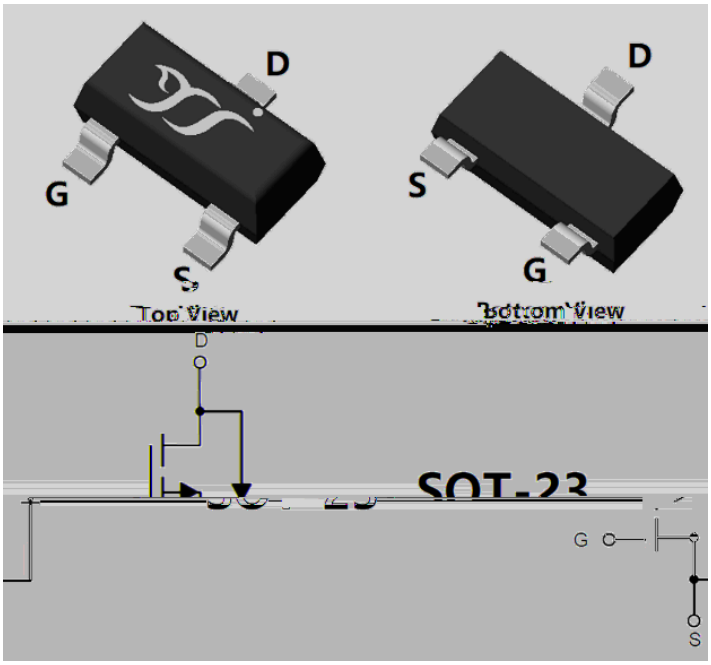
P-Channel Enhancement Mode Field Effect Transistor



Product Summary

- V_{DS} -20V
- I_D -5.4A
- $R_{DS(ON)}$(at V_{GS}=-4.5V) 39mohm
- $R_{DS(ON)}$(at V_{GS}=-2.5V) 49mohm
- $R_{DS(ON)}$(at V_{GS}=-1.8V) 63mohm

General Description

- Trench Power LV MOSFET technology
- High Power and Current handing capability
- Low Gate Charge
- Part no. with suffix “Q” means AEC-Q101 qualified

Applications

- Battery protection
- Power management
- Load switch

■ Absolute Maximum Ratings (T_A=25 unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	-20	V
Gate-source Voltage		V_{GS}	±10	V
Drain Current	T_A=25	I_D	-5.4	A
	T_A=70		-4.4	
Pulsed Drain Current [A]		I_{DM}	-22	A
Total Power Dissipation	T_A=25	P_D	1.2	W
	T_A=70		0.8	W
Thermal Resistance Junction-to-Ambient [B]		$R_{\theta JA}$	104	/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55 +150	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJL2305BQ	F2	$S5_B$	3000	30000	120000	7“ reel

■ Electrical Characteristics (T_J=25 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,Tj=25			-1	μA
		V_{DS}=-20V,V_{GS}=0V,Tj=150		-5		uA
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	-0.4	-0.62	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-5.4A		27	39	mΩ
		V_{GS}=-2.5V, I_D=-4A		36	49	
		V_{GS}=-1.8V, I_D=-3A		48	63	
Diode Forward Voltage	V_{SD}	I_S=-5.4A,V_{GS}=0V			-1.2	V
Gate resistance	R_G	f=1MHz, Open drain	-	14	-	Ω
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V,f=1MHZ		1010		pF
Output Capacitance	C_{oss}			130		
Reverse Transfer Capacitance	C_{rss}			109		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=-4.5V,V_{DS}=-10V,I_D=-4A		9.4		nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			2.3		
Reverse Recovery Chrage	Q_{rr}	I_F=-4A, di/dt=100A/us		4.38		
Reverse Recovery Time	t_{rr}			24.8		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-4.5V, V_{DS}=-10V, R_L=2.5Ω R_{GEN}=3Ω		8.4		
Turn-on Rise Time	t_r			36.2		
Turn-off Delay Time	$t_{D(off)}$			76.8		
Turn-off fall Time	t_f			56.2		

A. Repetitive rating; pulse width limited by max. junction temperature.

B. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in the still air environment with T_A =25 . The maximum allowed junction temperature of 150 . The value in any given application depends on the user's specific board design.

