

General Description:

The LWS6T10AJ uses 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 SOT-723, 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

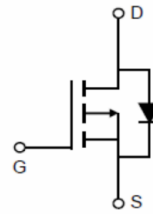


V_{DSS}	-60	V
I_D	-0.26	A
P_D	0.27	W
$R_{DS(ON)}$ TYPE	1.5	Ω

Marking and Pin Assignment



Inner Equivalent Principium Chart



Package Marking and Ordering Information:

Marking	Part Number	Package	Packing	Qty.
C** ^(a1)	LWS6T10AJ	SOT-723	Reel	5000 Pcs

Absolute Maximum Ratings:

Symbol	Parameter		Value	Units
V_{DSS}	Drain-to-Source Voltage		-60	V
I_D	Continuous Drain Current	$T_A=25^\circ\text{C}$	-0.26	A
	Continuous Drain Current	$T_A=100^\circ\text{C}$	-0.16	A
I_{DM}^{a2}	Pulsed Drain Current		-1.04	A
V_{GS}	Gate-to-Source Voltage		± 20	V
P_D	Power Dissipation		0.27	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
$R_{\theta JA}^{a3}$	Thermal Resistance, Junction-to-Ambient	461	$^\circ\text{C/W}$

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	$V_{GS}=0V, I_D=-250\mu A$	-60	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=-60V, V_{GS}=0V$	--	--	-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	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.1	-1.6	-2.1	V
$R_{DS(ON)1}$	Drain-to-Source On-Resistance	$V_{GS}=-10V, I_D=-0.2A$	--	1.5	2.5	Ω
$R_{DS(ON)2}$	Drain-to-Source On-Resistance	$V_{GS}=-4.5V, I_D=-0.1A$	--	2.0	4.0	Ω

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	$V_{GS}=0V$	--	13.8	--	pF
C_{oss}	Output Capacitance	$V_{DS}=-30V$	--	3.7	--	
C_{rss}	Reverse Transfer Capacitance	$f=1.0MHz$	--	1.4	--	

