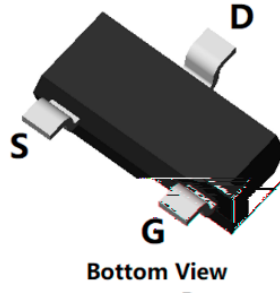
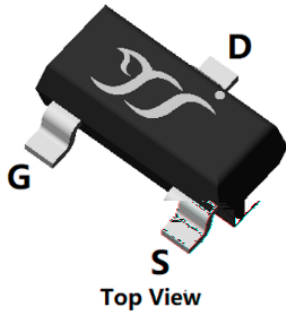
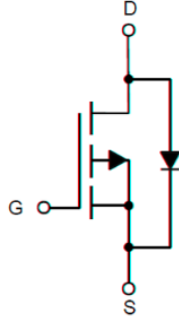


## P-Channel Enhancement Mode Field Effect Transistor



**SOT-23**



### Product Summary

• $V_{DS}$	-30V
• $I_D$	-4.4A
• $R_{DS(ON)}$ ( at $V_{GS}=-10V$ )	55mohm
• $R_{DS(ON)}$ ( at $V_{GS}=-4.5V$ )	68mohm
• $R_{DS(ON)}$ ( at $V_{GS}=-2.5V$ )	96mohm

### General Description

- Trench Power LV MOSFET technology
- High density cell design for Low  $R_{DS(ON)}$
- High Speed switching
- Part no. with suffix "Q" means AEC-Q101 qualified

### Applications

- Battery protection
- Power management
- Load switch
- 12V Automotive systems

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		$V_{DS}$	-30	V
Gate-source Voltage		$V_{GS}$	$\pm 12$	V
Drain Current	$T_A=25^\circ\text{C}$	$I_D$	-4.4	A
	$T_A=125^\circ\text{C}$		-1.9	
Pulsed Drain Current <sup>A</sup>		$I_{DM}$	-27	A
Total Power Dissipation	$T_A=25^\circ\text{C}$	$P_D$	1.2	W
	$T_A=125^\circ\text{C}$		0.2	W
Thermal Resistance Junction-to-Ambient <sup>B</sup>		$R_{\theta JA}$	104	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		$T_J, T_{STG}$	-55 +150	$^\circ\text{C}$

### ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJL3401AQ	F2	3401.	3000	30000	120000	7" reel



# YJL3401AQ

## ■ 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	-30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V			-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	-0.6	-0.9	-1.4	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-4.4A		45.5	55	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4A		52	68	
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2A		64	96	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-4.4A, V <sub>GS</sub> =0V			-1.2	V
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHZ		1040		pF
Output Capacitance	C <sub>oss</sub>			80		
Reverse Transfer Capacitance	C <sub>rss</sub>			68		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-4.4A		18		nC
Gate-Source Charge	Q <sub>gs</sub>			2.85		
Gate-Drain Charge	Q <sub>gd</sub>			1.5		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-4.4A R <sub>GEN</sub> =3Ω		5.0		ns
Turn-on Rise Time	t <sub>r</sub>			30		
Turn-off Delay Time	t <sub>D(off)</sub>			29		
Turn-off fall Time	t <sub>f</sub>			48		

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 the minimum recommend pad size, in the still air environment with T<sub>A</sub>=25°C. The maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

