

General Description:

The LWD3008ADC 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 DFN3.3*3.3-8L, 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:

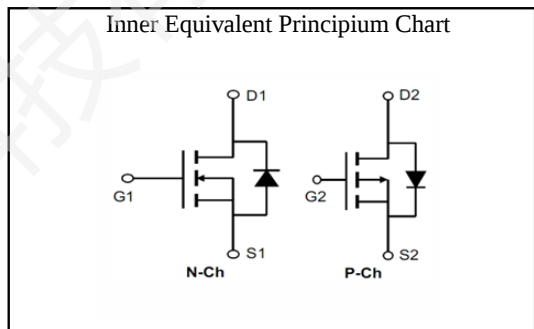
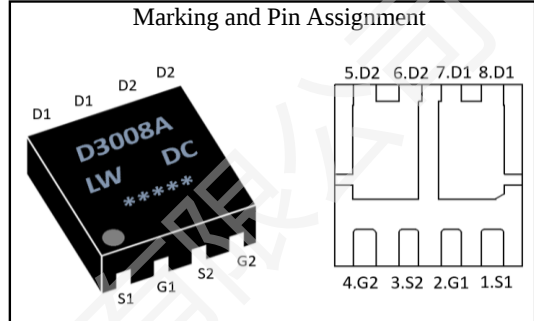
- DC-DC Converter
- Portable Equipment
- Power Management

100% DVDS Tested

100% Avalanche Tested



Symbol	N-Ch	P-Ch	Units
V_{DSS}	30	-30	V
I_D	45	-35	A
$R_{DS(ON)}$ TYPE	5.0	11	m Ω



Package Marking and Ordering Information:

Marking	Part Number	Package	Packing	Qty.
D3008A/LW DC/D.C.	LWD3008ADC	DFN3.3*3.3-8L	Reel	5000 Pcs

Absolute Maximum Ratings:

Symbol	Parameter		Value		Units
			N-Ch	P-Ch	
V_{DSS}	Drain-to-Source Voltage		30	-30	V
I_D	Continuous Drain Current	$T_C=25^{\circ}\text{C}$	45	-35	A
	Continuous Drain Current	$T_C=100^{\circ}\text{C}$	29	-22	A
I_{DM}^{a1}	Pulsed Drain Current		180	-140	A
E_{AS}^{a2}	Single pulse avalanche energy		97	84	mJ
V_{GS}	Gate-to-Source Voltage		± 20	± 20	V
P_D	Power Dissipation		30	30	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
			N-Ch	P-Ch	
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case		4.19	4.19	$^{\circ}\text{C/W}$
$R_{\theta JA}^{a3}$	Thermal Resistance, Junction-to-Ambient		51	51	$^{\circ}\text{C/W}$

N-Channel 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	$V_{GS}=0V, I_D=250\mu A$	30	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=30V, V_{GS}=0V$	--	--	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	1.5	2.0	V
$R_{DS(ON)1}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=20A$	--	5.0	6.5	m Ω
$R_{DS(ON)2}$	Drain-to-Source On-Resistance	$V_{GS}=4.5V, I_D=15A$	--	7.5	9.5	m Ω

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	$V_{GS}=0V$	--	1312	--	pF
C_{oss}	Output Capacitance	$V_{DS}=15V$	--	241	--	
C_{rss}	Reverse Transfer Capacitance	$f=1.0MHz$	--	194	--	
R_G	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	--	1.8	--	Ω

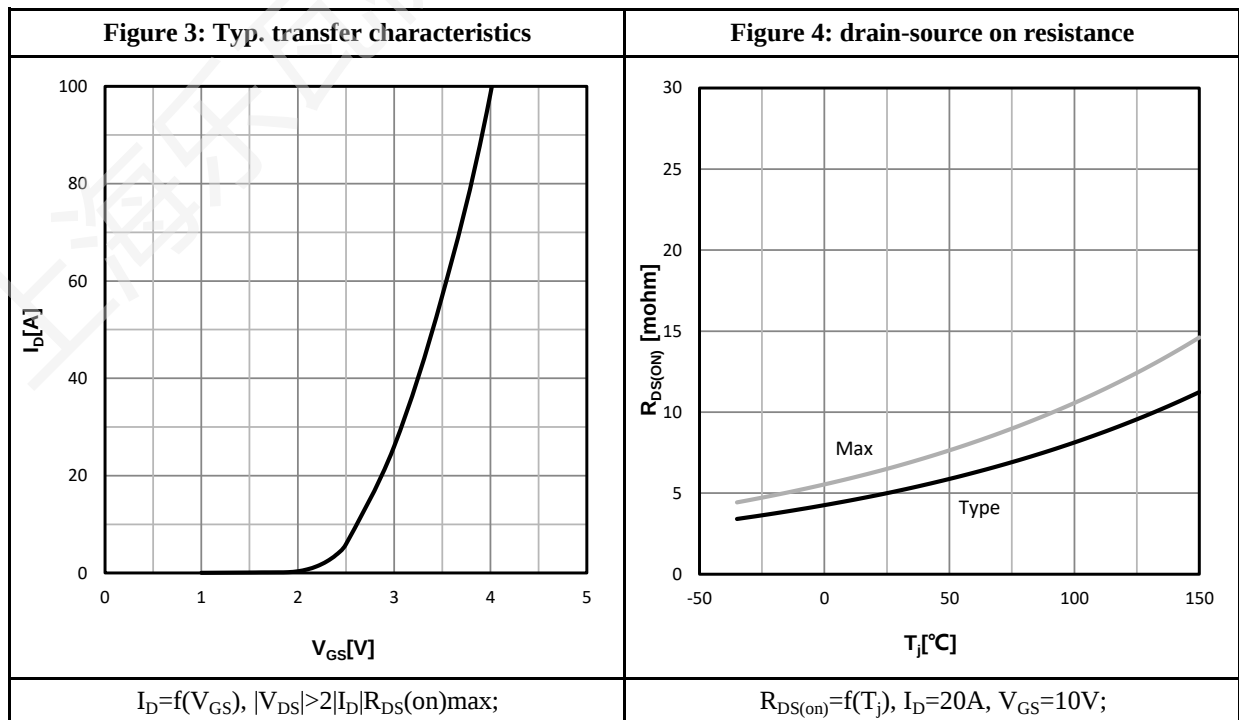
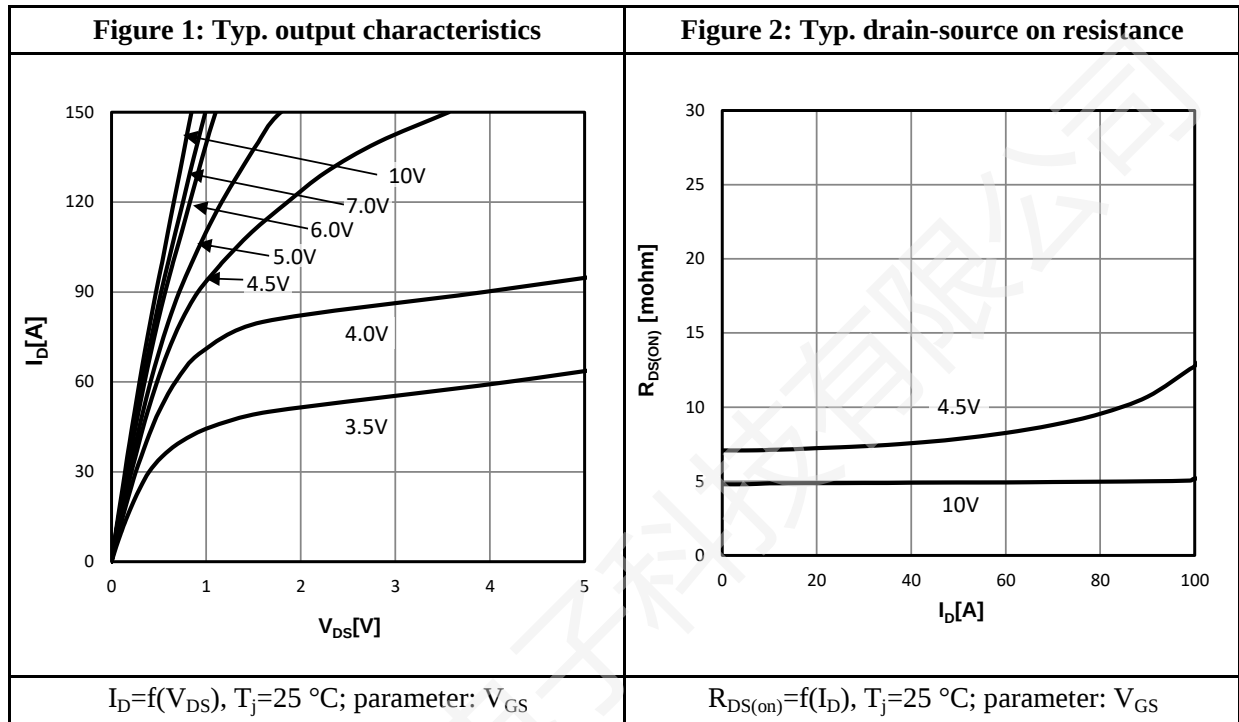
Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D=20A$	--	5.0	--	ns
t_r	Rise Time	$V_{DS}=15V$	--	80	--	
$t_{d(OFF)}$	Turn-Off Delay Time	$V_{GS}=10V$	--	20	--	
t_f	Fall Time	$R_G=6.0\Omega$	--	9.0	--	
Q_g	Total Gate Charge	$V_{GS}=10V$	--	33	--	nC
Q_{gs}	Gate to Source Charge	$V_{DS}=15V$	--	5.3	--	
Q_{gd}	Gate to Drain Charge	$I_D=20A$	--	7.4	--	

