

General Description:

The LW4568AK 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 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.
4568/LW AK/D.C.	LW4568AK	TO-247	Tube	30 Pcs

Absolute Maximum Ratings:

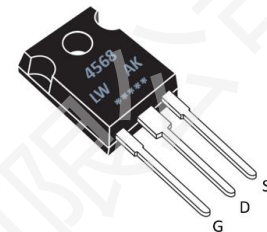
Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Voltage	150	V
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	170
	Continuous Drain Current	$T_C=100^\circ\text{C}$	108
I_{DM}^{a1}	Pulsed Drain Current	680	A
E_{AS}^{a2}	Single pulse avalanche energy	2441	mJ
I_{AS}^{a2}	Avalanche Current	186	A
V_{GS}	Gate-to-Source Voltage	± 30	V
P_D	Power Dissipation	521	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:

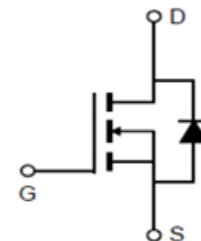
Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.24	$^\circ\text{C}/\text{W}$
$R_{\theta JA}^{a3}$	Thermal Resistance, Junction-to-Ambient	40	$^\circ\text{C}/\text{W}$

V_{DSS}	150	V
I_D	170	A
P_D	521	W
$R_{DS(ON) \text{ TYPE}}$	5.7	$\text{m}\Omega$

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	$V_{GS}=0V, I_D=250\mu A$	150	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=150V, V_{GS}=0V$	--	--	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	4.5	5.0	V
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=95A$	--	5.7	6.5	$m\Omega$

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	$V_{GS}=0V$	--	10107	--	pF
C_{oss}	Output Capacitance	$V_{DS}=50V$	--	932	--	
C_{rss}	Reverse Transfer Capacitance	$f=1.0MHz$	--	432	--	
R_G	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	--	1.5	--	Ω