\*



## ■ Typical Performance Characteristics

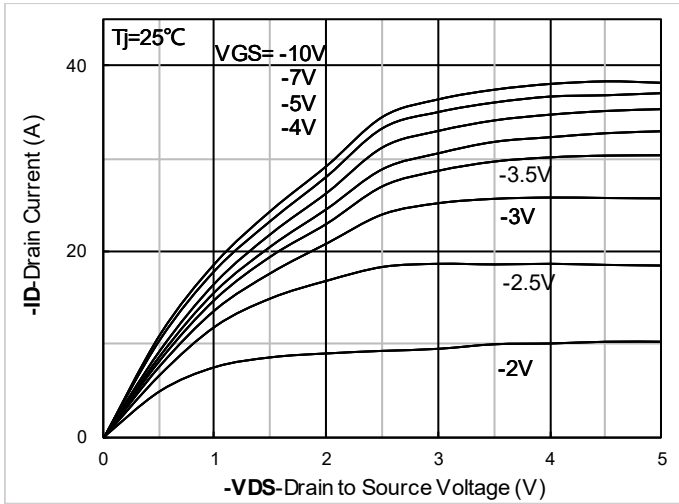


Figure1. Output Characteristics

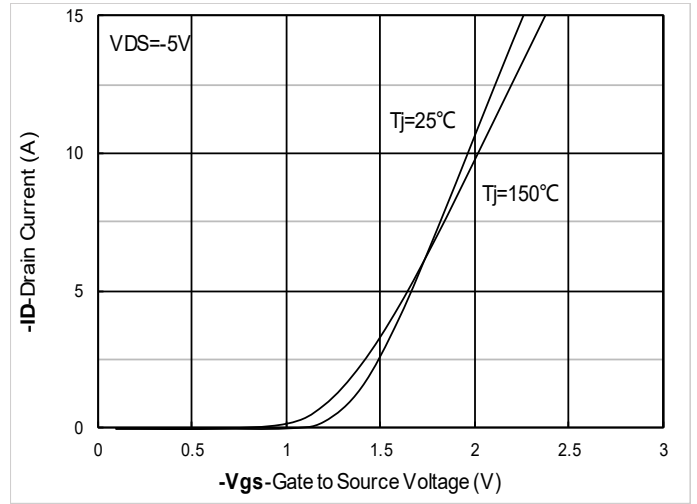


Figure2. Transfer Characteristics

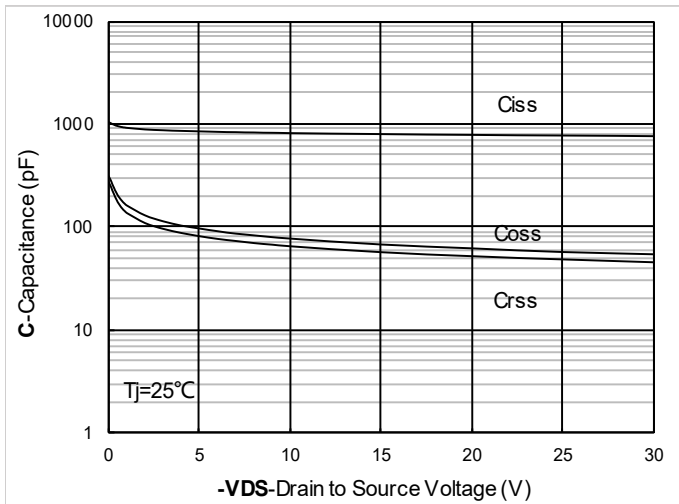


Figure3. Capacitance Characteristics

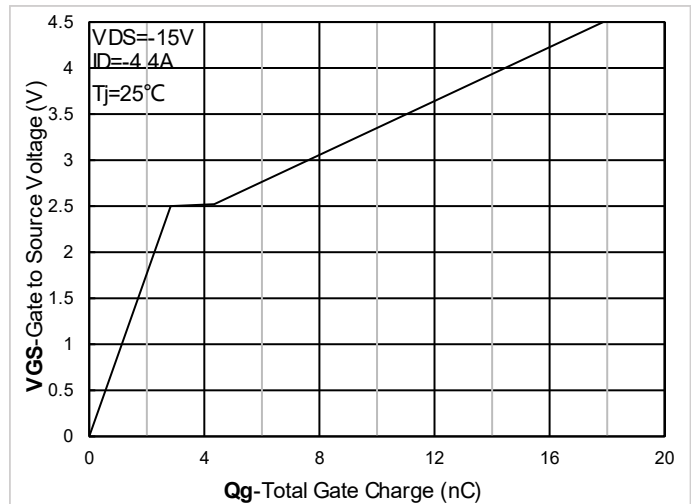


Figure4. Gate Charge

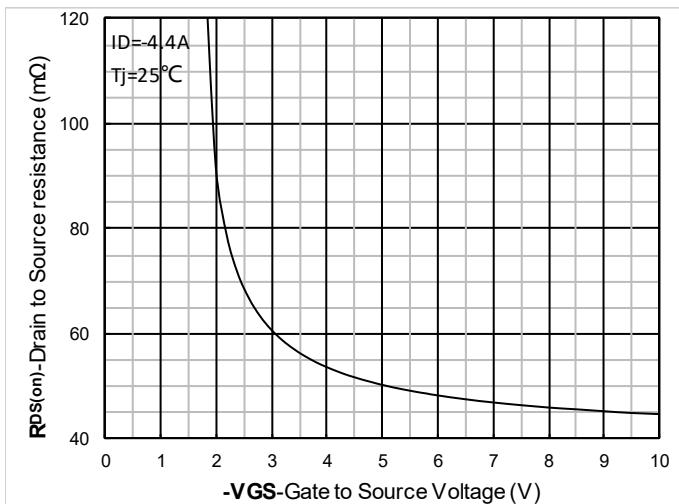