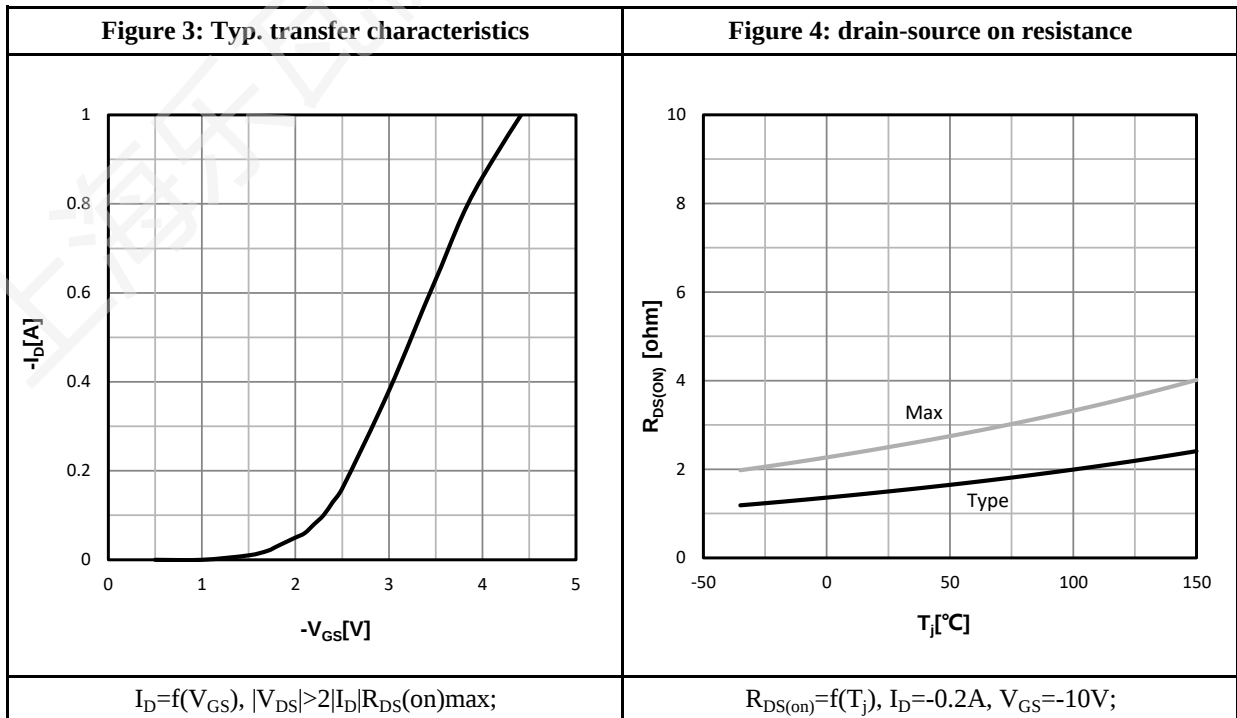
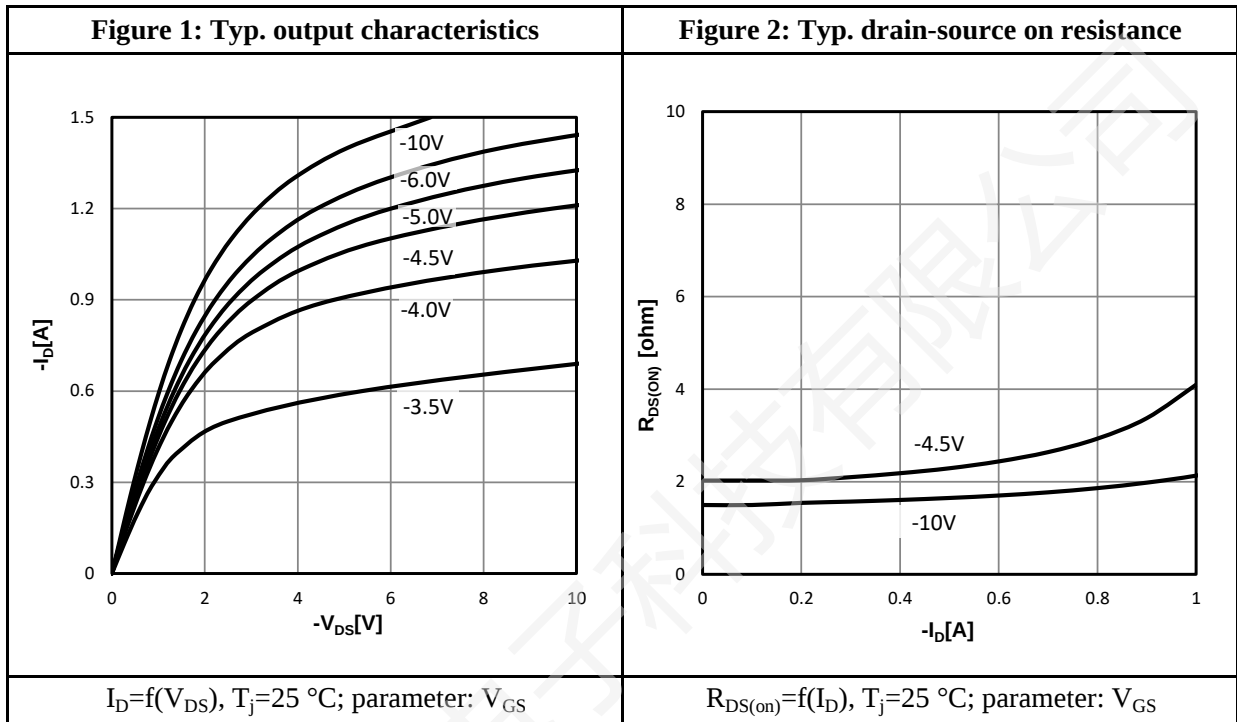
Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D=-0.2A$	--	6.0	--	ns
t_r	Rise Time	$V_{DS}=-30V$	--	5.0	--	
$t_{d(OFF)}$	Turn-Off Delay Time	$V_{GS}=-10V$	--	26	--	
t_f	Fall Time	$R_G=3.9\Omega$	--	14	--	
Q_g	Total Gate Charge	$V_{GS}=-10V$	--	0.87	--	nC
Q_{gs}	Gate to Source Charge	$V_{DS}=-30V$	--	0.20	--	
Q_{gd}	Gate to Drain Charge	$I_D=-0.2A$	--	0.35	--	

