



**THE DATASHEET OF  
ZLLS400QTA**



## Product Summary

$V_R$ (V)	$I_F$ (A)	$V_F$ Max @ 400mA (V)	$I_R$ Max @ 30V ( $\mu$ A)
40	0.52	0.5	10

## Features and Benefits

- Low Equivalent On-Resistance
- Extremely Low Leakage (10 $\mu$ A @30V)
- High Current Capability ( $I_F = 0.52$ A)
- Low  $V_F$ , Fast Switching Schottky
- ZLLS400 Complements Low Temperature Equivalent ZHCS400
- Package Thermally Rated to +150°C
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The ZLLS400Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

## Description and Applications

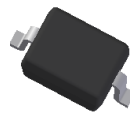
This compact SOD323 packaged Schottky diode offers users an excellent performance combination comprising high current operation, extremely low leakage and low forward voltage, ensuring suitability for applications requiring efficient operation at higher temperatures (above +85°C). See *Operational Efficiency Chart* on page 3.

- DC-DC converters
- Mobile telecoms
- Charging circuits
- Motor controls

## Mechanical Data

- Package: SOD323
- Package Material: UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish – Matte Tin Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.004 grams (Approximate)

SOD323



Top View

## Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
ZLLS400QTA	SOD323	3,000	Tape & Reel
ZLLS400QTC	SOD323	10,000	Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



40 = Product Type Marking Code

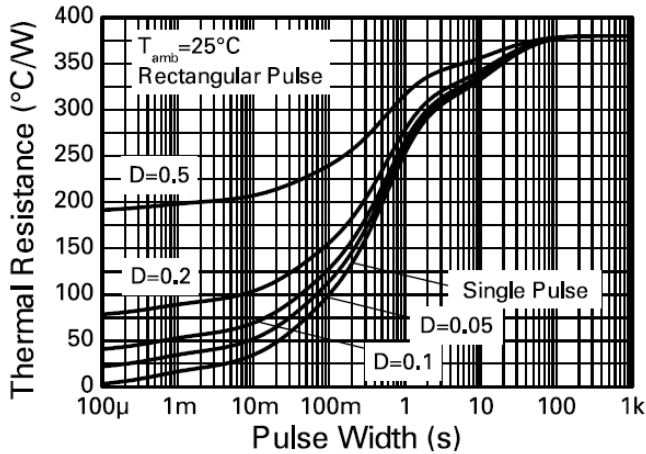
Top View

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

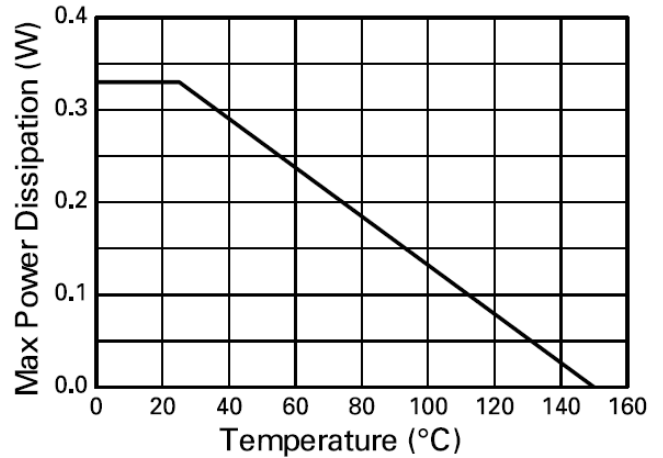
Characteristic	Symbol	Value	Units
Continuous Reverse Voltage	V <sub>R</sub>	40	V
Continuous Forward Current	I <sub>F</sub>	0.52	A
Peak Repetitive Forward Current Rectangular Pulse Duty Cycle	I <sub>FPK</sub>	0.85	A
Non Repetitive Forward Current	I <sub>FSM</sub>	t ≤ 100μs	12
		t ≤ 10ms	2.5

