

General Description:

The LWN2H550AT uses trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications. The package form is SOT23-6L, which accords with the ROHS standard and Halogen Free standard.

Features:

- Fast Switching
- Low Gate Charge and $R_{DS(ON)}$
- Low Reverse transfer capacitances

Applications:

- DC-DC Converter
- Portable Equipment
- Power Management



Package Marking and Ordering Information:

Marking	Part Number	Package	Packing	Qty.
N2H550A	LWN2H550AT	SOT23-6L	Reel	3000 Pcs

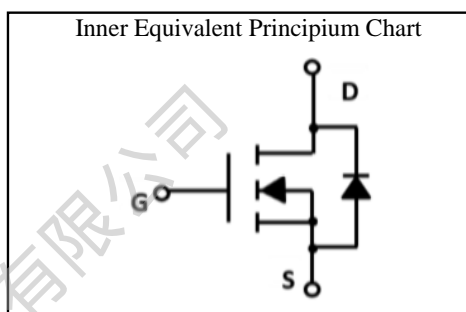
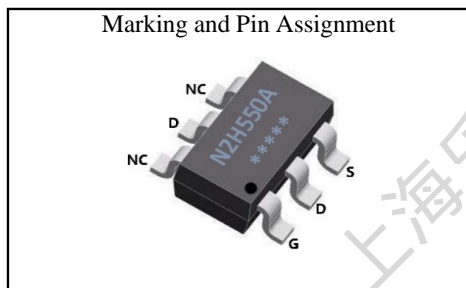
Absolute Maximum Ratings:

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Voltage	200	V
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	A
I_{DM}^{al}	Pulsed Drain Current	4.0	A
V_{GS}	Gate-to-Source Voltage	± 20	V
P_D	Power Dissipation	1.6	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	150, -55 to 150	$^\circ\text{C}$
T_L	Maximum Temperature for Soldering	260	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Value	Units
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	78	$^\circ\text{C}/\text{W}$

V_{DSS}	200	V
I_D	1.2	A
P_D	1.6	W
$R_{DS(ON) \text{ TYPE}}$	450	$\text{m}\Omega$



Electrical Characteristic ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified):