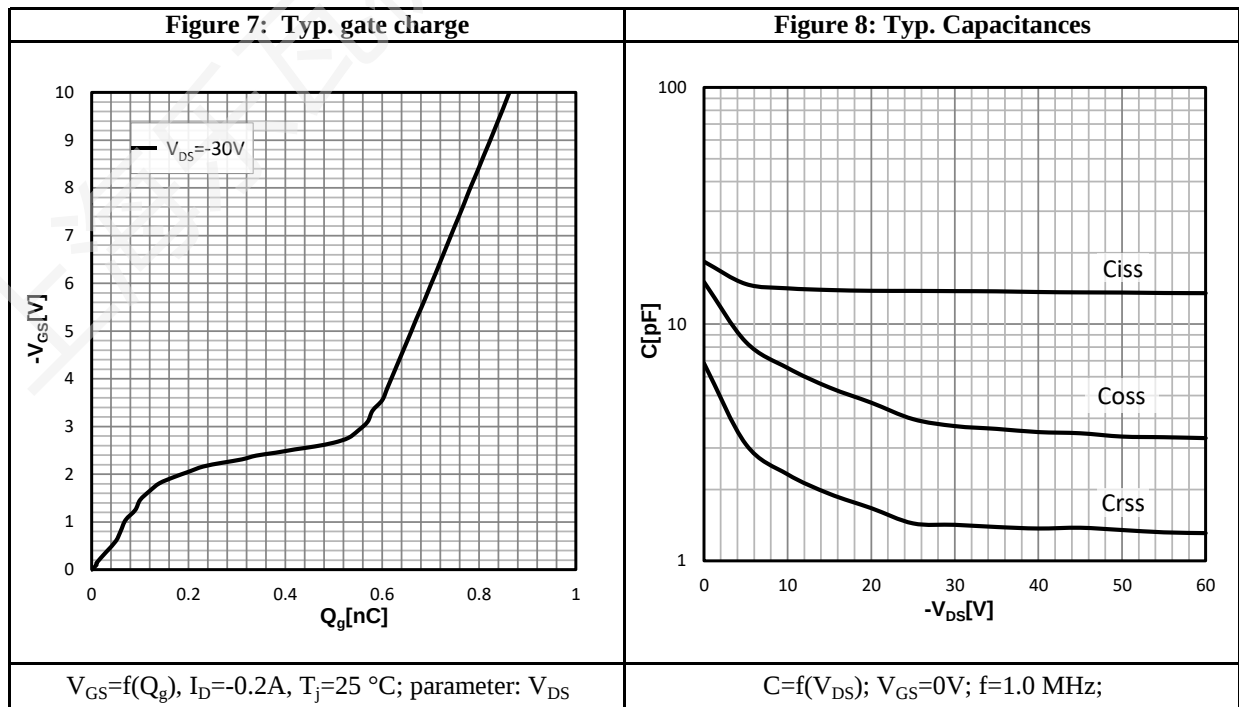
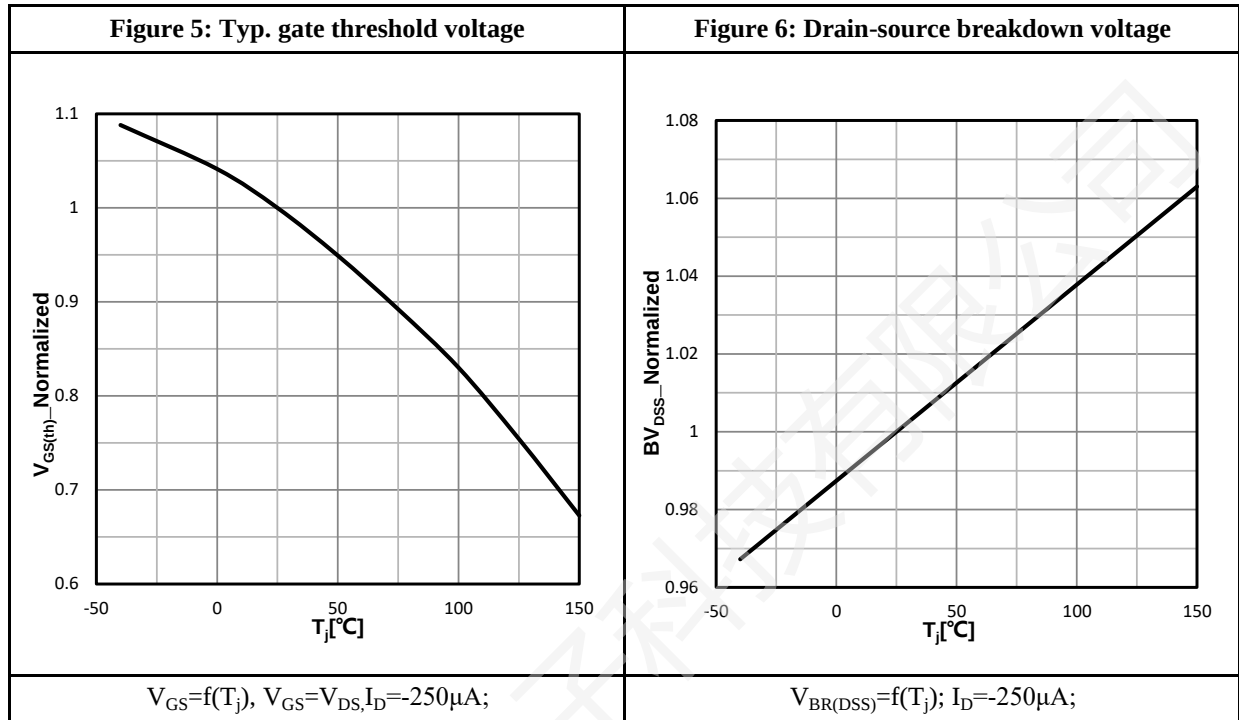
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
I_S	Diode Forward Current	$T_A=25\text{ }^{\circ}\text{C}$	--	--	-0.26	A
V_{SD}	Diode Forward Voltage	$I_S=-0.2A, V_{GS}=0V$	--	--	-1.2	V