Figure5. On-Resistance vs Gate to Source Voltage

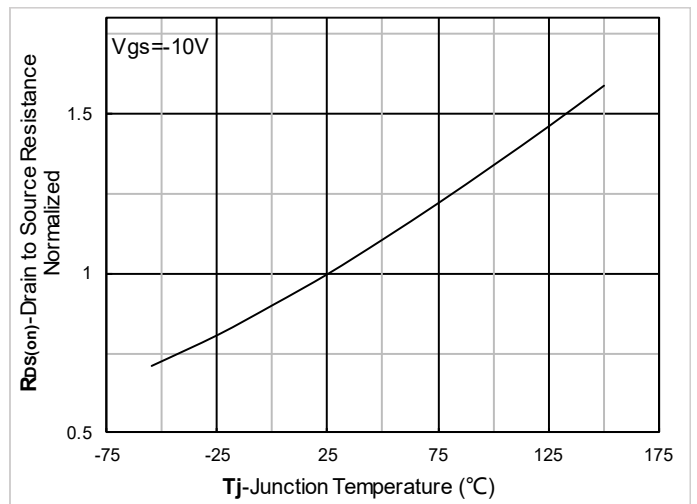


Figure6. Normalized On-Resistance



# YJL3401AQ

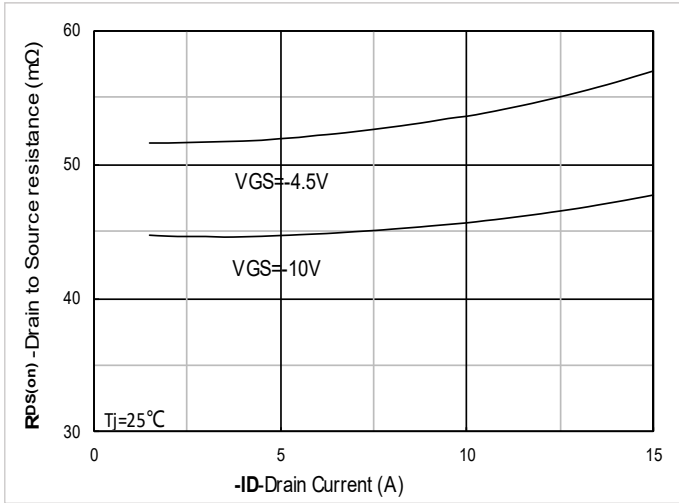


Figure 7. RDS(on) VS Drain Current

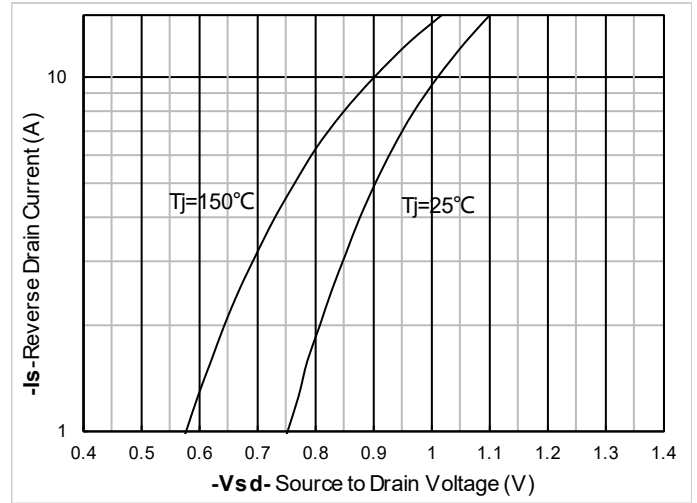


Figure 8. Forward characteristics of reverse diode

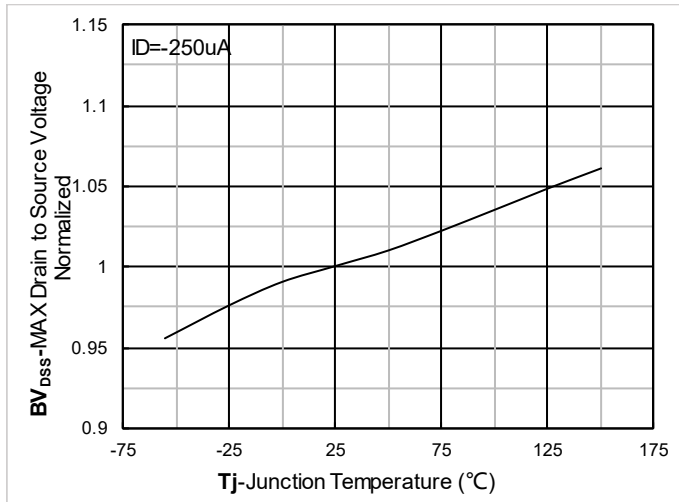


