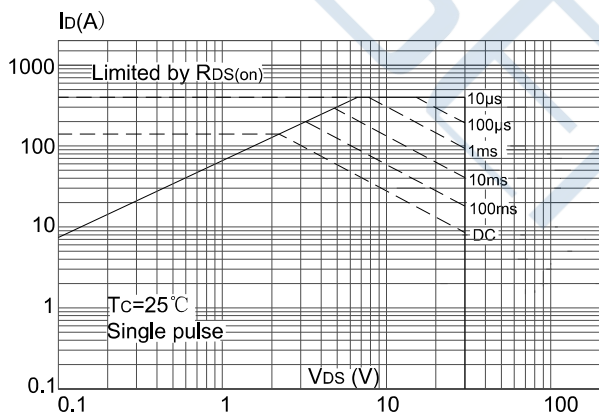


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

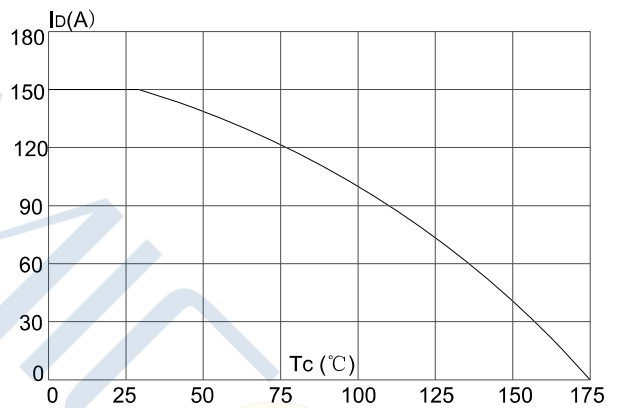
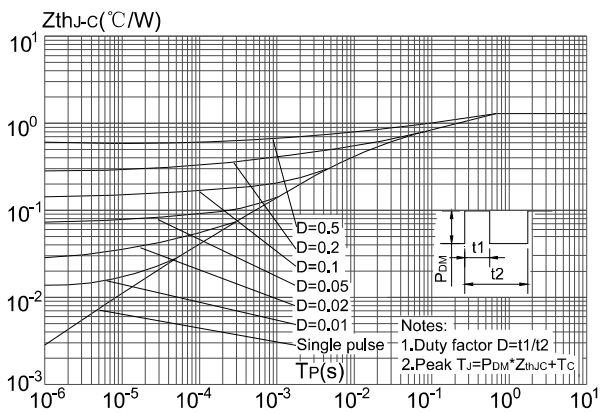


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case (TO-252)



