

## General Description:

The LWS6008A5 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-263, 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:

- Battery switching application
- Hard switched and high frequency circuits
- Power Management

**100% DVDS Tested**

**100% Avalanche Tested**

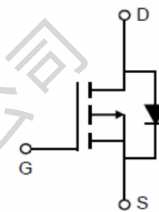


$V_{DSS}$	-60	V
$I_D$	-110	A
$P_D$	180	W
$R_{DS(ON)}$ TYPE	5.5	$m\Omega$

Marking and Pin Assignment



Inner Equivalent Principium Chart



## Package Marking and Ordering Information:

Marking	Part Number	Package	Packing	Qty.
S6008/LW A5/D.C.	LWS6008A5	TO-263	Reel	800 Pcs

## Absolute Maximum Ratings:

Symbol	Parameter	Value	Units
$V_{DSS}$	Drain-to-Source Voltage	-60	V
$I_D$	Continuous Drain Current	$T_C=25^\circ\text{C}$	-110
	Continuous Drain Current	$T_C=100^\circ\text{C}$	-70
$I_{DM}^{a1}$	Pulsed Drain Current	-440	A
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$P_D$	Power Dissipation	180	W
$E_{AS}^{a2}$	Single pulse avalanche energy	960	mJ
$T_J, T_{STG}$	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	0.69	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	60	$^\circ\text{C}/\text{W}$

**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	$V_{GS}=0V, I_D=-250\mu A$	-60	--	--	V
$I_{DSS}$	Drain to Source Leakage Current	$V_{DS}=-60V, V_{GS}=0V$	--	--	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	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.6	-2.0	-2.4	V
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=-10V, I_D=-15A$	--	5.5	7.0	m $\Omega$

