

General Description:

The LWT1H014HK uses advanced SGT 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 TO-247, 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

100% DVDS Tested

100% Avalanche Tested


Package Marking and Ordering Information:

Marking	Part Number	Package	Packing	Qty.
T1H014/LW HK/D.C.	LWT1H014HK	TO-247	Tube	30 Pcs

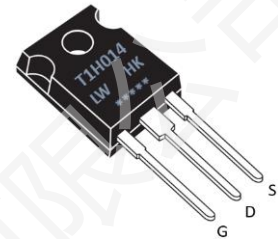
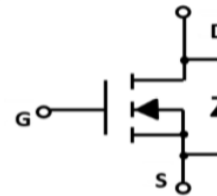
Absolute Maximum Ratings:

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Voltage	100	V
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	385
	Continuous Drain Current	$T_C=100^\circ\text{C}$	273
I_{DM}^{a1}	Pulsed Drain Current	1200	A
E_{AS}^{a2}	Single pulse avalanche energy	1462	mJ
V_{GS}	Gate-to-Source Voltage	± 20	V
P_D	Power Dissipation	441	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	175, -55 to 175	$^\circ\text{C}$
T_L	Maximum Temperature for Soldering	260	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.34	$^\circ\text{C}/\text{W}$
$R_{\theta JA}^{a3}$	Thermal Resistance, Junction-to-Ambient	43	$^\circ\text{C}/\text{W}$

V_{DSS}	100	V
I_D	385	A
P_D	441	W
$R_{DS(ON) \text{ TYPE}}$	1.8	$\text{m}\Omega$

Marking and Pin Assignment

Inner Equivalent Principium Chart


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

Static Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	--	--	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	$V_{DS}=V_{GS}, I_D=250\mu A$	3.0	3.5	4.0	V
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=100A$	--	1.8	2.3	$m\Omega$

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	$V_{GS}=0V$	--	12039	--	pF
C_{oss}	Output Capacitance	$V_{DS}=50V$	--	4036	--	
C_{rss}	Reverse Transfer Capacitance	$f=1.0MHz$	--	58	--	
R_G	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	--	0.59	--	Ω

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D=100A$	--	35	--	ns
t_r	Rise Time	$V_{DS}=50V$	--	90	--	
$t_{d(OFF)}$	Turn-Off Delay Time	$V_{GS}=10V$	--	95	--	
t_f	Fall Time	$R_G=5.0\Omega$	--	105	--	
Q_g	Total Gate Charge	$V_{GS}=10V$	--	173	--	nC
Q_{gs}	Gate Source Charge	$V_{DS}=50V$	--	58	--	
Q_{gd}	Gate Drain Charge	$I_D=100A$	--	39	--	