■ Typical Performance Characteristics

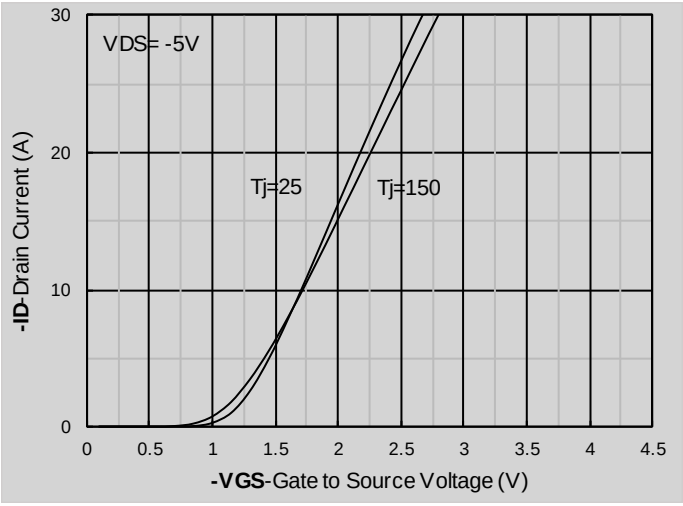


Figure1. Output Characteristics

Figure2. Transfer Characteristics

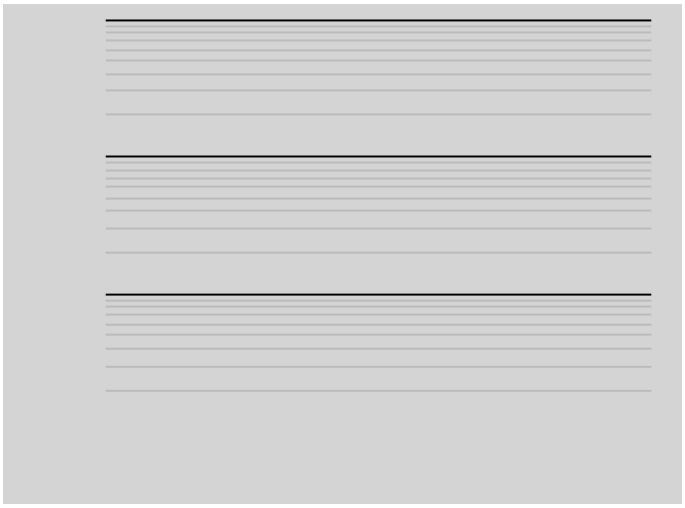


Figure3. Capacitance Characteristics

Figure4. Gate Charge

Figure5. On-Resistance vs Gate to Source Voltage

Figure6. Normalized On-Resistance

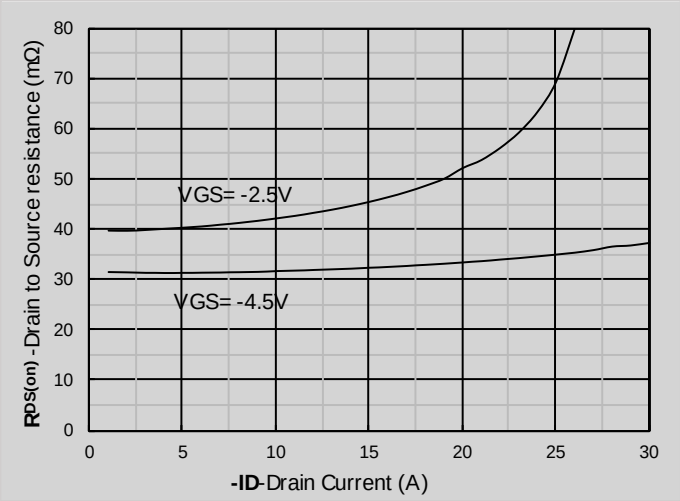


Figure 7. $R_{DS(on)}$ VS Drain Current

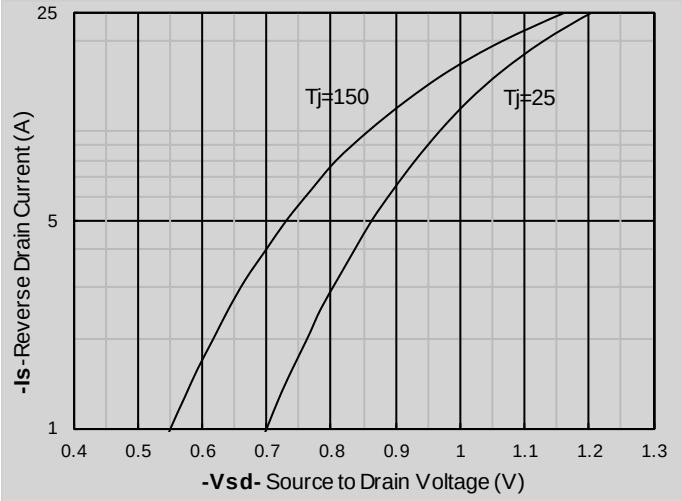


