

**General Description:**

The LWN2H550AD2 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 DFN2\*2-6L, 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	LWN2H550AD2	DFN2*2-6L	Reel	3000 Pcs

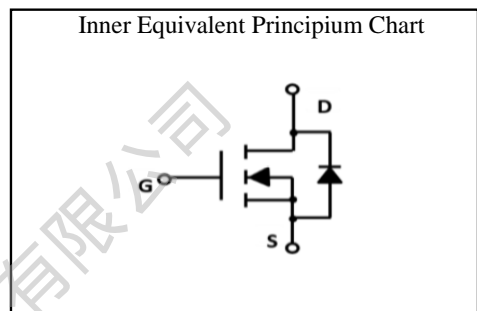
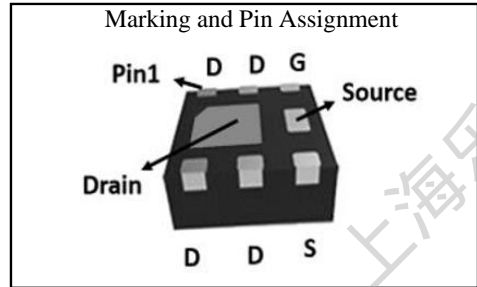
**Absolute Maximum Ratings:**

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	8.0	A
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$P_D$	Power Dissipation	3.0	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	41.7	$^\circ\text{C}/\text{W}$

$V_{DSS}$	200	V
$I_D$	2.0	A
$P_D$	3.0	W
$R_{DS(ON) \text{ TYPE}}$	450	$\text{m}\Omega$