Test Circuit

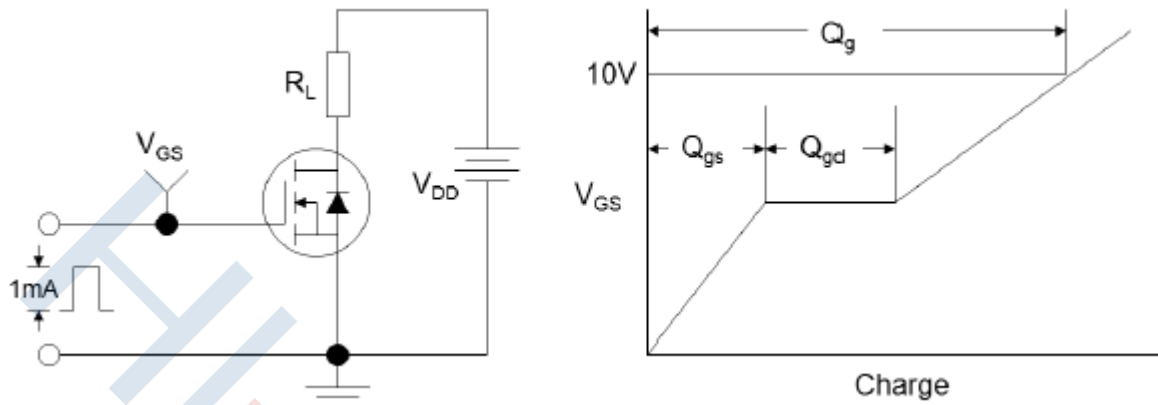


Figure1:Gate Charge Test Circuit & Waveform

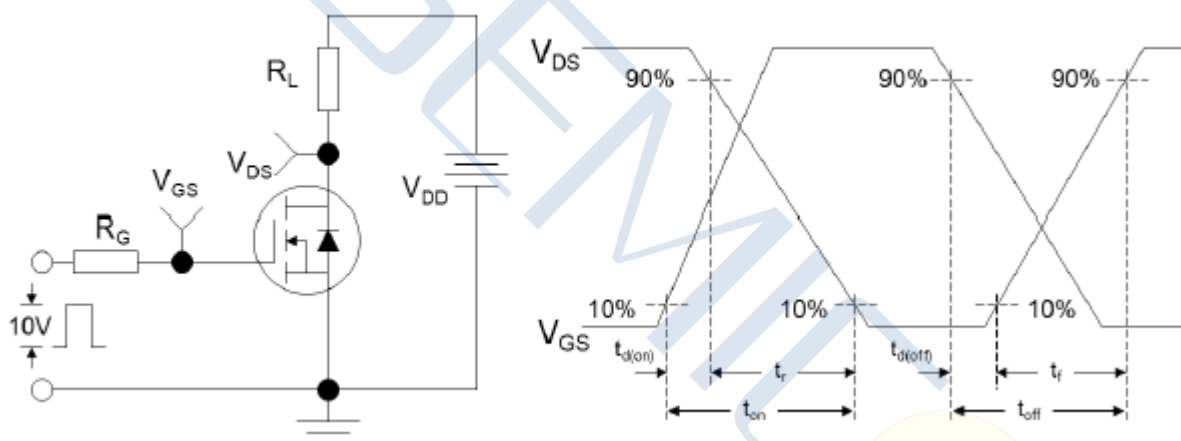


Figure 2: Resistive Switching Test Circuit & Waveforms

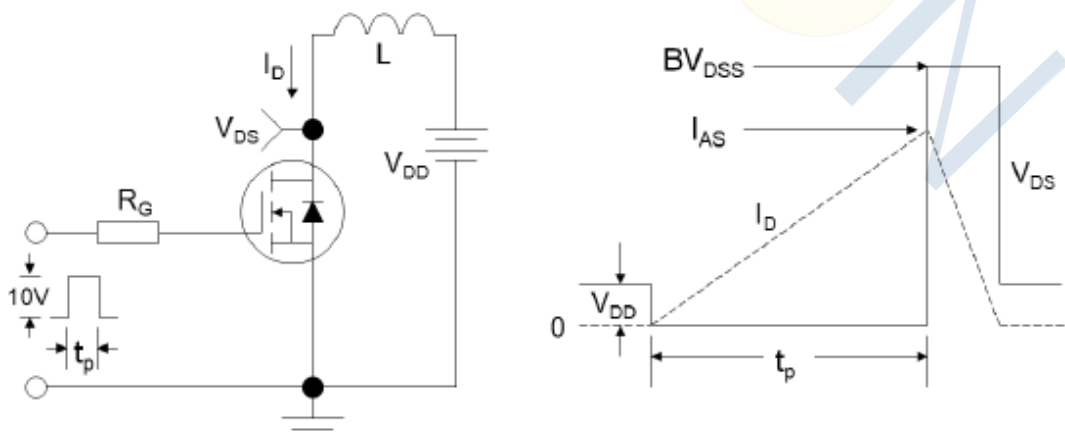


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Test Circuit

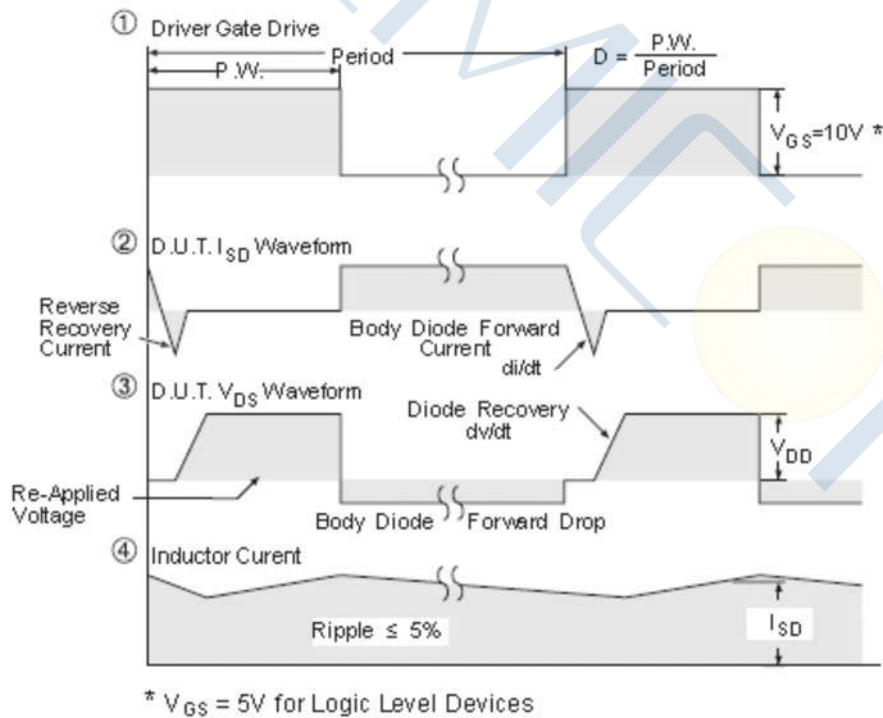
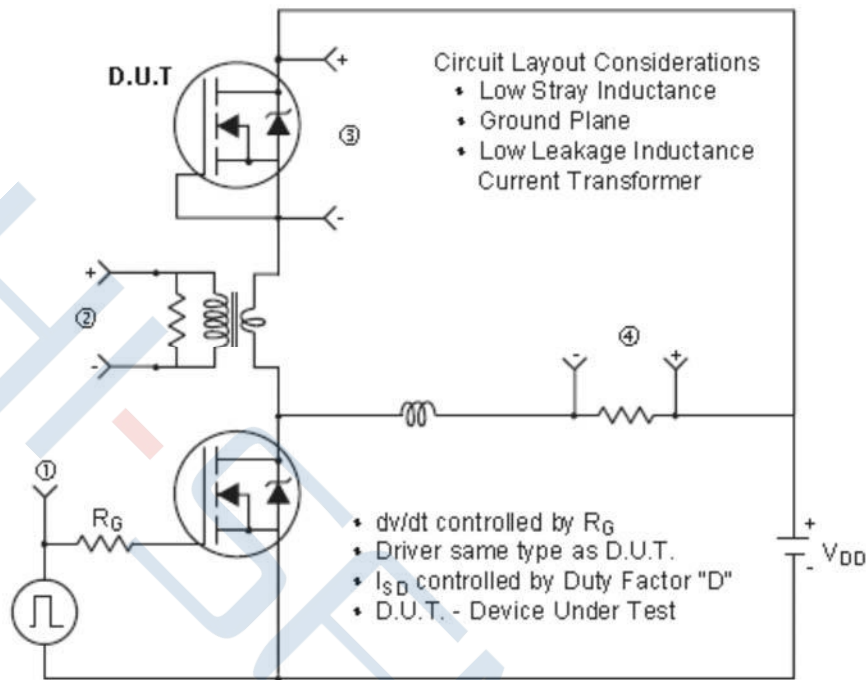
