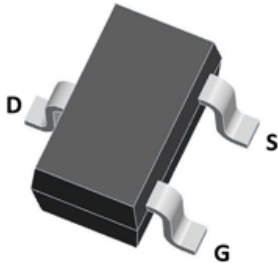
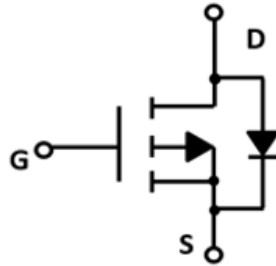
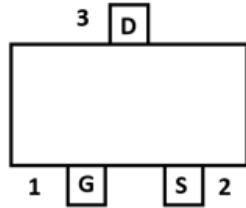


## P-Channel Enhancement Mode Field Effect Transistor



SOT-323



### Product Summary

- $V_{DS}$  -20V
- $I_D$  -1.2A
- $R_{DS(ON)}$ ( at  $V_{GS}=-4.5V$ ) < 130 mohm
- $R_{DS(ON)}$ ( at  $V_{GS}=-2.5V$ ) < 170 mohm
- $R_{DS(ON)}$ ( at  $V_{GS}=-1.8V$ ) < 250 mohm

### General Description

- Trench Power LV MOSFET technology
- Low  $R_{DS(ON)}$
- Low Gate Charge
- Part no. with suffix "Q" means AEC-Q101 qualified

### Applications

- Video monitor
- Power management

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

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	$V_{DS}$	-20	V
Gate-source Voltage	$V_{GS}$	$\pm 10$	V
Drain Current	$I_D$	$T_A=25^\circ C$ @ Steady State	-1.2
		$T_A=70^\circ C$ @ Steady State	-1.0
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	-9.6	A
Total Power Dissipation @ $T_A=25^\circ C$	$P_D$	300	mW
Thermal Resistance Junction-to-Ambient <sup>B</sup>	$R_{\theta JA}$	400	$^\circ C/W$
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	$^\circ C$

### ■ Ordering Information

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJL2101WQ	F2	TS1.	3000	30000	120000	7" reel



# YJL2101WQ

## ■ Electrical Characteristics (T<sub>J</sub>=25°C 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>A</sub> =25°C			-1	μA
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	-0.3	-0.6	-1.0	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> =-1.5A		100	130	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> =-1.2A		135	170	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> =-1.0A		180	250	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-2.0A, V <sub>GS</sub> =0V		-0.9	-1.2	V
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, f=1MHZ		210		pF
Output Capacitance	C <sub>OSS</sub>			37		
Reverse Transfer Capacitance	C <sub>RSS</sub>			30		
<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> =-1.2A		2.9		nC
Gate Source Charge	Q <sub>gs</sub>			0.65		
Gate Drain Charge	Q <sub>gd</sub>			0.7		
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>SD</sub> =-1.2A, di/dt=60A/us		0.9		nC
Reverse Recovery Time	t <sub>rr</sub>			5.4		ns
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, I <sub>D</sub> =-1.2A, R <sub>g</sub> =3Ω		4.8		ns
Turn-on Rise Time	t <sub>r</sub>			22		
Turn-off Delay Time	t <sub>D(off)</sub>			21		
Turn-off Fall Time	t <sub>f</sub>			28		