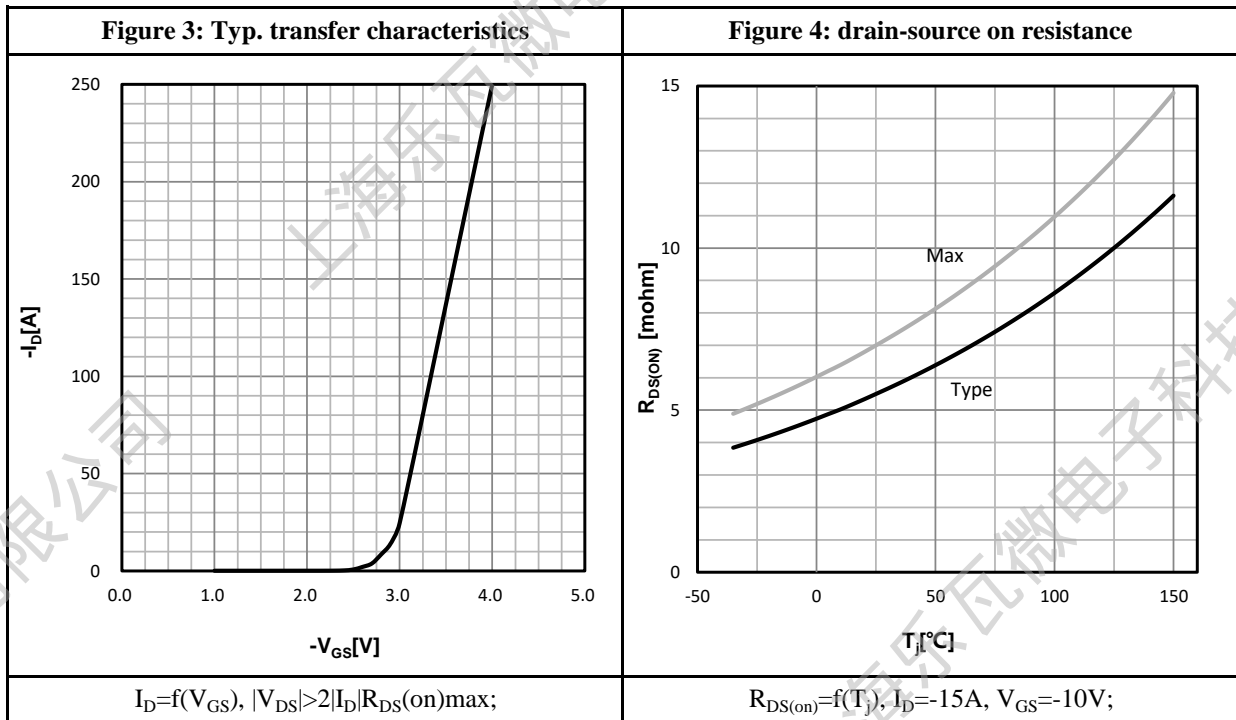
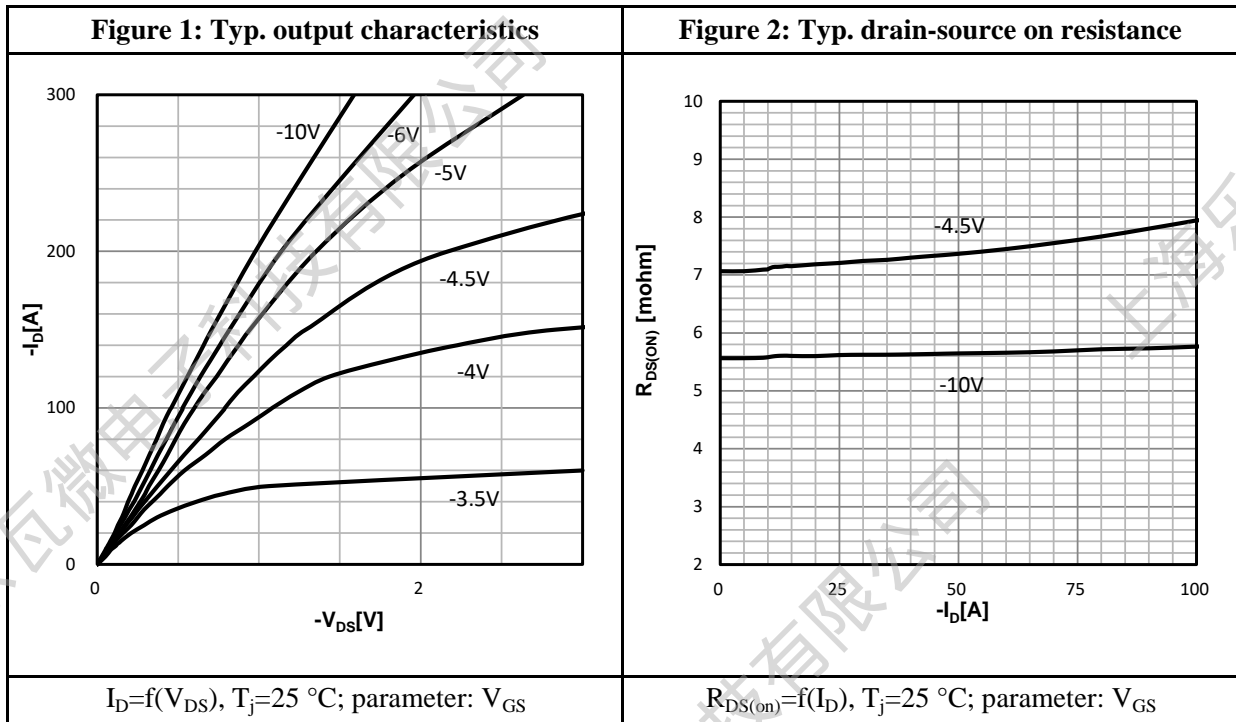
Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$C_{iss}$	Input Capacitance	$V_{GS} = 0V$	--	5403	--	pF
$C_{oss}$	Output Capacitance	$V_{DS} = -30V$	--	941	--	
$C_{rss}$	Reverse Transfer Capacitance	$f = 1.0MHz$	--	48	--	
$R_G$	Gate resistance	$V_{GS}=0V, V_{DS}$ Open	--	2.0	--	$\Omega$

