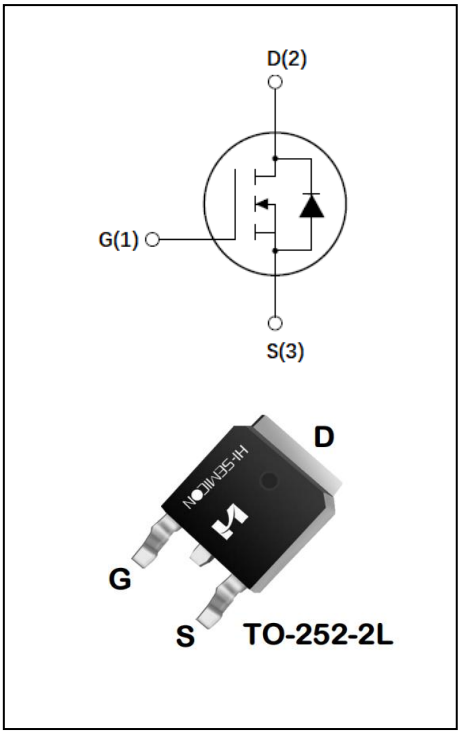
150A,30V N-CHANNEL MOSFET



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

- $R_{DS(on)}$=2.6mΩ(Typ)@V_{GS}=10V
- $R_{DS(on)}$=4.1mΩ(Typ)@V_{GS}=4.5V
- V_{DS}=30V,I_D=150A
- Low Crss: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	T_C = 25°C	I_D	150	A
	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	$R_{\theta JC}$	1.5	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	°C/W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain -Source Breakdown Voltage	B_{VDSS}	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	gFS	VDS =5V, ID =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=1.8Ω,I_D=60A	--	88	--	ns

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/uS	--	--	1.2	V

Notes:

1.Pluse width limited by maximum junction temperature

2.L=0.5mH, V_G=10V, R_G=25Ω, starting T_J=25°C

3.Pulse Test: Pulse width ≤300μs, Duty cycle≤2%;