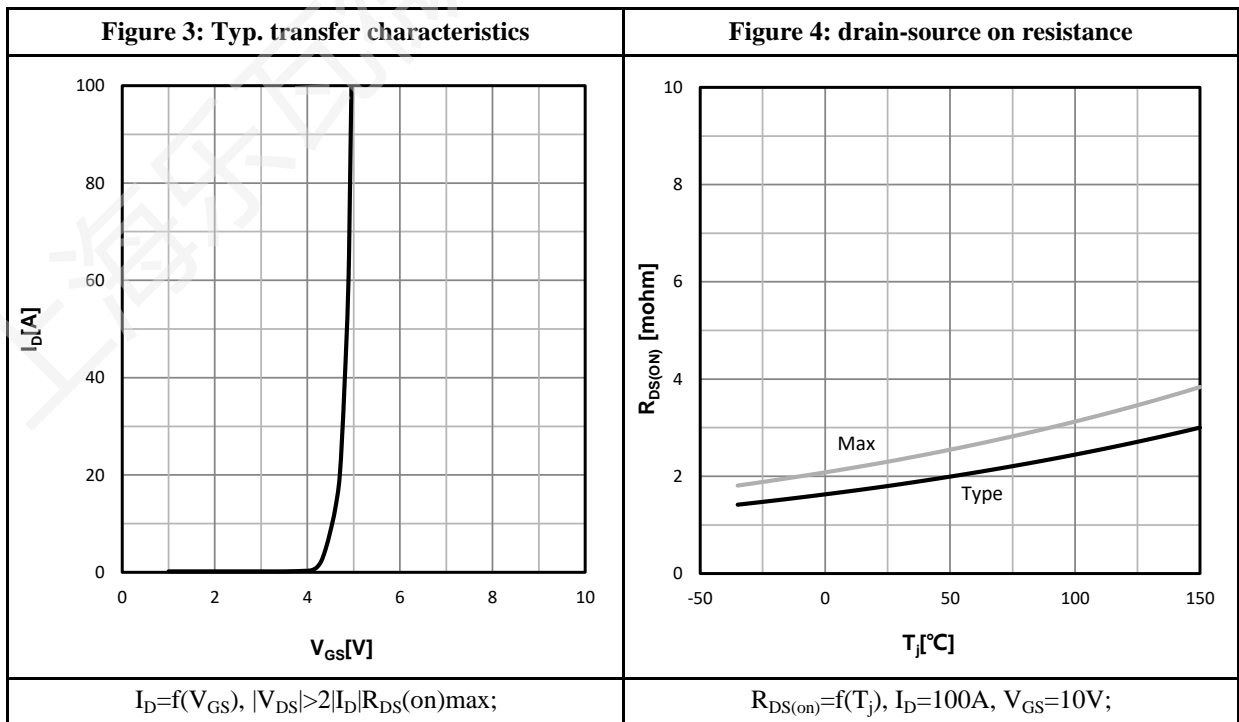
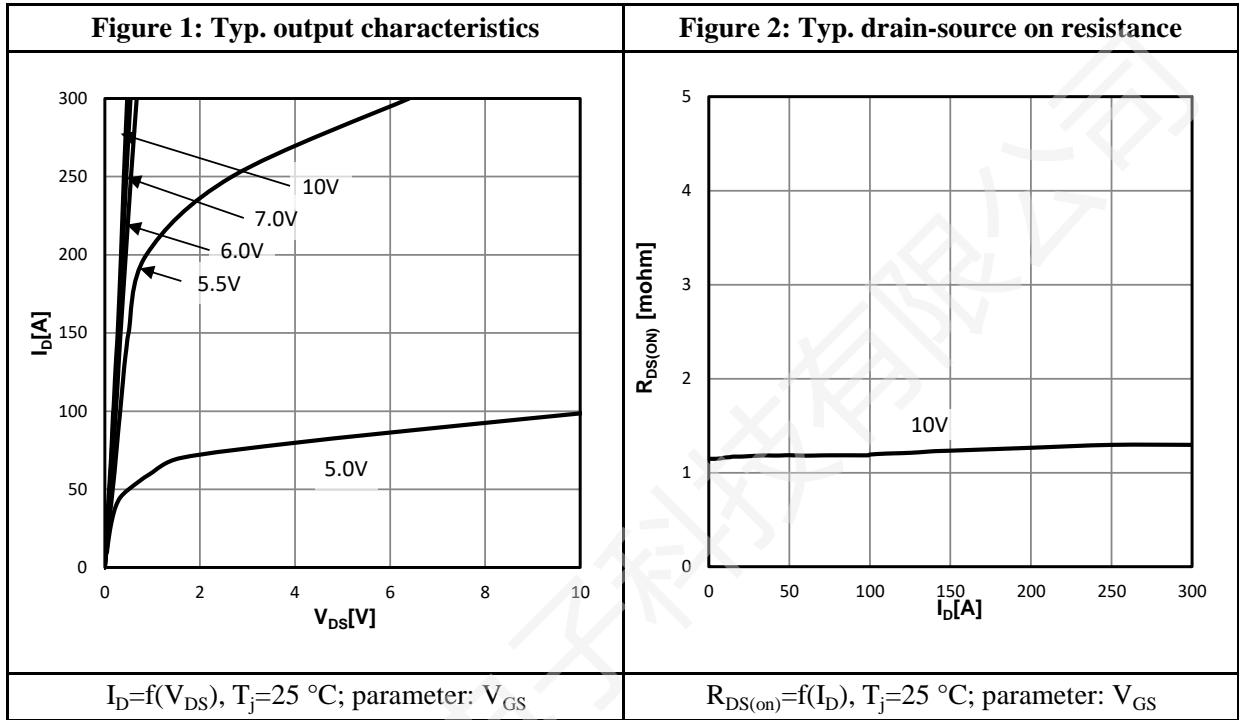
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
I_S	Diode Forward Current	$T_C=25\text{ }^\circ\text{C}$	--	--	385	A
V_{SD}	Diode Forward Voltage	$I_S=100A, V_{GS}=0V$	--	--	1.2	V
t_{rr}	Reverse Recovery Time	$I_S=100A, V_{DD}=50V$	--	95	--	ns
Q_{rr}	Reverse Recovery Charge	$dI/dt=100A/\mu s$	--	200	--	nC

