SURFACE MOUNT SCHOTTKY BARRIER DIODE

Product Summary

V_R (V)	I_F (mA)	V_F Max (V) @ +25°C	I_R Max (µA) @ +25°C
40V	0.75A	0.63	10

Features and Benefits

- Extremely Low Leakage (10µA @30V)
- High Current Capability (I_F = 0.7A)
- Low V_F, Fast Switching Schottky
- ZLLS500 Complements Low Temperature Equivalent ZHCS500
- Package Thermally Rated to +150°C
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Description

This compact SOT23-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.

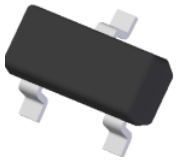
Applications

- DC-DC Converters
- Strobes
- Mobile Telecommunication
- Charging Circuits
- Motor Control

Mechanical Data

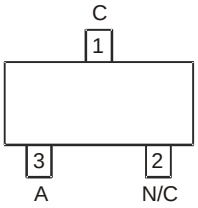
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.008 grams (Approximate)

SOT23



Top View

Device Schematic



Top View
Pin Configuration

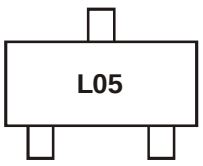
Ordering Information (Note 5)

Device	Compliance	Packaging	Shipping
ZLLS500QTA	Automotive	SOT23	3,000/Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/quality/product_compliance_definitions/.
5. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information

SOT23



L05 = Product Type Marking Code

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

Characteristic		Symbol	Value	Units
Continuous Reverse Voltage		V_R	40	V
Continuous Forward Current		I_F	0.7	A
Peak Repetitive Forward Current Rectangular Pulse Duty Cycle		I_{FPK}	1.14	A
Non Repetitive Forward Current	t ≤ 100µs	I_{FSM}	13	A
	t ≤ 10ms		3.2	A

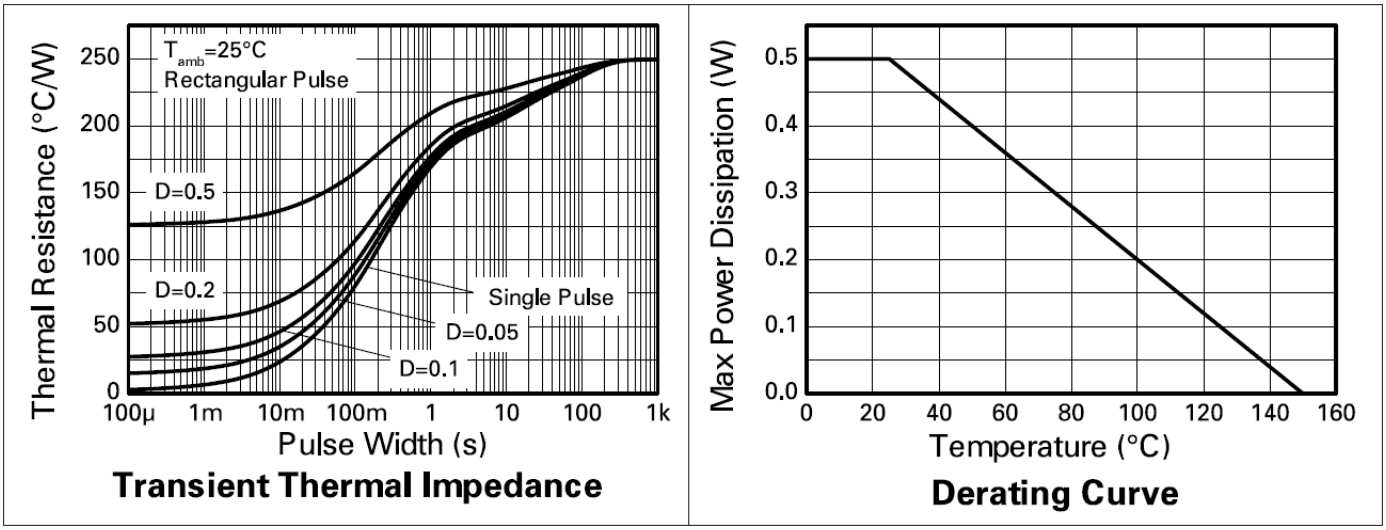
Thermal Characteristics

Characteristic		Symbol	Value	Unit
Power Dissipation, T_A = +25°C Single Die Continuous Single Die Measured at t < 5 seconds		P_D	 500 630	mW
Thermal Resistance, Junction to Ambient	(Note 6) (Note 7)	$R_{\theta JA}$	250 198	°C/W
Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{STG}	-55 to +150	°C