Typical Performance Characteristics

Figure1: Output Characteristics

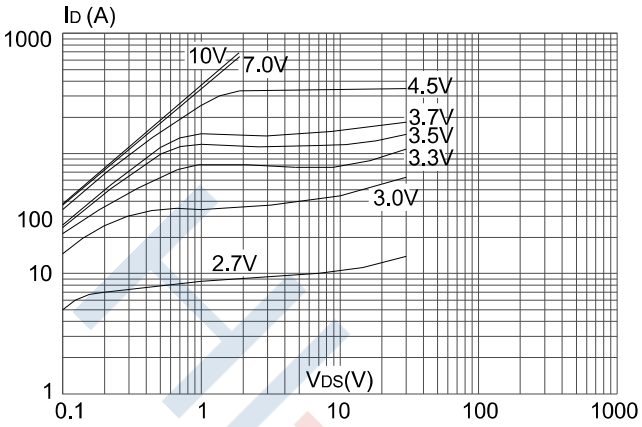


Figure 2: Typical Transfer Characteristics

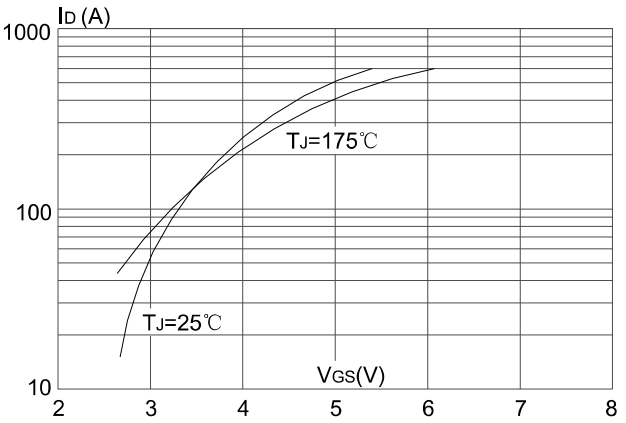


Figure 3: On-resistance vs. Drain Current

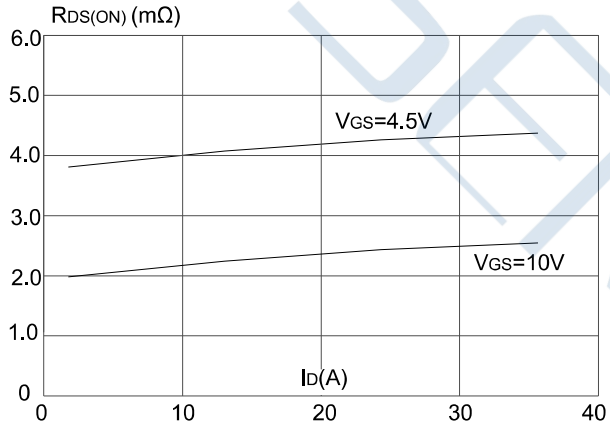


Figure 4: Body Diode Characteristics

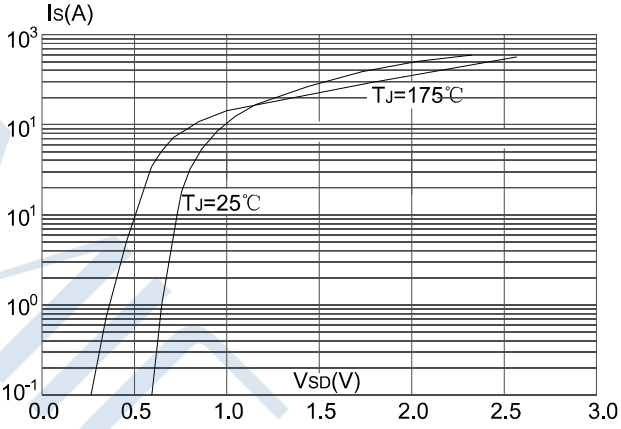


Figure 5: Gate Charge Characteristics

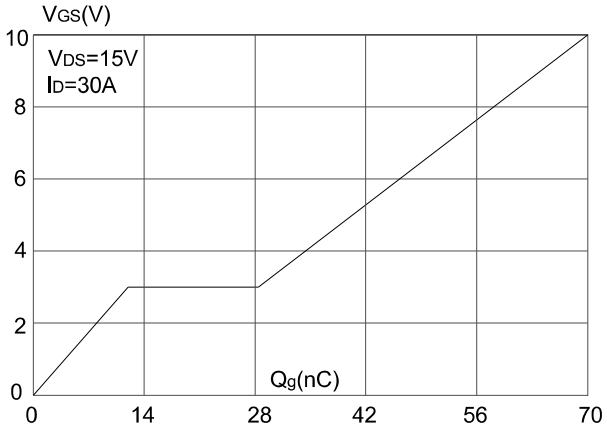
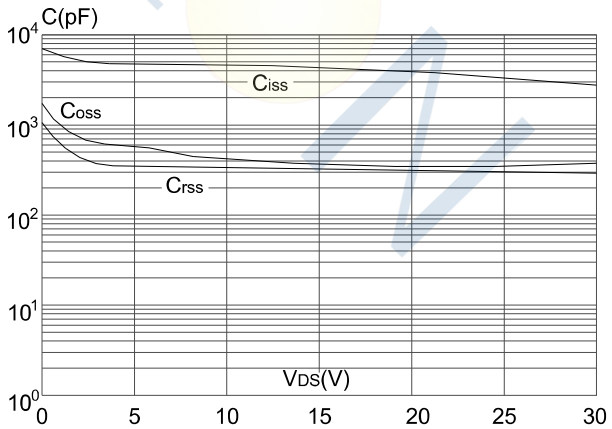