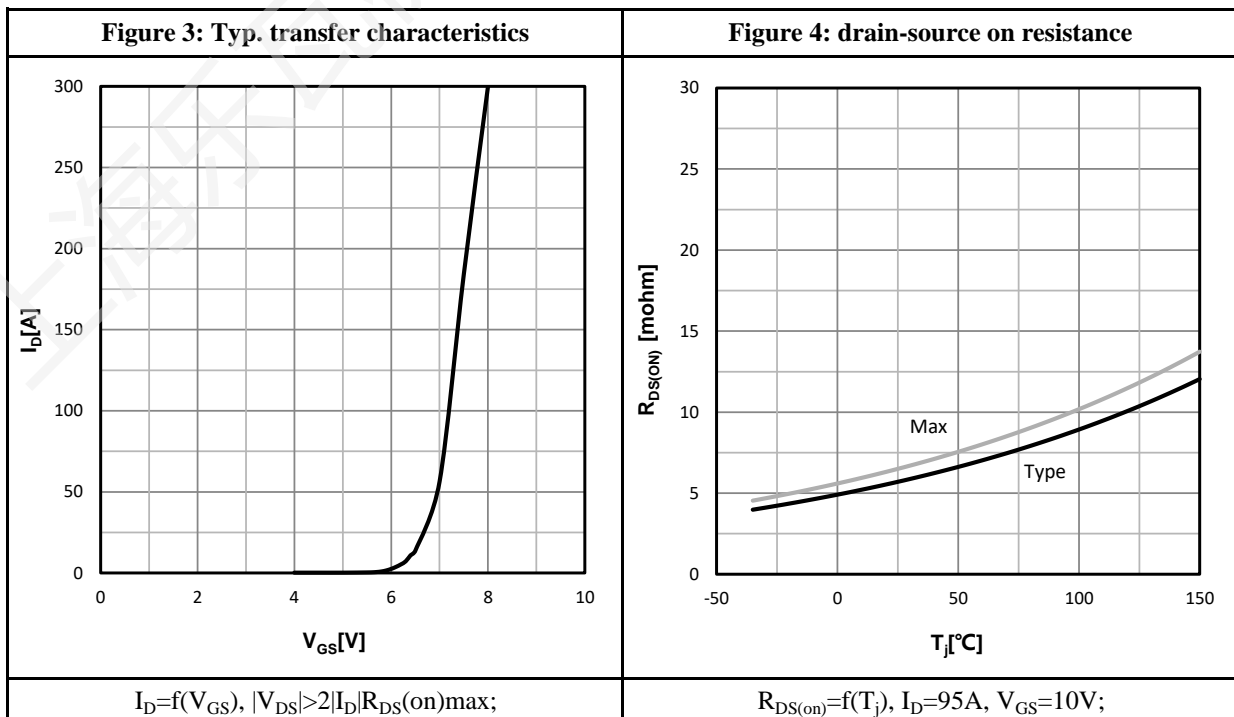
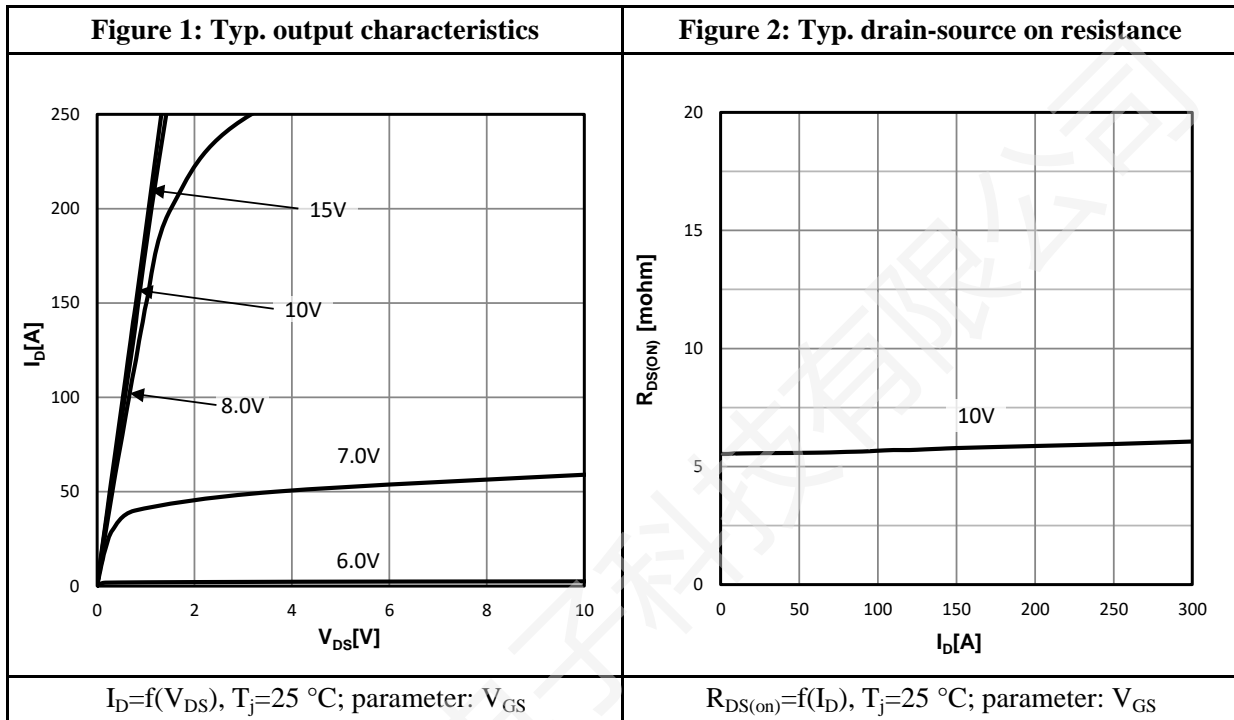
Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D=95A$	--	25	--	ns
t_r	Rise Time	$V_{DS}=75V$	--	115	--	
$t_{d(OFF)}$	Turn-Off Delay Time	$V_{GS}=10V$	--	57	--	
t_f	Fall Time	$R_G=5.0\Omega$	--	95	--	
Q_g	Total Gate Charge	$V_{GS}=10V$	--	196	--	nC
Q_{gs}	Gate to Source Charge	$V_{DS}=75V$	--	79	--	
Q_{gd}	Gate to Drain Charge	$I_D=95A$	--	72	--	