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

B. Device mounted on FR-4 PCB, 1 mm x 17mm x 15mm.



## Typical Performance Characteristics

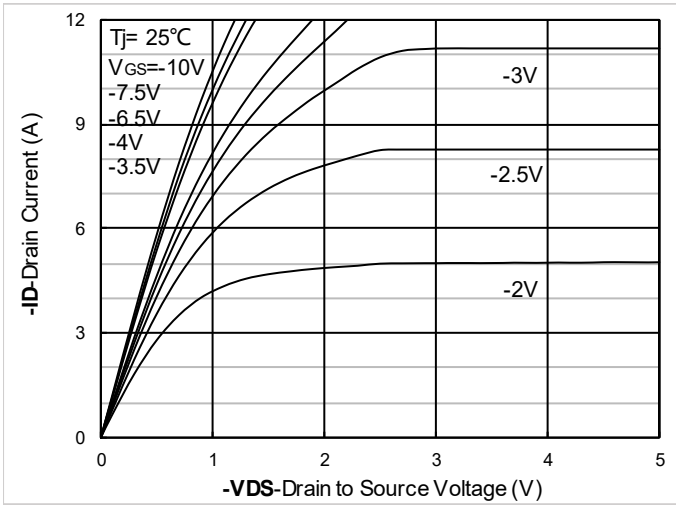


Figure1. Output Characteristics

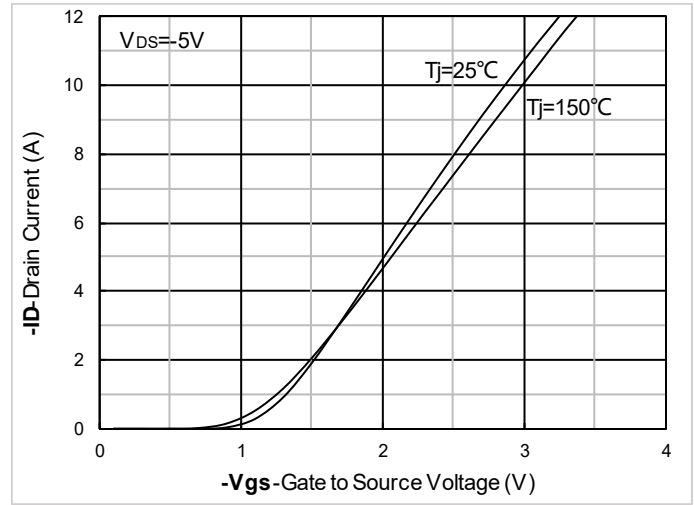


Figure2. Transfer Characteristics

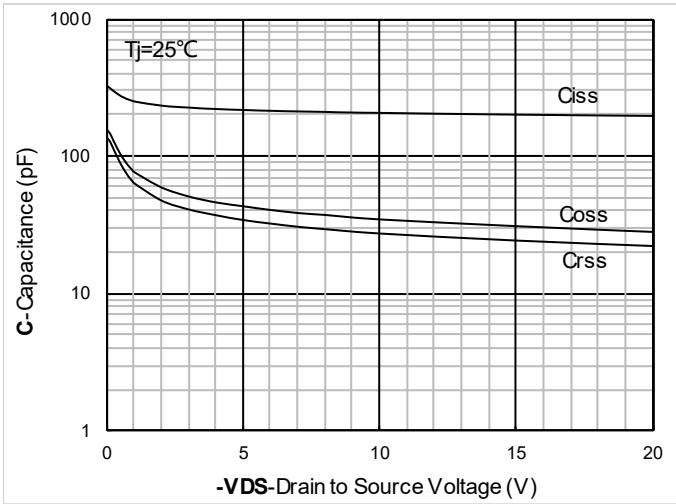