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

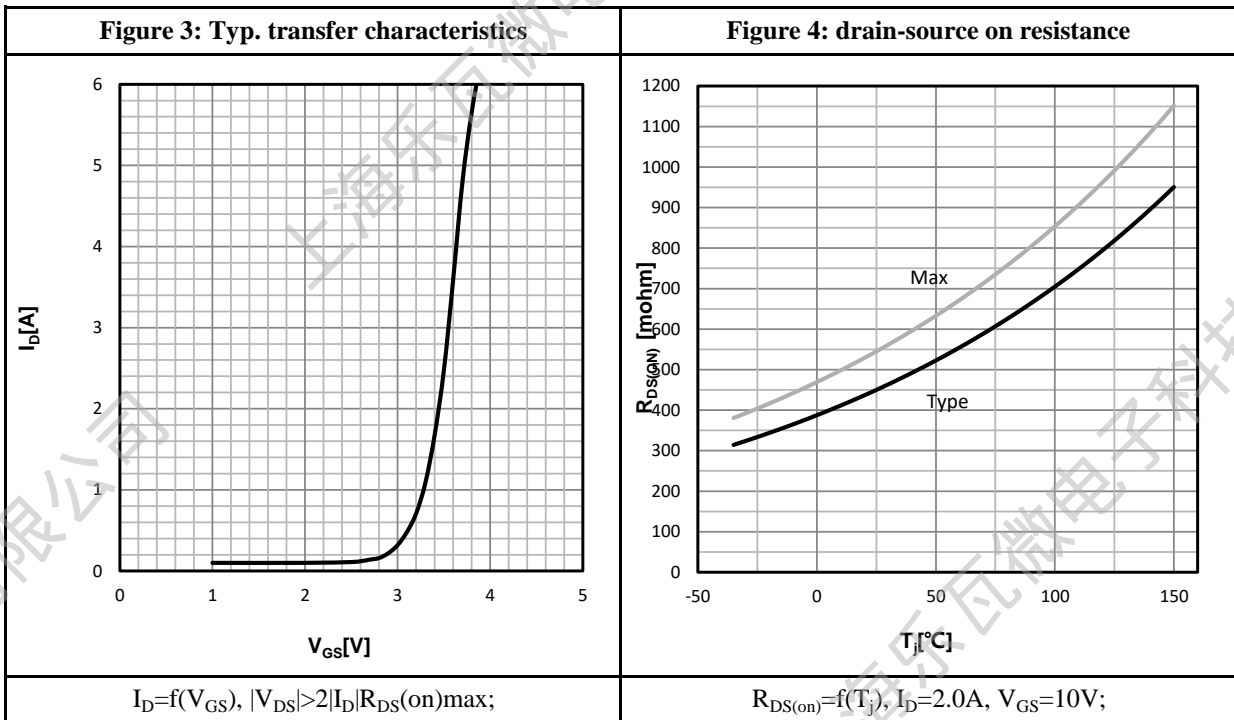
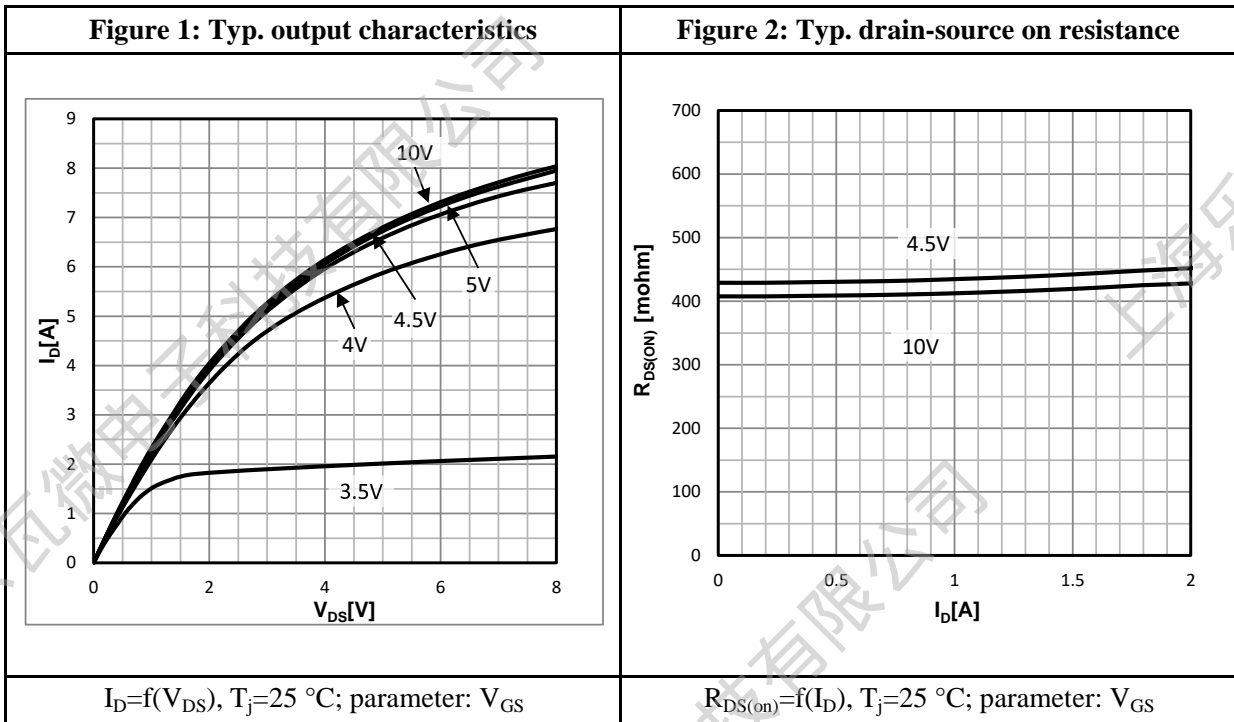
Static Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$V_{DSS}$	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	200	--	--	V
$I_{DSS}$	Drain to Source Leakage Current	$V_{DS}=200V, V_{GS}=0V$	--	--	1.0	$\mu A$
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+20V, V_{DS}=0V$	--	--	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 $\Omega$