Figure 9. Normalized breakdown voltage

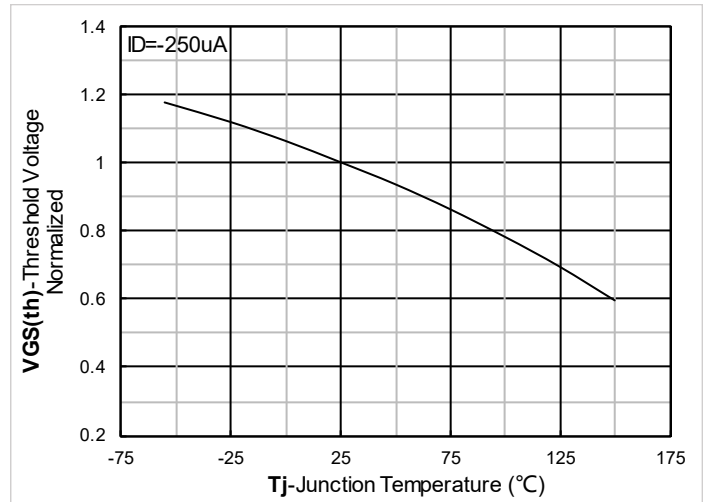


Figure 10. Normalized Threshold voltage

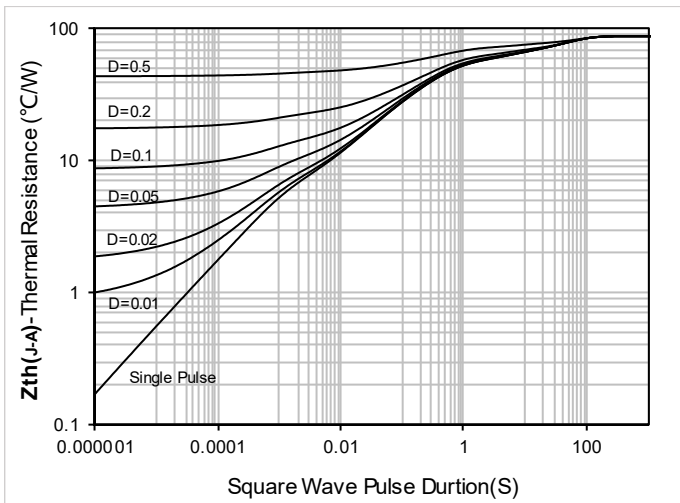


Figure 11. Maximum Transient Thermal Impedance

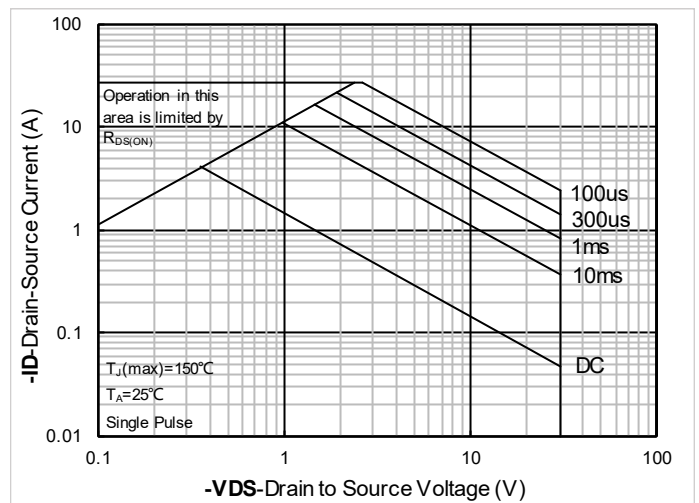


Figure 12. Safe Operation Area

## ■ Test Circuits & Waveforms

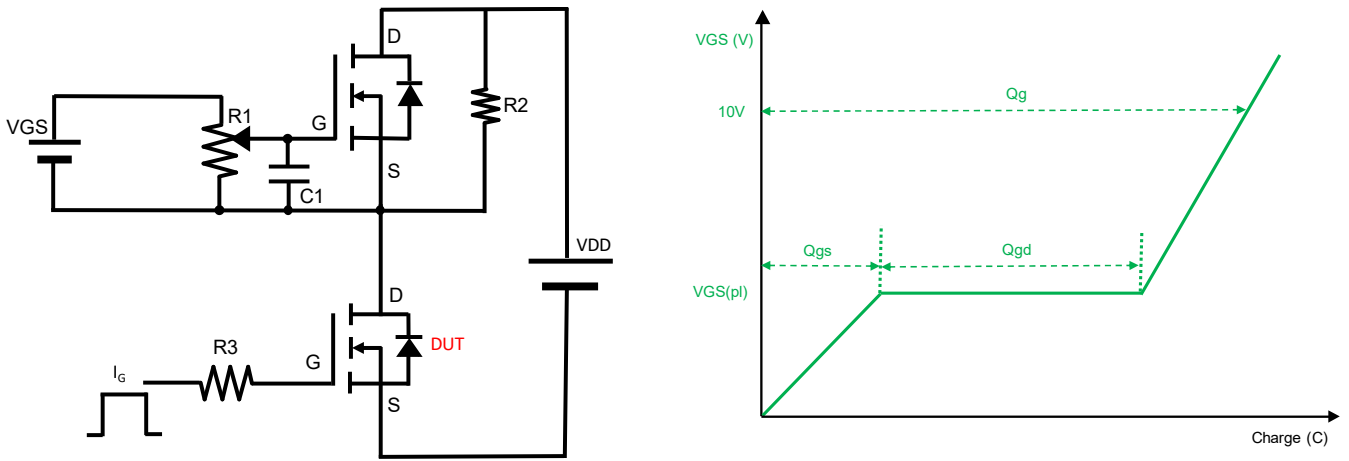