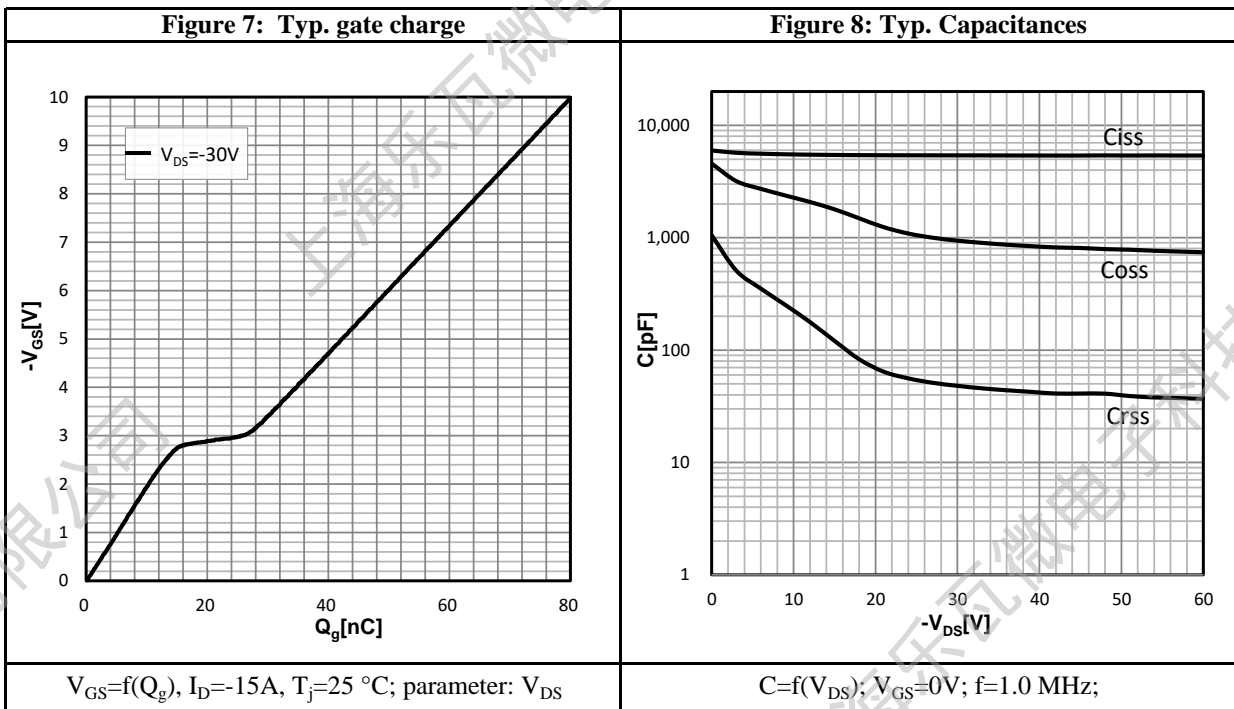
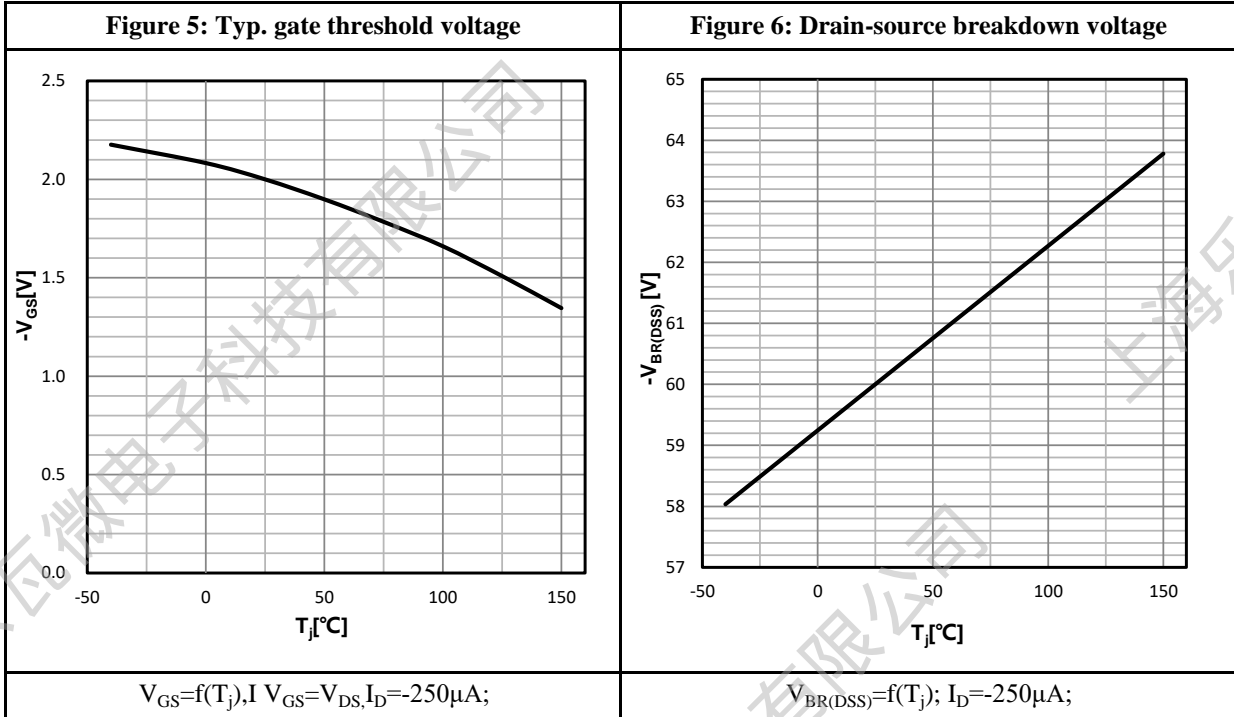
Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D = -15A$	--	4.5	--	ns
$t_r$	Rise Time	$V_{DS} = -30V$	--	2.5	--	
$t_{d(OFF)}$	Turn-Off Delay Time	$V_{GS} = -10V$	--	14.5	--	
$t_f$	Fall Time	$R_G = 3\Omega$	--	3.5	--	
$Q_g$	Total Gate Charge	$V_{GS} = -10V$	--	80	--	nC
$Q_{gs}$	Gate Source Charge	$V_{DS} = -30V$	--	15	--	
$Q_{gd}$	Gate Drain Charge	$I_D = -15A$	--	11	--	