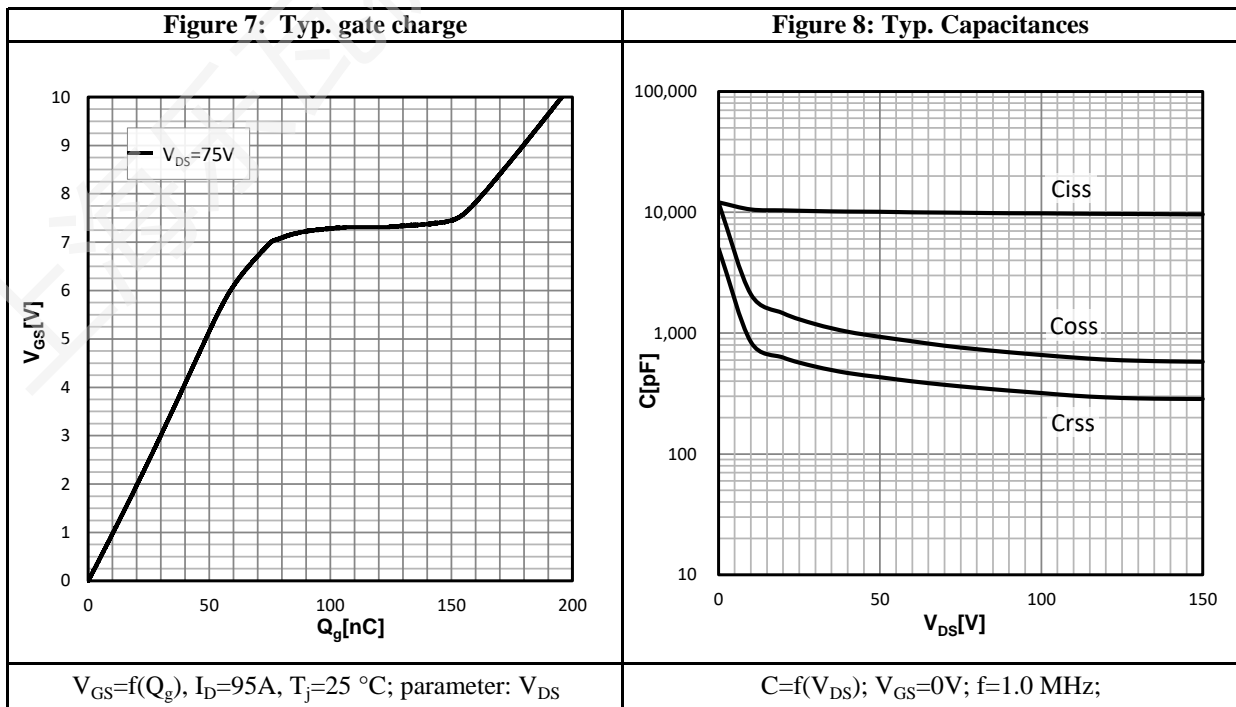
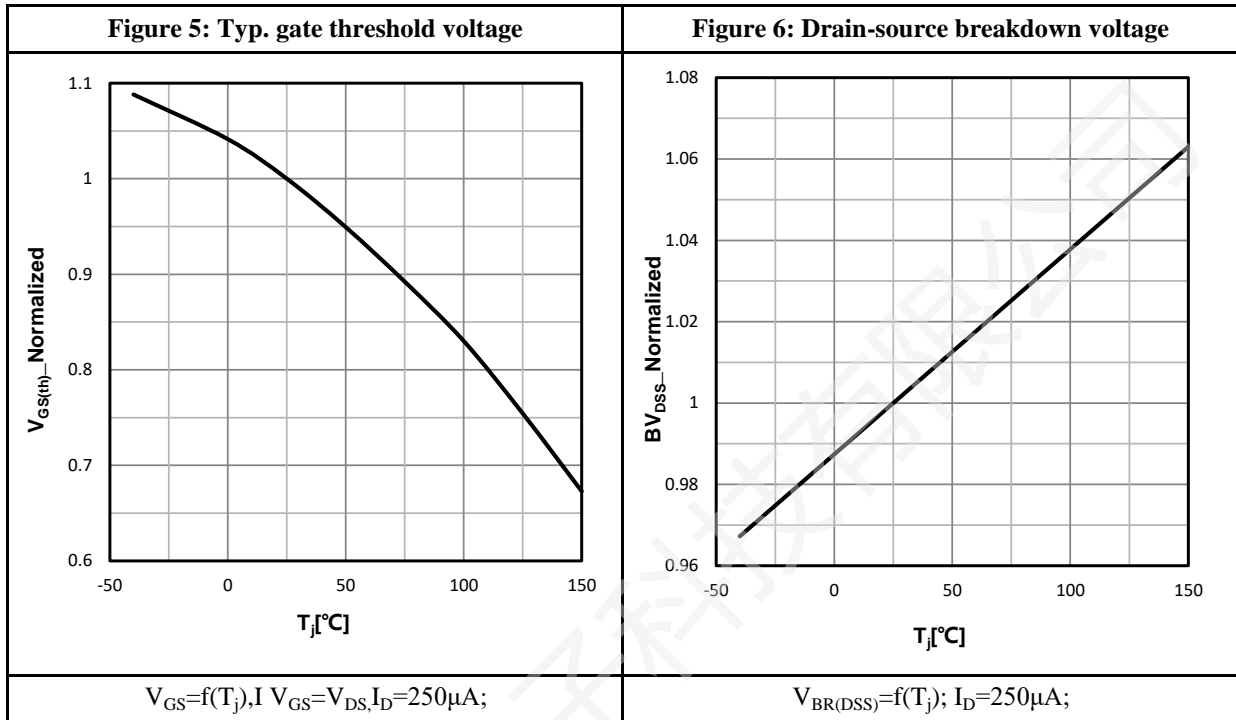
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
I_S	Diode Forward Current	$T_C=25\text{ }^\circ\text{C}$	--	--	170	A
V_{SD}	Diode Forward Voltage	$I_S=95A, V_{GS}=0V$	--	--	1.2	V
t_{rr}	Reverse Recovery time	$I_S=95A, V_{DD}=50V$	--	120	--	ns
Q_{rr}	Reverse Recovery Charge	$dI/dt=100A/\mu s$	--	600	--	nC