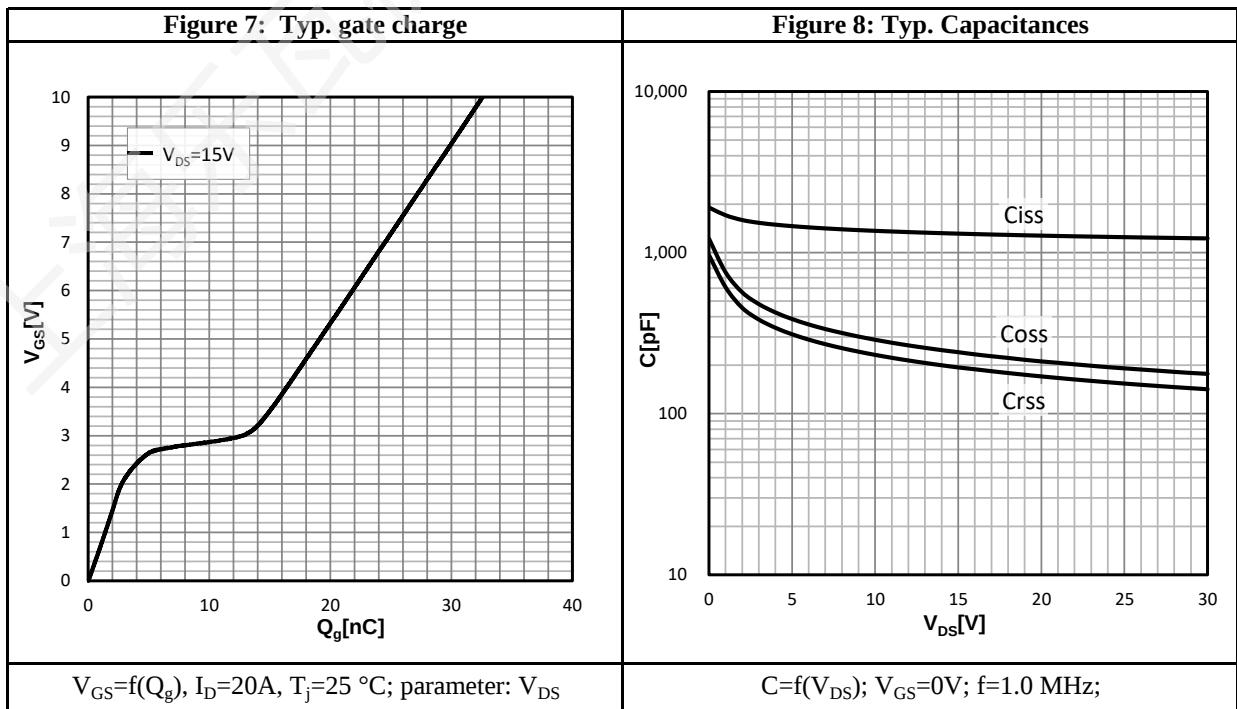
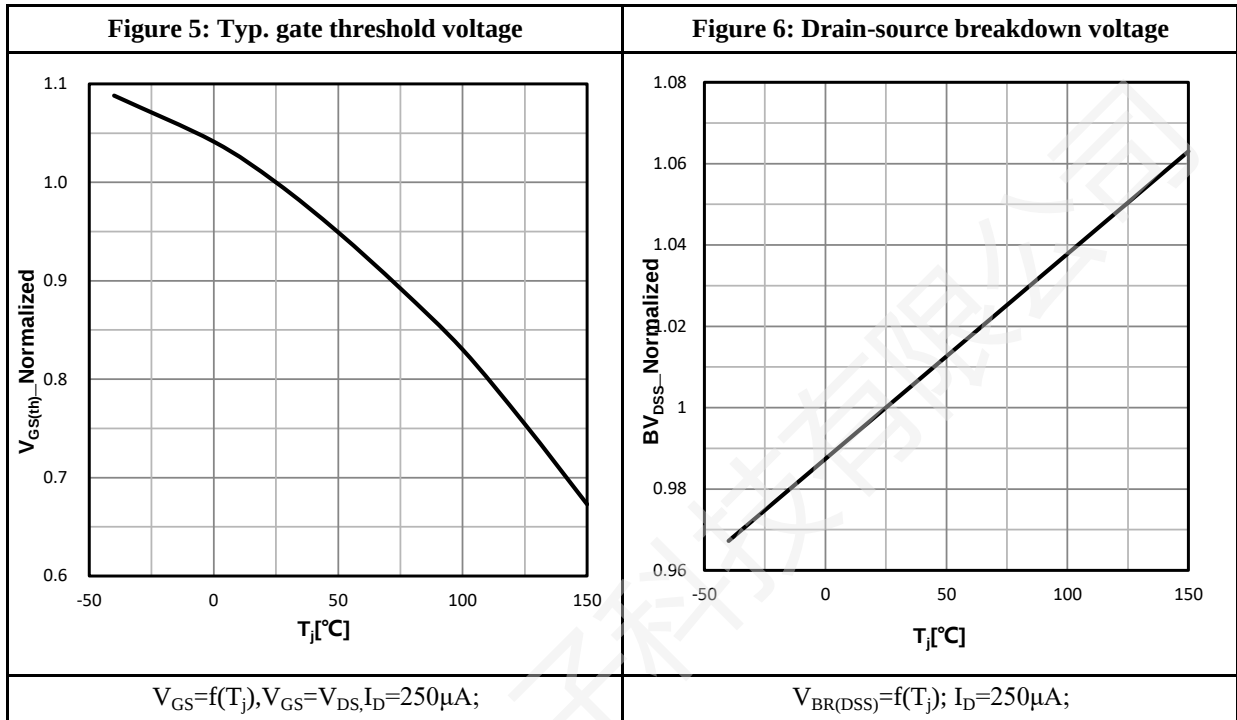
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
I_S	Diode Forward Current	$T_C=25\text{ }^{\circ}\text{C}$	--	--	45	A
V_{SD}	Diode Forward Voltage	$I_S=20A, V_{GS}=0V$	--	--	1.2	V