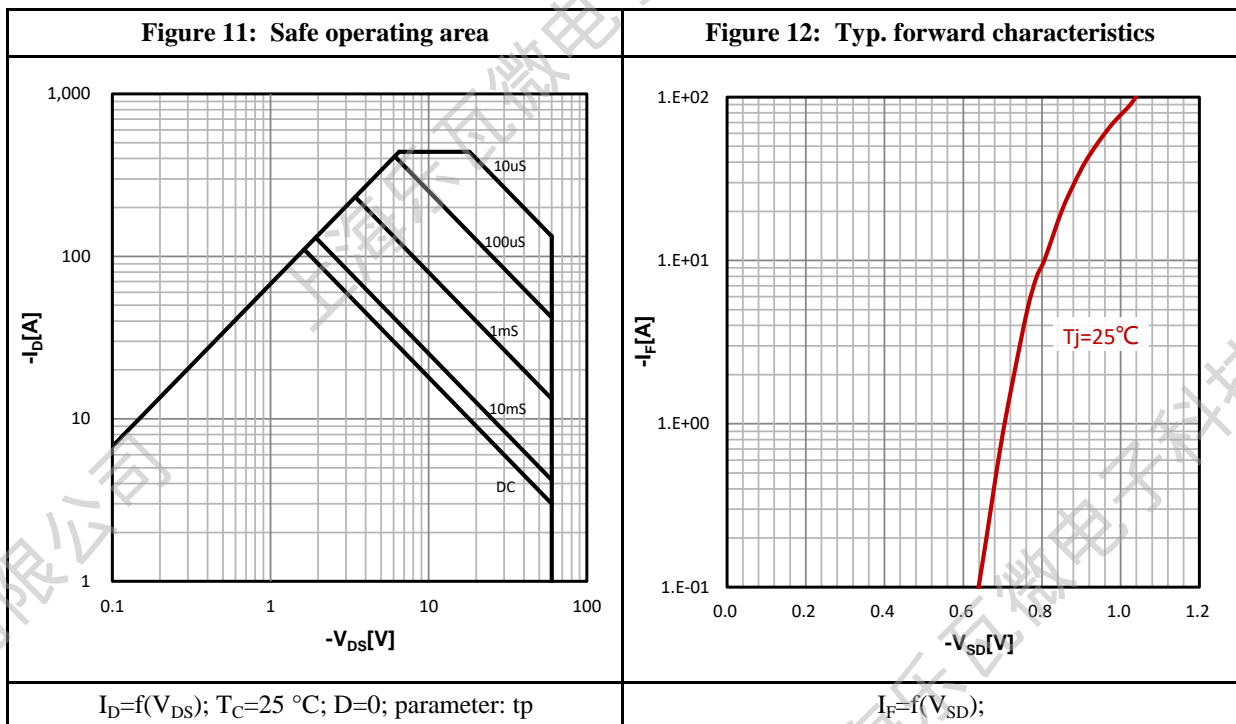
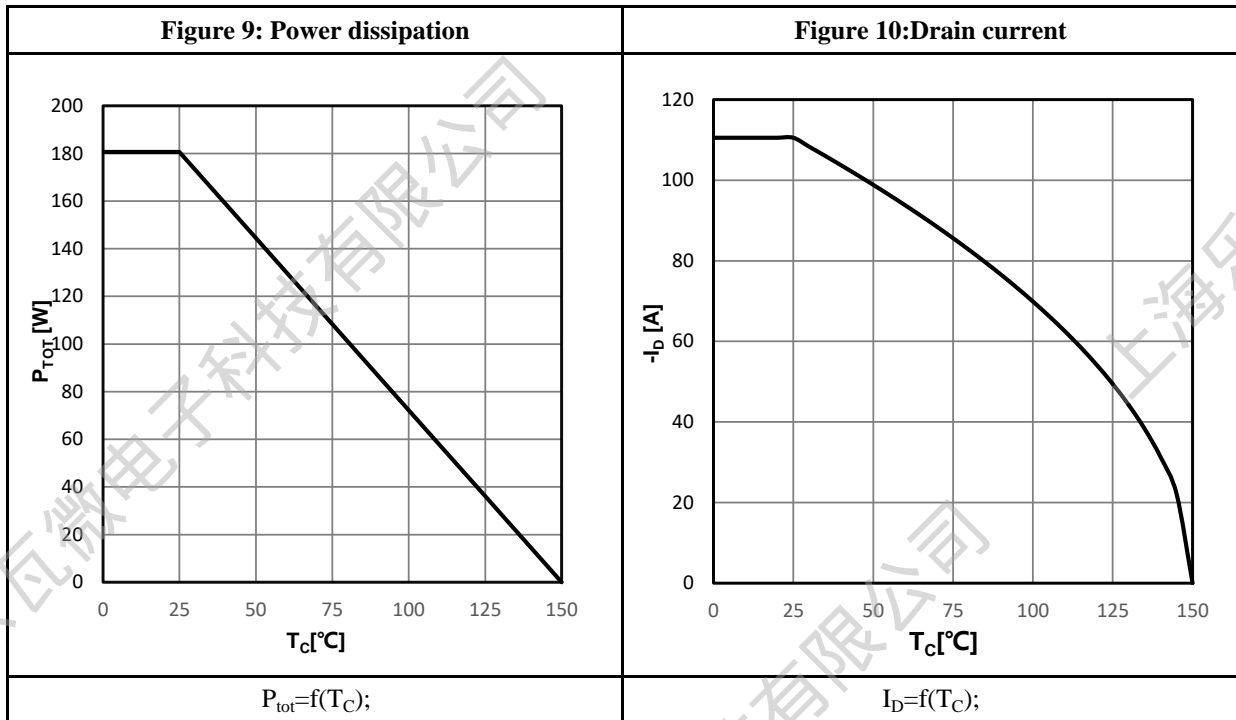
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$I_S$	Diode Forward Current	$T_C = 25\text{ }^\circ\text{C}$	--	--	-110	A
$V_{SD}$	Diode Forward Voltage	$I_S = -15A, V_{GS} = 0V$	--	--	-1.2	V
$t_{rr}$	Reverse Recovery time	$I_S = -15A, V_{DD} = -30V,$	--	60	--	ns
$Q_{rr}$	Reverse Recovery Charge	$dI/dt = 100A/\mu s$	--	105	--	nC

