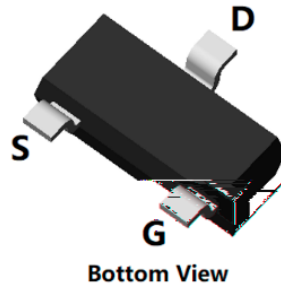
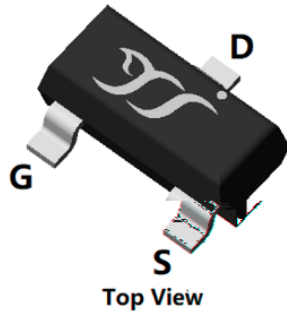
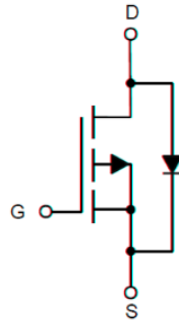


## P-Channel Enhancement Mode Field Effect Transistor



**SOT-23**



### 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 handling 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		$V_{GS}$	$\pm 10$	V
Drain Current	$T_A=25$	$I_D$	-5.4	A
	$T_A=70$		-4.4	
Pulsed Drain Current <sup>A</sup>		$I_{DM}$	-22	A
Total Power Dissipation	$T_A=25$	$P_D$	1.2	W
	$T_A=70$		0.8	W
Thermal Resistance Junction-to-Ambient <sup>B</sup>		$R_{\theta JA}$	104	/ W
Junction and Storage Temperature Range		$T_J, T_{STG}$	-55 +150	

### ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJL2305BQ	F2	S5 <sub>B</sub>	3000	30000	120000	7" reel



# YJL2305BQ

## ■ Electrical Characteristics (T<sub>J</sub>=25 unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-20			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V, T <sub>J</sub> =25			-1	μA
		V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V, T <sub>J</sub> =150		-5		uA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.4	-0.62	-1.0	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5.4A		27	39	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-4A		36	49	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-3A		48	63	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-5.4A, V <sub>GS</sub> =0V			-1.2	V
Gate resistance	R <sub>G</sub>	f=1MHz, Open drain	-	14	-	Ω
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, f=1MHZ		1010		pF
Output Capacitance	C <sub>oss</sub>			130		
Reverse Transfer Capacitance	C <sub>rss</sub>			109		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, I <sub>D</sub> =-4A		9.4		nC
Gate-Source Charge	Q <sub>gs</sub>			1.2		
Gate-Drain Charge	Q <sub>gd</sub>			2.3		
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =-4A, di/dt=100A/us		4.38		ns
Reverse Recovery Time	t <sub>rr</sub>			24.8		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, R <sub>L</sub> =2.5Ω R <sub>GEN</sub> =3Ω		8.4		ns
Turn-on Rise Time	t <sub>r</sub>			36.2		
Turn-off Delay Time	t <sub>D(off)</sub>			76.8		
Turn-off fall Time	t <sub>f</sub>			56.2		

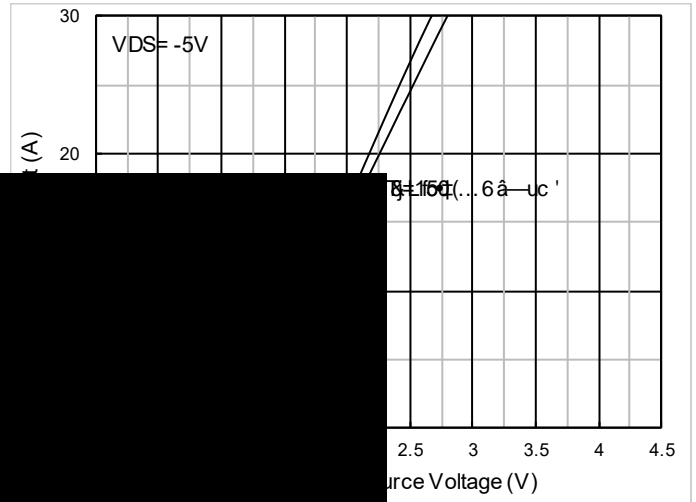
A. Repetitive rating; pulse width limited by max. junction temperature.

B. The value of R<sub>θJA</sub> is measured with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz. Copper, in the still air environment with T<sub>A</sub> =25 . The maximum allowed junction temperature of 150 . The value in any given application depends on the user's specific board design.