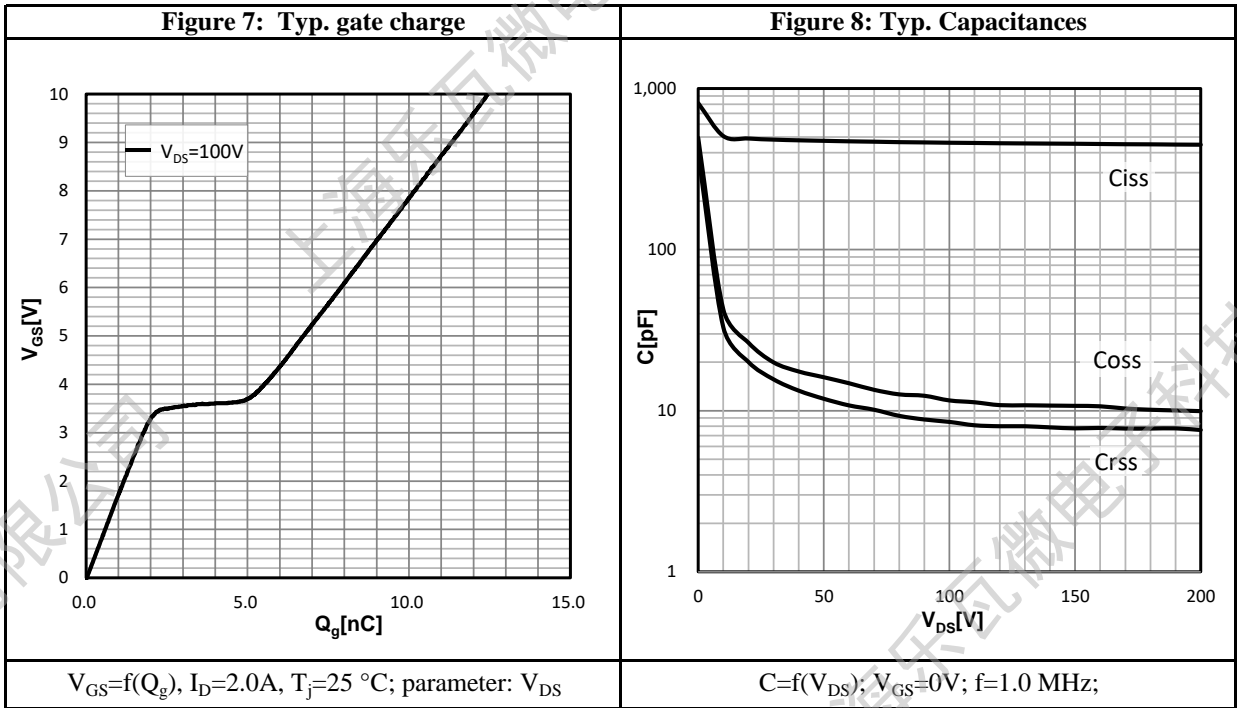
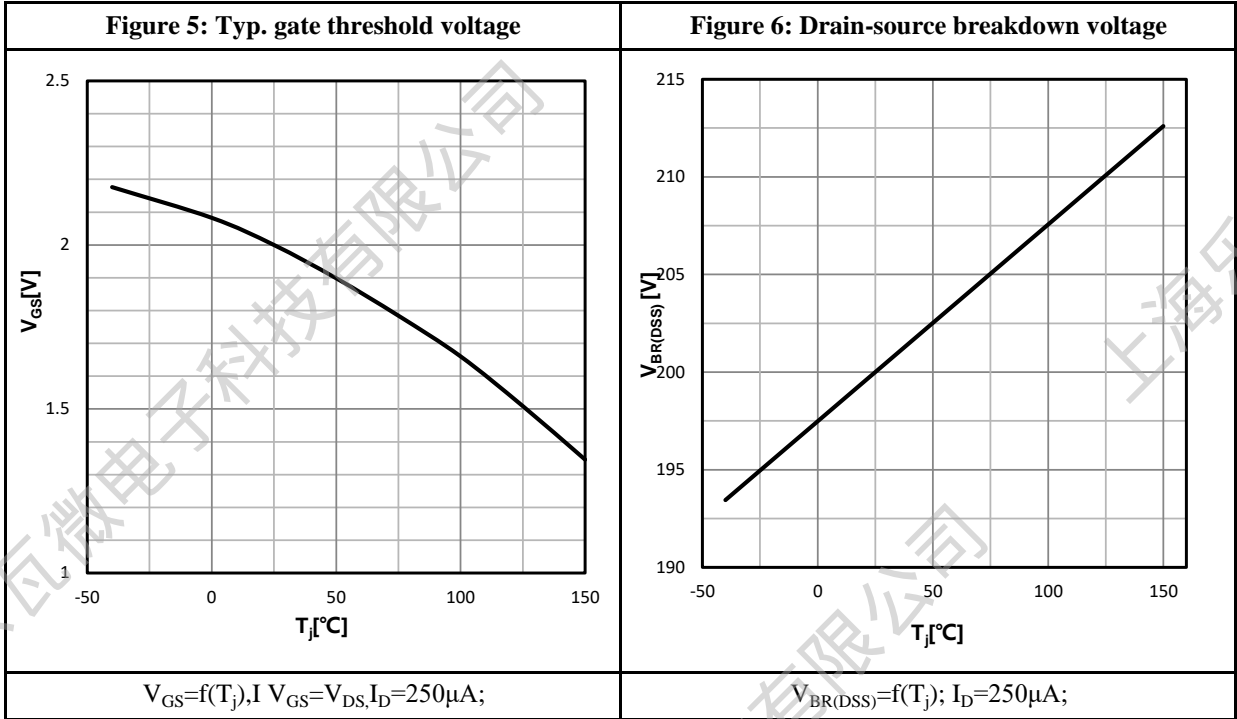
Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$C_{iss}$	Input Capacitance	$V_{GS} = 0V$	--	461	--	pF
$C_{oss}$	Output Capacitance	$V_{DS} = 100V$	--	11.6	--	
$C_{rss}$	Reverse Transfer Capacitance	$f = 1.0MHz$	--	8.5	--	
$R_G$	Gate resistance	$V_{GS}=0V,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

