



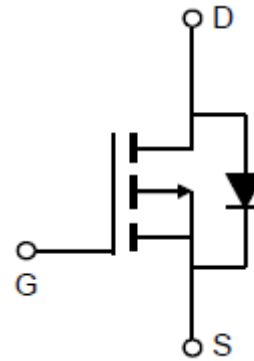
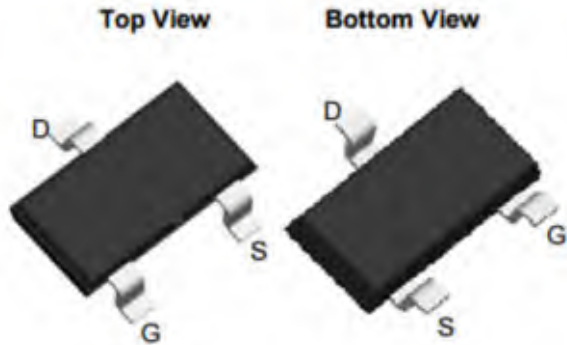
GeneralDescription

The ZLM0305AC uses advanced trench technology to excellent $R_{DS(ON)}$, and ultra-low low gate charge. This device is suitable for use as a load switch or in PWM applications.

◆ RoHS and Halogen-Free Compliant

Product Summary

V_{DS}	-30V
I_D (at $V_{GS}=-10V$)	-8A
$R_{DS(ON)}$ (at $V_{GS}=-10V$)	<32m Ω
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	<55m Ω



Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-8	A
		-6.6	
Pulsed Drain Current ^C	I_{DM}	-40	A
Power Dissipation ^B	P_D	3.1	W
		2	
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance, Junction-to-Ambient ^A	$R_{\theta JA}$	75	°C/W

**Electrical Characteristics (T_J=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =-250uA, V _{GS} =0V	-30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-30V, V _{GS} =0V			-1	uA
I _{GSS}	Gate-Bodyleakagecurrent	V _{DS} =0V, V _{GS} =±20V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-1.3		-2.4	V
I _{D(ON)}	Onstate draincurrent	V _{GS} =-10V, V _{DS} =-5V	-40			A
R _{DS(ON)}	StaticDrain-Source On-Resistance	V _{GS} =-10V, I _D =-6A		21	32	mΩ
		V _{GS} =-4.5V, I _D =-4A		33	55	mΩ
g _{FS}	ForwardTransconductance	V _{DS} =-5V, I _D =-8A		19		S
V _{SD}	Diode Forward Voltage	I _{DS} =-1A, V _{GS} =0V		-0.8	-1	V
I _S	Maximum Body-Diode ContinuousCurrent				-3.5	A
DYNAMIC PARAMETERS						
C _{iss}	InputCapacitance	V _{GS} =0V, V _{DS} =-15V, f=1MHz		740		pF
C _{oss}	OutputCapacitance			130		pF
C _{rss}	Reverse TransferCapacitance			92		pF
SWITCHING PARAMETERS						
Q _g	TotalGate Charge	V _{GS} =-10V, V _{DS} =-15V, I _D =-8A		14		nC
Q _{gs}	Gate Source Charge			2.8		nC
Q _{gd}	Gate Drain Charge			3.5		nC
t _{D(on)}	Turn-OnDelayTime	V _{GS} =-10V, V _{DS} =-15V, R _L =1.8Ω, R _{GEN} =3Ω		8		ns
t _r	Turn-On Rise Time			6		ns
t _{D(off)}	Turn-OffDelayTime			17		ns
t _f	Turn-OffFallTime			5		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =-8A, dI/dt=500A/μs		15		ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =-8A, dI/dt=500A/μs		9.7		nC

Notes:

A. is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design while R_{θCA} is determined by the user's board design. R_{θJA} shown below for single device operation on FR-4 in still air.

B. The power dissipation P_D is based on T_{J(MAX)}=150°C, using ≤ 10s junction-to-ambient thermal resistance.

C. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J=25°C.

D. The static characteristics in Figures 1 to 6 are obtained using <300us pulses, duty cycle 0.5% max.

E. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, assuming a maximum junction temperature of T_{J(MAX)}=150°C. The SOA curve provides a single pulse rating.