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

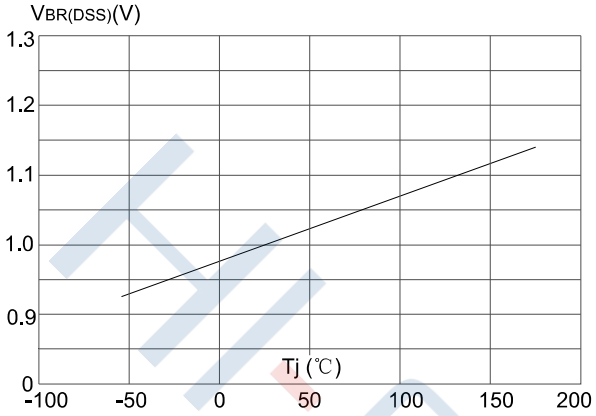


Figure 8: Normalized on Resistance vs. Junction Temperature

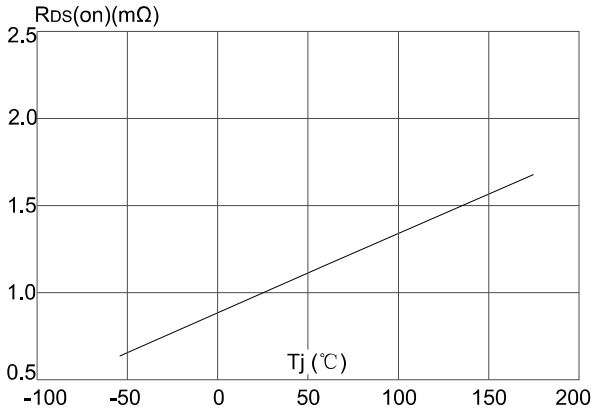


Figure 9: Maximum Safe Operating Area

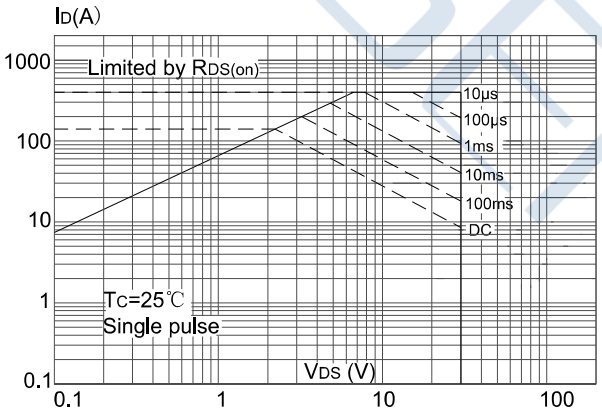


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

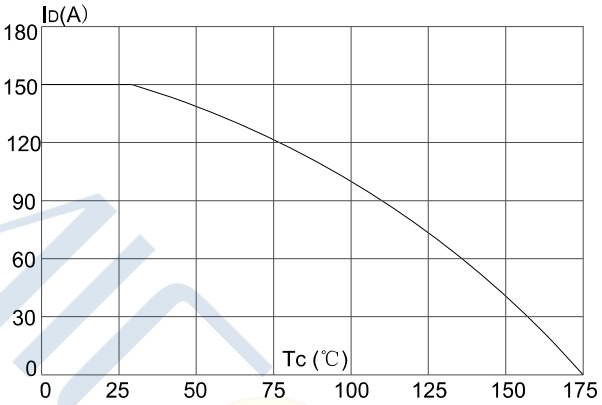
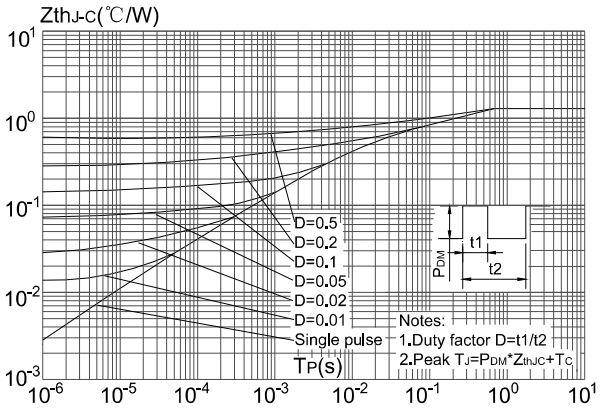


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case (TO-252)