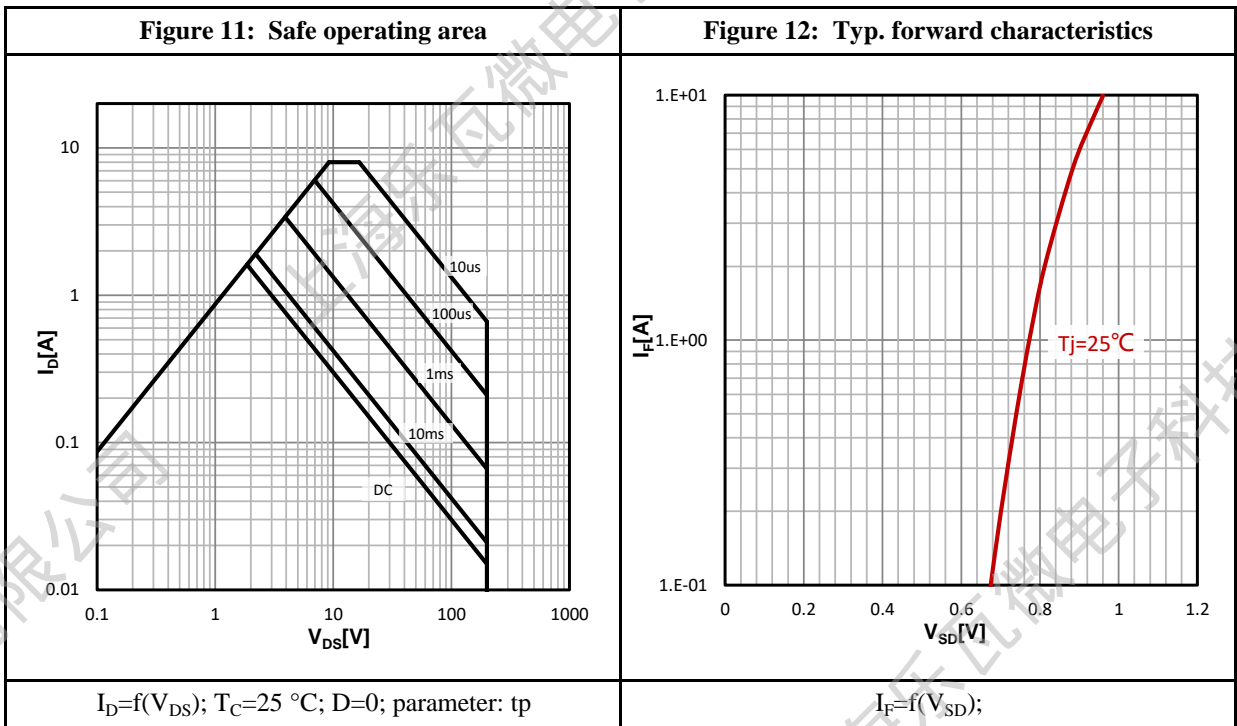
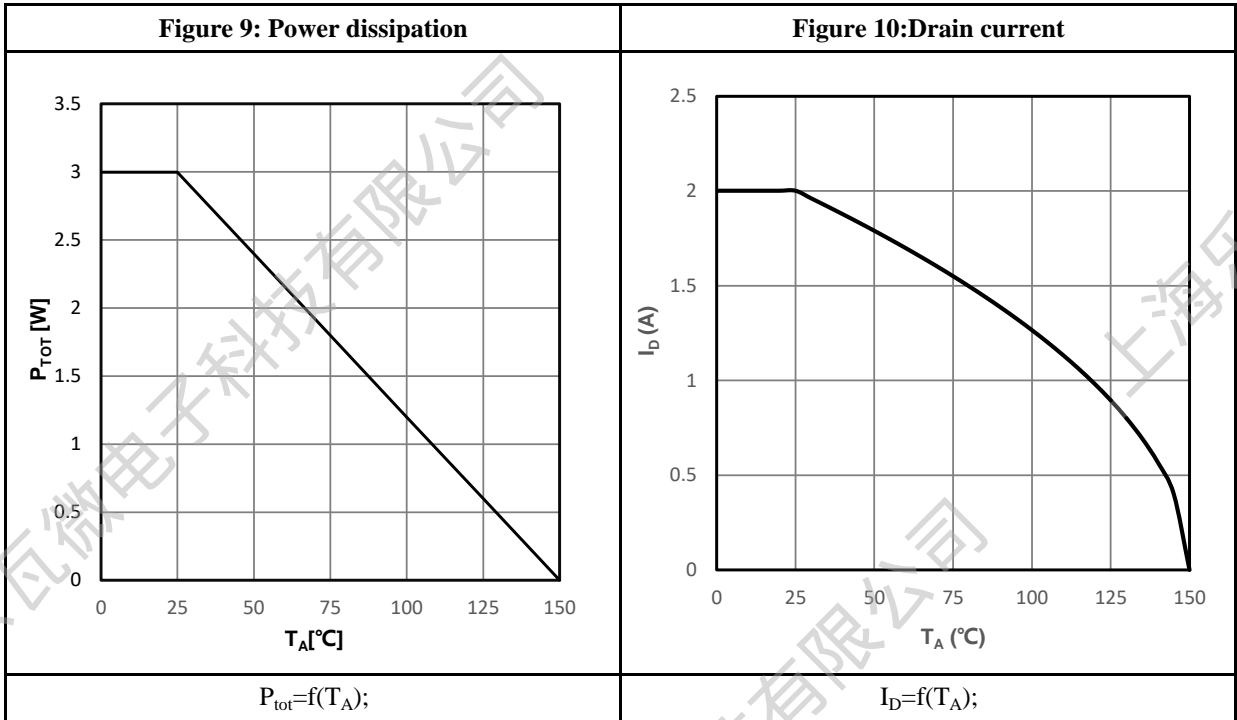
Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D = 2.0A$	--	6	--	ns
$t_r$	Rise Time	$V_{DS} = 100V$	--	7	--	
$t_{d(OFF)}$	Turn-Off Delay Time	$V_{GS} = 10V$	--	17	--	
$t_f$	Fall Time	$R_G = 4.0\Omega$	--	8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