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

a2: $V_{DD}=15V, L=0.1mH, R_G=25\Omega$, 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.

N-Channel Characteristics Curve:




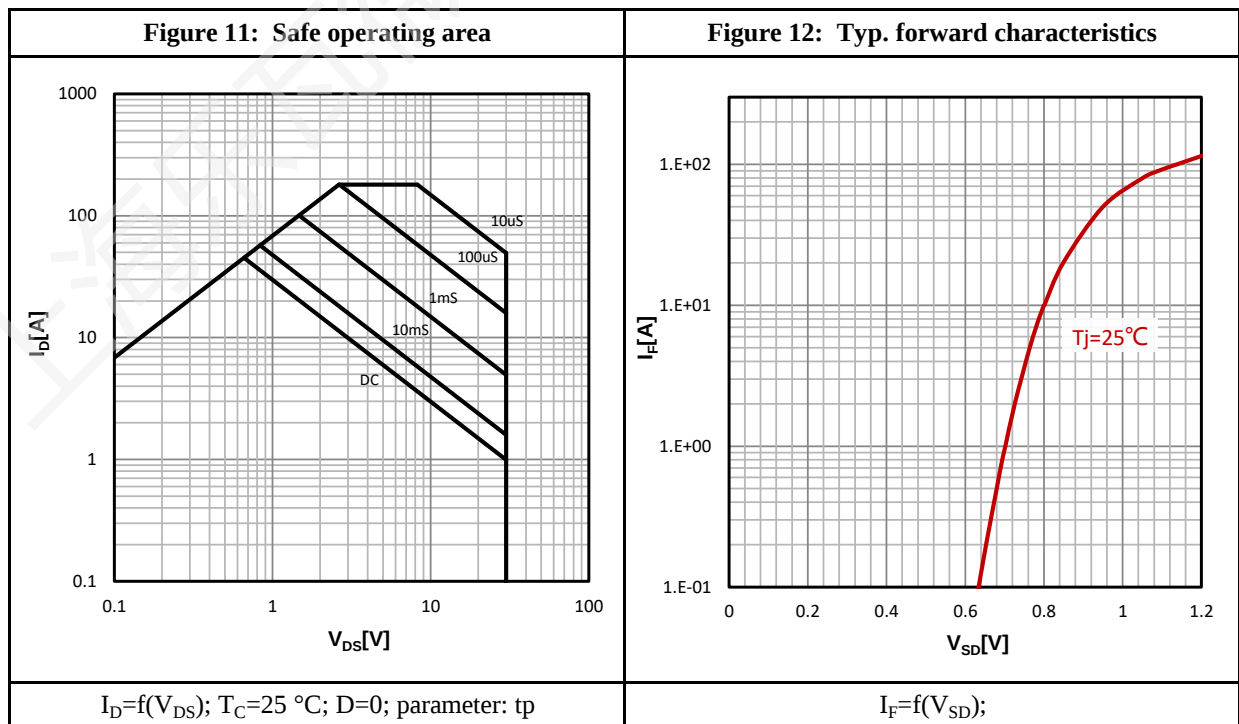
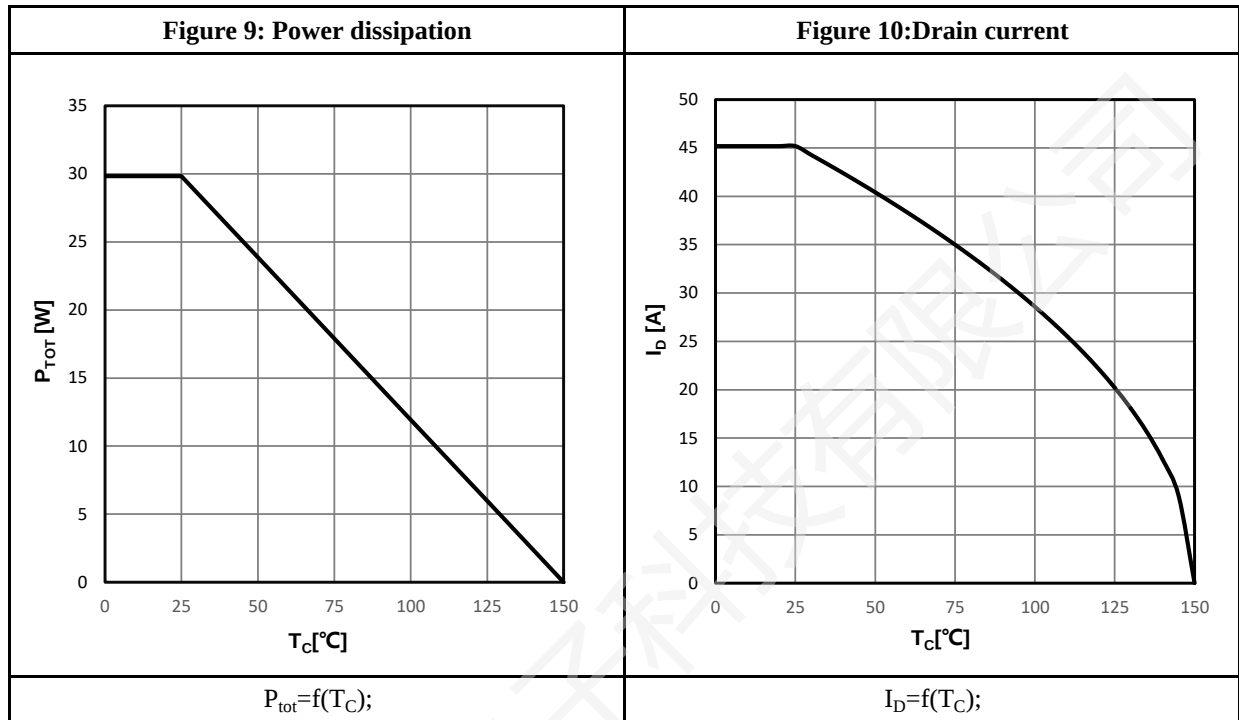
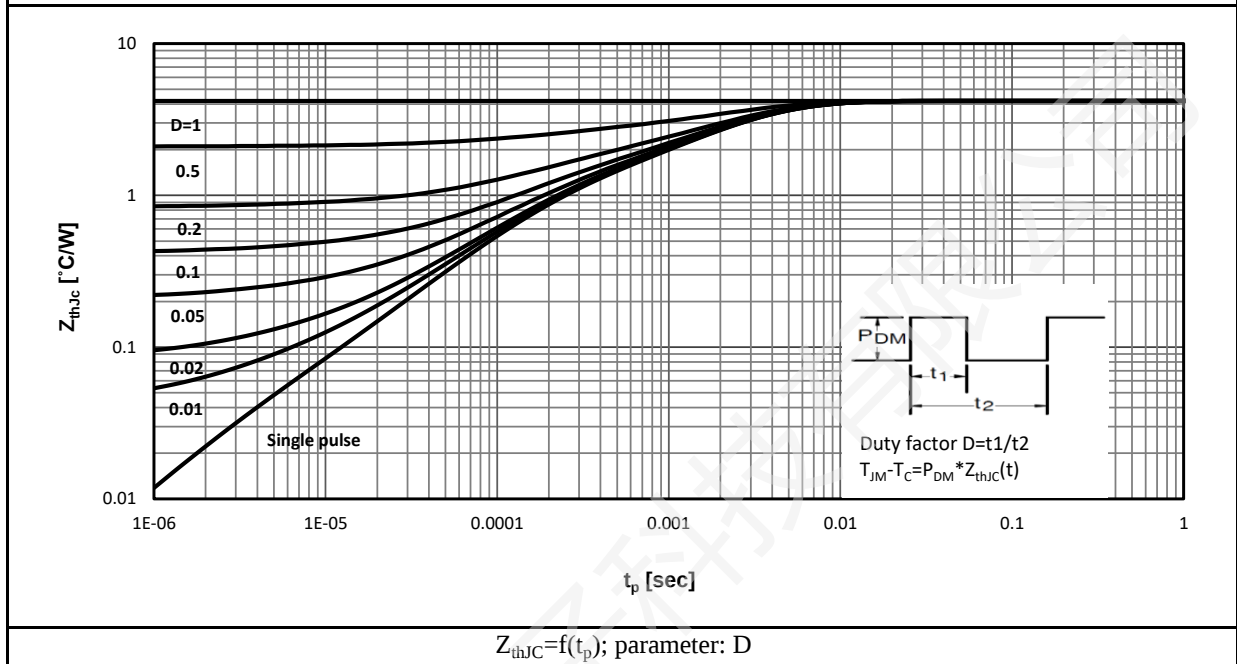


