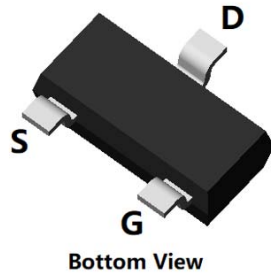
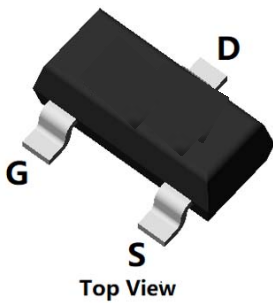
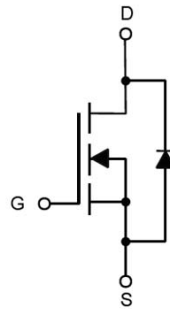


N-Channel Enhancement Mode Field Effect Transistor



SOT-23



Product Summary

- V_{DS} 20V
- I_D 3.0A
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <50 mohm
- $R_{DS(ON)}$ (at $V_{GS}=2.5V$) <70 mohm

General Description

- Trench Power LV MOSFET technology
- High Power and current handing capability
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- PWM application
- Load switch

■ Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	20	V
Gate-source Voltage	V_{GS}	± 10	V
Drain Current	I_D	$T_A=25^\circ C$ @ Steady State	3.0
		$T_A=70^\circ C$ @ Steady State	2.4
Pulsed Drain Current ^A	I_{DM}	14	A
Total Power Dissipation @ $T_A=25^\circ C$	P_D	0.7	W
Thermal Resistance Junction-to-Ambient @ Steady State ^B	$R_{\theta JA}$	178	$^\circ C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
ZXL2302B	F2	2302B.	3000	30000	120000	7" reel

ZXL2302B

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V, T _C =25°C			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.55	0.78	1.1	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 4.5V, I _D =3.0A		38.5	50	mΩ
		V _{GS} = 2.5V, I _D =2.0A		53.5	70	
Diode Forward Voltage	V _{SD}	I _S =3.0A, V _{GS} =0V			1.2	V
Maximum Body-Diode Continuous Current	I _S				3.0	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHZ		220		pF
Output Capacitance	C _{oss}			34		
Reverse Transfer Capacitance	C _{rss}			26		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D =3.0A		3.61		nC
Gate Source Charge	Q _{gs}			0.88		
Gate Drain Charge	Q _{gd}			0.77		
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V, V _{DD} =10V, R _L =1.5Ω, R _{GEN} =3Ω		6.8		ns
Turn-on Rise Time	t _r			57		
Turn-off Delay Time	t _{D(off)}			14		
Turn-off Fall Time	t _f			53		

A. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

■ Typical Performance Characteristics

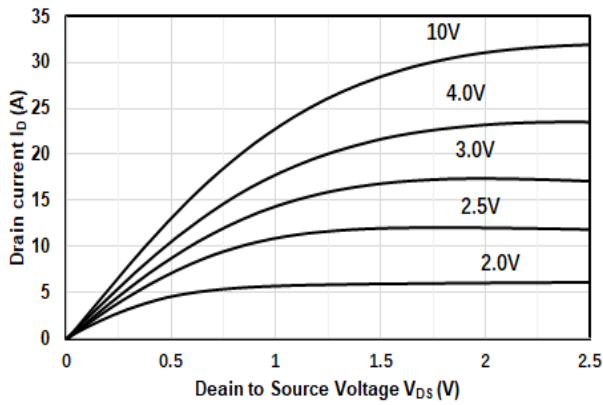


Figure1. Output Characteristics

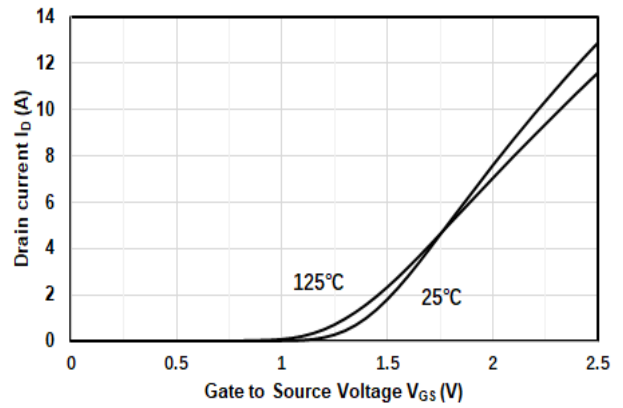


Figure2. Transfer Characteristics

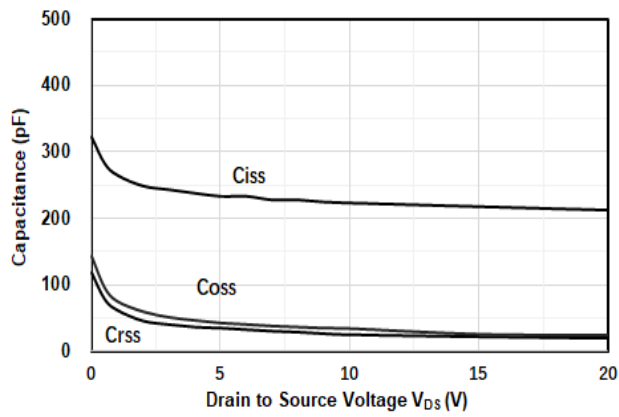


Figure3. Capacitance Characteristics

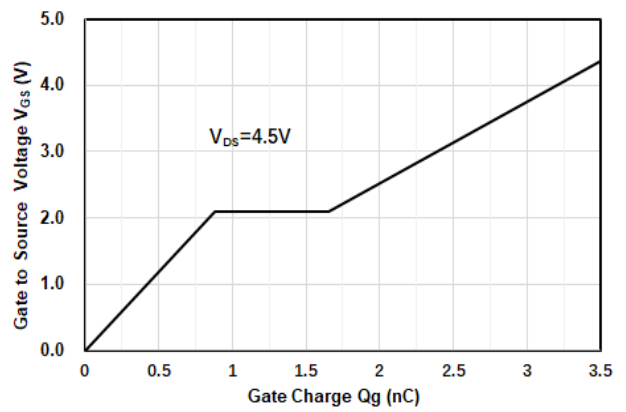


Figure4. Gate Charge

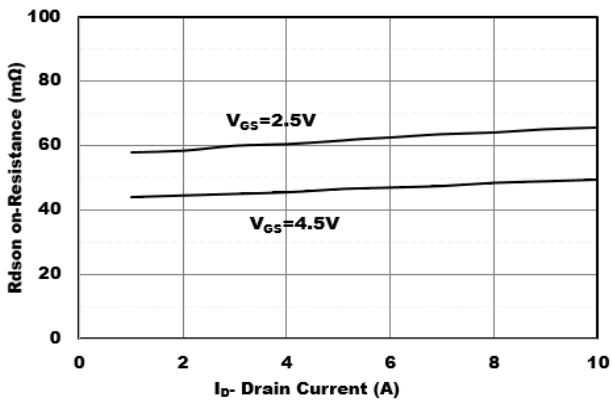


Figure5. Drain-Source on Resistance

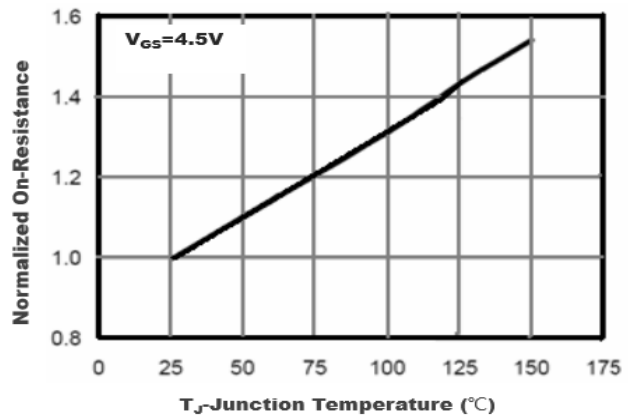


Figure6. Drain-Source on Resistance

ZXL2302B

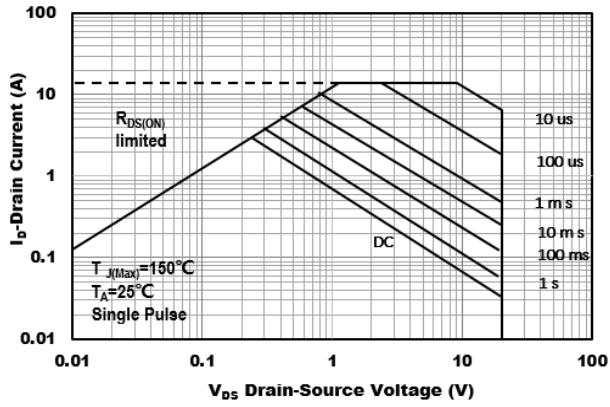


Figure 7. Safe Operation Area

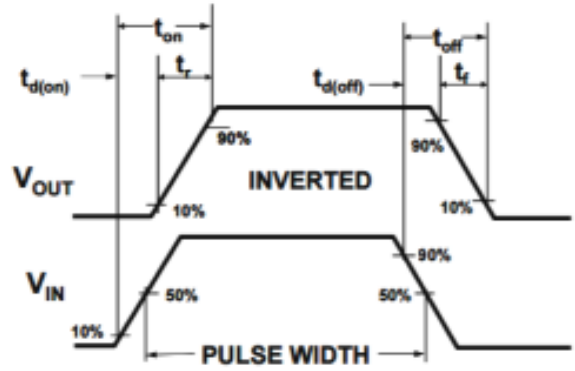


Figure 8. Switching wave

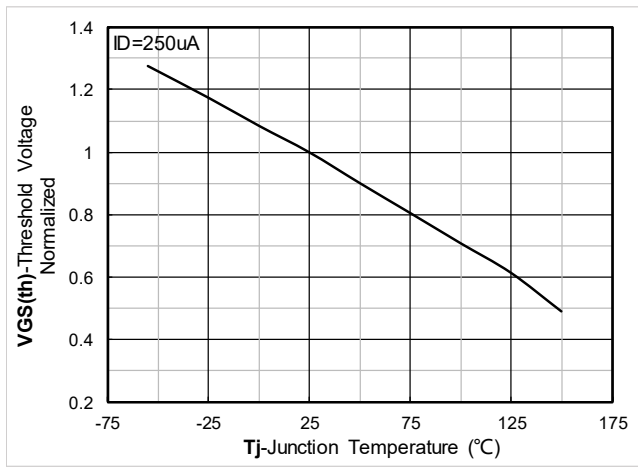


Figure 9. Normalized Threshold voltage

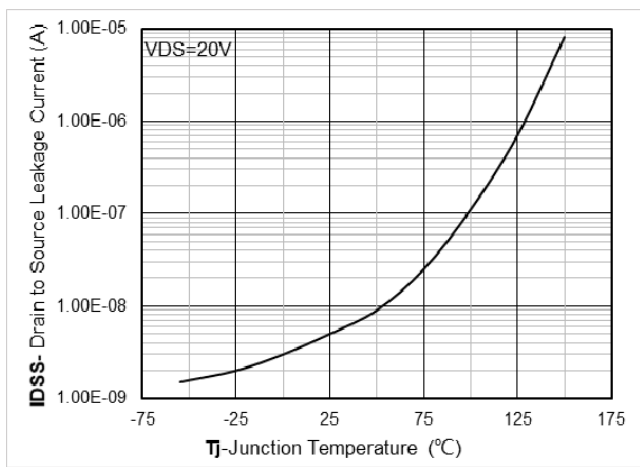
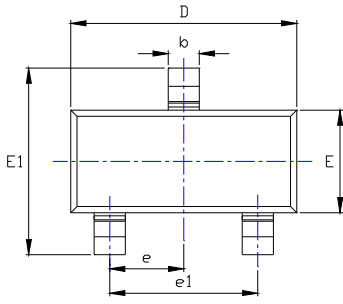