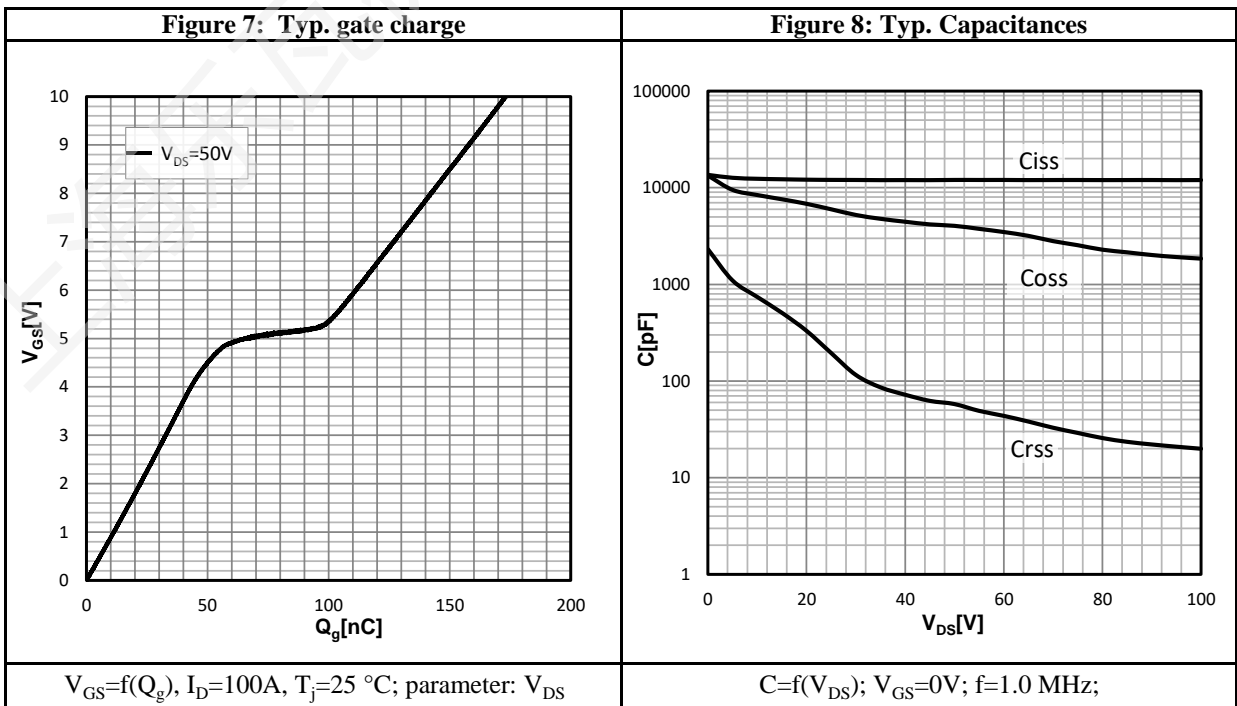
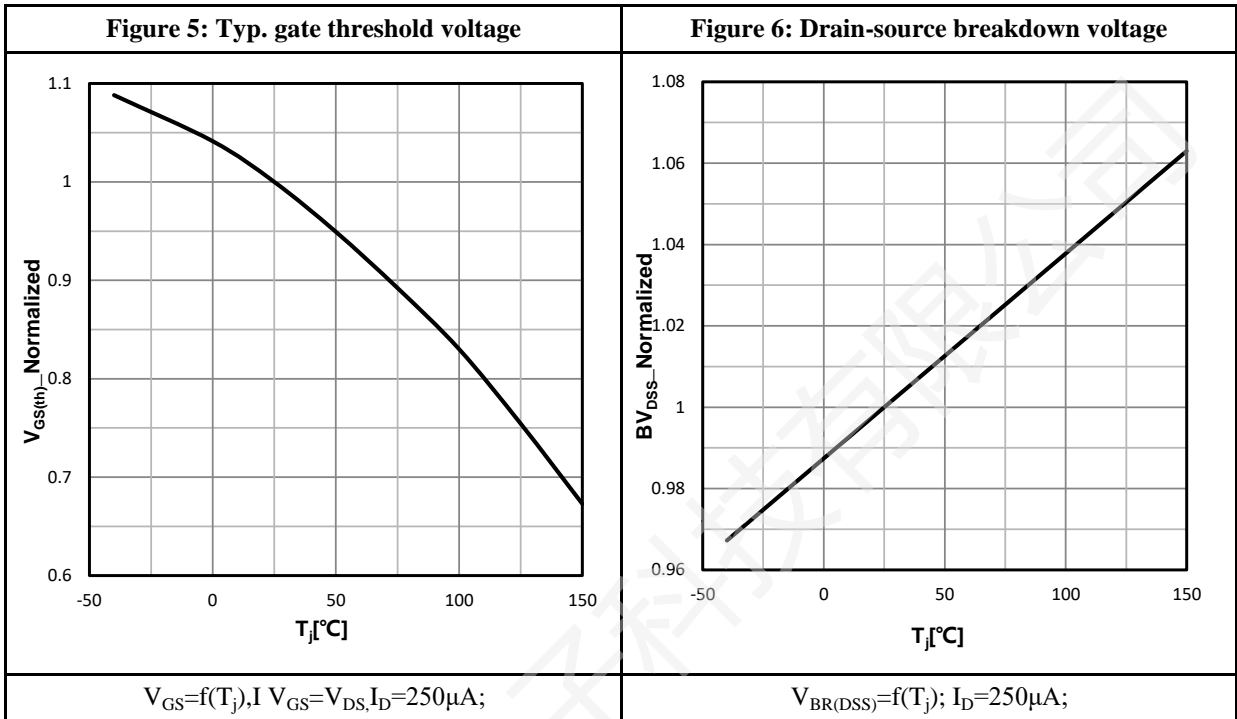
a1: Repetitive rating; pulse width limited by maximum junction temperature