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

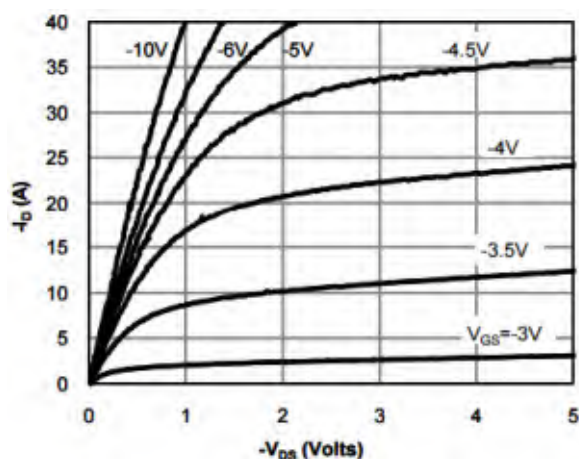


Fig 1: On-Region Characteristics (Note D)

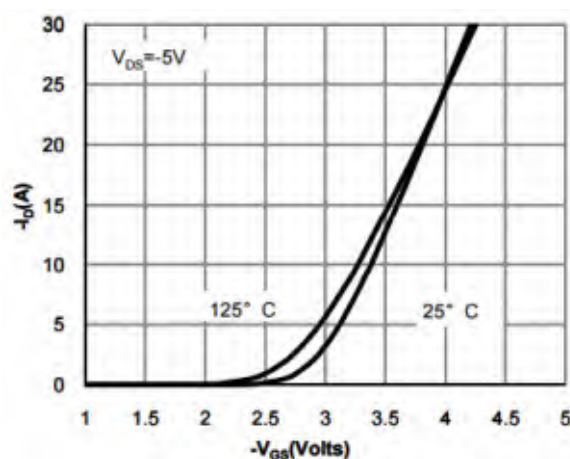


Figure 2: Transfer Characteristics (Note D)

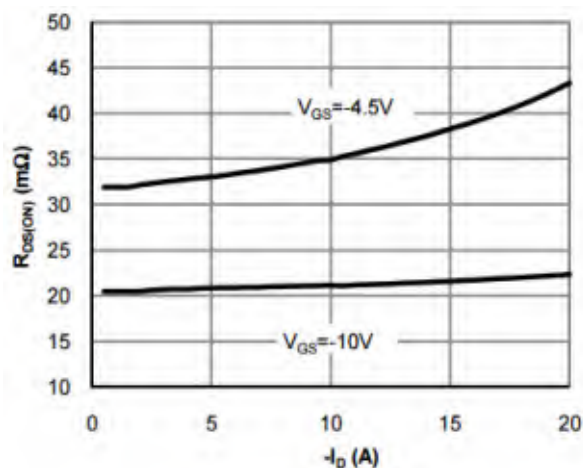


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note D)

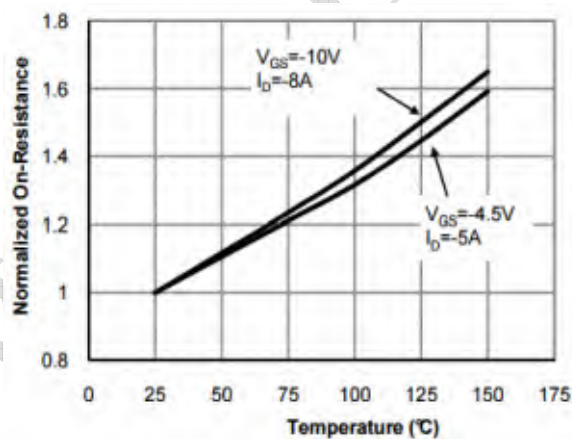


Figure 4: On-Resistance vs. Junction Temperature (Note D)

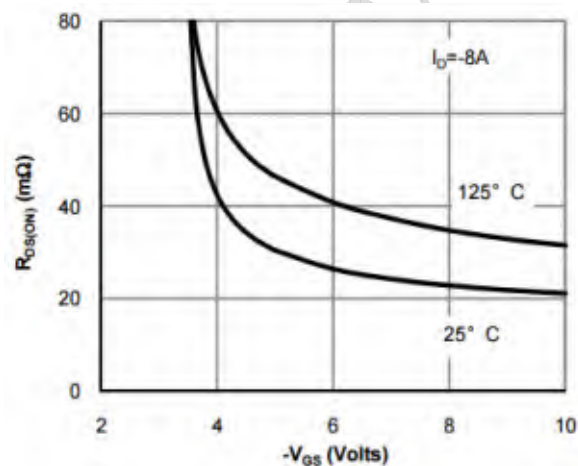


Figure 5: On-Resistance vs. Gate-Source Voltage (Note D)