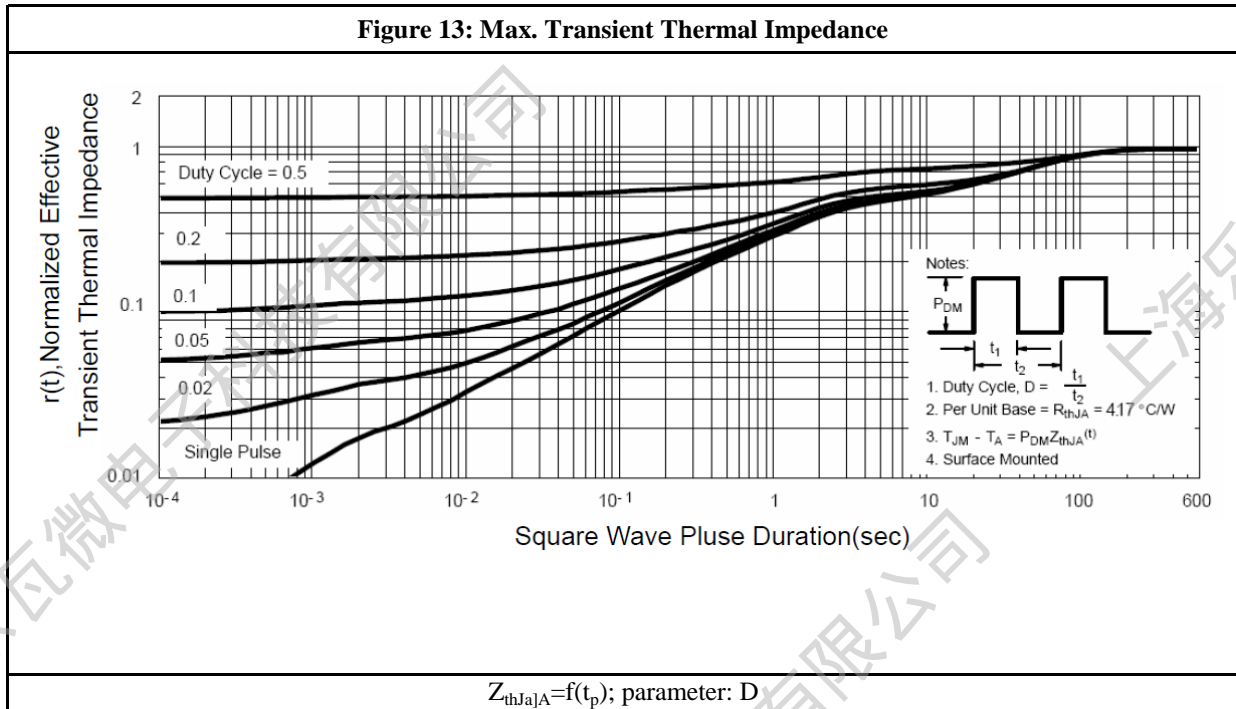
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$I_S$	Diode Forward Current	$T_C = 25\text{ }^\circ\text{C}$	--	--	2.0	A
$V_{SD}$	Diode Forward Voltage	$I_S=2.0A, V_{GS}=0V$	--	--	1.2	V
$t_{rr}$	Reverse Recovery time	$I_S=2.0A, V_{DD}=100V$	--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