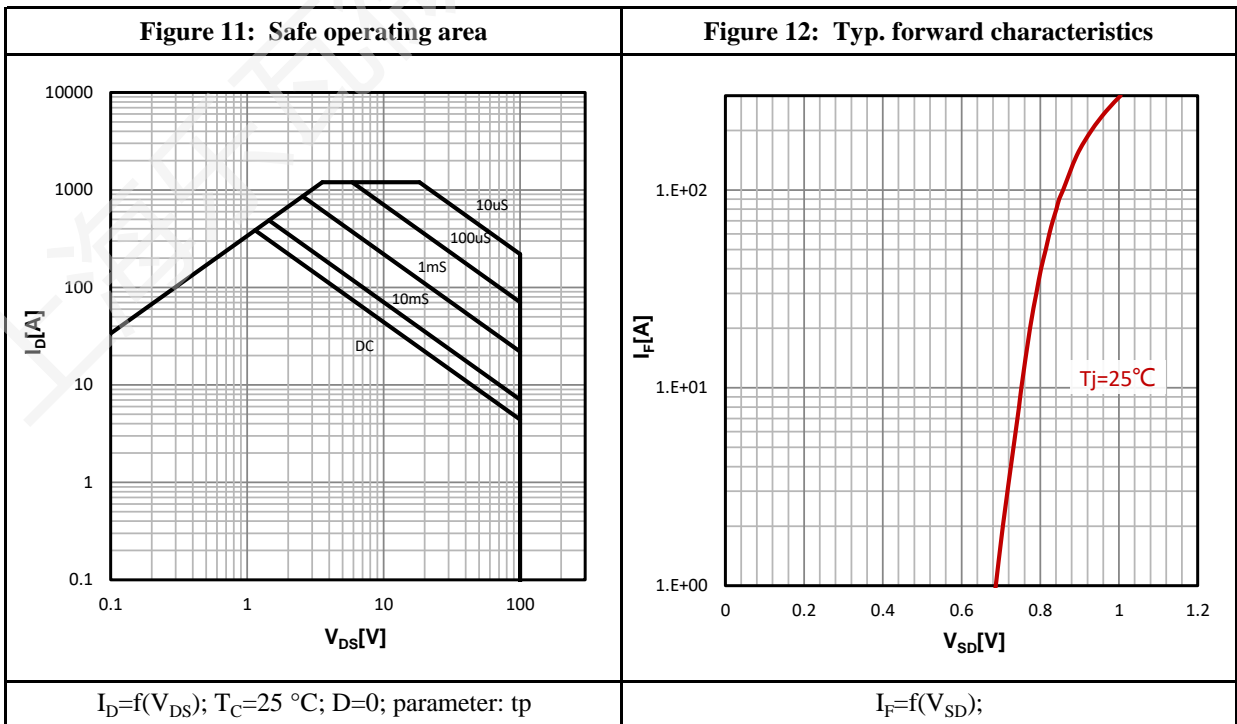
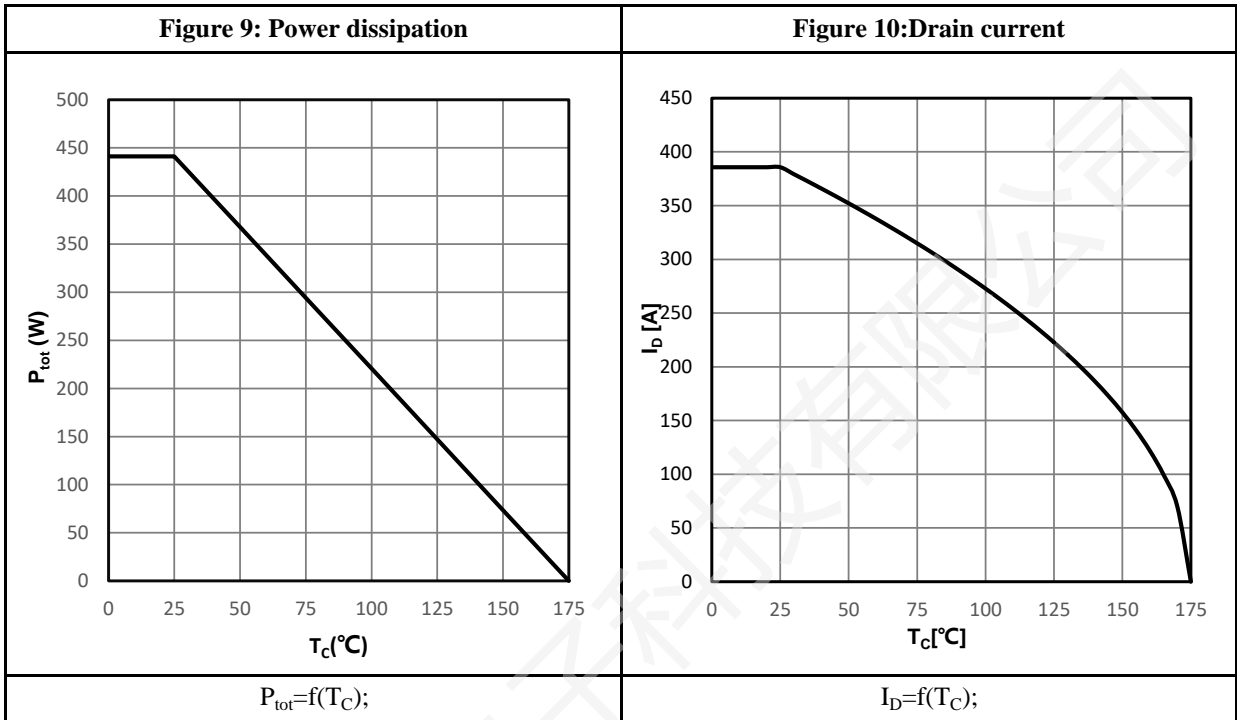
a2: $V_{DD}=50V, L=0.3mH, R_G=25\Omega$, Starting $T_j=25\text{ }^\circ\text{C}$

