N-Channel Enhancement Mode Field Effect Transistor

Features

20V/2.8A

$R_{DS(ON)}$ <60mΩ @ V_{GS} = 4.5V

$R_{DS(ON)}$ < 115mΩ @ V_{GS} = 2.5V

$R_{DS(ON)}$ < 130mΩ @ V_{GS} = 1.8V

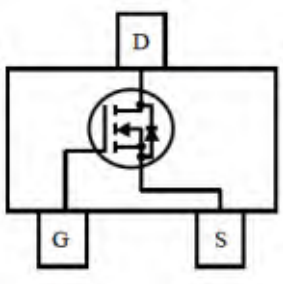
SOT23 Package

General Description

The ZLM0202AB uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 1.8V. This device is suitable for use as a load switch or in PWM applications.

Pin Configurations

See Diagram below (top view)



Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±8	V
Drain Current (Continuous)	T_A=25°C	I_D	2.8	A
	T_A=70°C		2.1	
Drain Current (Pulse)		I_{DM}	12	A
Power Dissipation	T_A=25°C	P_D	0.6	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

- **Electrical Characteristics** @T_A=25℃ unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D=250μA	20	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0V	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS} , I_{DS}=250μA	--	0.85	1.2	V
Gate Leakage Current	I_{GSS}	V_{GS}= ± 8V, V_{DS}=0V	--	--	100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 1A	--	40	60	mΩ
		V_{GS} =2.5V, I_D = 1A	--	50	115	mΩ
		V_{GS} =1.8V, I_D = 1A	--	80	130	mΩ
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=2A	--	5	--	S
Diode Forward Voltage	V_{SD}	I_{SD}=1.7A, V_{GS}=0V	--	0.8	1.2	V
Maximum Body-Diode Continuous Current	I_S		--	--	1.2	A
Switching						
Total Gate Charge	Q_g	V_{GS}=4.5V, V_{DS}=10V, I_D=2.8A	--	4.5	--	nC
Gate-Source Charge	Q_{gs}		--	0.8	--	nC
Gate-Drain Charge	Q_{gd}		--	1.2	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{DS} = 10V, I_D = 1A, V_{GS} = 4.5V, R_G = 6Ω	--	11.2	--	ns
Turn-on Rise Time	tr		--	3.5	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	19.6	--	ns
Turn-off Fall Time	tf		--	4.4	--	ns
Dynamic						
Input Capacitance	C_{iss}	V_{DS} = 15V, V_{GS} = 0V,f = 1.0MHz	--	456.4	--	pF
Output Capacitance	C_{oss}		--	86.8	--	pF
Reverse Transfer Capacitance	C_{rss}		--	58.9	--	pF