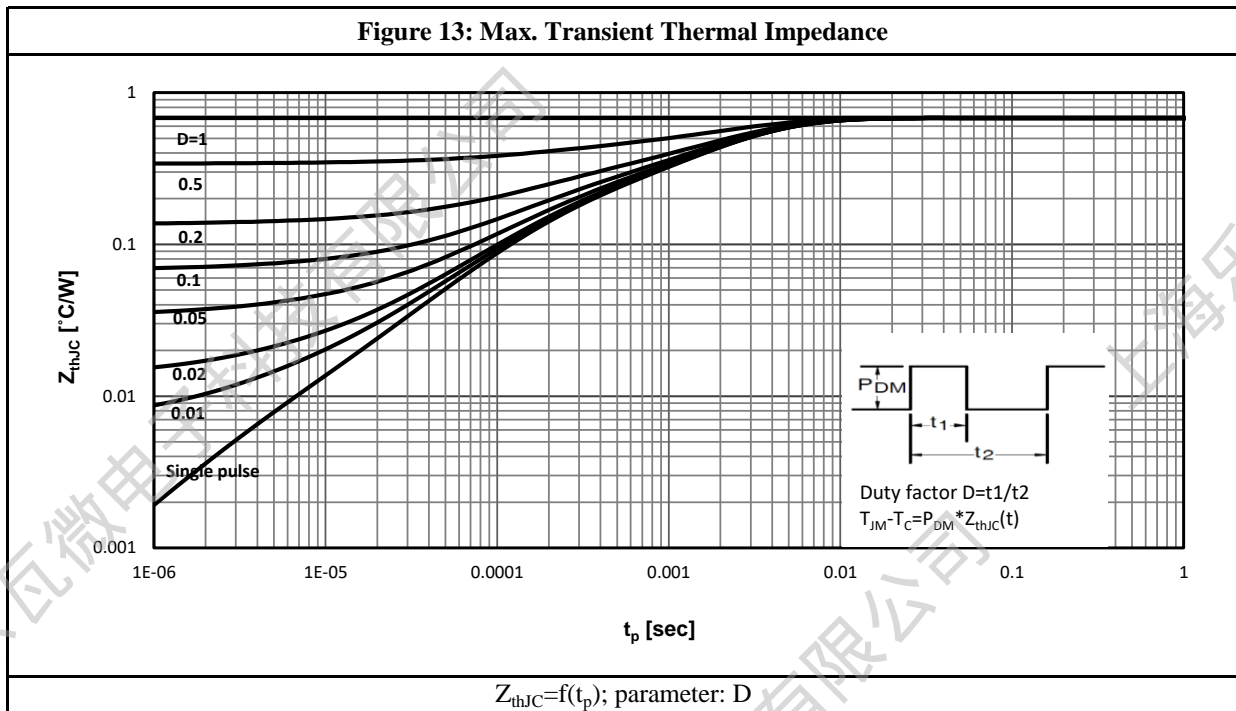
a1: Repetitive rating; pulse width limited by maximum junction temperature