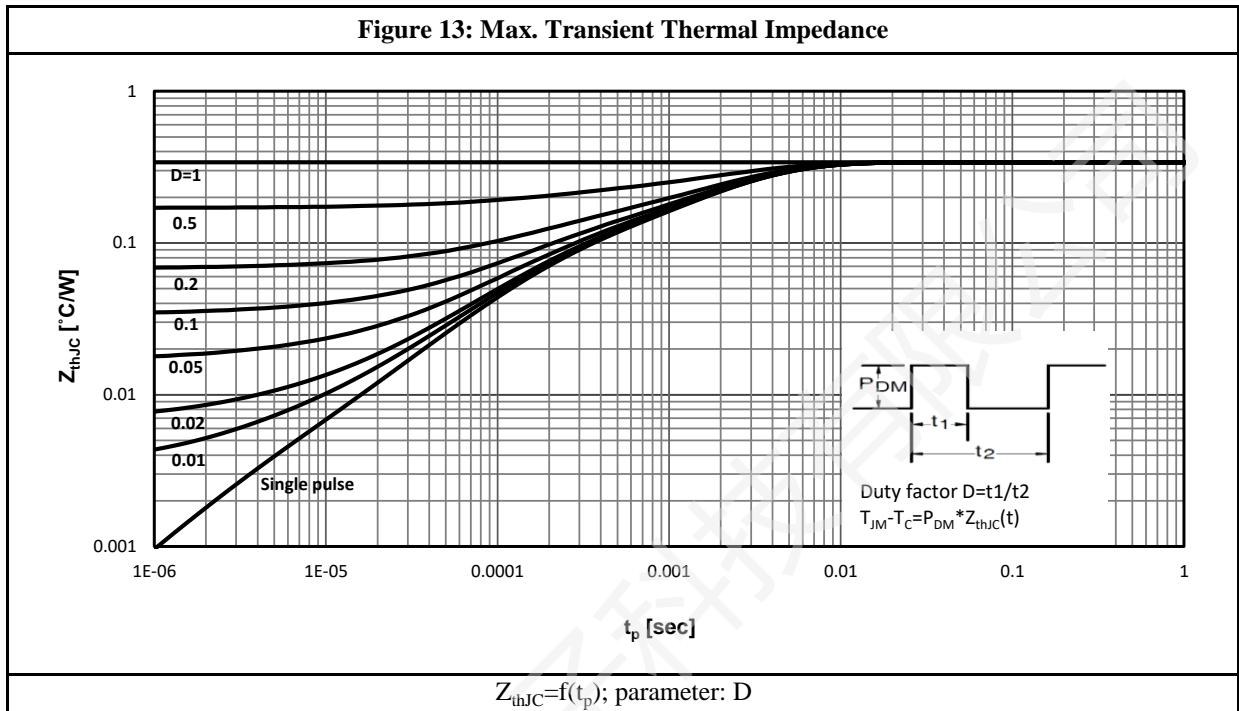
a3: Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm² (one layer, 70 μm thick) copper area for drain connection.