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

- **Typical Performance Characteristics**

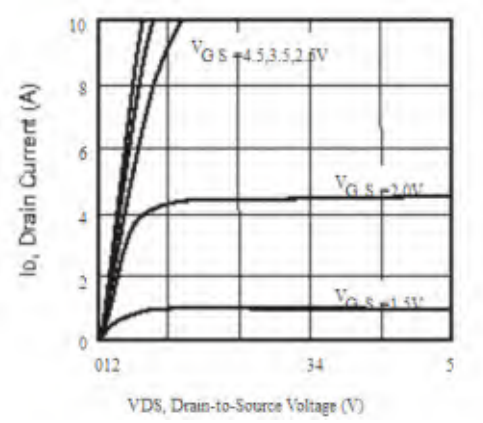


Figure1.Output Characteristics

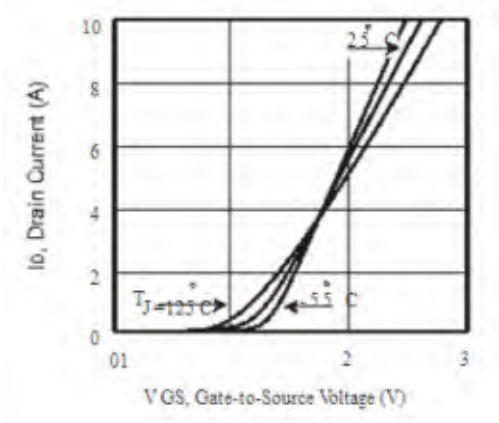


Figure 2.Transfer Characteristics

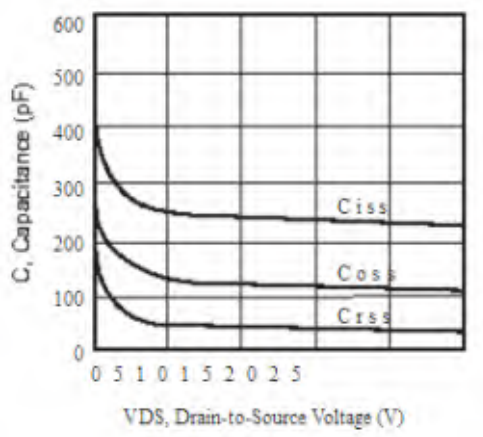


Figure 3.Capacitance

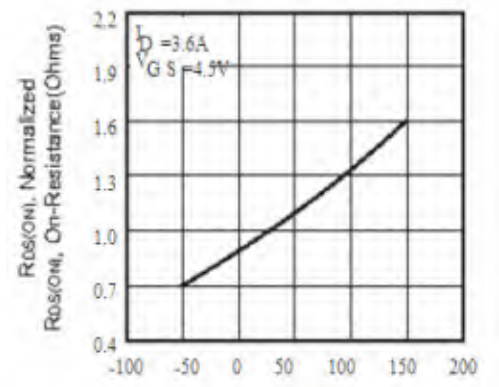


Figure 4. On-Resistance Variation
With Tepmerature

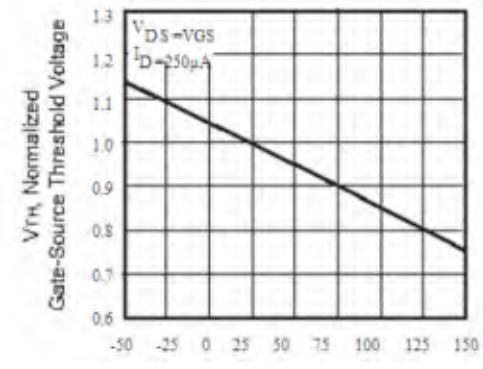


Figure 5. Gate Threshold Variatioa
With Tepmerature

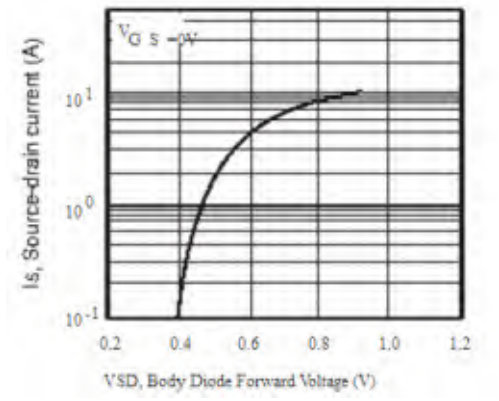