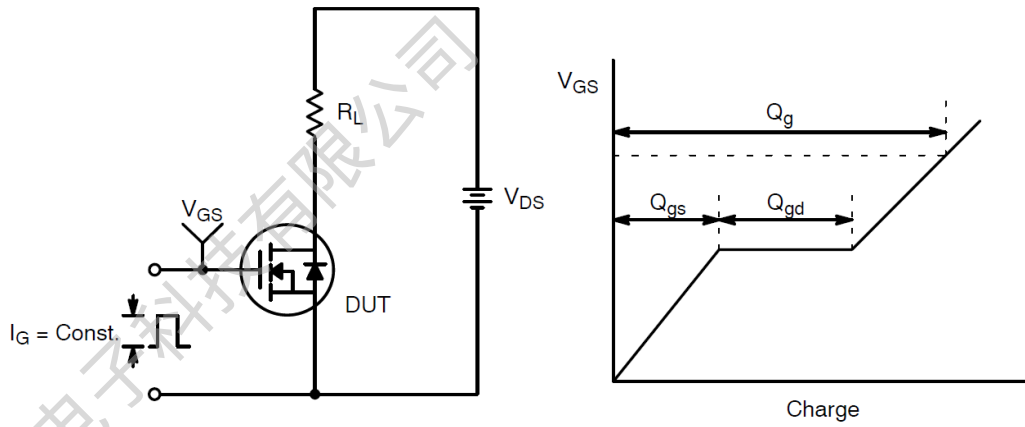
a2:  $V_{DD} = -30V, L = 1.0mH, R_G = 25\Omega$ , Starting  $T_j = 25\text{ }^\circ\text{C}$