Figure 13: Max. Transient Thermal Impedance


Test Circuit & Waveform:

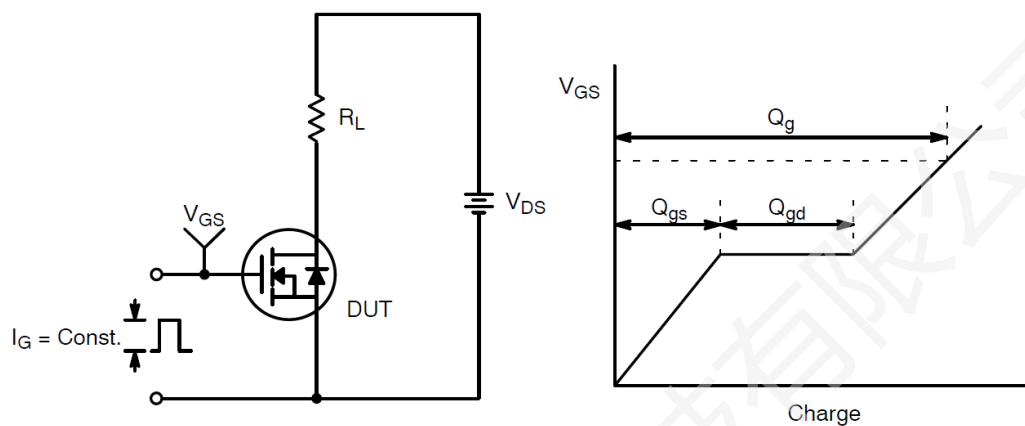


Figure 14: Gate Charge Test Circuit & Waveform

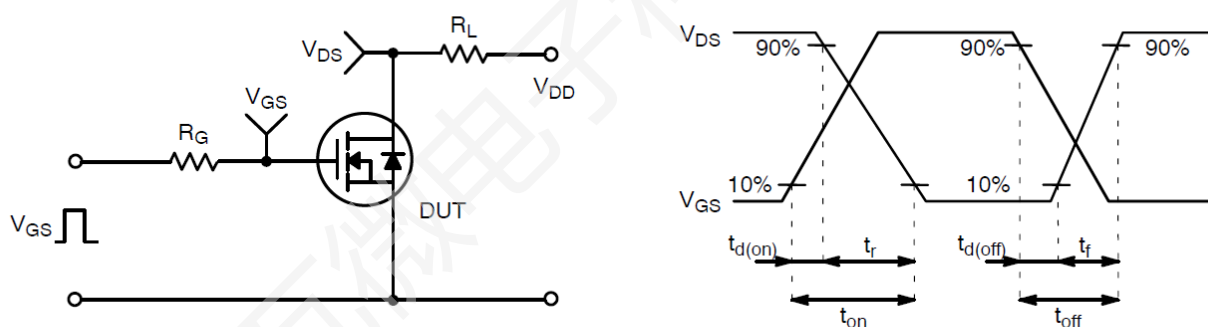


Figure 15: Resistive Switching Test Circuit & Waveforms

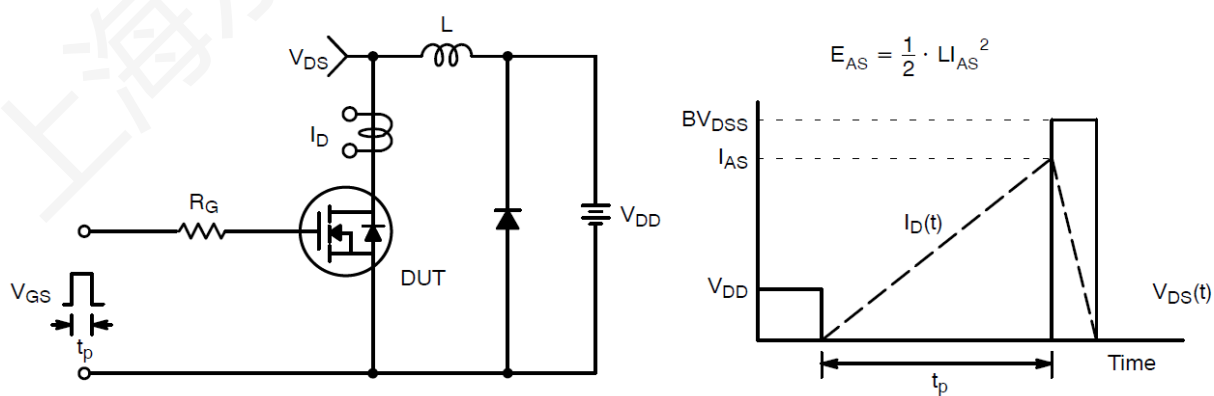


Figure 16: Unclamped Inductive Switching Test Circuit & Waveforms

P-Channel 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	$V_{GS}=0V, I_D=-250\mu A$	-30	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=-30V, V_{GS}=0V$	--	--	-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	-1.5	-2.0	V
$R_{DS(ON)1}$	Drain-to-Source On-Resistance	$V_{GS}=-10V, I_D=-20A$	--	11	14	$m\Omega$
$R_{DS(ON)2}$	Drain-to-Source On-Resistance	$V_{GS}=-4.5V, I_D=-15A$	--	17	22	$m\Omega$