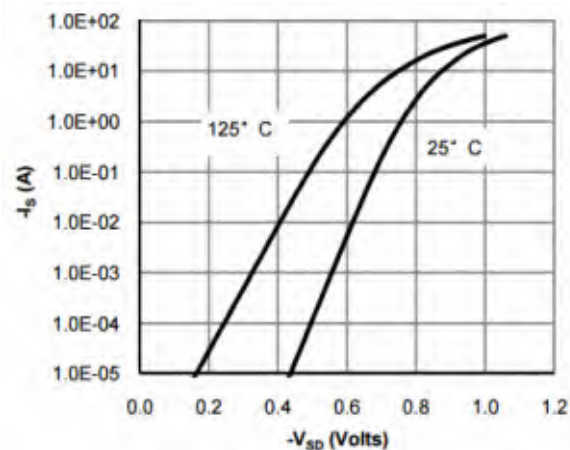


Figure 6: Body-Diode Characteristics (Note D)



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

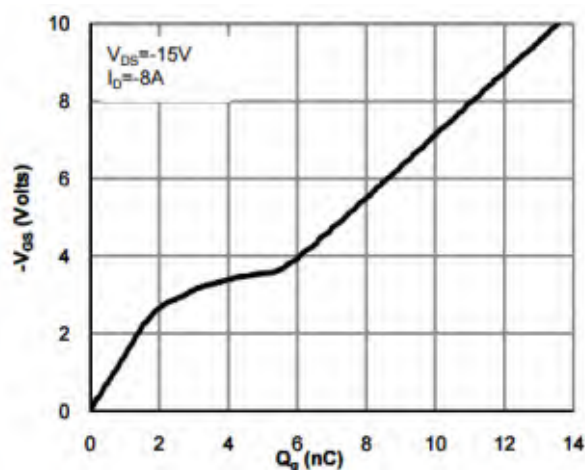


Figure 7: Gate-Charge Characteristics

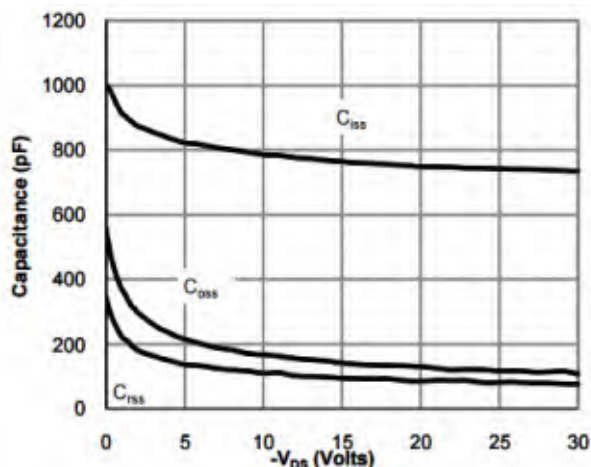


Figure 8: Capacitance Characteristics

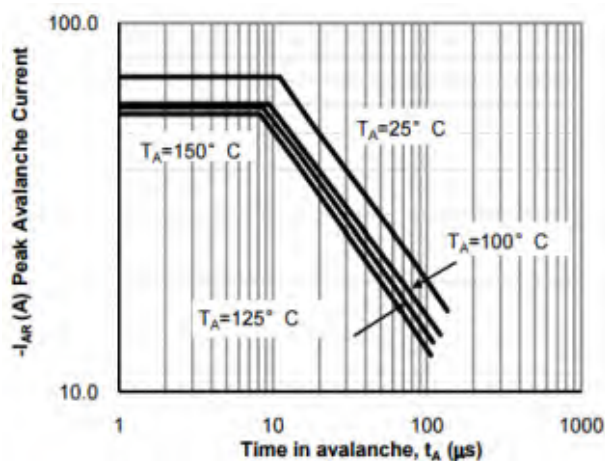


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