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation, T <sub>A</sub> = +25°C Single Die Continuous Single Die Measured at t < 5 secs	P <sub>D</sub>	330 390	mW
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	379 317	°C/W
Junction Temperature	T <sub>J</sub>	+150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C



**Transient Thermal Impedance**



**Derating Curve**

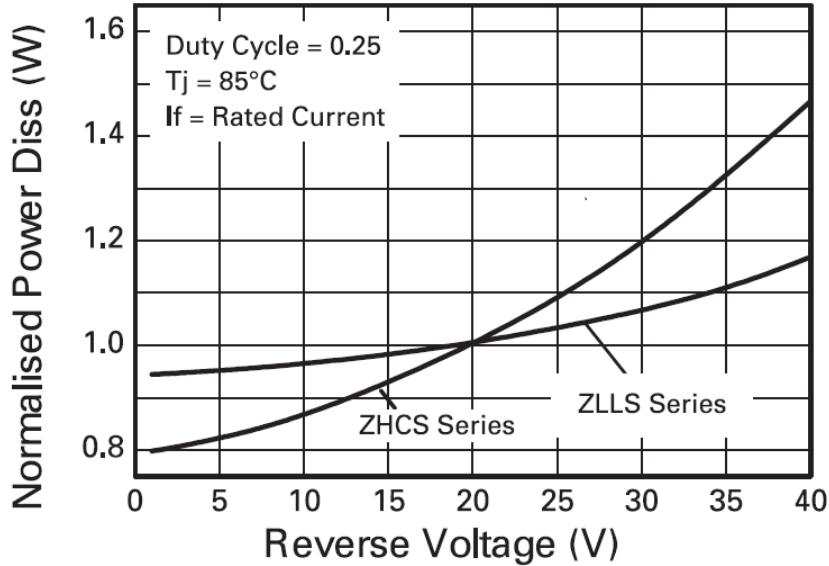
Notes: 5. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.  
6. For a device surface-mounted on FR4 PCB measured at t < 5 secs.

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage	V <sub>(BR)R</sub>	40	60	—	V	I <sub>R</sub> = 200μA
Forward Voltage (Note 7)	V <sub>F</sub>	—	305	360	mV	I <sub>F</sub> = 50mA
		—	335	390		I <sub>F</sub> = 100mA
		—	395	450		I <sub>F</sub> = 250mA
		—	445	500		I <sub>F</sub> = 400mA
		—	550	630		I <sub>F</sub> = 750mA
		—	620	710		I <sub>F</sub> = 1A
		—	710	800		I <sub>F</sub> = 1.5A
		—	405	—		I <sub>F</sub> = 400mA, T <sub>A</sub> = +100°C
Reverse Current	I <sub>R</sub>	—	6	10	μA	V <sub>R</sub> = 30V
		—	370	—		V <sub>R</sub> = 30V, T <sub>A</sub> = +85°C
Diode Capacitance	C <sub>D</sub>	—	15	—	pF	f = 1MHz, V <sub>R</sub> = 30V
Reverse Recovery Time	t <sub>rr</sub>	—	3	—	ns	Switched from I <sub>F</sub> = 500mA to V <sub>R</sub> = 5.5V Measured @ I <sub>R</sub> = 50mA
Reverse Recovery Charge	Q <sub>rr</sub>	—	210	—	pC	dI/dt = 500mA/ns R <sub>source</sub> = 6Ω, R <sub>load</sub> = 10Ω

Note: 7. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%.