Figure3. Capacitance Characteristics

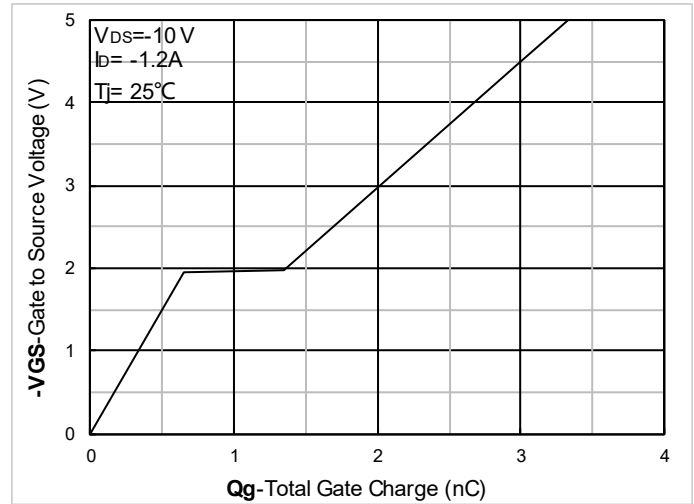


Figure4. Gate Charge

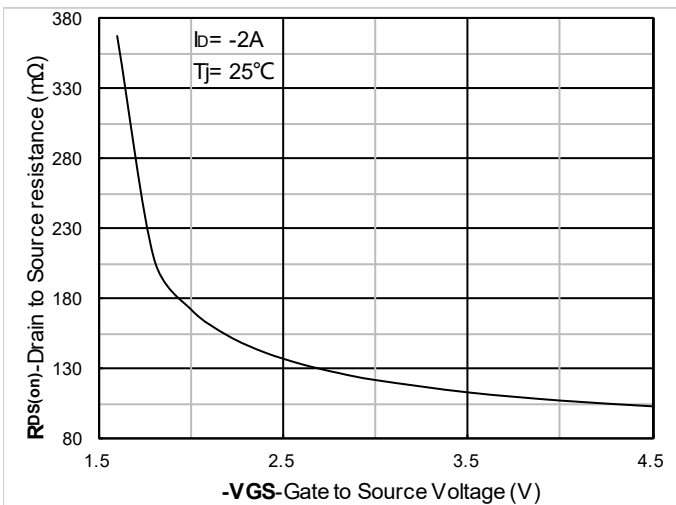


Figure5. On-Resistance vs Gate to Source Voltage

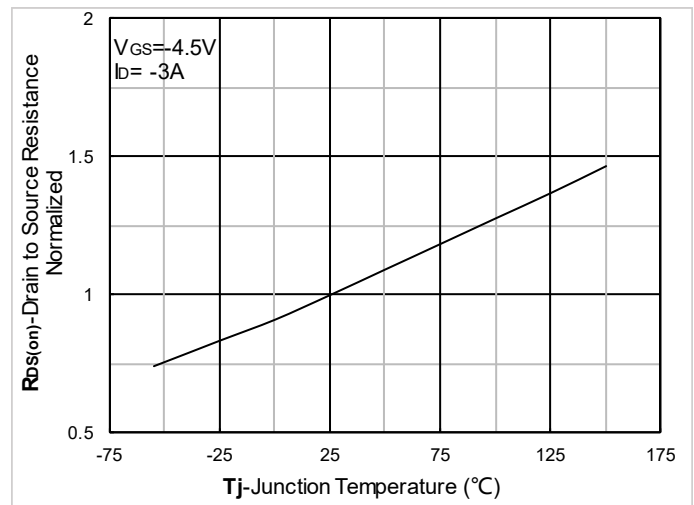


Figure6. Normalized On-Resistance



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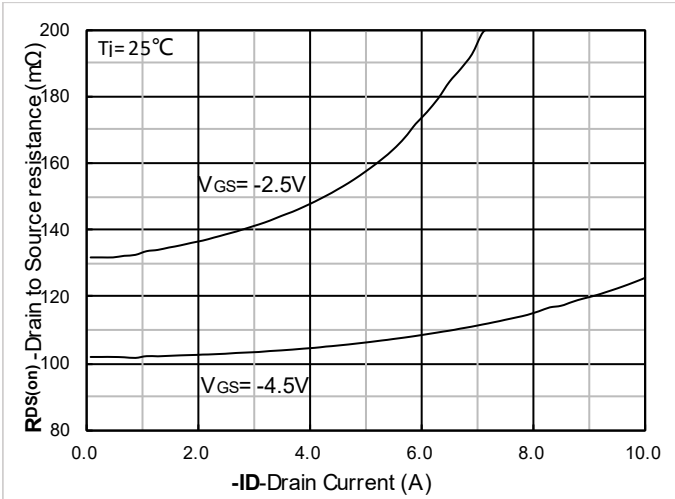