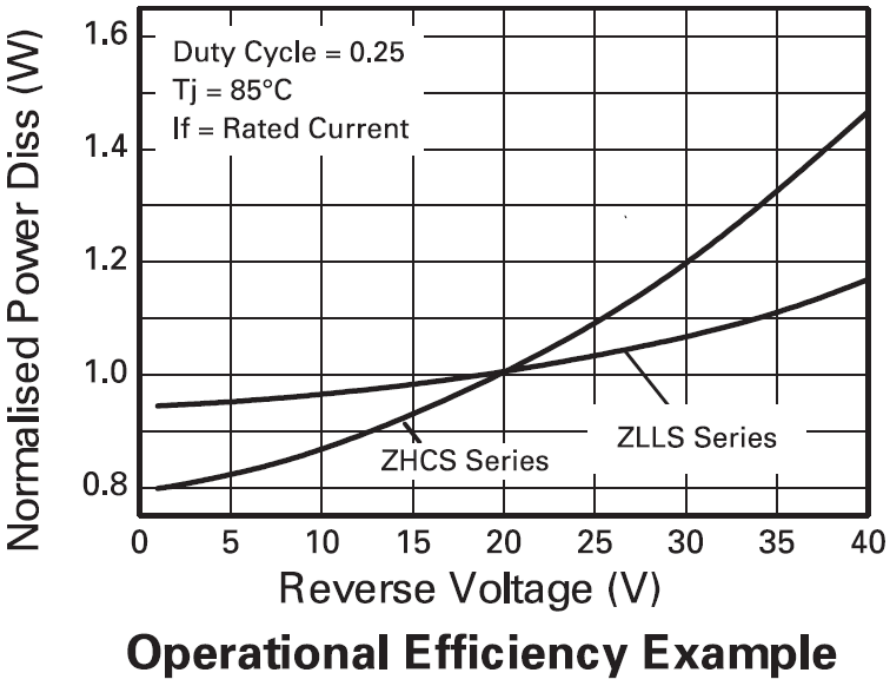
Electrical Characteristics (@T_A = +25°C unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage	$V_{(BR)R}$	40	—	—	V	I_R = 200µA
Forward Voltage (Note 8)	V_F	—	305	360	mV	I_F = 50mA
		—	335	390		I_F = 100mA
		—	395	450		I_F = 250mA
		—	465	530		I_F = 500mA
		—	550	630		I_F = 750mA
		—	620	710		I_F = 1A
		—	710	800		I_F = 1.5A
		—	415	—		I_F = 500mA, T_A = +100°C
Reverse Current	I_R	—	6	10	µA	V_R = 30V
		—	370	—		V_R = 30V, T_A = +85°C
Diode Capacitance	C_D	—	16	—	pF	f = 1MHz, V_R = 30V
Reverse Recovery Time	t_{RR}	—	3	—	ns	Switched from I_F = 500mA to V_R = 5.5V Measured @ I_R = 50mA di /dt = 500mA/ns R_{SOURCE} = 6Ω; R_{LOAD}= 10Ω
Reverse Recovery Charge	Q_{RR}	—	210	—	pC	

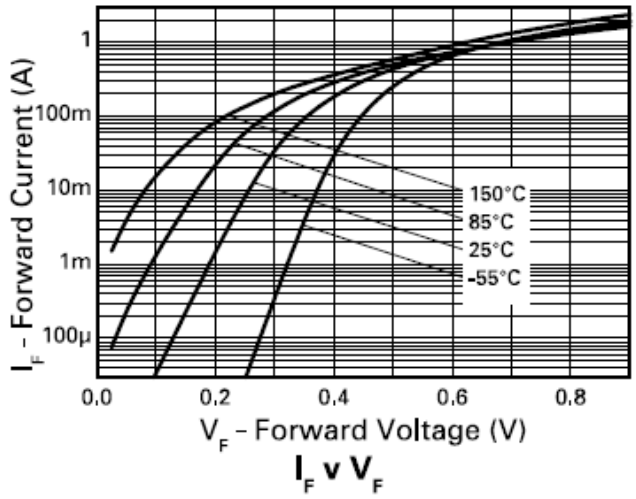
Notes: 6. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
7. For a device surface mounted on FR4 PCB measured at t < 5 seconds.
8. Measured under pulsed conditions. Pulse width = 300µS. Duty cycle ≤ 2%.