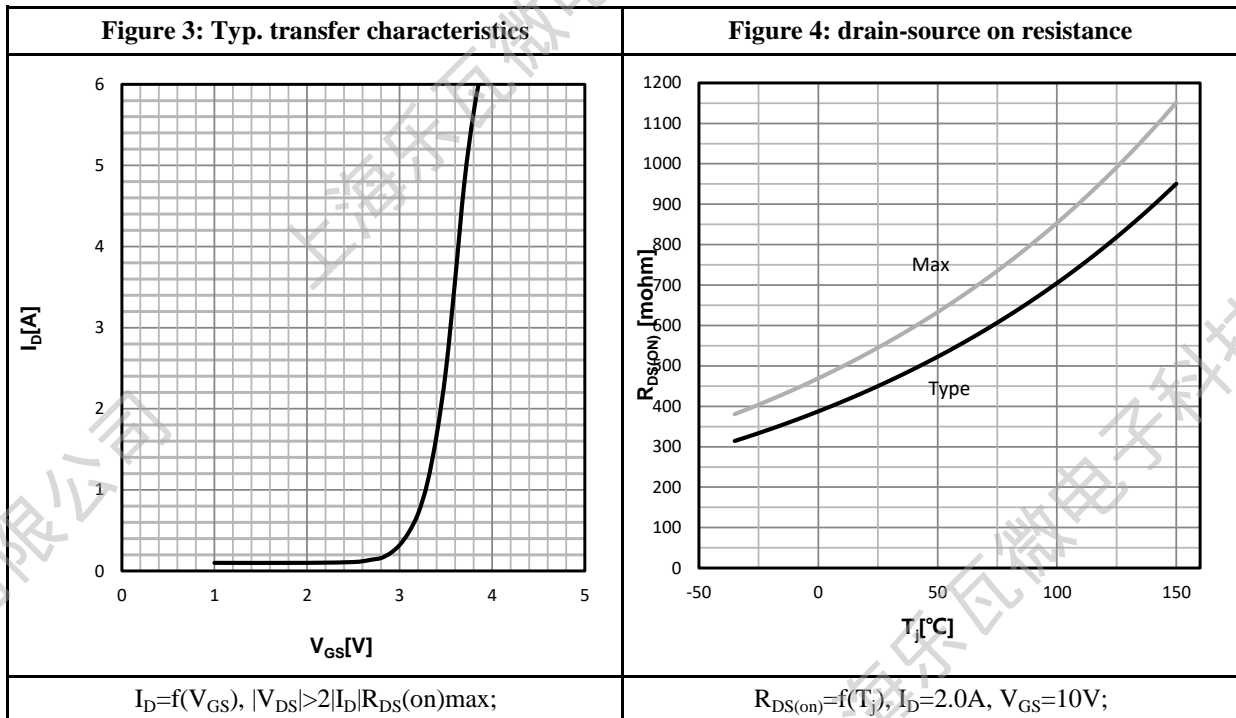
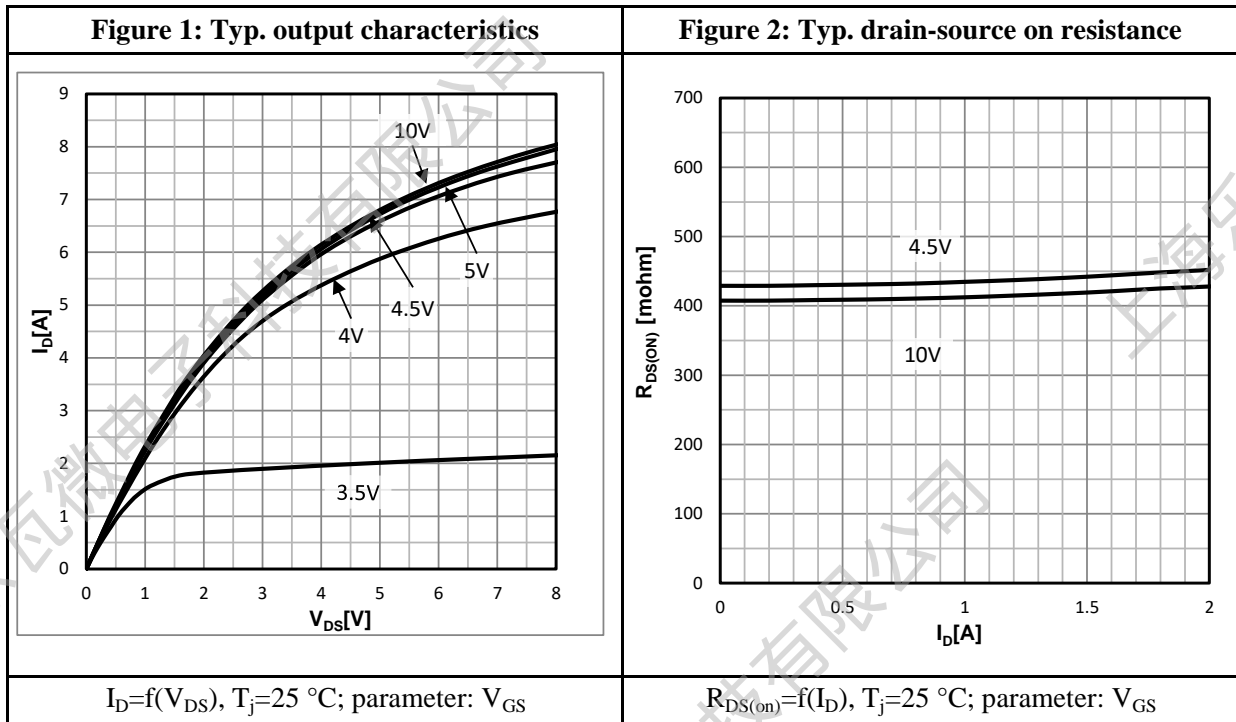
Static Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	200	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=200V, V_{GS}=0V$	--	--	1.0	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+20V, V_{DS}=0V$	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-20V, V_{DS}=0V$	--	--	-100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	2.0	3.0	V
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=2.0A$	--	450	550	m Ω