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	$V_{GS}=0V$	--	1345	--	pF
C_{oss}	Output Capacitance	$V_{DS}=-15V$	--	240	--	
C_{rss}	Reverse Transfer Capacitance	$f=1.0MHz$	--	199	--	
R_G	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	--	6.8	--	Ω

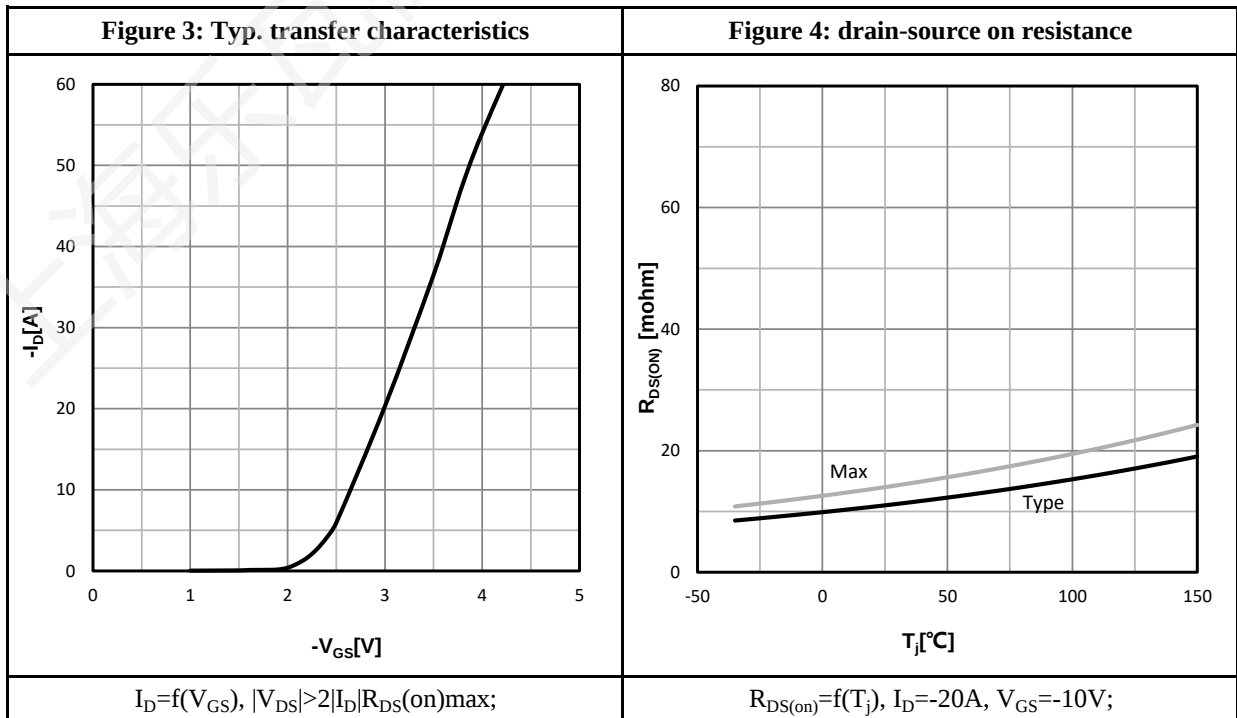
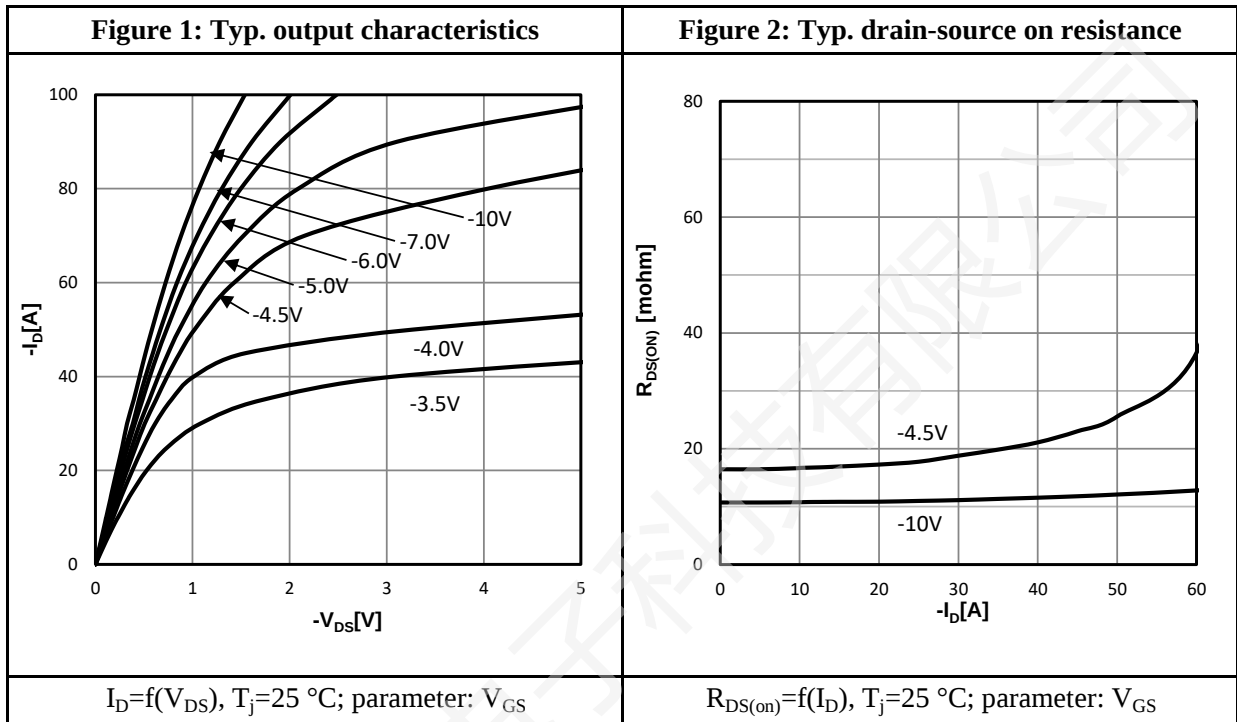
Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D=-20A$	--	8.0	--	ns
t_r	Rise Time	$V_{DS}=-15V$	--	34	--	
$t_{d(OFF)}$	Turn-Off Delay Time	$V_{GS}=-10V$	--	61	--	
t_f	Fall Time	$R_G=3.0\Omega$	--	50	--	
Q_g	Total Gate Charge	$V_{GS}=-10V$	--	32	--	nC
Q_{gs}	Gate to Source Charge	$V_{DS}=-15V$	--	5.8	--	
Q_{gd}	Gate to Drain Charge	$I_D=-20A$	--	6.2	--	