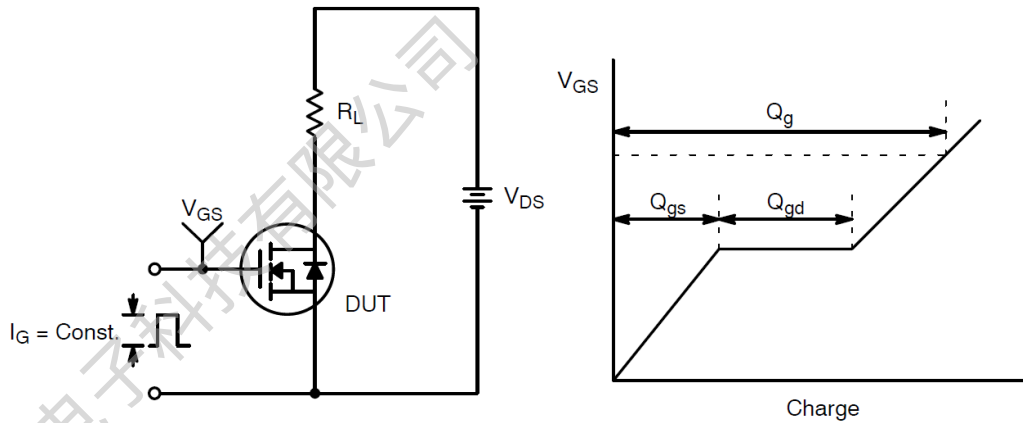
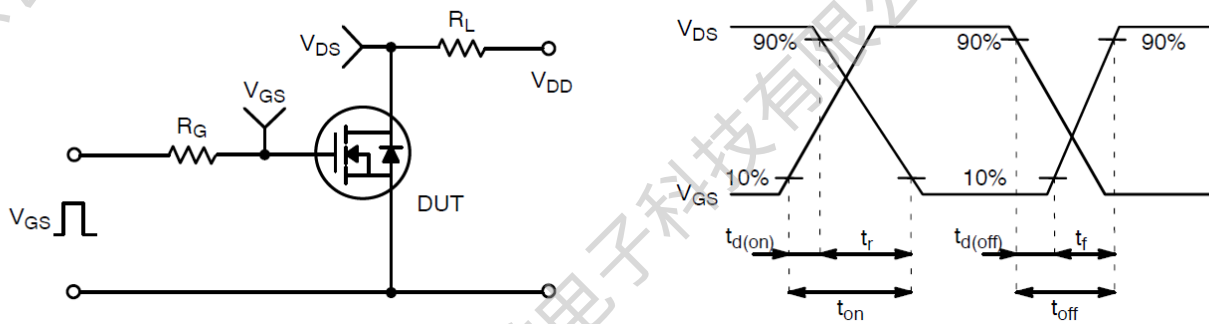
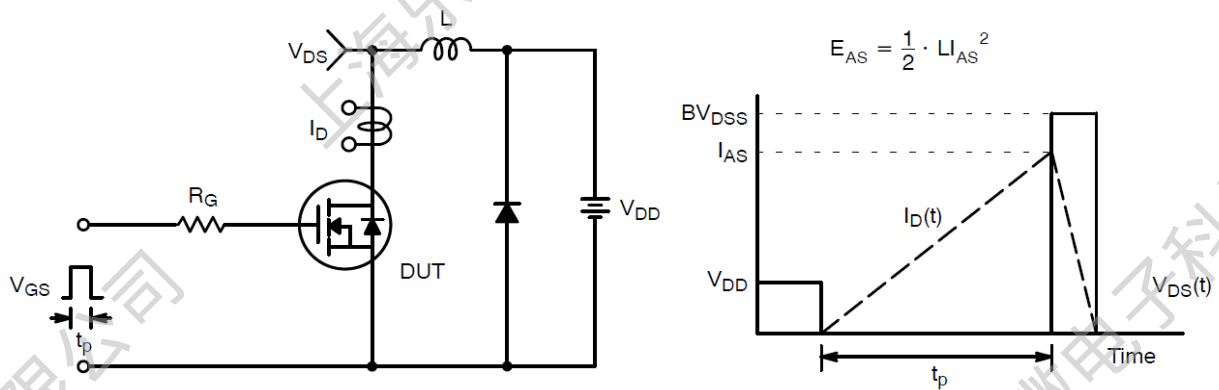
a1: Repetitive rating; pulse width limited by maximum junction temperature