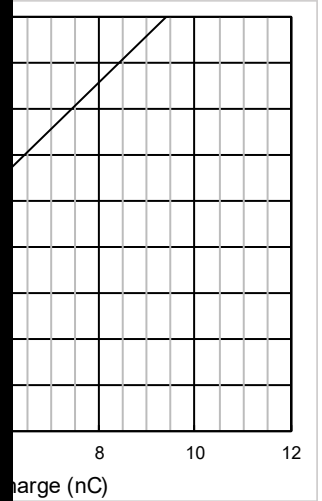


# YJL2305BQ

## ■ Typical Performance Characteristics



Characteristics



Gate Charge

On-Resistance



# YJL2305BQ

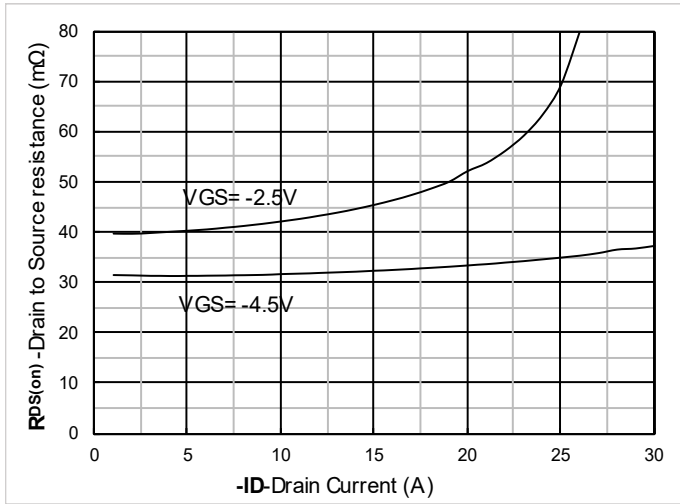


Figure 7.  $R_{DS(on)}$  VS Drain Current

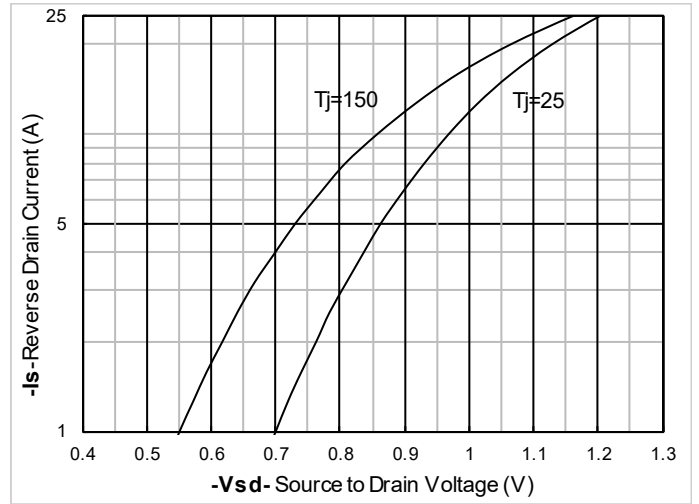


Figure 8. Forward characteristics of reverse diode

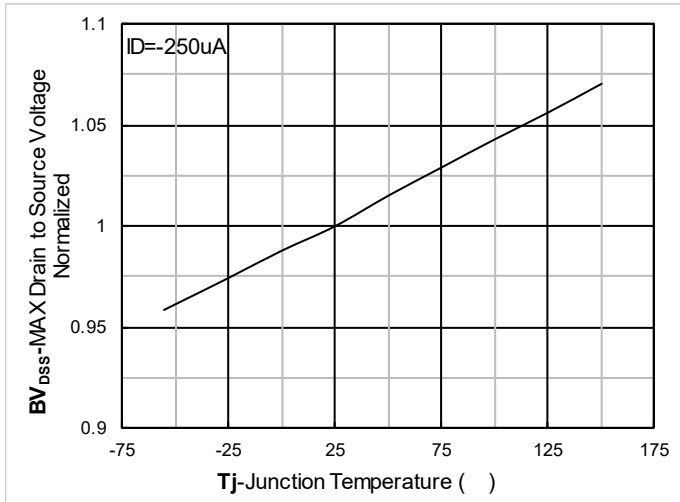


Figure 9. Normalized breakdown voltage

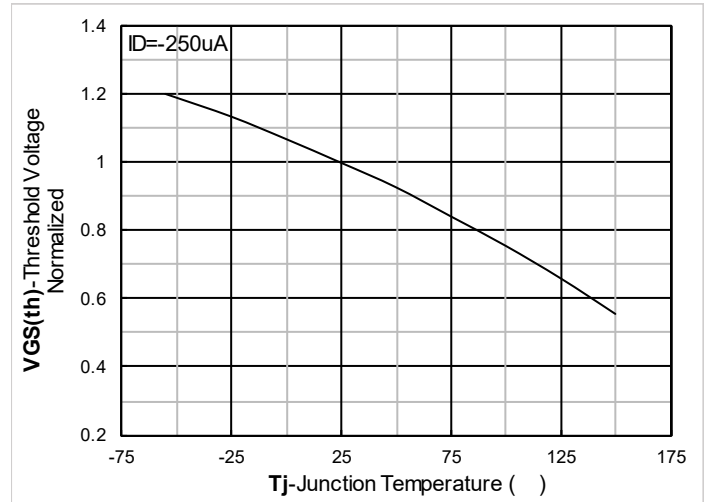


Figure 10. Normalized Threshold voltage

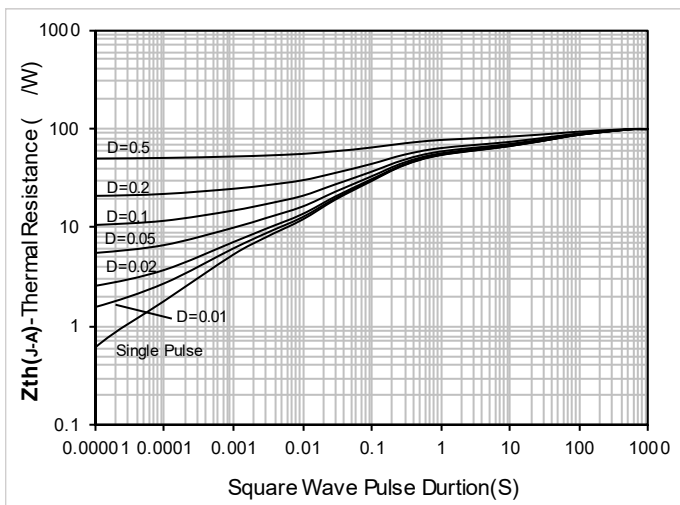