a1: ** is defined as date code

a2: Repetitive rating; pulse width limited by maximum junction temperature

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:




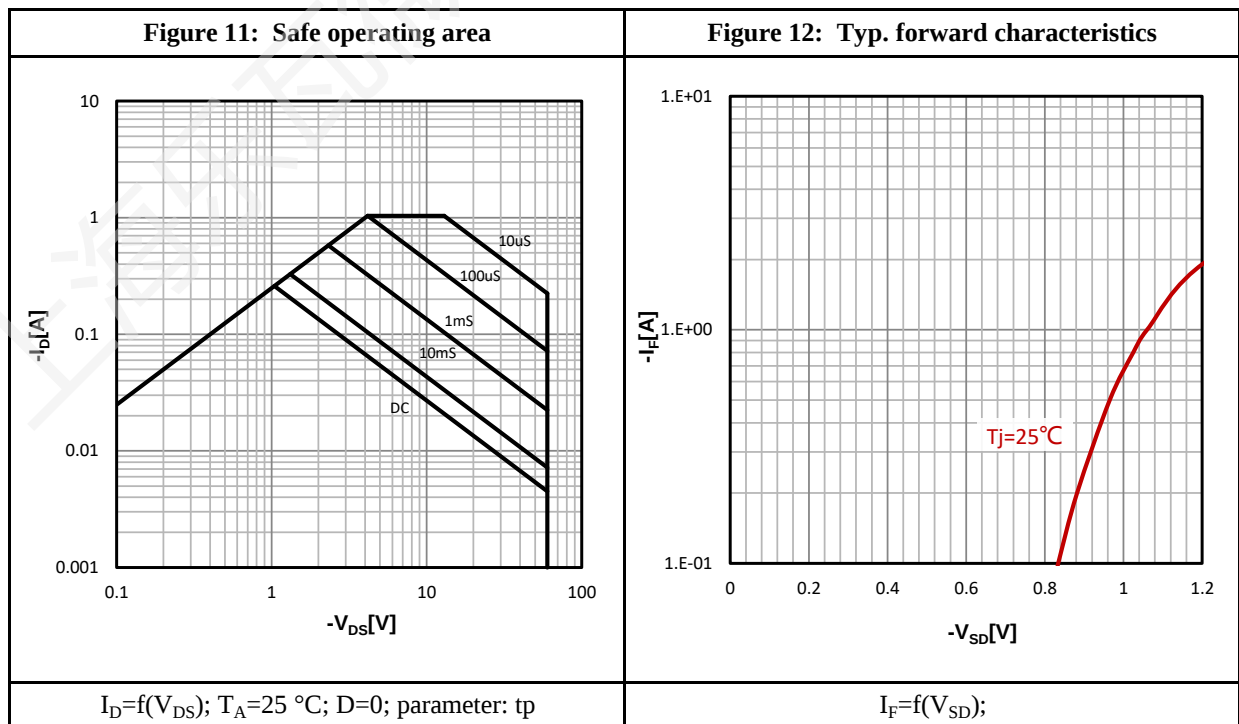
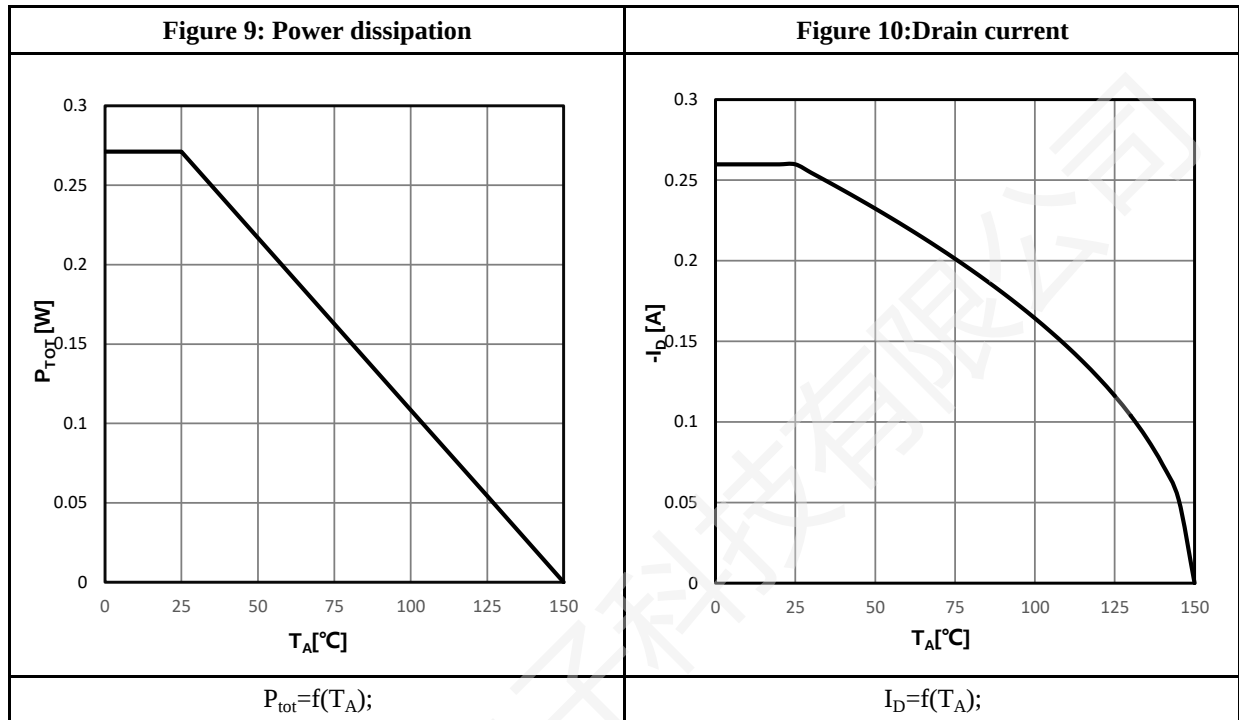
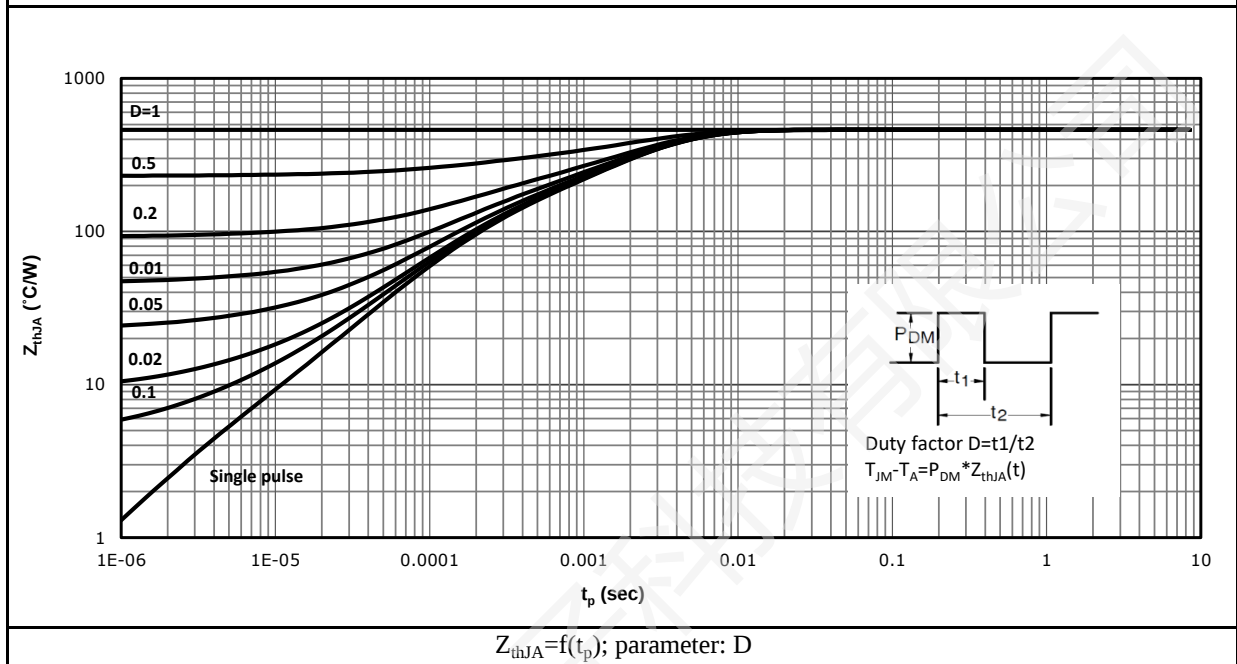
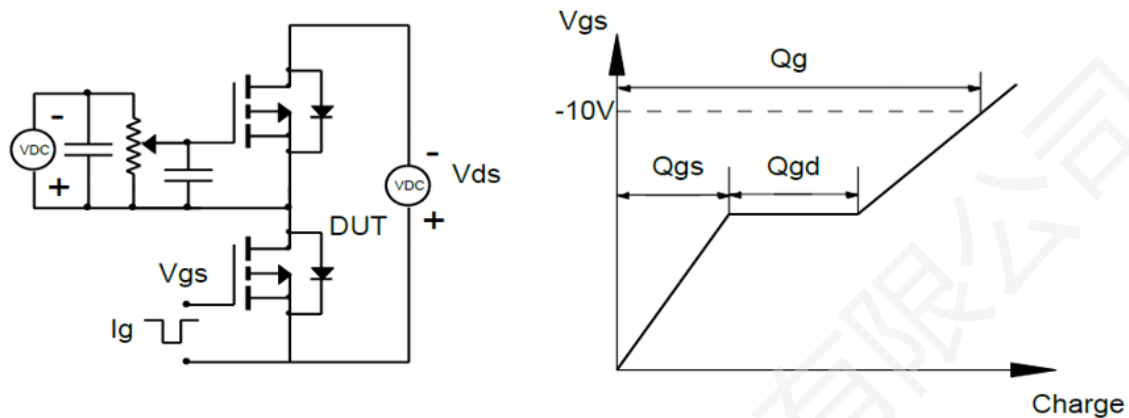
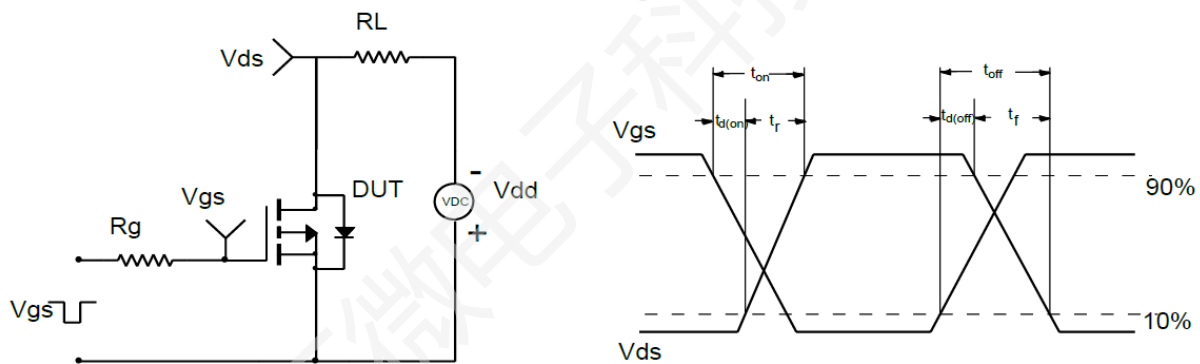
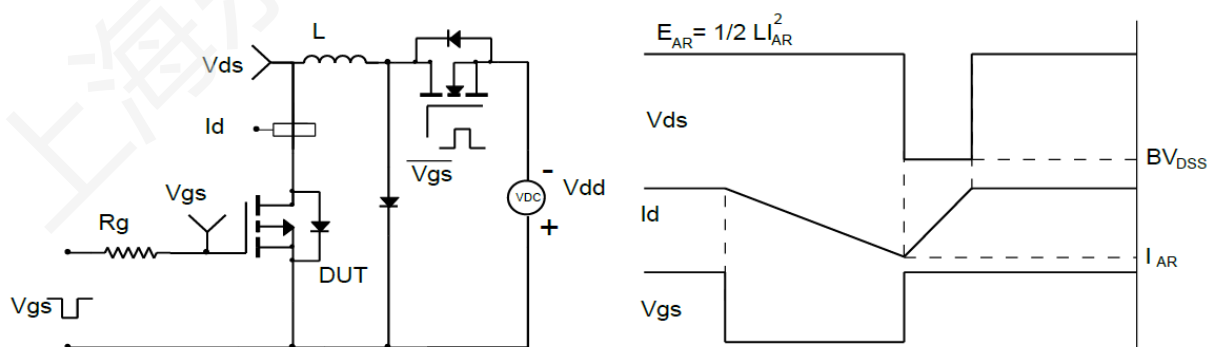