Figure 8. Forward characteristics of reverse diode

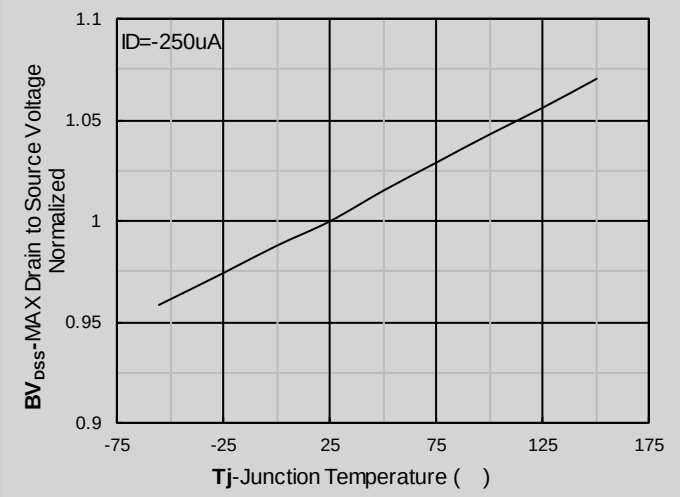


Figure 9. Normalized breakdown voltage

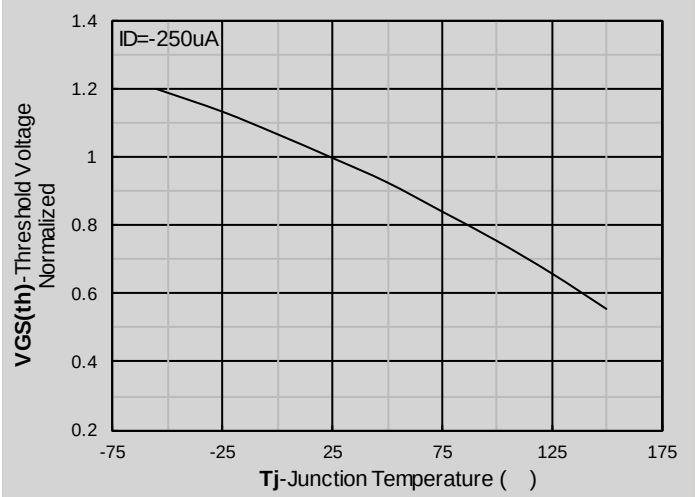


Figure 10. Normalized Threshold voltage

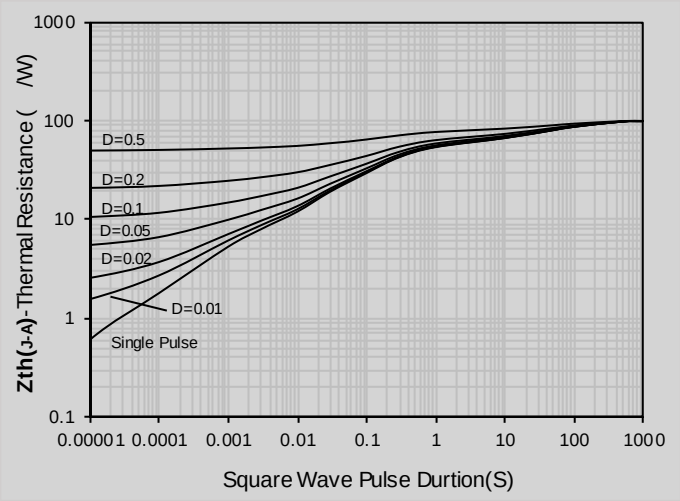


Figure 11. Maximum Transient Thermal Impedance

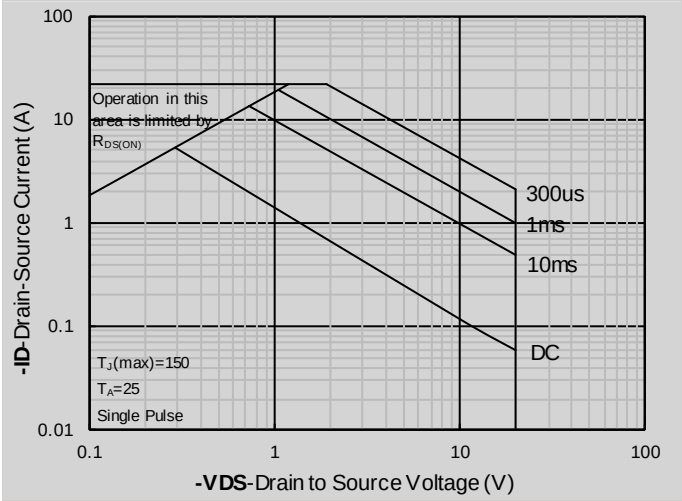
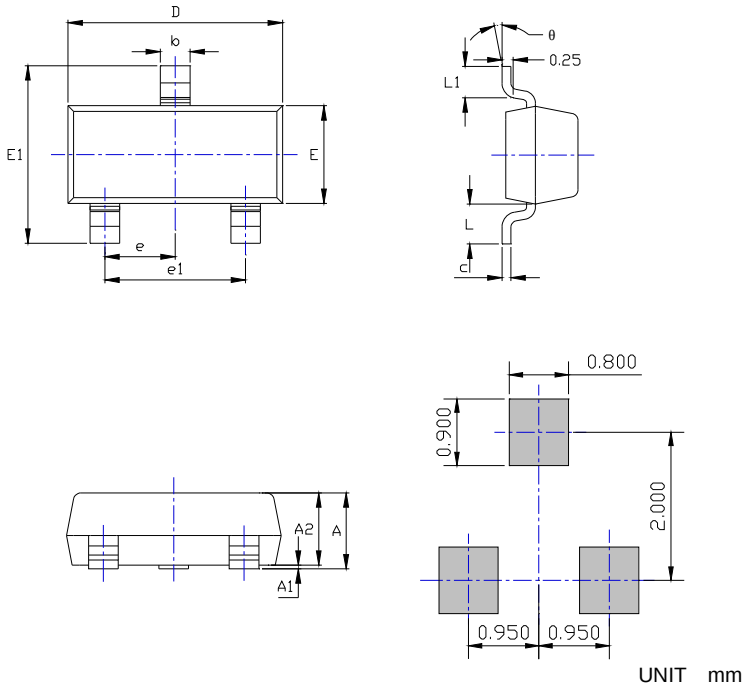


Figure 12. Safe Operation Area

■ SOT-23 Package Outline Dimensions

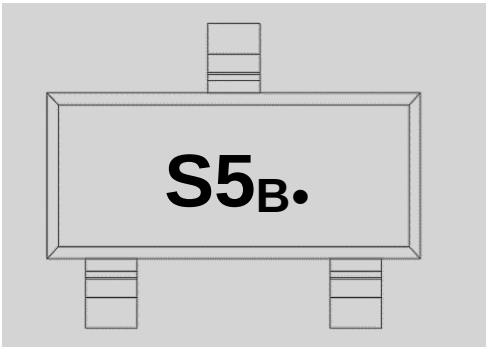


UNIT mm

DIMENSIONS				
SYMBOL	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	0.020	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.

■ Marking Information



Note:
1. All marking is at middle of the product body
2. All marking is in laser marking
3. $S5_B$ is Marking Code
4. Body color: Black

Disclaimer

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