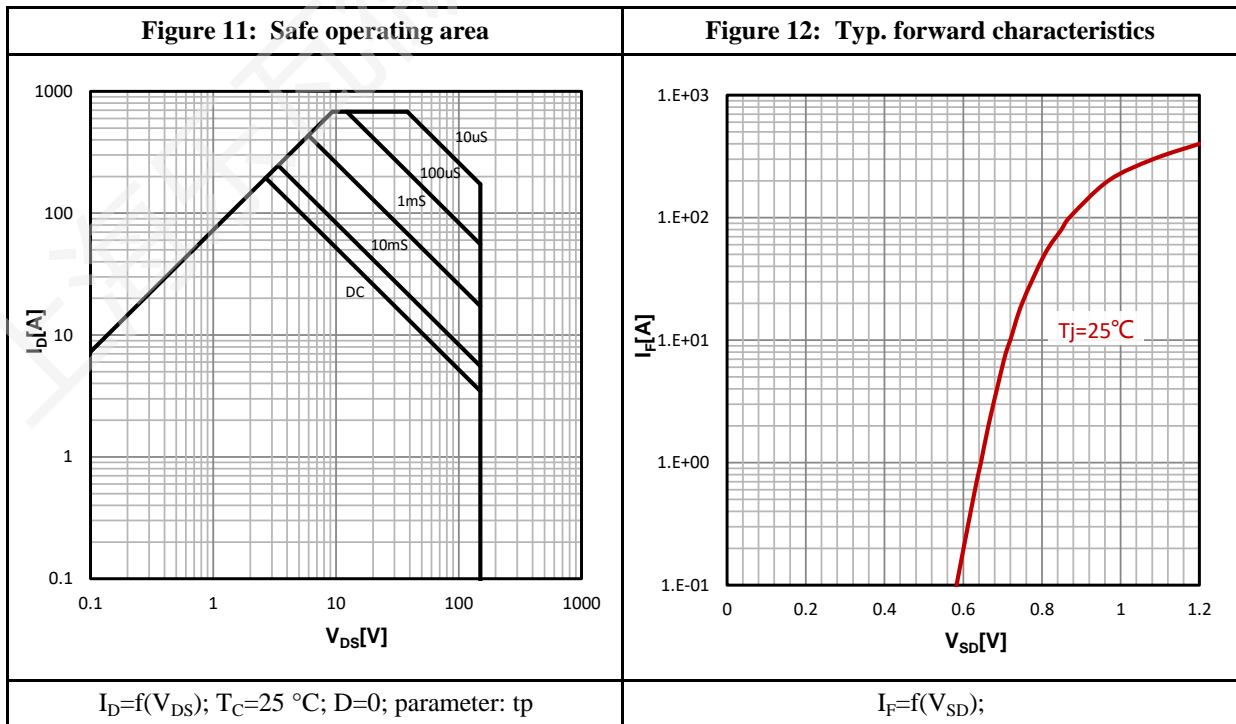
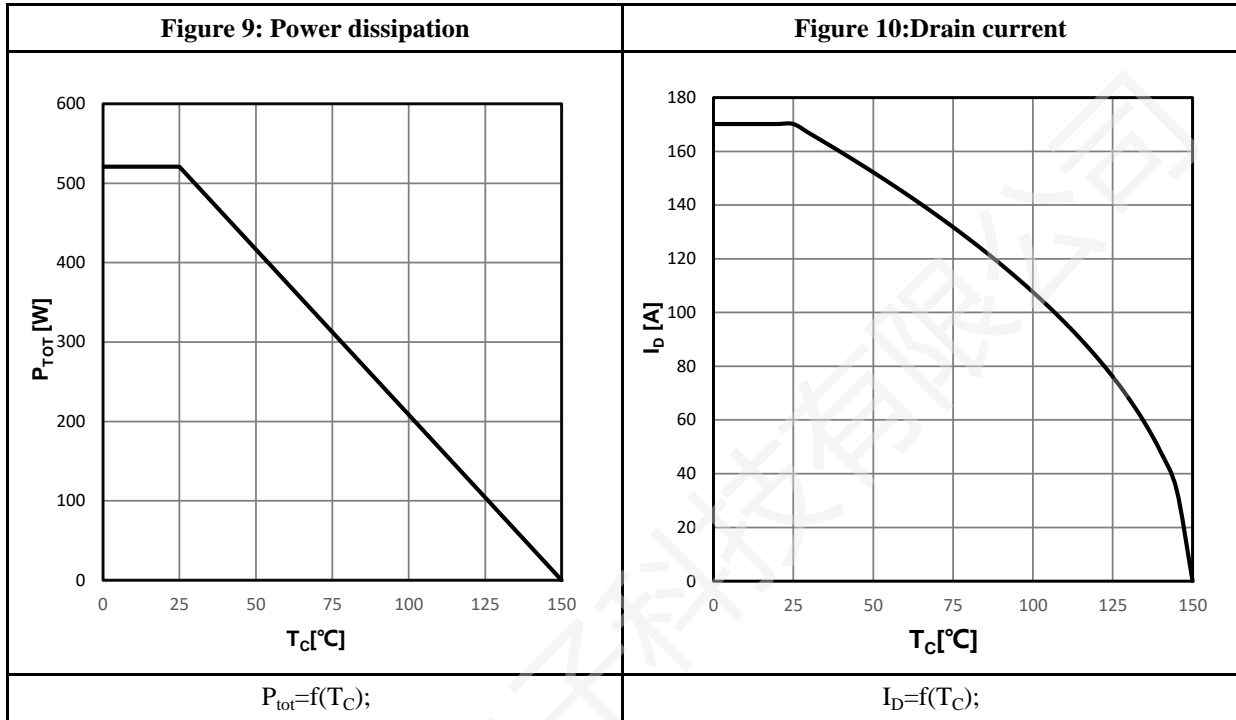
a1: Repetitive rating; pulse width limited by maximum junction temperature