Figure 11. Maximum Transient Thermal Impedance

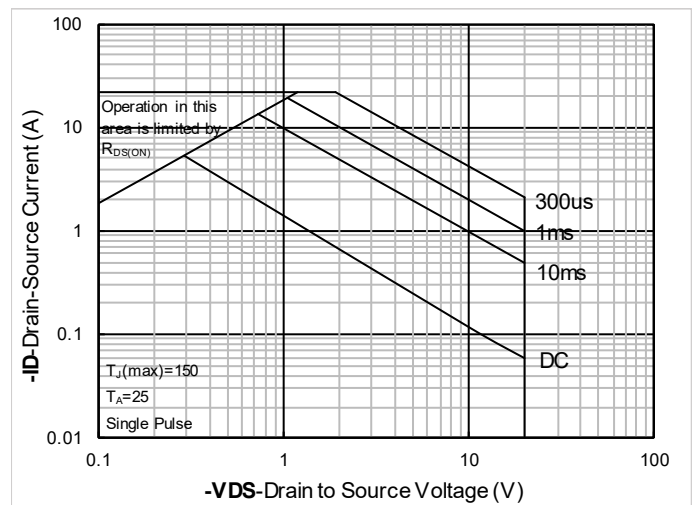
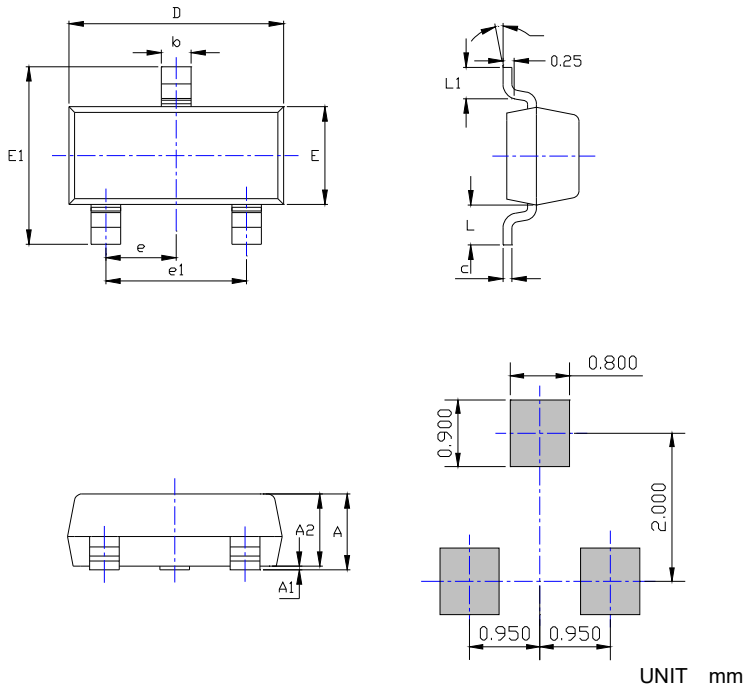


Figure 12. Safe Operation Area



# YJL2305BQ

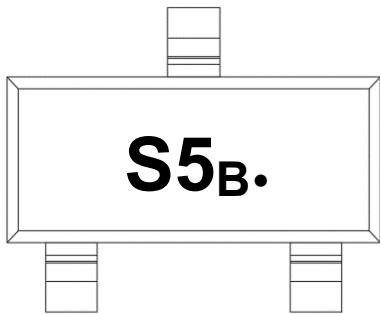
## ■ SOT-23 Package Outline Dimensions



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	0.020	0.300	0.500
	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<sub>B</sub> is Marking Code
  4. Body color: Black



## YJL2305BQ

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### Disclaimer

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