40V SURFACE-MOUNT SCHOTTKY BARRIER DIODE

Product Summary (@T_A = +25°C)

V_{RRM} (V)	I_O (A)	$V_{F(MAX)}$ (V)	$I_{R(MAX)}$ (µA)
40	0.4	0.5	40

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. It is qualified by AEC-Q101, supported by a PPAP and is ideal for use in:

- DC-DC converters
- Mobile telecoms
- Blocking diodes
- Reverse polarity protections

Features and Benefits

- High-Current Capability (I_F = 0.40A)
- Miniature Surface-Mount Package
- Low V_F, Fast Switching Schottky
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The ZHCS400Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

Mechanical Data

- Package: SOD323
- Package Material: Molded Plastic, "Green" Molding Compound. 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

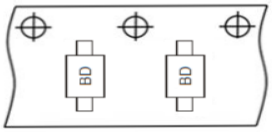
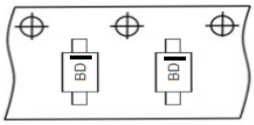
Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
ZHCS400QTA	SOD323	3,000	Tape & Reel
ZHCS400QTC	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

BD = Product Type Marking Code

Before Date Code 2428 (YYWW)	From Date Code 2428 (YYWW) (Including 2428)
Anode BD Cathode	Anode BD Cathode
	

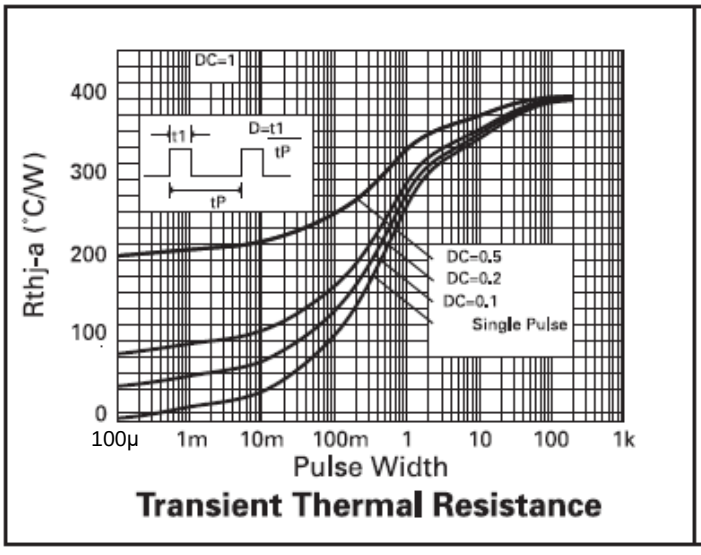
Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Continuous Reverse Voltage		V_R	40	V
Average Rectified Output Current		I_O	400	mA
Average Peak Forward Current, D.C. = 50%		$I_{F(AV)}$	1000	mA
Non Repetitive Forward Current	t ≤ 100µs	I_{FSM}	6.75	A
	t ≤ 10ms		3	A
Human Body Mode ESD Protection		ESD HBM	4000	V
Machine Model ESD Protection		ESD MM	400	V
Charged Device Model		ESD CDM	1	kV

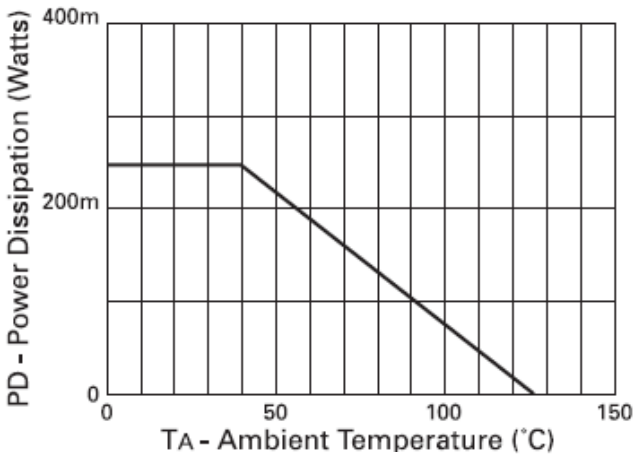
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	500	°C/W
Power Dissipation, T_A = +25°C	P_D	250	mW
Junction Temperature	T_J	+125	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Note: 5. 1*MRP FR-4 PC board, 2oz.