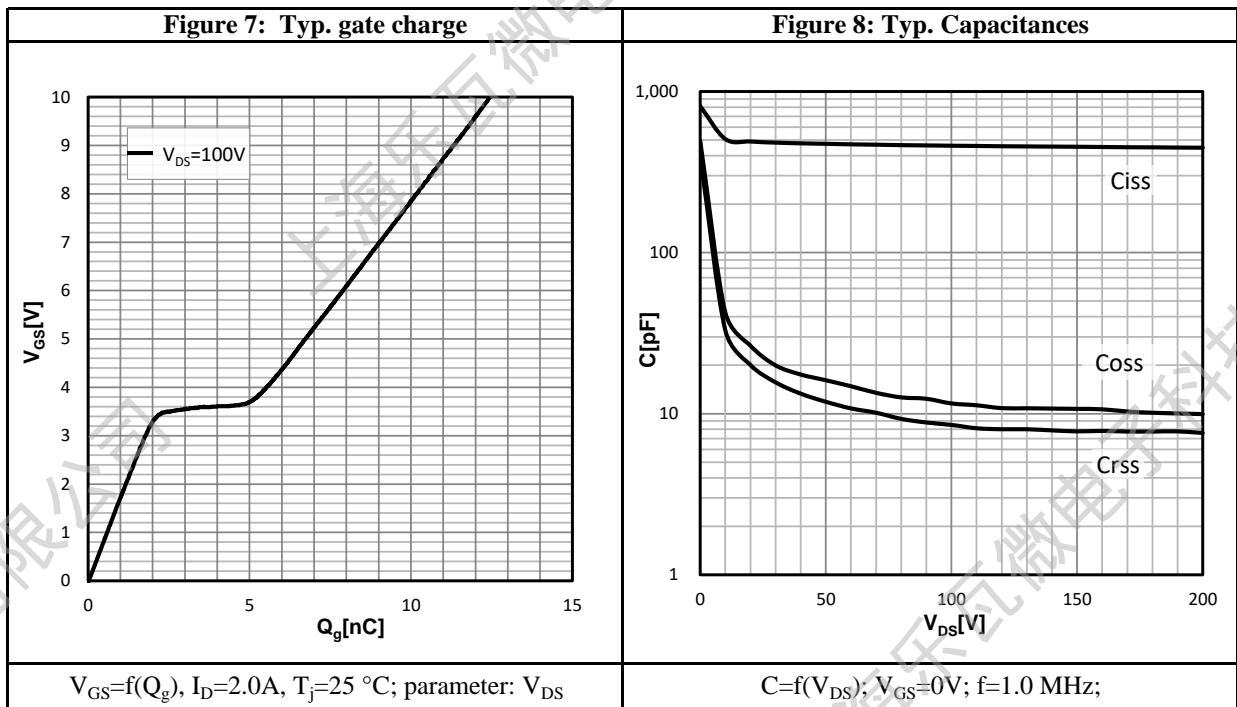
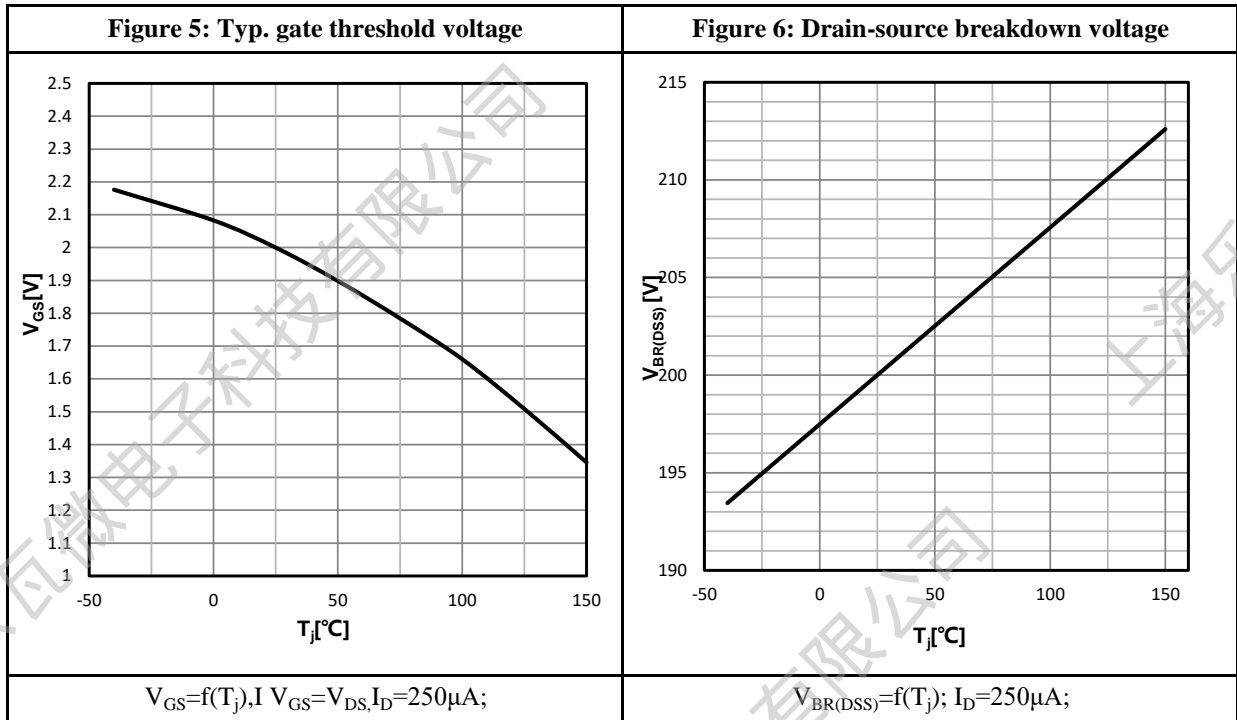
Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	$V_{GS} = 0V$	--	461	--	pF
C_{oss}	Output Capacitance	$V_{DS} = 100V$	--	11.6	--	
C_{rss}	Reverse Transfer Capacitance	$f = 1.0MHz$	--	8.5	--	
R_G	Gate resistance	$V_{GS}=0V, V_{DS}$ Short	--	1.35	--	Ω