Figure 6. Body Diode Forward Voltage Variatioa
With Source Current

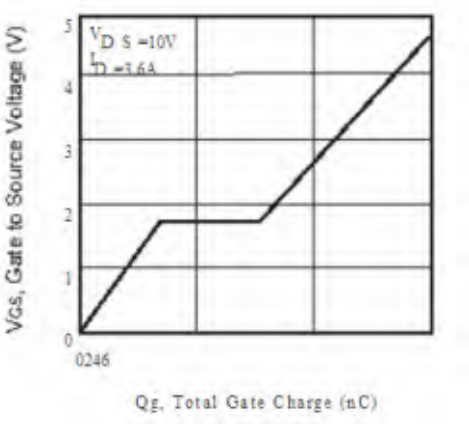


Figure 7. Gate Charge

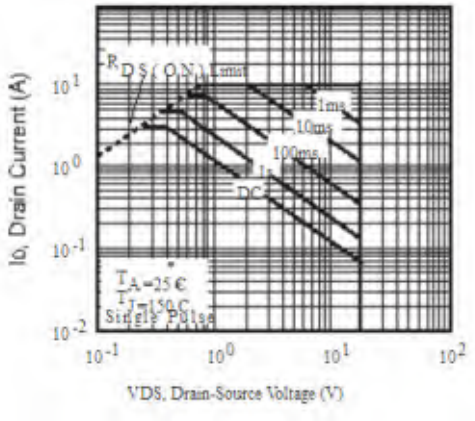


Figure 8. Maximum Safe Operating Area

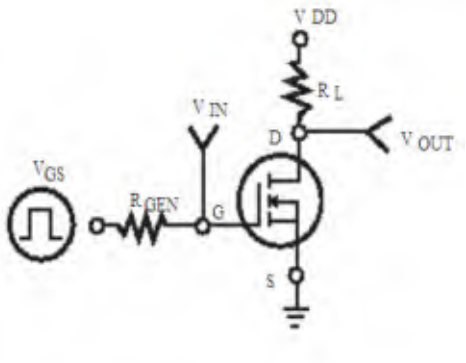


Figure 9. Switching Test Circuit

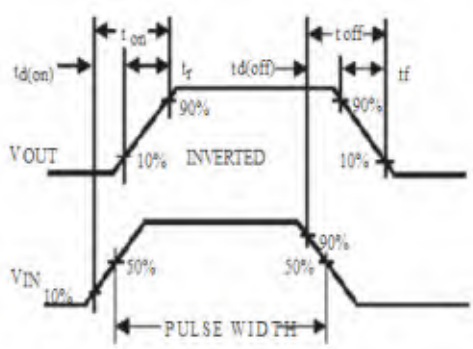


Figure 10. Switching Waveforms

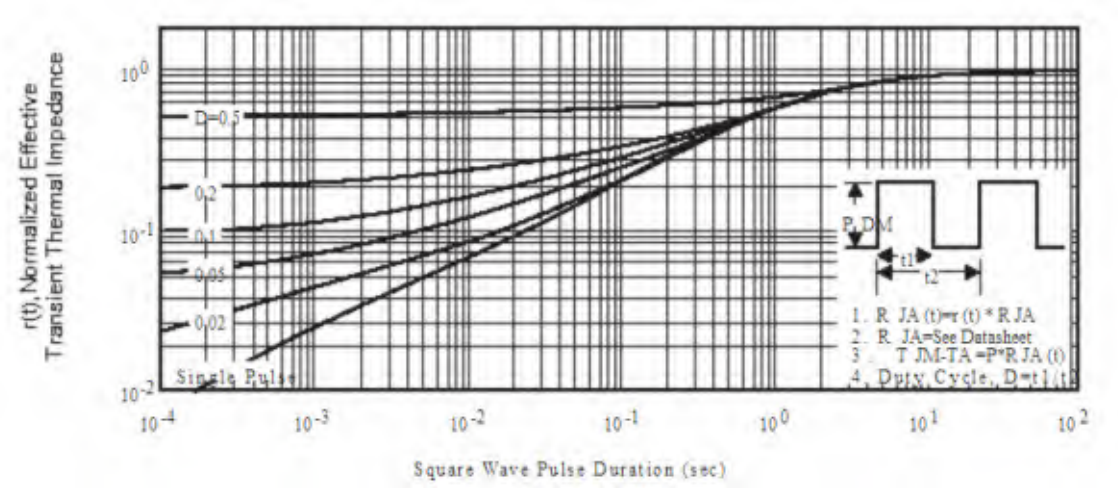
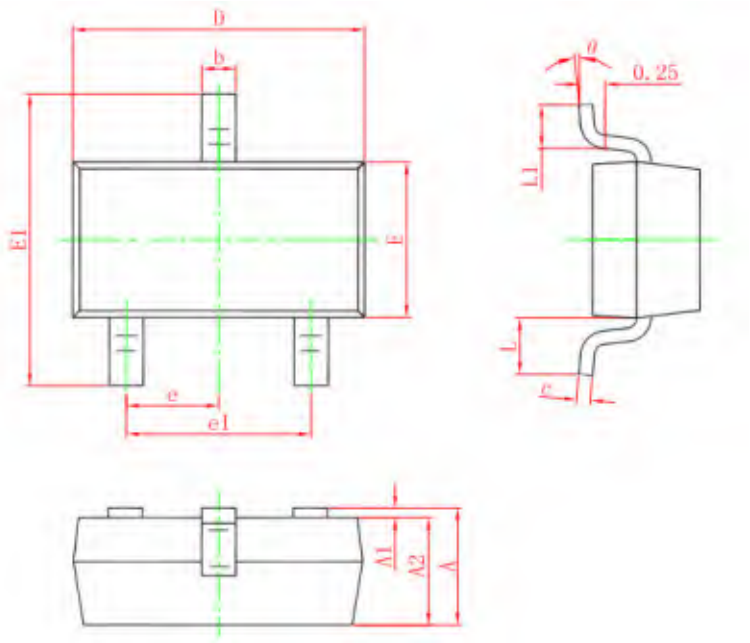


Figure 11. Normalized Thermal Transient Impedance Curve

- **Package Information**

SOT23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°