Transient Thermal Resistance

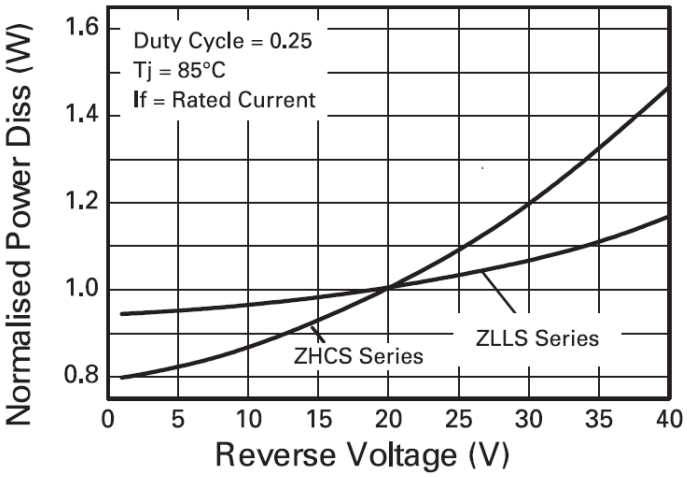


P_D vs. T_A

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

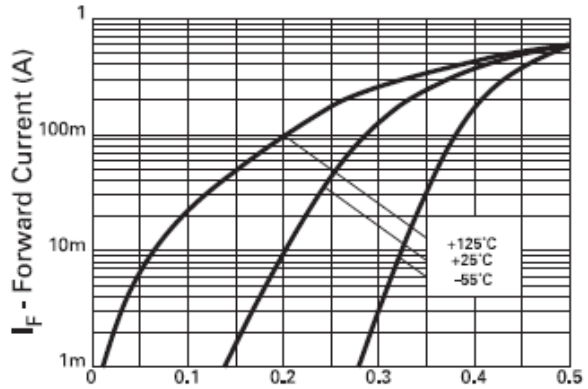
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage	$V_{(BR)R}$	40	60	—	V	I_R = 200µA
Forward Voltage	V_F	—	270	300	mV	I_F = 50mA
		—	300	350		I_F = 100mA
		—	370	460		I_F = 250mA
		—	425	500		I_F = 400mA
		—	550	670		I_F = 750mA
		—	640	780		I_F = 1,000mA
		—	810	1050		I_F = 1,500mA
		—	440	—		I_F = 500mA, T_A = +100°C
Reverse Current	I_R	—	15	40	µA	V_R = 30V
Diode Capacitance	C_D	—	20	—	pF	f = 1MHz, V_R = 25V
Switching Speed	t_{RR}	—	12	—	ns	I_F = 10mA, I_{RR} = 0.1*I_R, T_A = +25°C

Operational Efficiency Chart

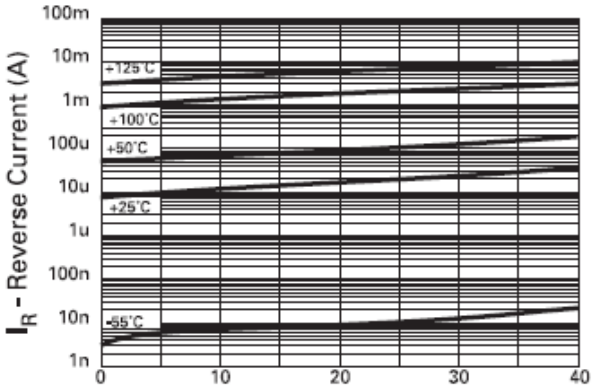


Operational Efficiency Example

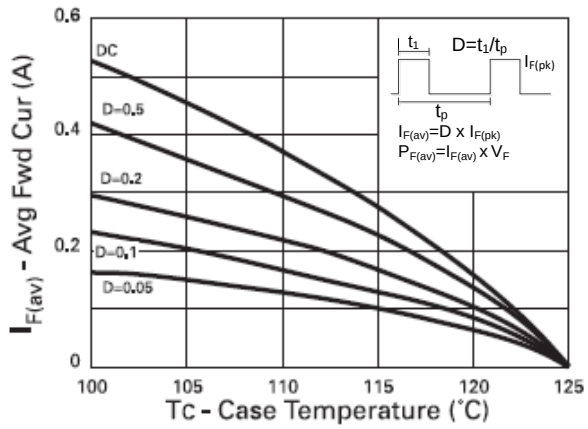
The operational efficiency chart indicates the beneficial use of the ZLLS series diodes in applications requiring higher voltage, higher temperature operation. Circuits requiring low voltage low temperature operation will benefit from using Zetex low V_F ZHCS series diodes.