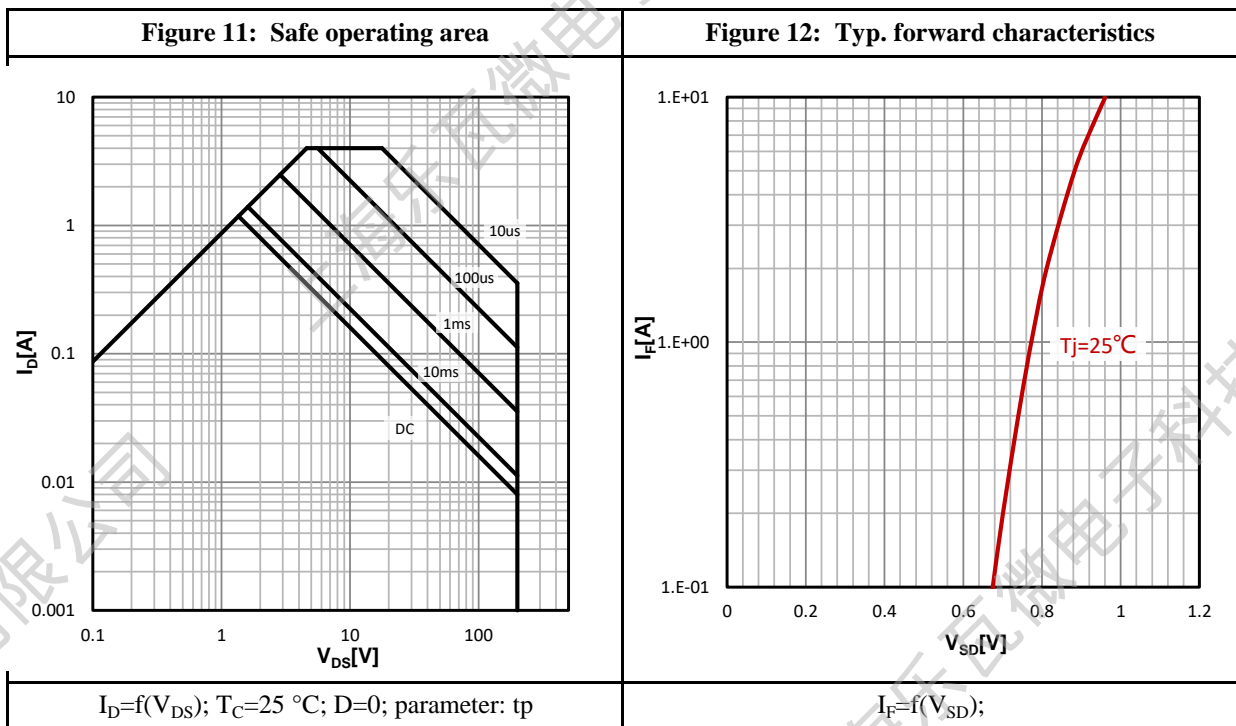
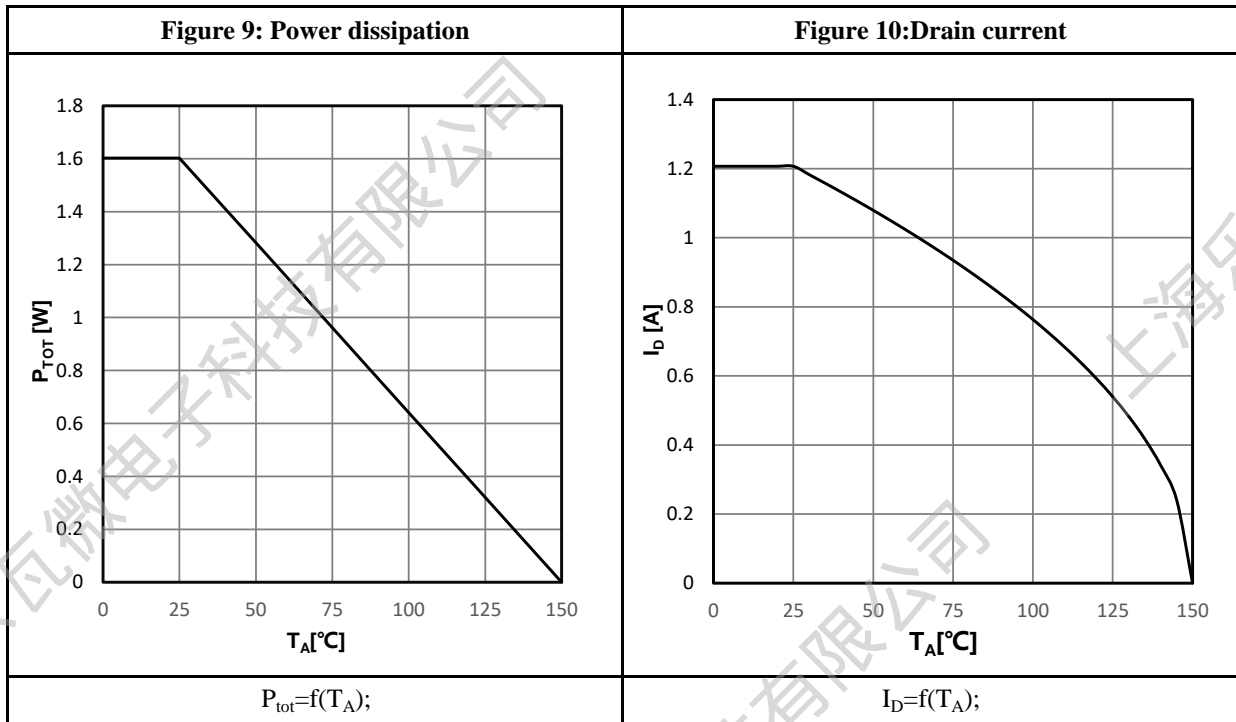
Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D = 2.0A$	--	6	--	ns
t_r	Rise Time	$V_{DS} = 100V$	--	7	--	
$t_{d(OFF)}$	Turn-Off Delay Time	$V_{GS} = 10V$	--	17	--	
t_f	Fall Time	$R_G = 4.0\Omega$	--	8	--	
Q_g	Total Gate Charge	$V_{GS} = 10V$	--	12.5	--	nC
Q_{gs}	Gate Source Charge	$V_{DS} = 100V$	--	1.75	--	
Q_{gd}	Gate Drain Charge	$I_D = 2.0A$	--	2.9	--	