Figure 7.  $R_{DS(on)}$  VS Drain Current

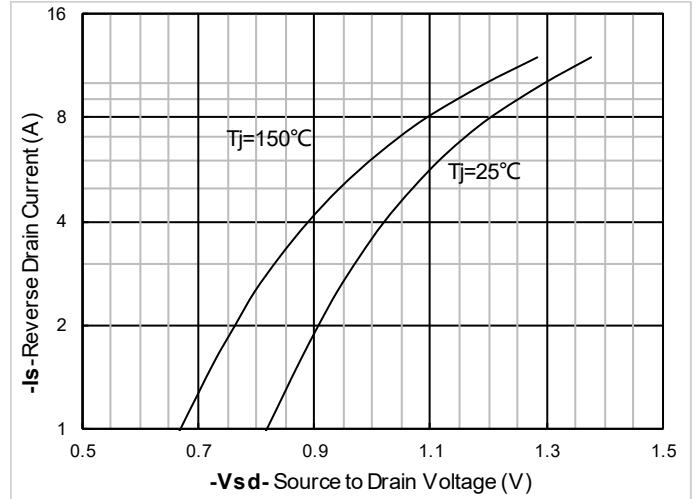


Figure 8. Forward characteristics of reverse diode

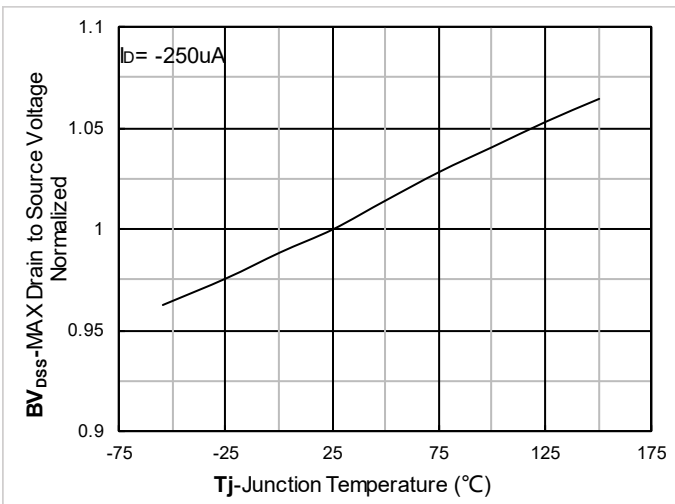


Figure 9. Normalized breakdown voltage

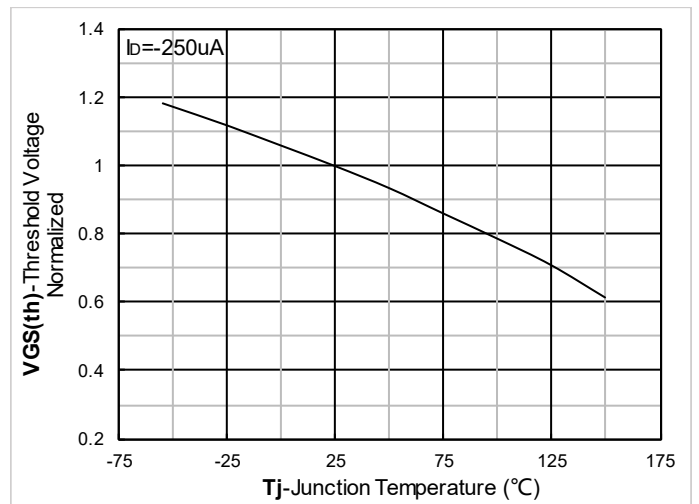


Figure 10. Normalized Threshold voltage

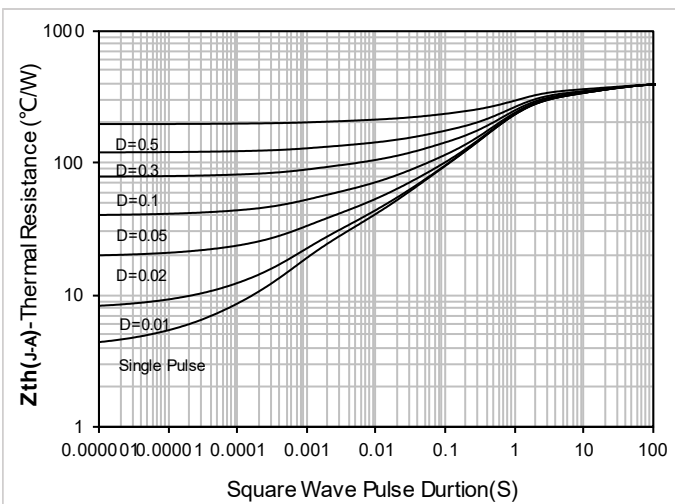


Figure 11. Maximum Transient Thermal Impedance

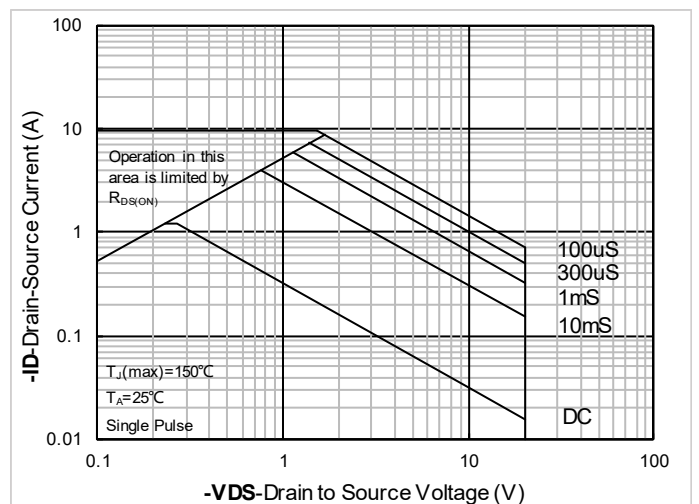
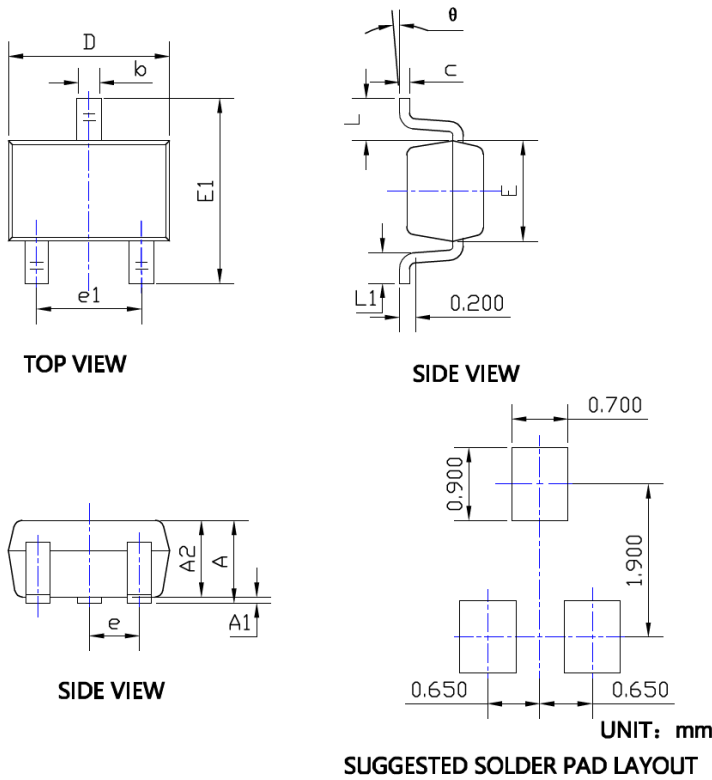


Figure 12. Safe Operation Area



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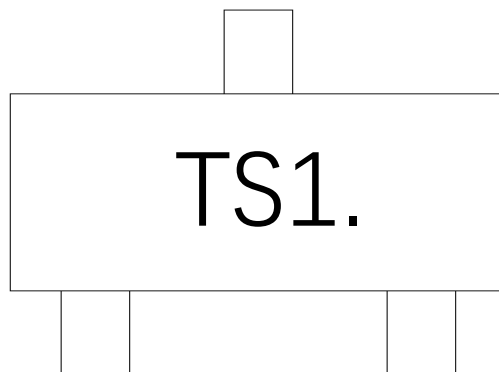
## ■ SOT-323 Package Outline Dimensions



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.043	0.900	1.100
A1	0.000	0.004	0.000	0.100
A2	0.035	0.039	0.900	1.000
b	0.006	0.016	0.150	0.400
c	0.004	0.010	0.100	0.250
D	0.071	0.087	1.800	2.200
E	0.045	0.053	1.150	1.350
E1	0.085	0.096	2.150	2.450
e	0.026TYP		0.650TYP	
e1	0.047	0.055	1.200	1.400
L	0.021REF		0.525REF	
L1	0.010	0.018	0.260	0.460
θ	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. TS1 is Marking Code
4. Body color: Black



## Disclaimer

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