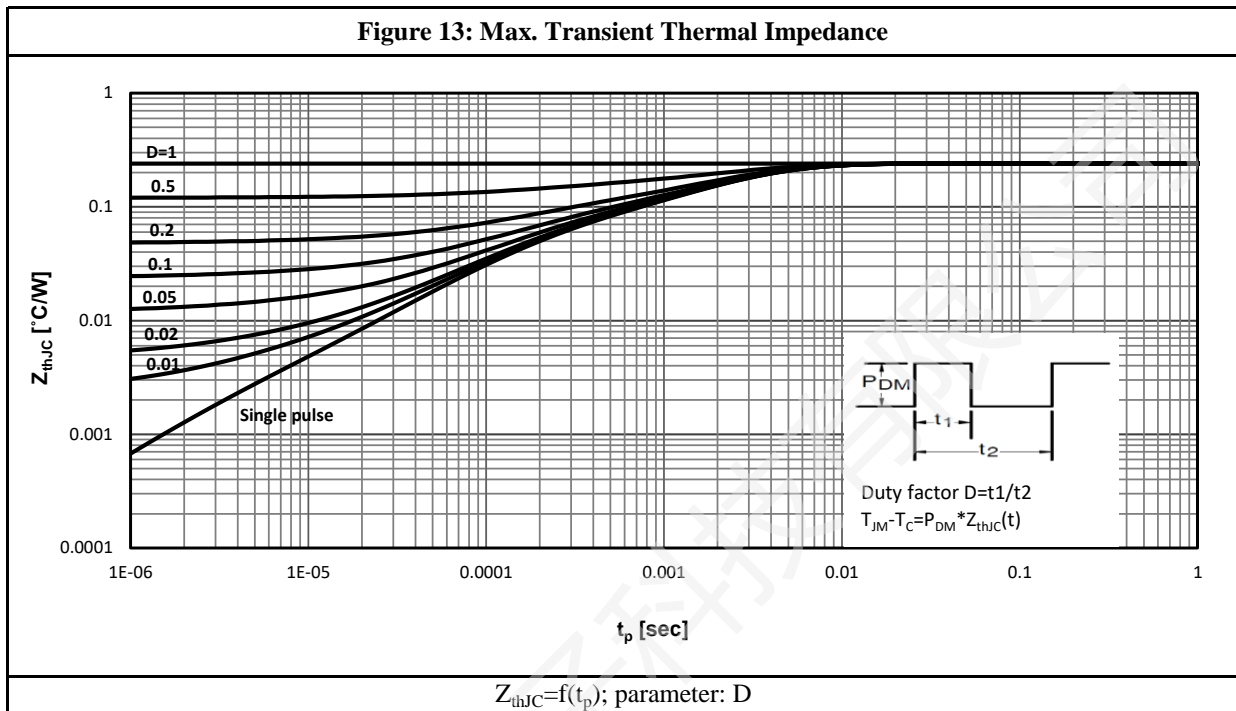
a2: $V_{DD}=75V, L=0.14mH, R_G=25\Omega$, Starting $T_j=25\text{ }^\circ\text{C}$