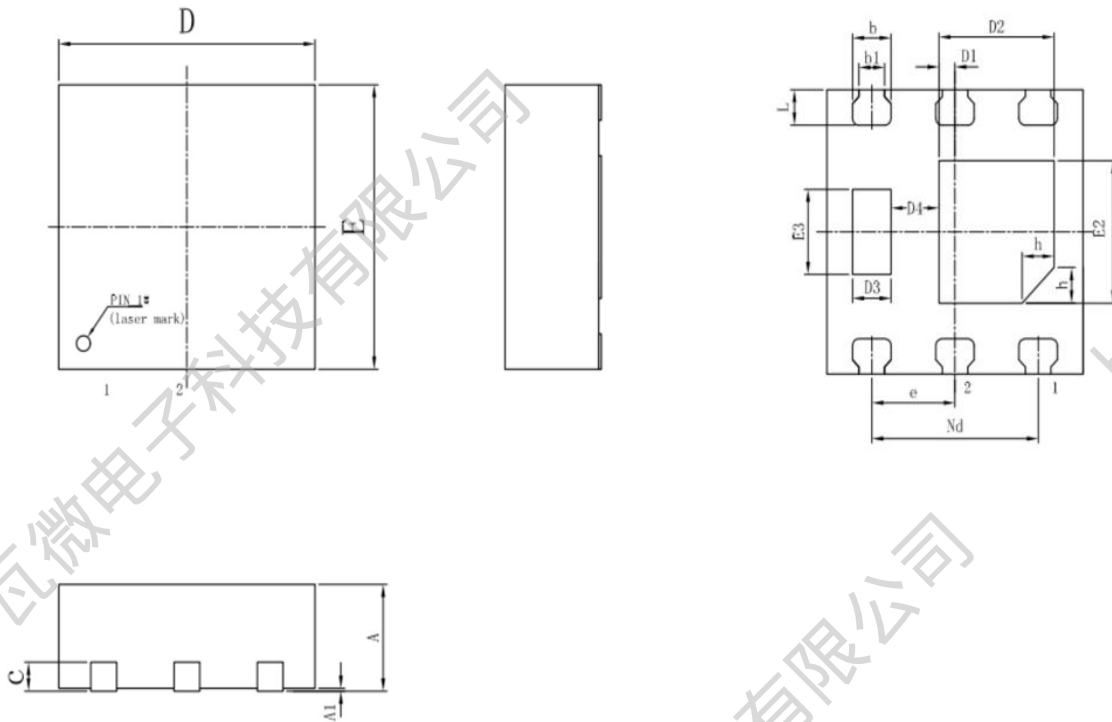
**Characteristics Curve:**






**Figure 13: Max. Transient Thermal Impedance**


**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	DFN2*2-6L		
Symbol	MIN	NOM	MAX
A	0.700	0.750	0.800
A1	0.000	0.020	0.050
b	0.250	0.300	0.350
b1	0.150	0.200	0.250
c	0.102	0.152	0.202
D	1.950	2.000	2.050
D1	0.080	0.125	0.170
D2	0.850	0.900	0.950
D3	0.250	0.300	0.350
D4	0.330	0.375	0.430
e	0.65 BSC		
Nd	1.30 BSC		
E	1.950	2.000	2.050
E2	0.950	1.000	1.050
E3	0.550	0.600	0.650
L	0.200	0.250	0.300
h	0.200	0.250	0.300



**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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