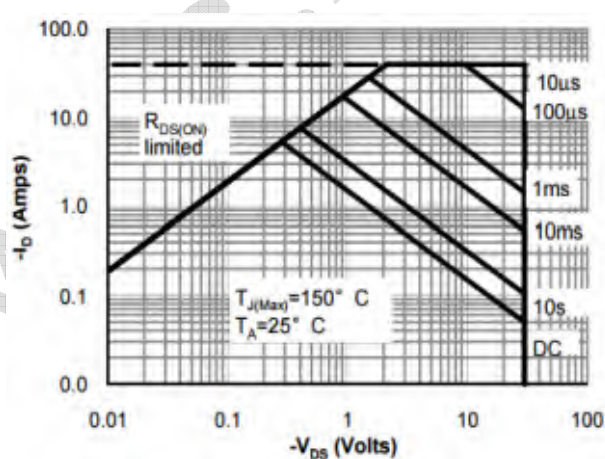


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

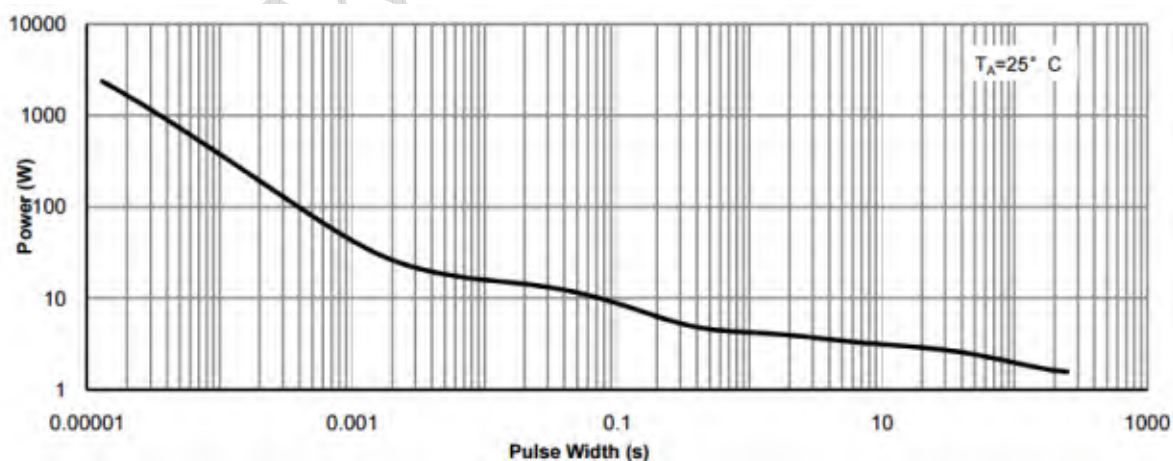
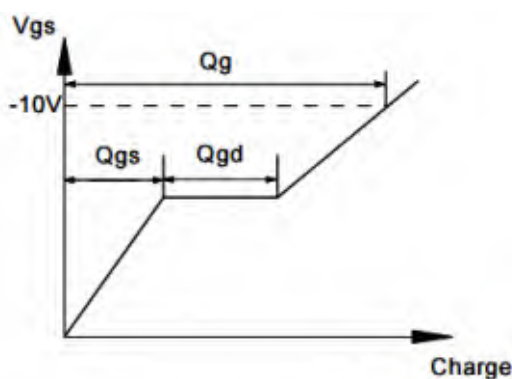
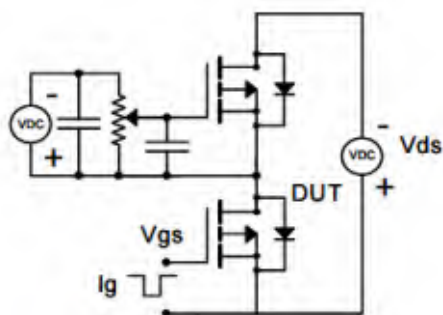


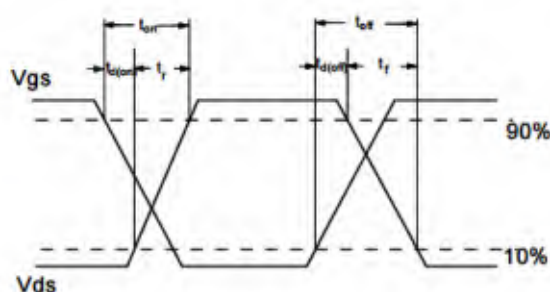
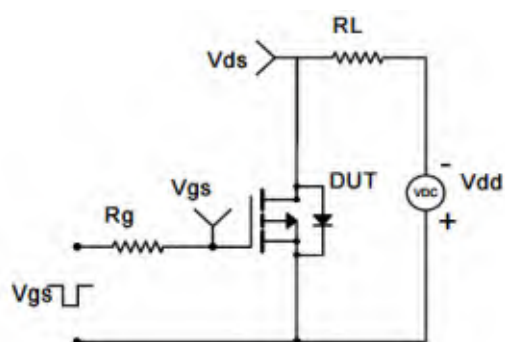
Figure 11: Normalized Maximum Transient Thermal Impedance (Note E)