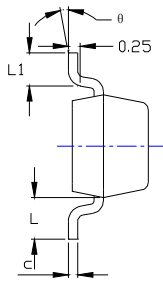
Figure 10. Drain to Source Leakage Current

ZXL2302B

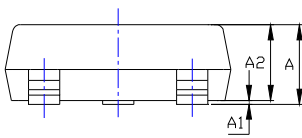
■SOT-23 Package information



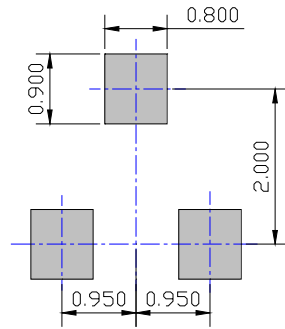
TOP VIEW



SIDE VIEW



SIDE VIEW



UNIT: mm

SUGGESTED SOLDER PAD LAYOUT

SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.045	0.900	1.150
A1	0.000	0.004	0.000	0.100
A2	0.035	0.041	0.900	1.050
b	0.012	0.020	0.300	0.500
c	0.004	0.008	0.100	0.200
D	0.110	0.118	2.800	3.000
E	0.047	0.055	1.200	1.400
E1	0.089	0.100	2.250	2.550
e	0.037TYP		0.950TYP	
e1	0.071	0.079	1.800	2.000
L	0.022REF		0.550REF	
L1	0.012	0.200	0.300	0.500
θ	0°	8°	0°	8°

NOTE:

1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.

2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.

3. THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.