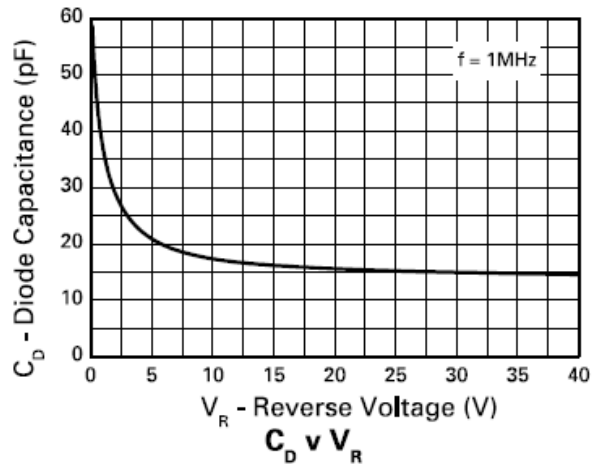
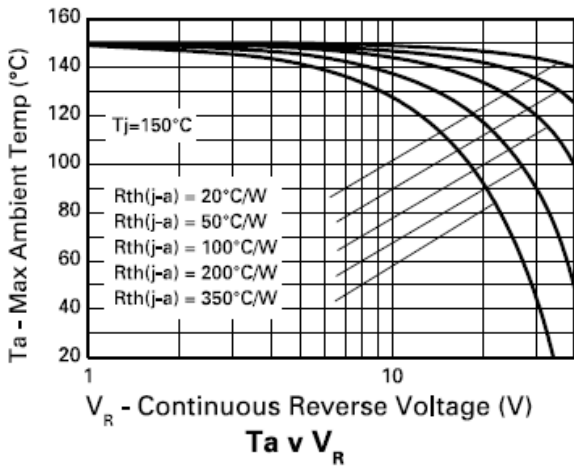
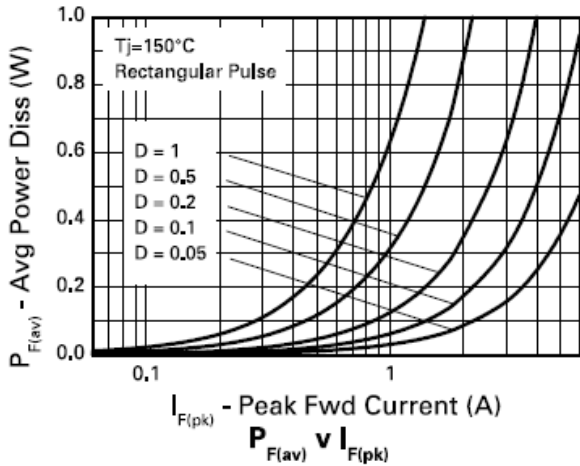
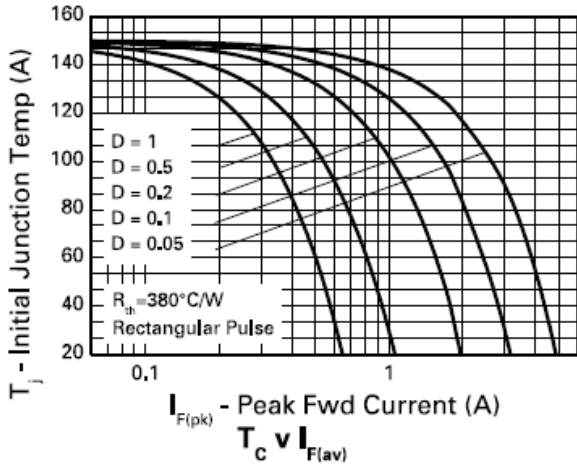
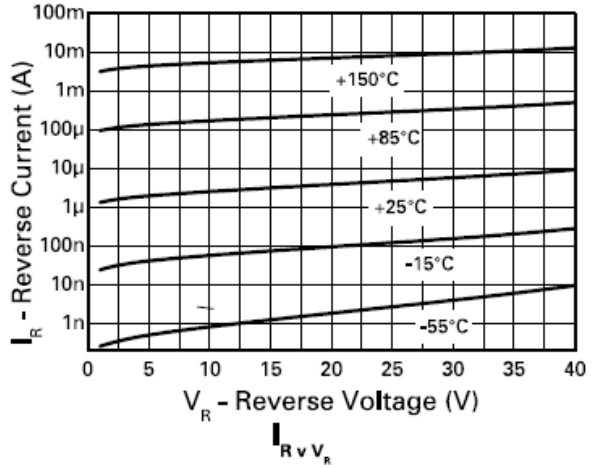
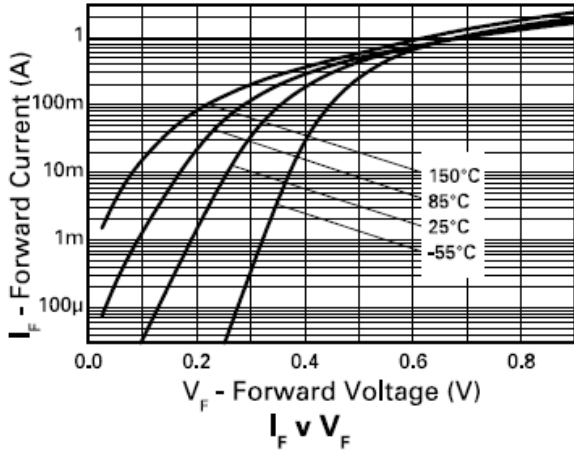
**Operational Efficiency Chart**