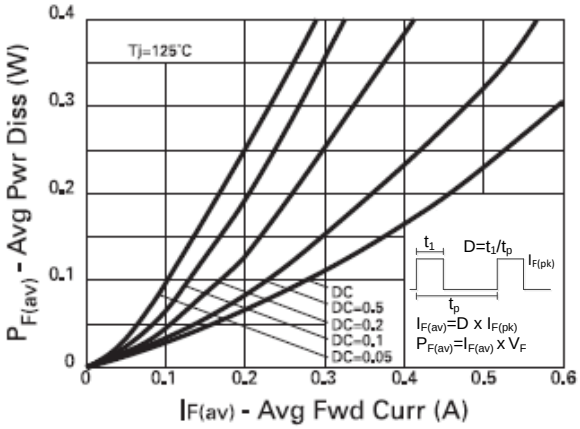
IF v VF



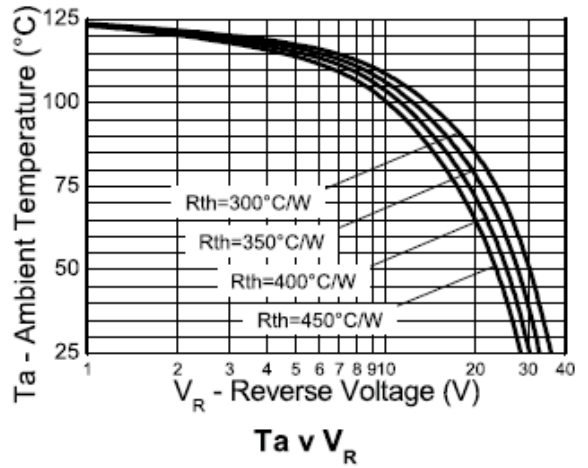
IR v VR



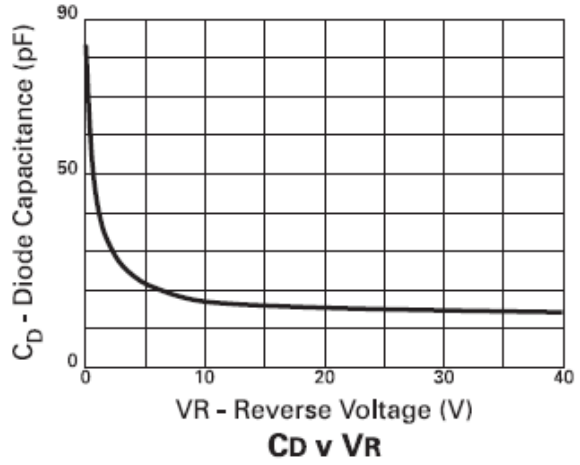
IF(av) v TC



PF(av) v IF(av)



Ta v VR

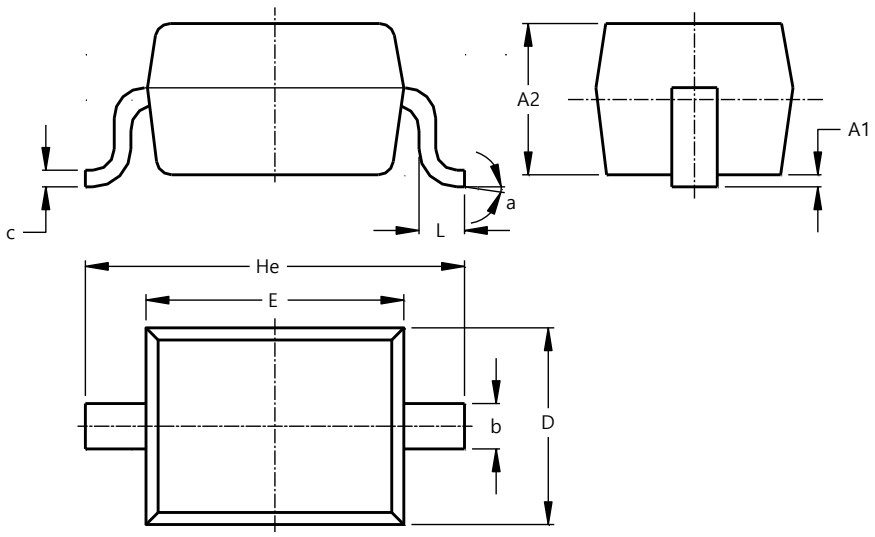


CD v VR

Package Outline Dimensions

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

SOD323

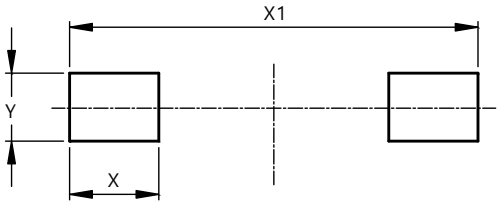


SOD323			
Dim	**Min**	**Max**	**Typ**
A1	--	0.10	0.05
A2	1.00	1.10	1.05
b	0.25	0.35	0.30
c	0.10	0.15	0.11
D	1.20	1.40	1.30
E	1.60	1.80	1.70
He	2.30	2.70	2.50
L	0.20	0.40	0.30
a	0º	8º	--
All Dimensions in mm			

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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