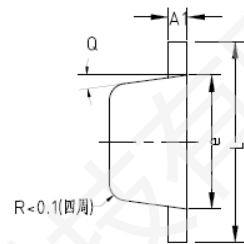
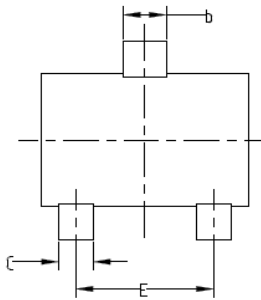
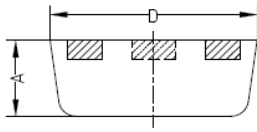


Figure 13: Max. Transient Thermal Impedance


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 IN DIMENSION (MM)

PKG	SOT-723		
Symbol	Min	Nom	Max
A	0.420	0.450	0.480
A1	0.100	0.110	0.120
b	0.230	0.250	0.280
c	0.180	0.200	0.235
D	1.150	1.200	1.300
E	0.750	0.800	0.850
L	1.170	1.200	1.240
e	0.750	0.800	0.850
Q	8°		

Revision History:

Revison	Date	Descriptions
Rev 1.0	Feb.2026	Initial Version

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Mailing Address: Unit 02&04&05, 10th Floor, Building 5, No.666 Shengxia Road, No.122 Yindong Road,
China (Shanghai) Pilot Free Trade Zone
Shanghai Lewa Micro-electronics Technology Co., Ltd