**Operational Efficiency Example**

The operational efficiency chart indicates the beneficial use of the ZLLS series diodes in applications requiring higher voltage and higher temperature operation. Circuits requiring low voltage, low temperature operation will benefit from using Diodes Incorporated's low V<sub>F</sub> ZHCS series.

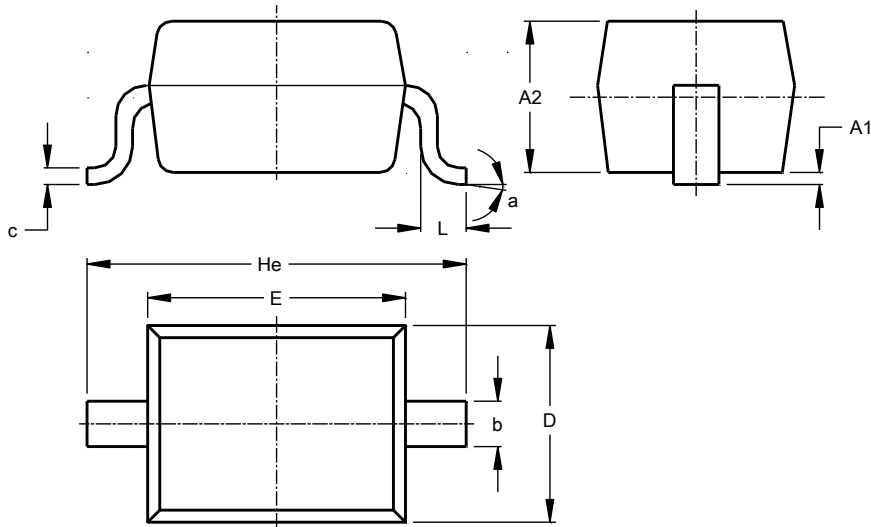
**Operational Efficiency Chart** (continued)



## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD323

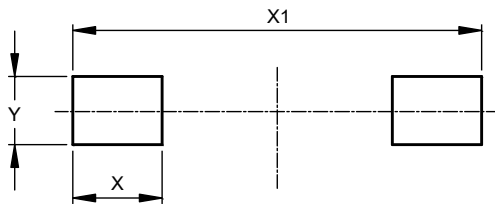


SOD323			
Dim	Min	Max	Typ
A1	--	0.10	0.05
A2	1.00	1.10	1.05
b	0.25	0.35	0.30
c	0.10	0.15	0.11
D	1.20	1.40	1.30
E	1.60	1.80	1.70
He	2.30	2.70	2.50
L	0.20	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD323



Dimensions	Value (in mm)
X	0.590
X1	2.700
Y	0.450

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