Figure A. Gate Charge Test Circuit & Waveform

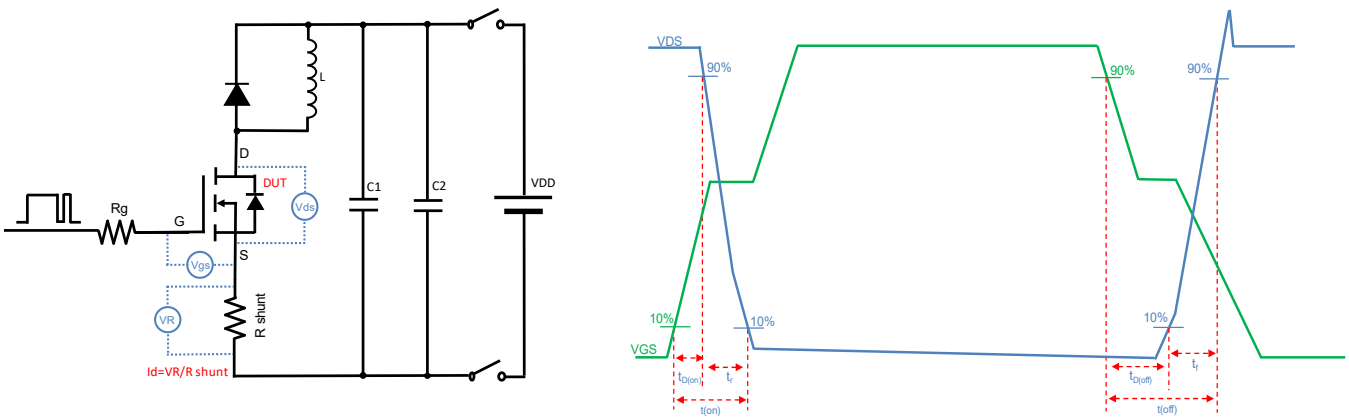


Figure B. Resistive Switching Test Circuit & Waveform

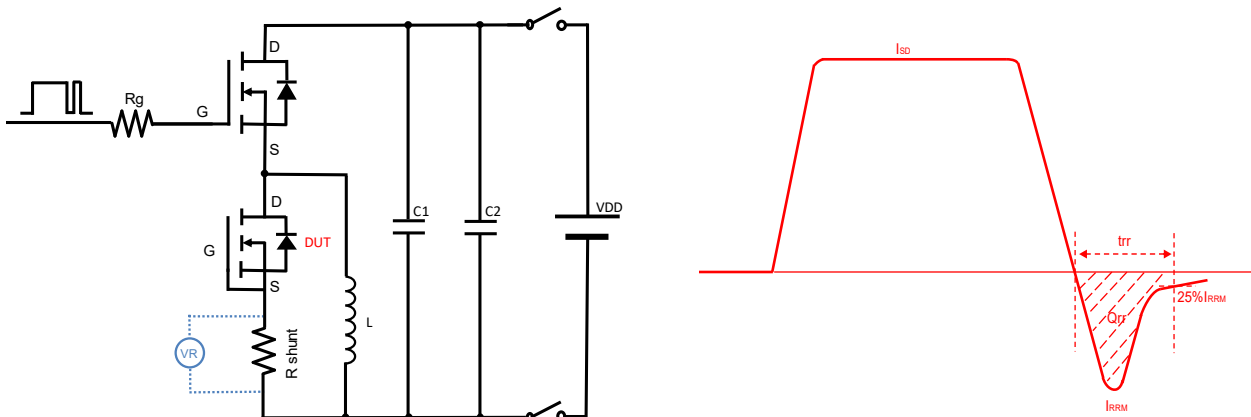
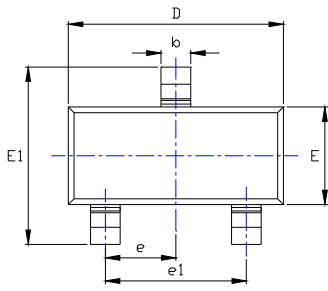


Figure C. Diode Recovery Test Circuit & Waveform

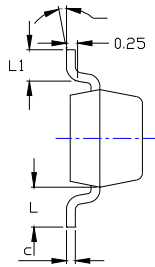


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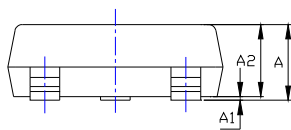
## ■ SOT-23 Package information



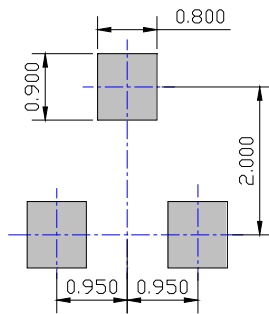
TOP VIEW



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	0.020	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. 3401 is Marking Code
4. Body color: Black



## Disclaimer

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