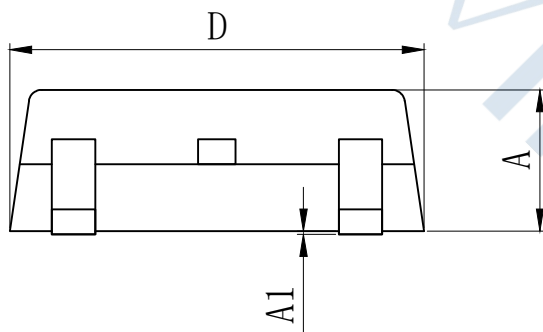
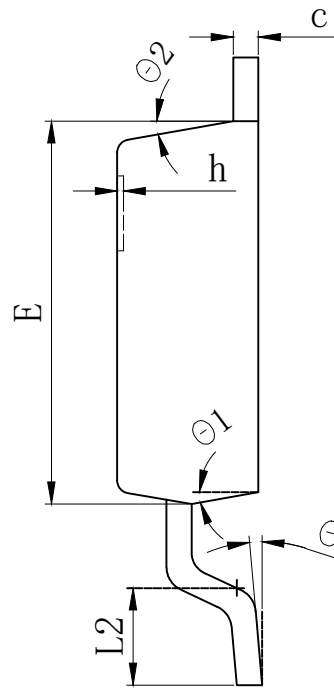
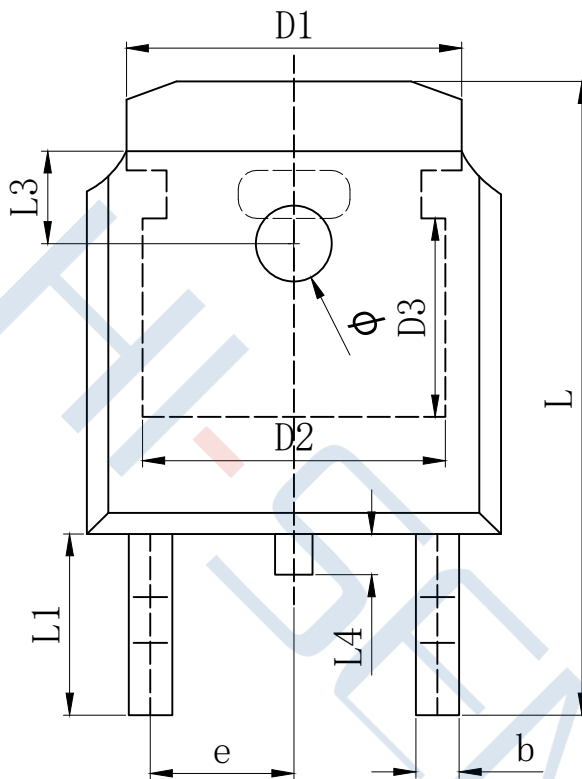


Figure 4: Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

Package Dimensions of TO-252-2L

Unit:mm



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°
θ_1	9° TYP		
θ_2	9° TYP		

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