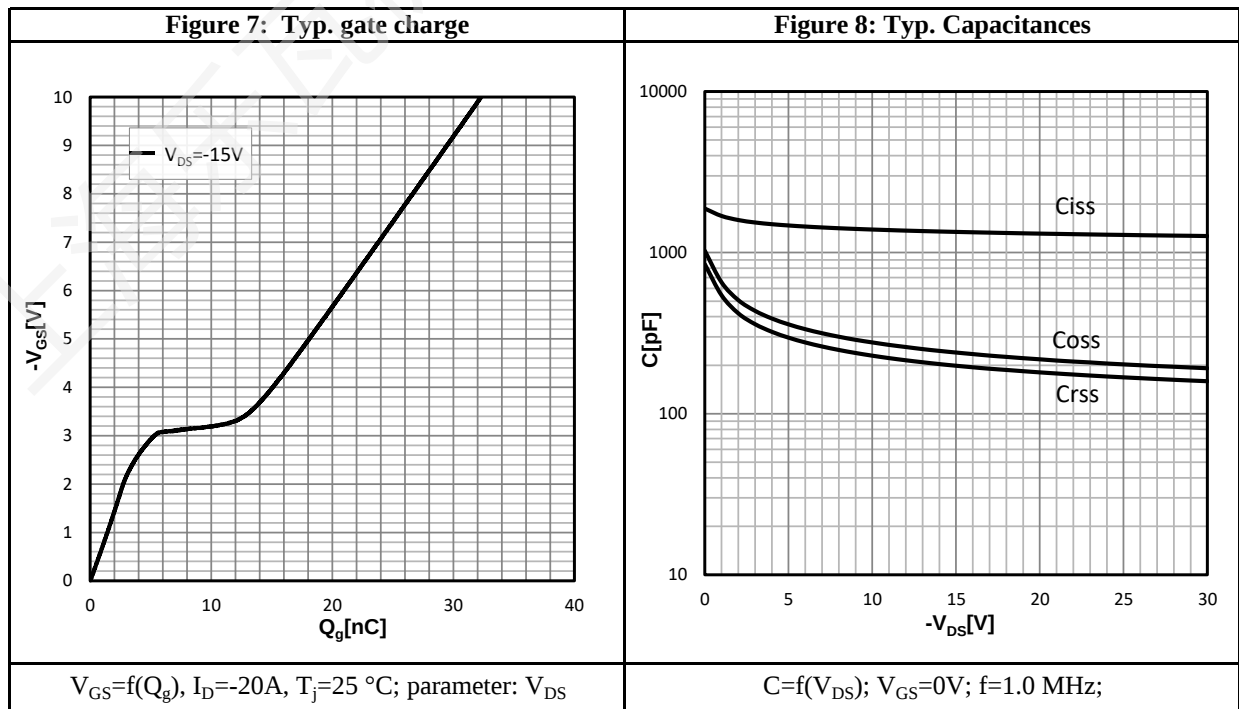
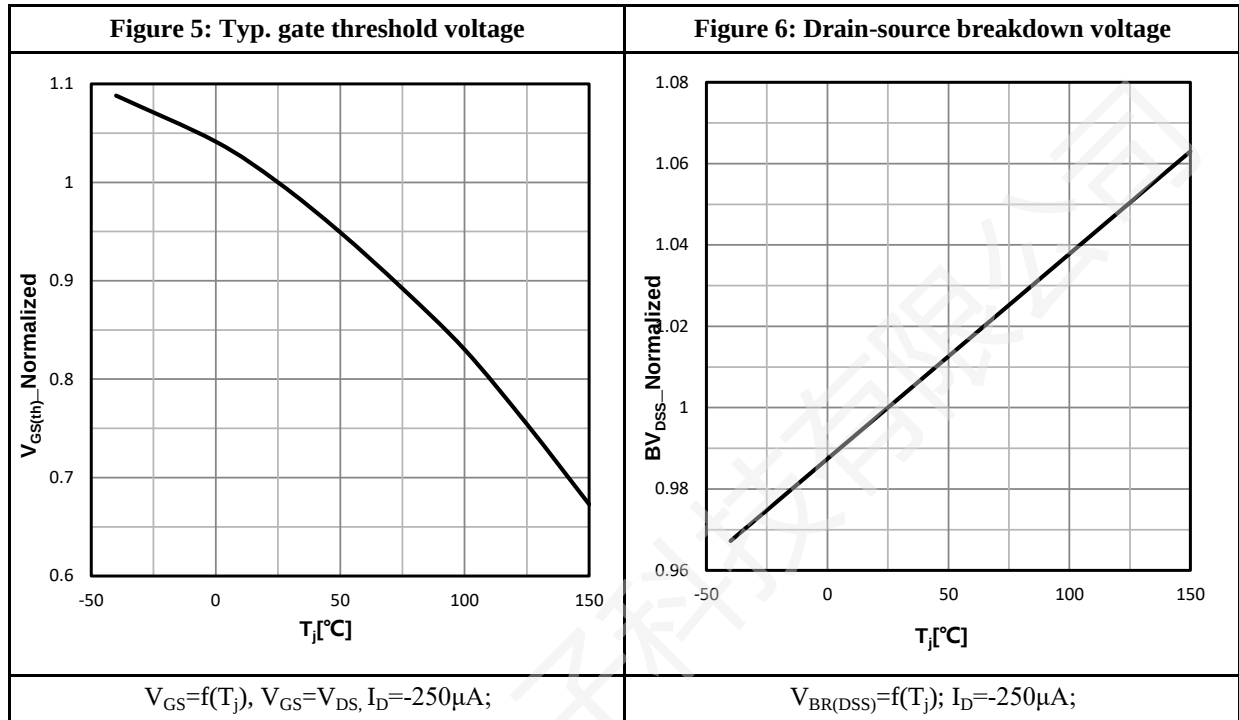
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
I_S	Diode Forward Current	$T_C=25\text{ }^{\circ}\text{C}$	--	--	-35	A
V_{SD}	Diode Forward Voltage	$I_S=-20A, V_{GS}=0V$	--	--	-1.2	V