Test Circuit

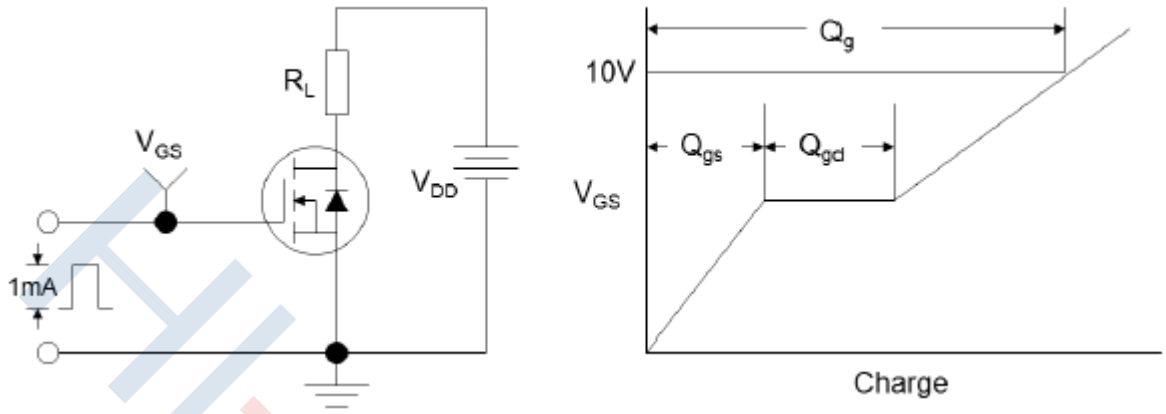


Figure1:Gate Charge Test Circuit & Waveform

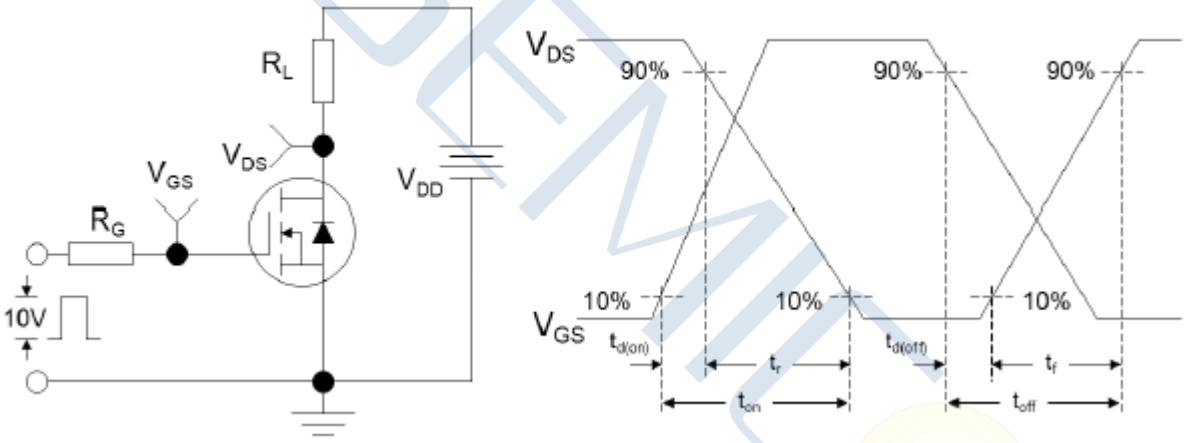


Figure 2: Resistive Switching Test Circuit & Waveforms