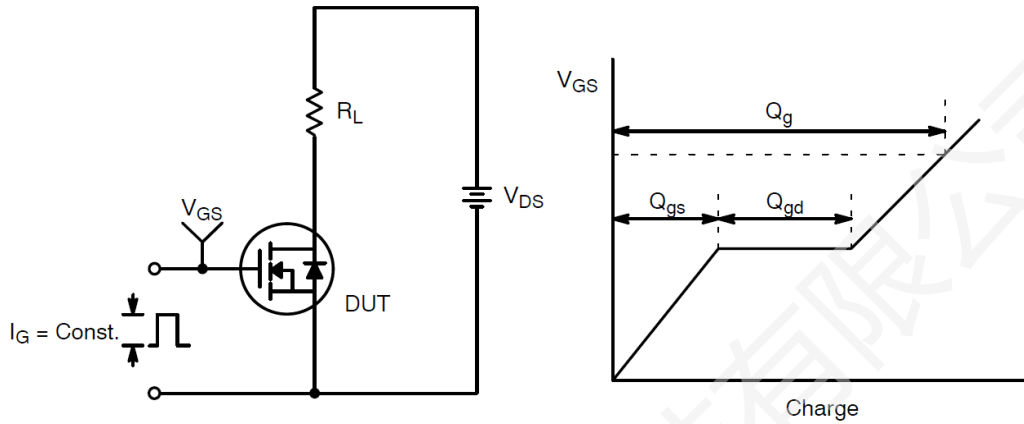
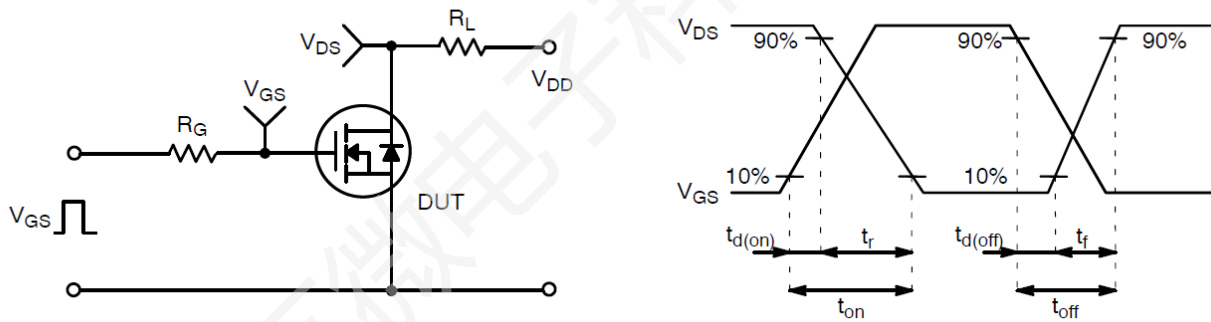
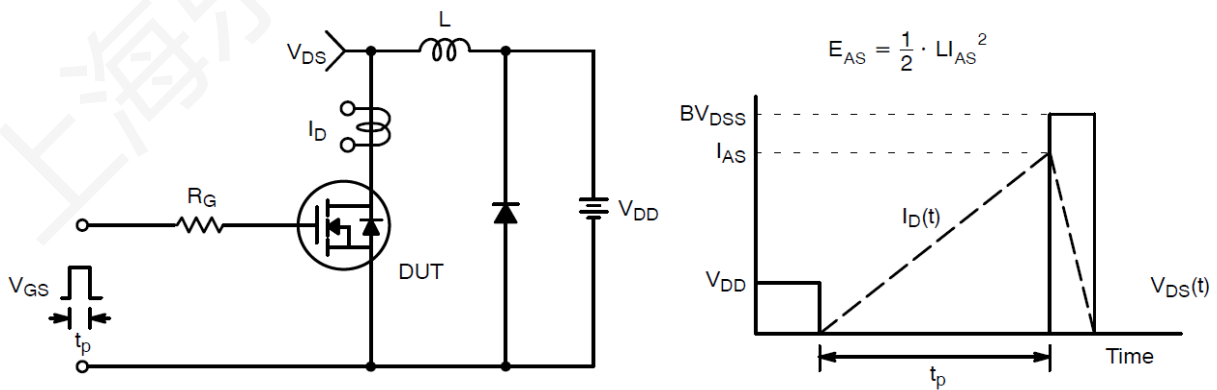
Characteristics Curve:

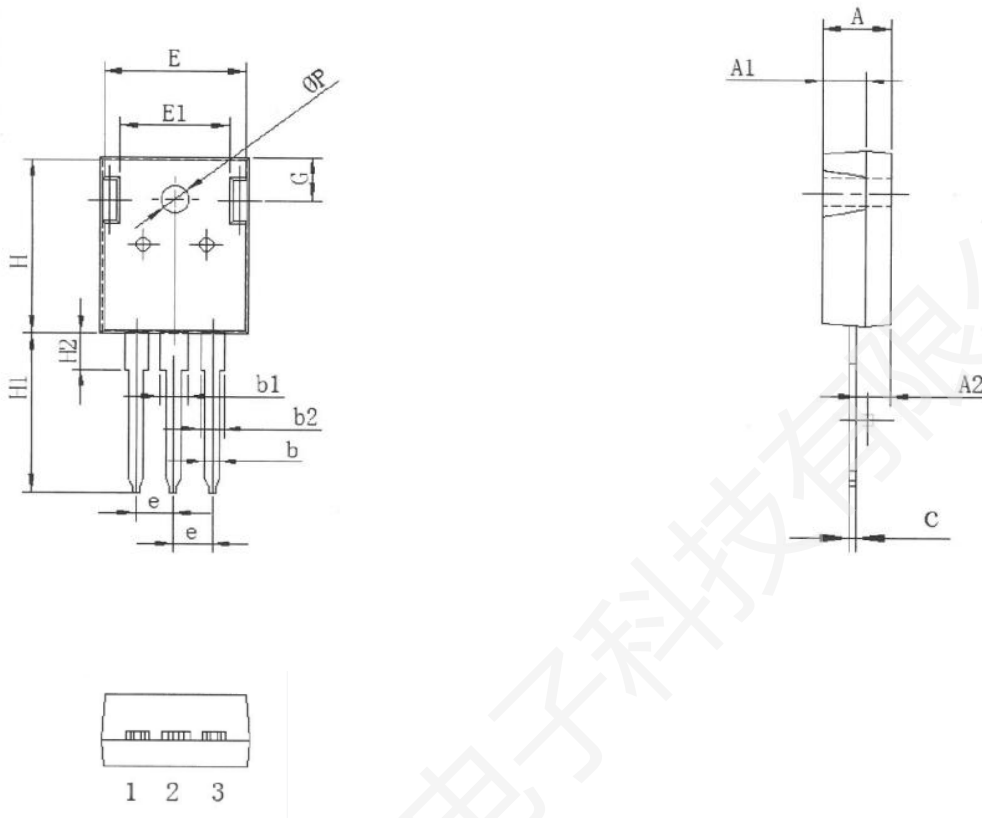








Test Circuit & Waveform:

Figure 14: Gate Charge Test Circuit & Waveform

Figure 15: Resistive Switching Test Circuit & Waveforms

Figure 16: Unclamped Inductive Switching Test Circuit & Waveforms

Package Outline:


基本尺寸			
SYMBOL	单位:mm		
	MIN	NOM	MAX
A	4.8	5.0	5.2
A1	3.3	3.5	3.7
A2	2.2	2.4	2.6
b	1.0	1.2	1.4
b1	2.9	3.1	3.3
b2	1.9	2.1	2.3
c	0.5	0.6	0.7
e	5.3	5.5	5.7
E	15.2	15.7	16.2
E1	10.2	10.7	11.2
H	20.8	21.0	21.2
H1	19.5	20.0	20.5
H2	4.0	4.2	4.4
G	5.6	5.8	6.0
θ_p	3.3	3.5	3.7

Revision History:

Rev 1.0	Jun.2023	Initial Version
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