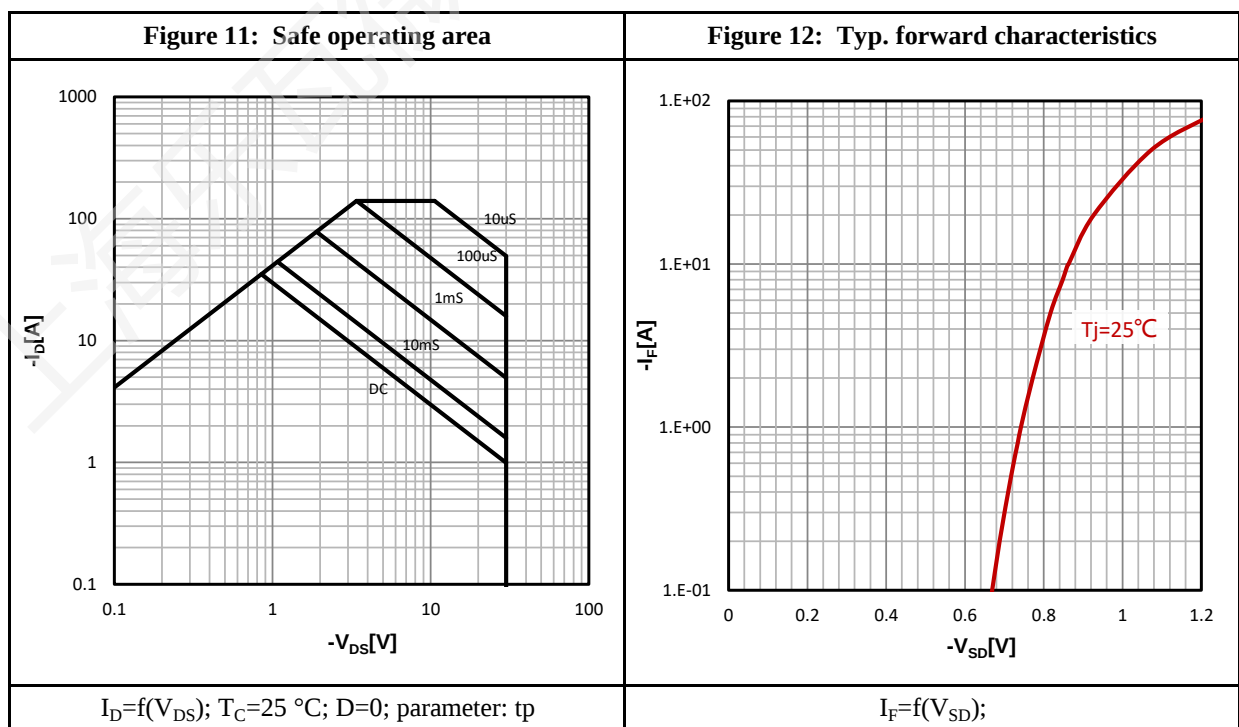
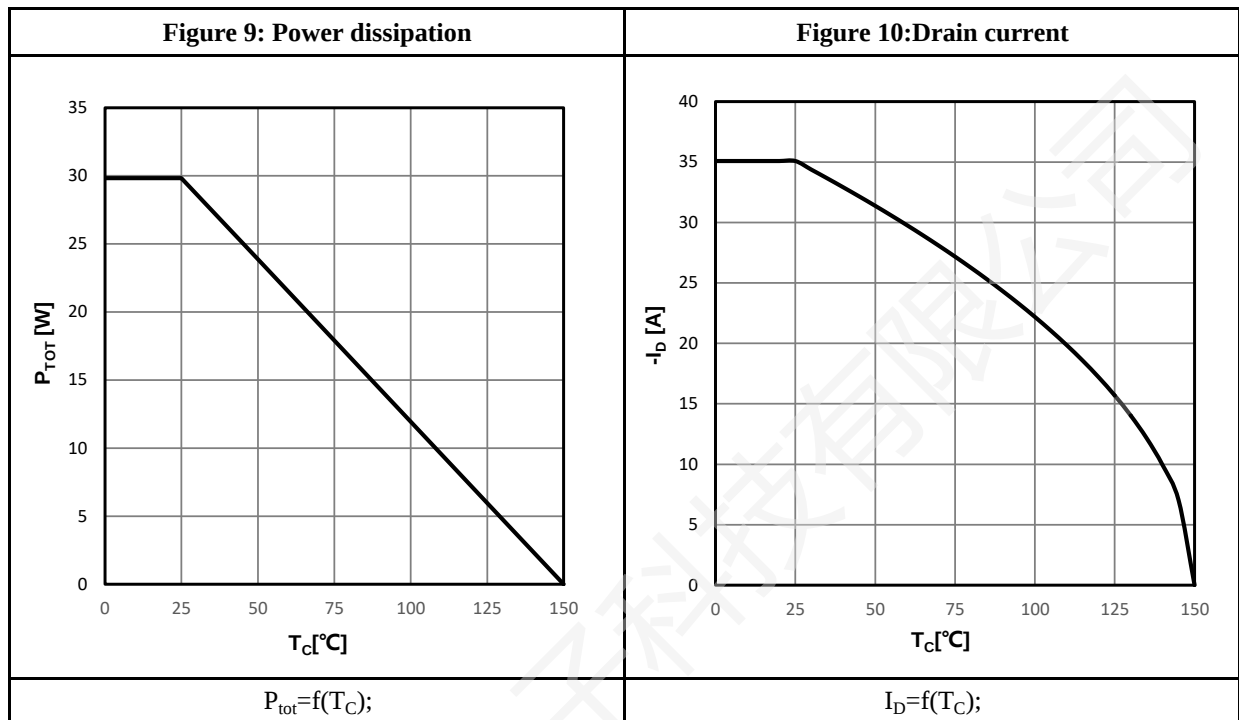
a1: Repetitive rating; pulse width limited by maximum junction temperature

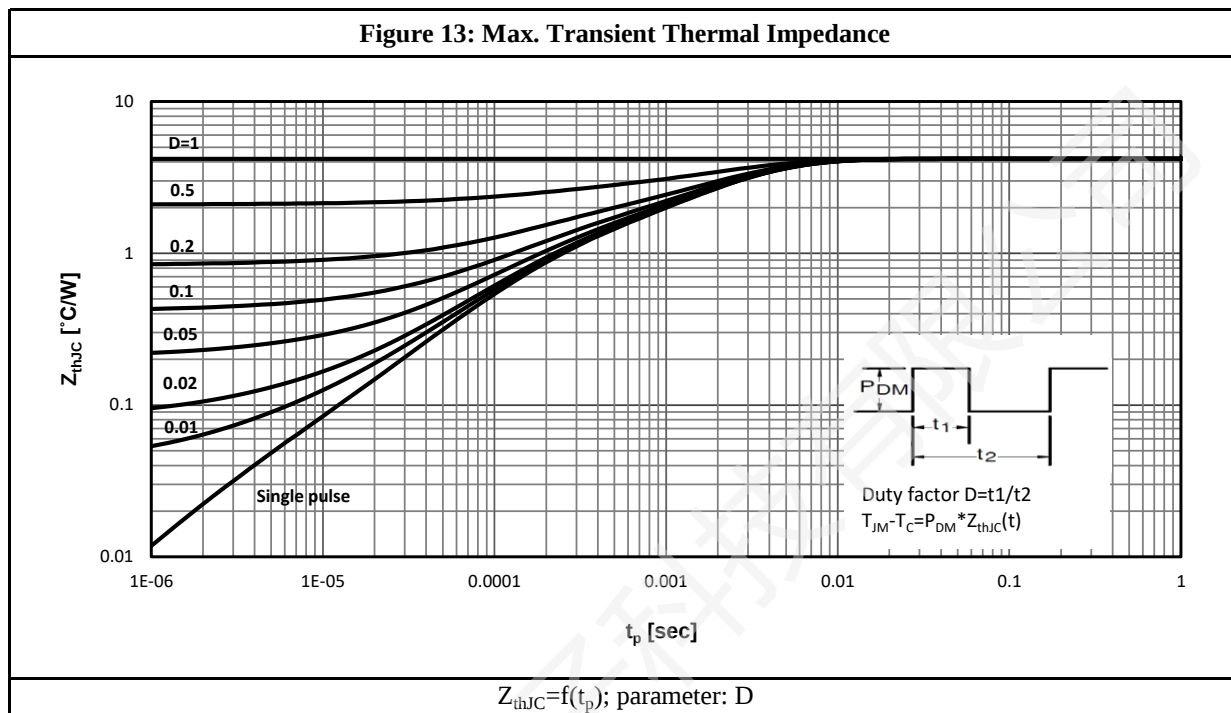
a2: $V_{DD}=-15V, L=0.1mH, R_G=25\Omega$, Starting $T_j=25\text{ }^{\circ}\text{C}$

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.