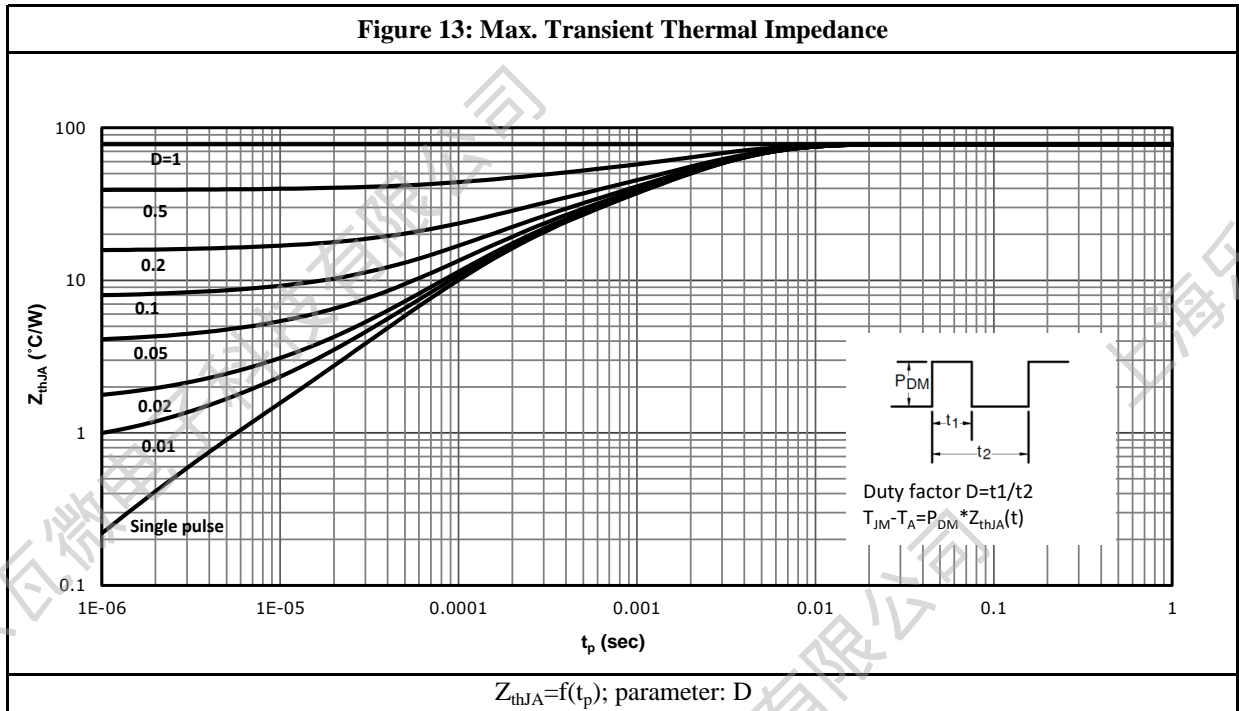
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
I_S	Diode Forward Current	$T_C = 25\text{ }^\circ\text{C}$	--	--	1.2	A
V_{SD}	Diode Forward Voltage	$I_S=2.0A, V_{GS}=0V$	--	--	1.2	V
t_{rr}	Reverse Recovery time	$I_S=2.0A, V_{DD}=100V$	--	75	--	ns
Q_{rr}	Reverse Recovery Charge	$dI/dt=100A/\mu s$	--	198	--	nC