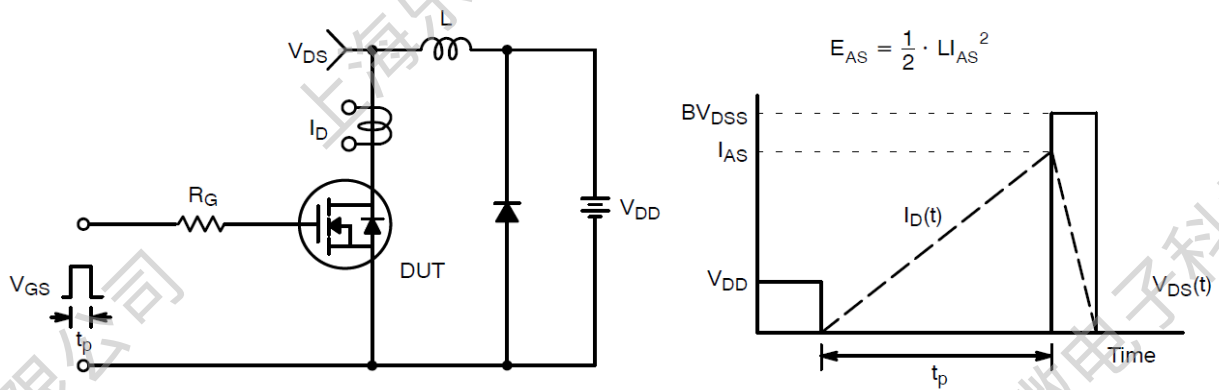
**Characteristics Curve:**


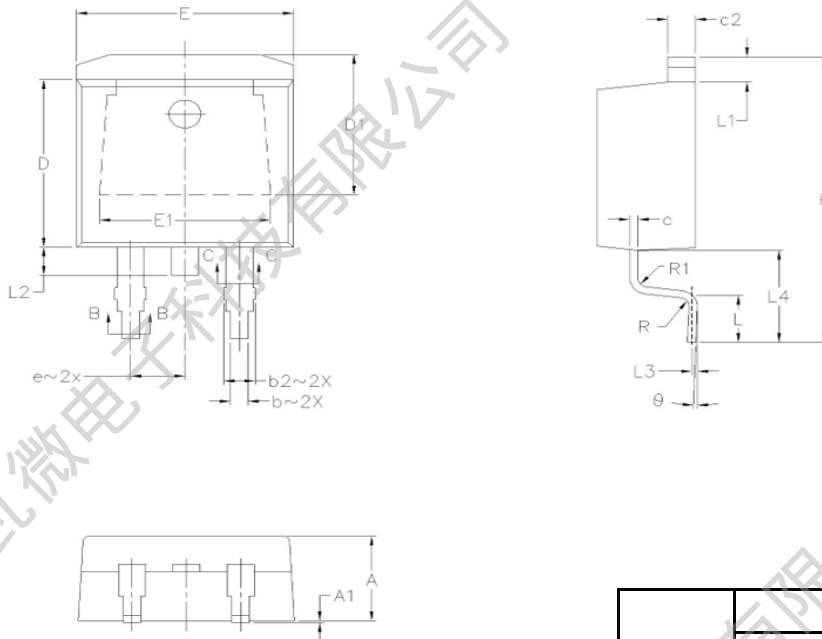






**Test Circuit & Waveform:**

**Figure 14: Gate Charge Test Circuit & Waveform**

**Figure 15: Resistive Switching Test Circuit & Waveforms**

**Figure 16: Unclamped Inductive Switching Test Circuit & Waveforms**

**Package Outline:**


Symbol	COMMON			
	MM		INCH	
	Min	Max	MIN	Max
<b>A</b>	4.064	4.826	0.160	0.190
<b>A1</b>	0.000	0.254	0.000	0.010
<b>b</b>	0.508	0.991	0.020	0.039
<b>b1</b>	0.508	0.889	0.020	0.035
<b>b2</b>	1.143	1.778	0.045	0.070
<b>b3</b>	1.143	1.727	0.045	0.068
<b>c</b>	0.381	0.737	0.015	0.029
<b>c1</b>	0.381	0.584	0.015	0.023
<b>c2</b>	1.143	1.651	0.045	0.065
<b>D</b>	8.382	9.652	0.330	0.380
<b>D1</b>	6.858	—	0.270	—
<b>E</b>	9.652	10.668	0.380	0.420
<b>E1</b>	6.223	—	0.245	—
<b>e</b>	2.540 BSC		0.100 BSC	
<b>H</b>	14.605	15.875	0.575	0.625
<b>L</b>	1.778	2.794	0.070	0.110
<b>L1</b>	—	1.676	—	0.066
<b>L2</b>	—	1.778	—	0.070
<b>L3</b>	0.254 BSC		0.010 BSC	
<b>L4</b>	4.780	5.280	0.188	0.208
<b>R</b>	0.460 TYP		0.018 TYP	
<b>R1</b>	0.461 TYP		0.019 TYP	
<b>θ</b>	0°	8°	0°	8°



**Revision History:**

<b>Revison</b>	<b>Date</b>	<b>Descriptions</b>
Rev 1.0	Mar.2022	Initial Version

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