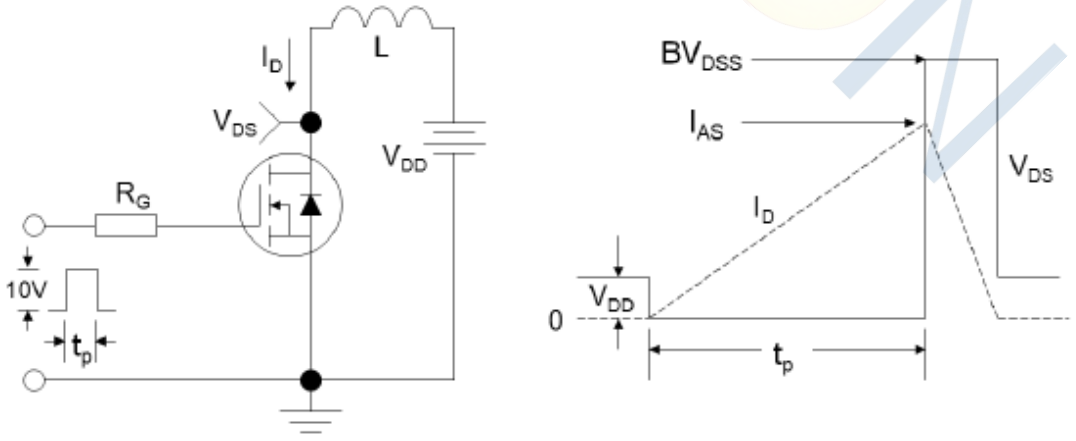


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Test Circuit

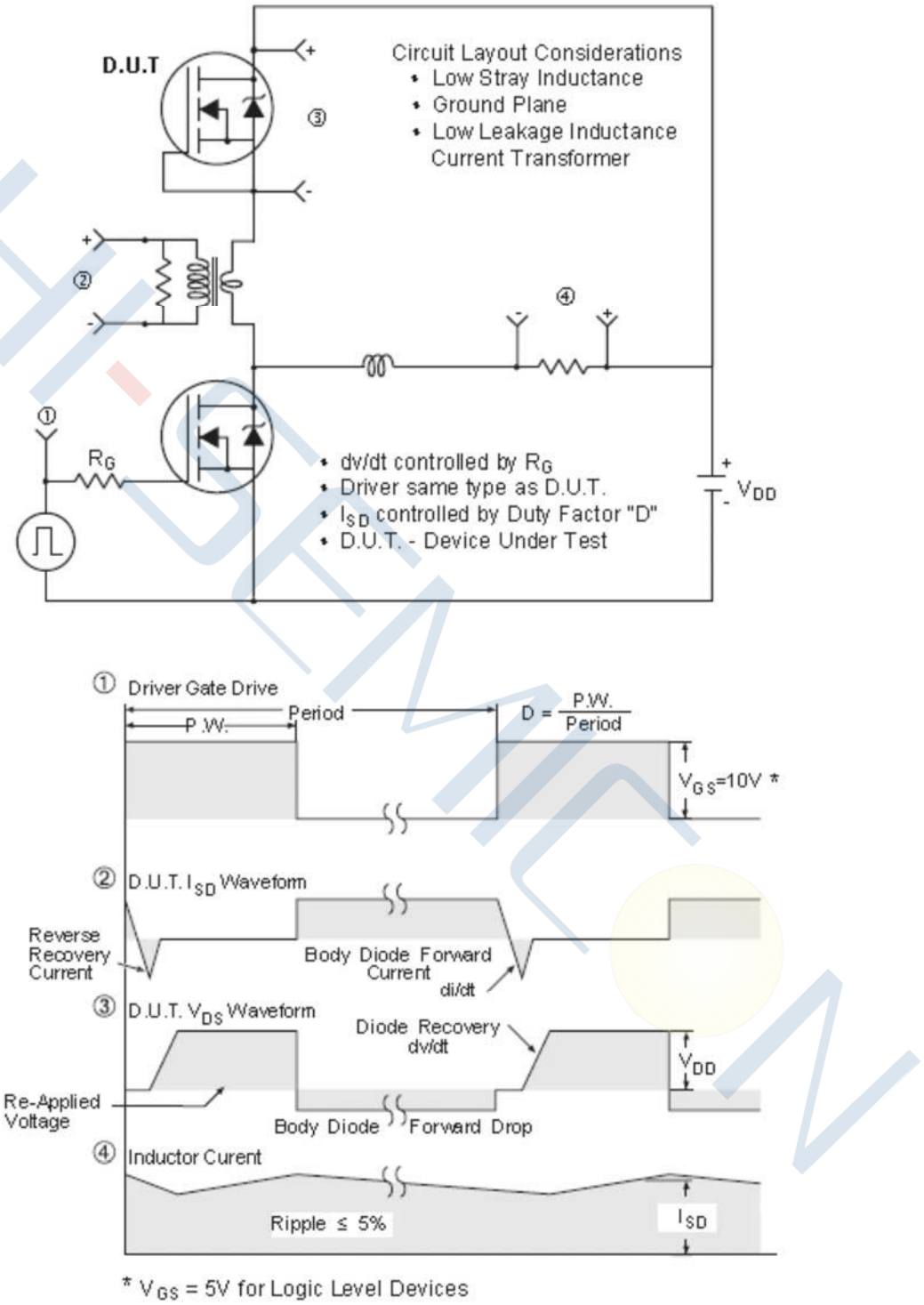
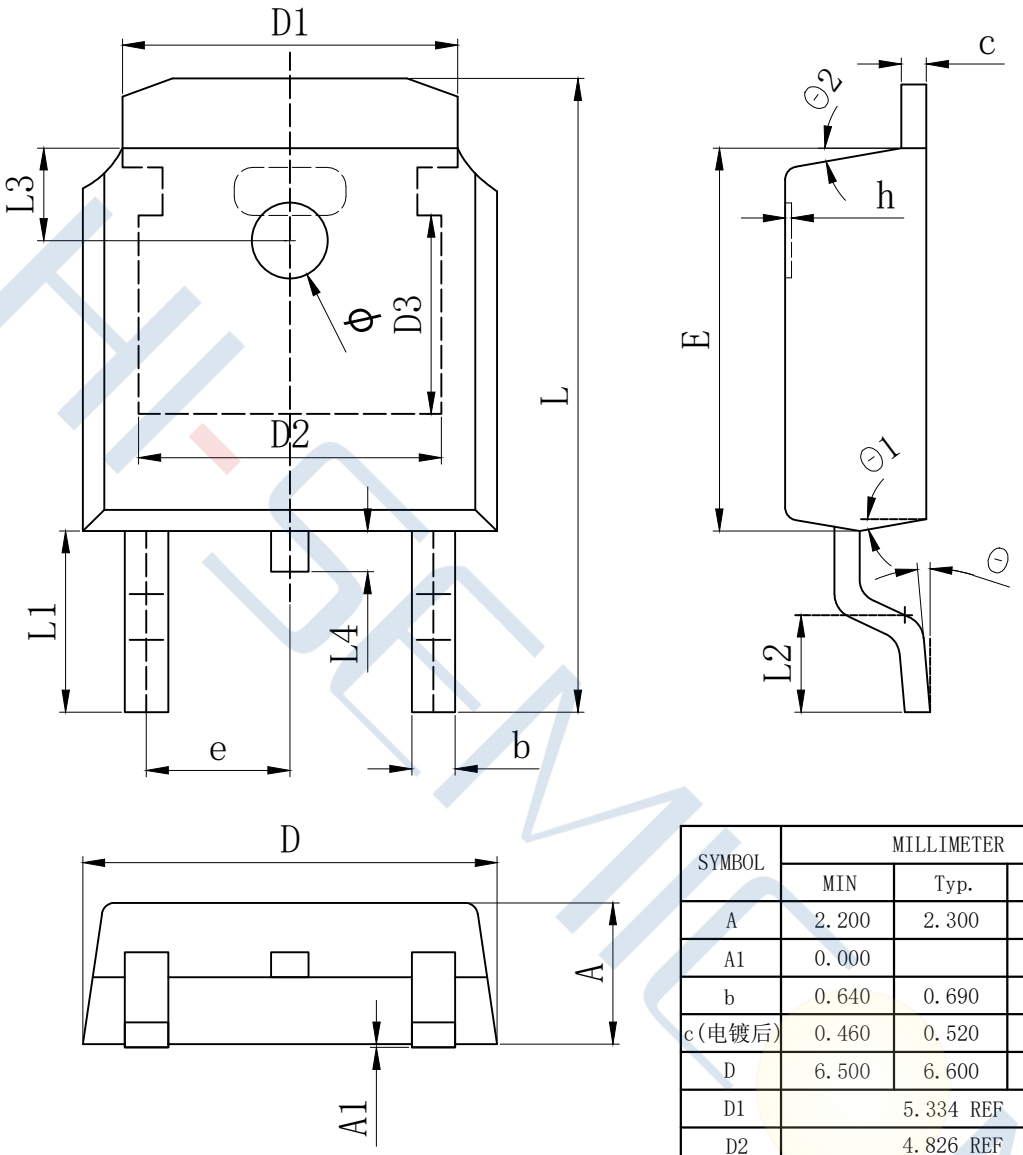


Figure 4:Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

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°
θ1	9° TYP		
θ2	9° TYP		

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