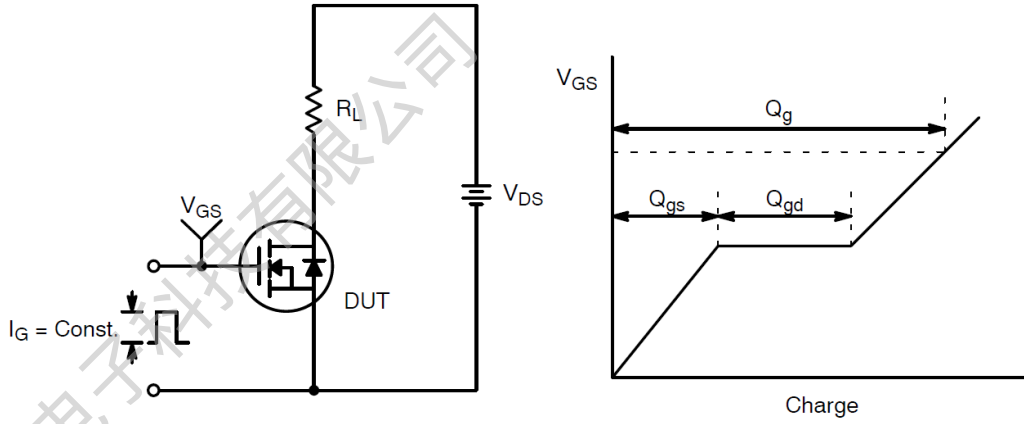
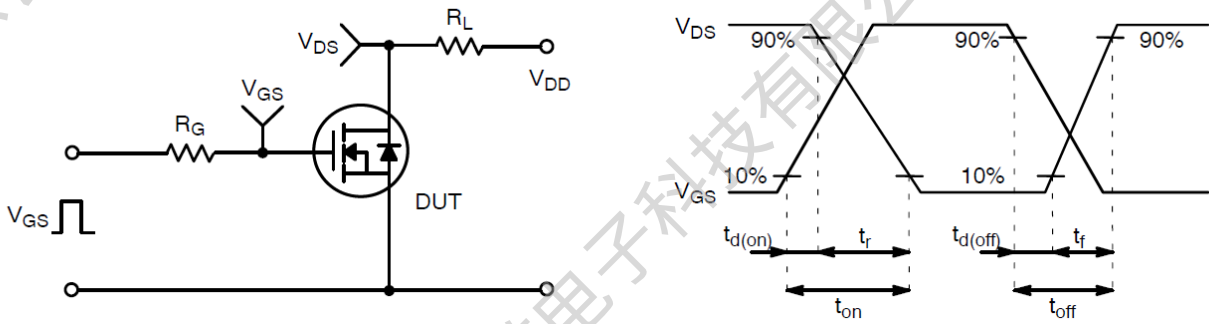
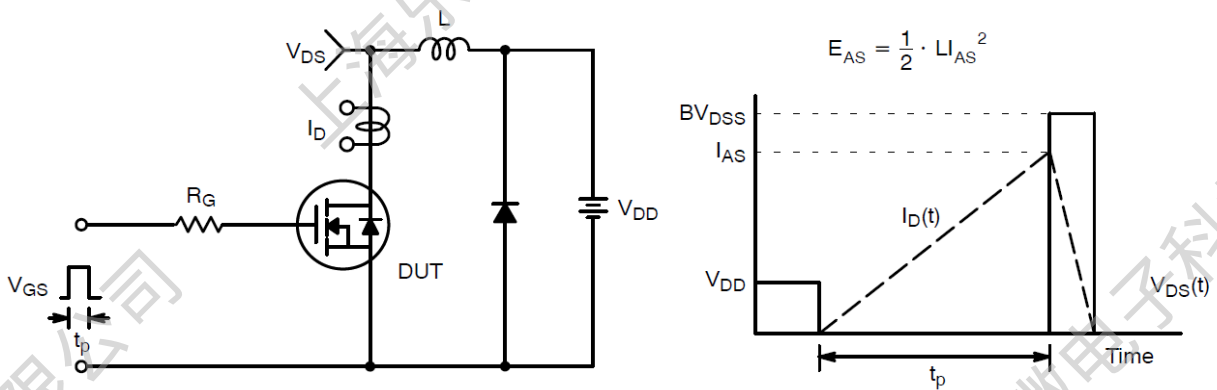
a1: Repetitive rating; pulse width limited by maximum junction temperature