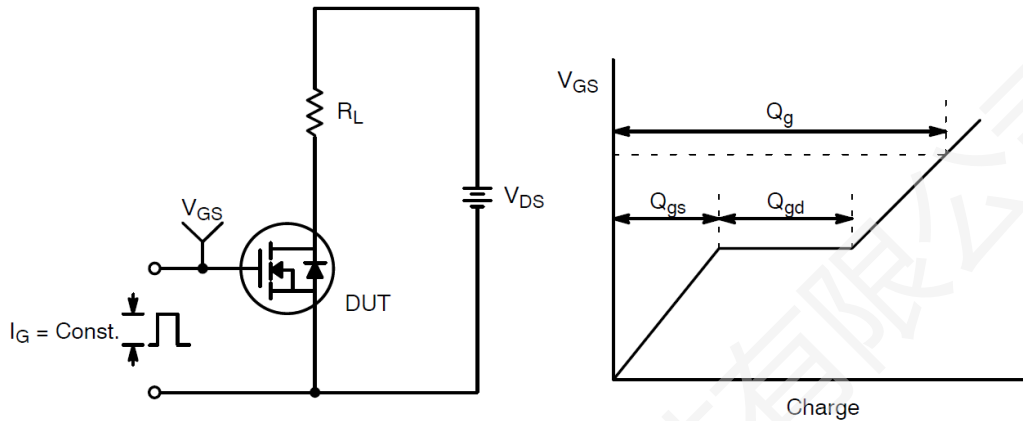
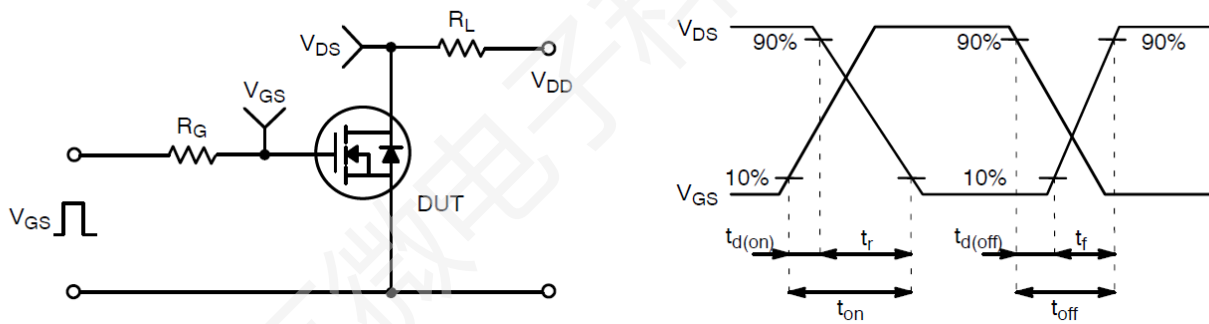
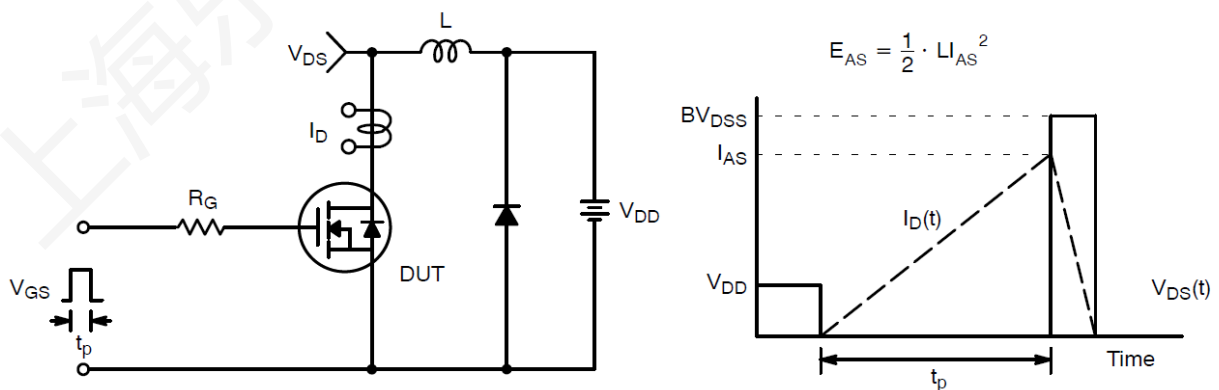
a3: Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm² (one layer, 70 μm thick) copper area for drain connection.

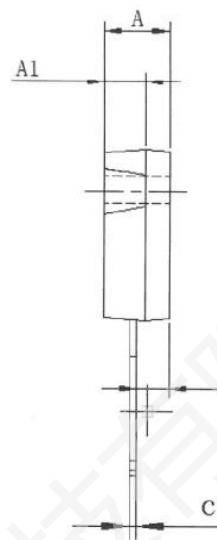
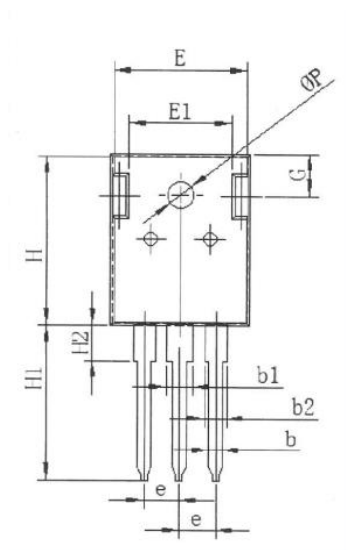
Characteristics Curve:








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:


1 2 3

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:

Revison	Date	Descriptions
Rev 1.1	July.2025	Initial Version

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