P-Channel Characteristics Curve:








P-Channel Test Circuit & Waveform:

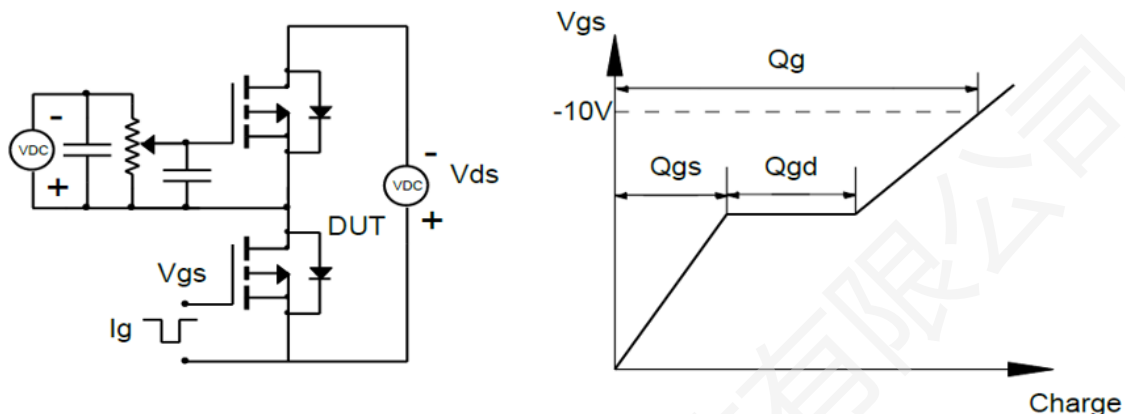


Figure 14: Gate Charge Test Circuit & Waveform

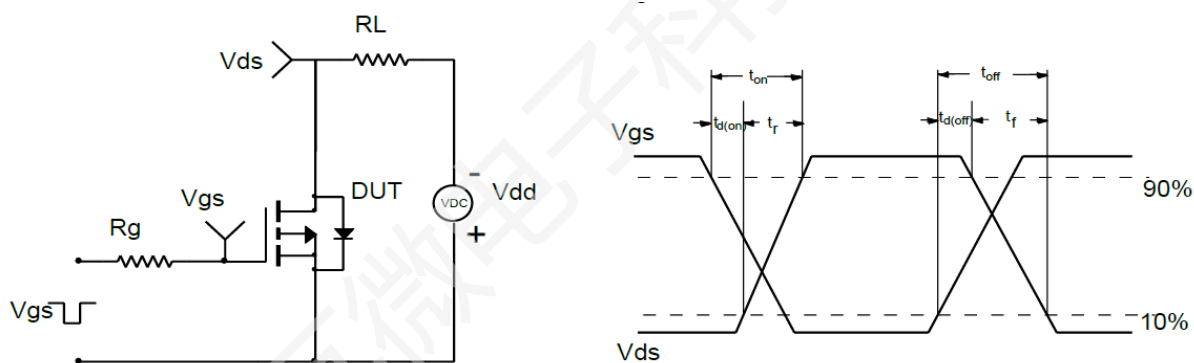


Figure 15: Resistive Switching Test Circuit & Waveforms

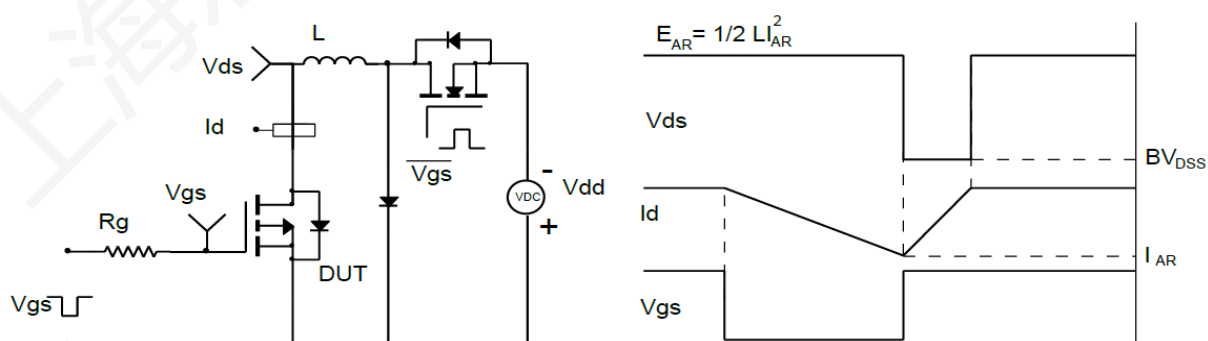
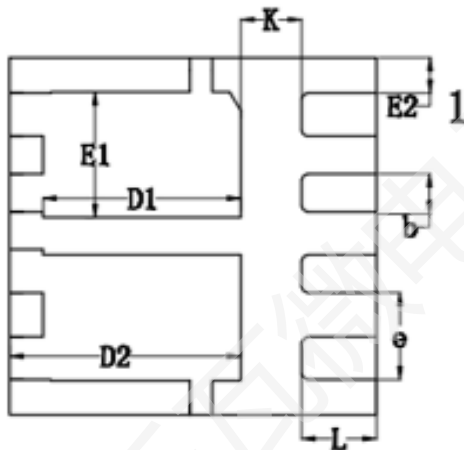
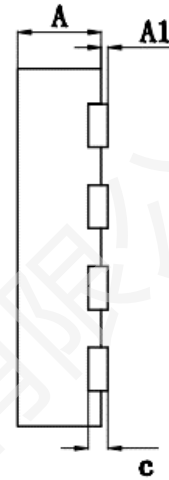
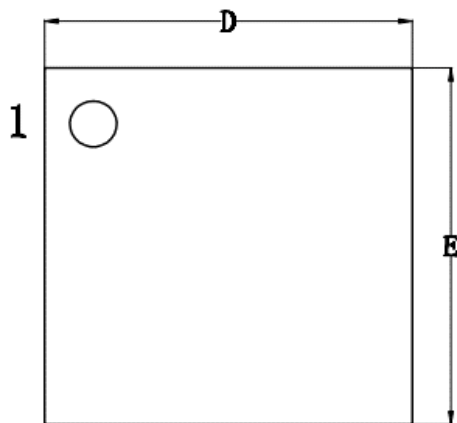


Figure 16: Unclamped Inductive Switching Test Circuit & Waveforms

Package Outline:


SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	—	0.05
b	0.30	0.40	0.45
c	0.203TYP		
D	3.25	3.30	3.35
D1	1.68	1.78	1.88
D2	1.98	2.08	2.18
E	3.25	3.30	3.35
E1	1.06	1.16	1.26
E2	0.325REF		
e	0.75 BSC		
K	0.55REF		
L	0.57	0.62	0.67

Revision History:

Revison	Date	Descriptions
Rev 1.1	Jun.2025	Initial Version

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