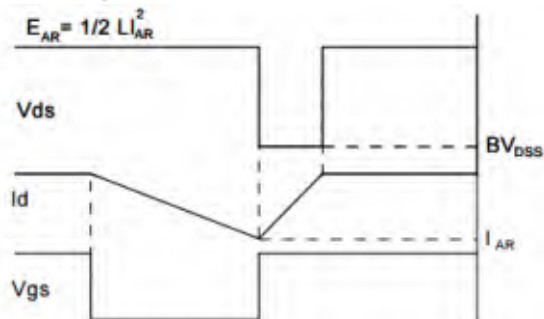
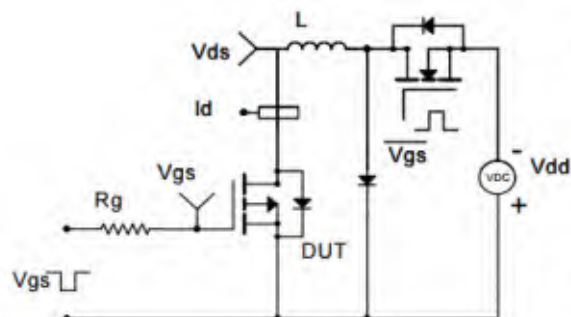
Gate Charge Test Circuit & Waveform



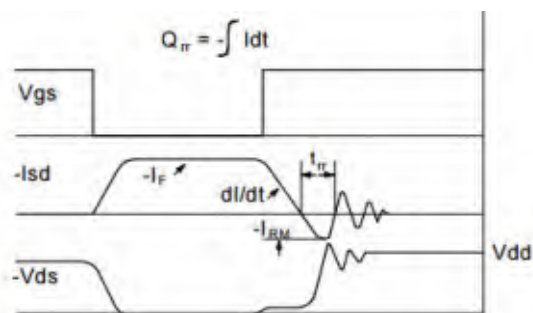
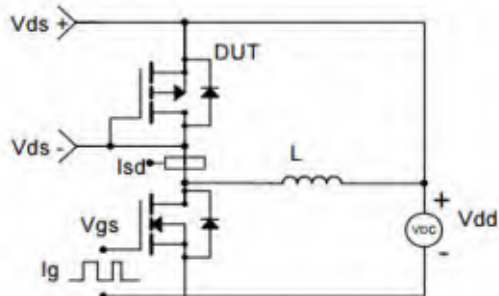
Resistive Switching Test Circuit & Waveforms

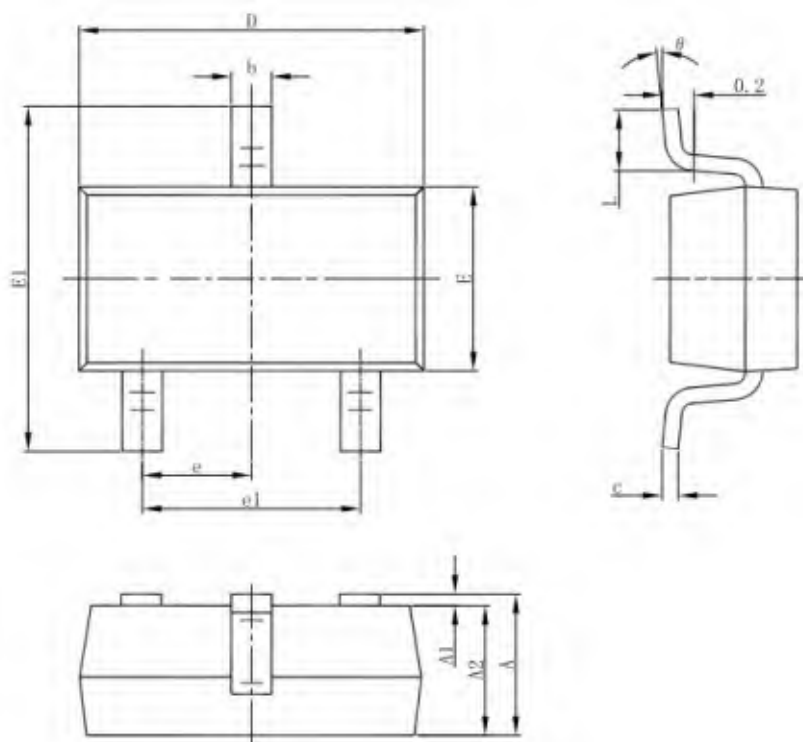


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



**Package Information****SOT23-3L**

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°