Characteristics Curve:


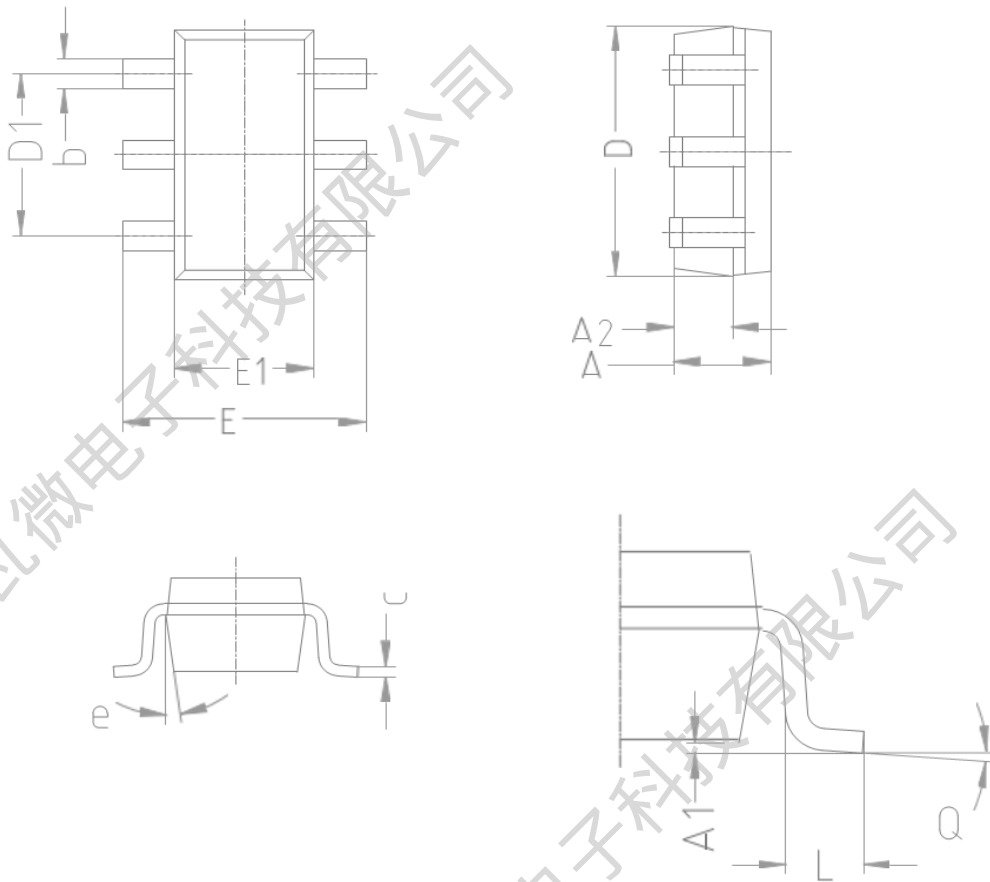






Test Circuit & Waveform:

Figure 14: Gate Charge Test Circuit & Waveform

Figure 15: Resistive Switching Test Circuit & Waveforms

Figure 16: Unclamped Inductive Switching Test Circuit & Waveforms

Package Outline:



COMMON DIMENSION (MM)

PKG	SOT23-3/5/6		
Symbol	MIN	NOM	MAX
A	1.080	1.100	1.120
A1	0.010	0.060	0.150
A2	0.640	0.470	0.700
b	0.325	0.350	0.375
c	0.125	0.135	0.150
D	2.920	2.930	2.980
D1	1.875	1.900	1.925
E	2.650	2.800	2.950
E1	1.580	1.600	1.670
L	0.300	0.450	0.600
e	8°		
Q	0°	4°	8°

Revision History:

Revison	Date	Descriptions
Rev 1.0	Feb.2024	Initial Version

Disclaimer:

The information in this document is believed to be accurate and reliable. However, no responsibility is assumed by LW-Micro for its use. All operating parameters must be designed, validated and tested to ensure they meet the requirements of your application. LW-Micro reserves the right to make any specification and/or circuitry changes without prior notification. Before starting a brand-new project, please contact LW-Micro Sales to get the most recent relevant information.

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