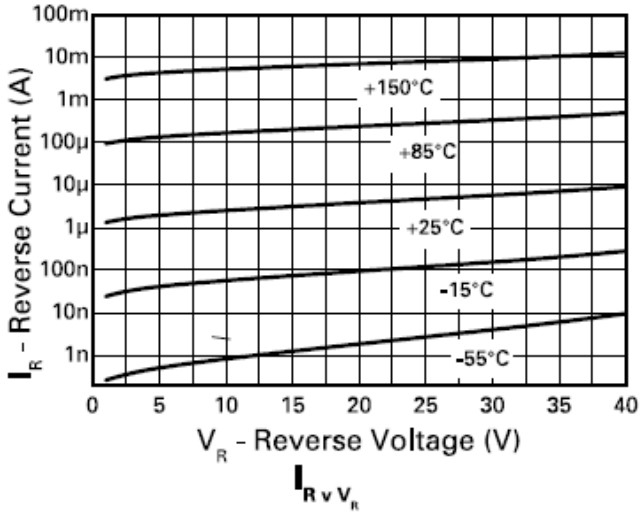
Operational Efficiency Chart



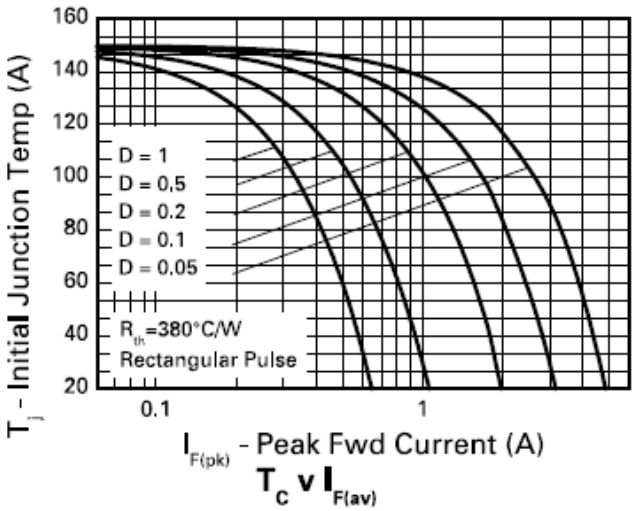
The operational efficiency chart indicates the beneficial use of the ZLLS series diodes in applications requiring higher voltage, higher temperature operation. Circuits requiring low voltage low temperature operation will benefit from using Zetex low V_F ZHCS series diodes.



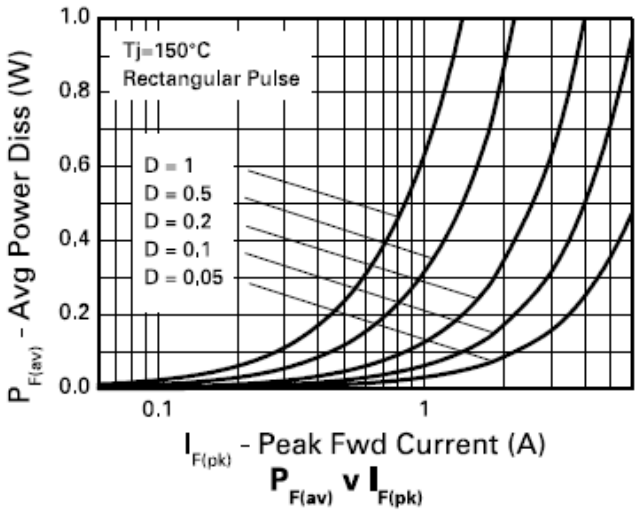
I_F v V_F



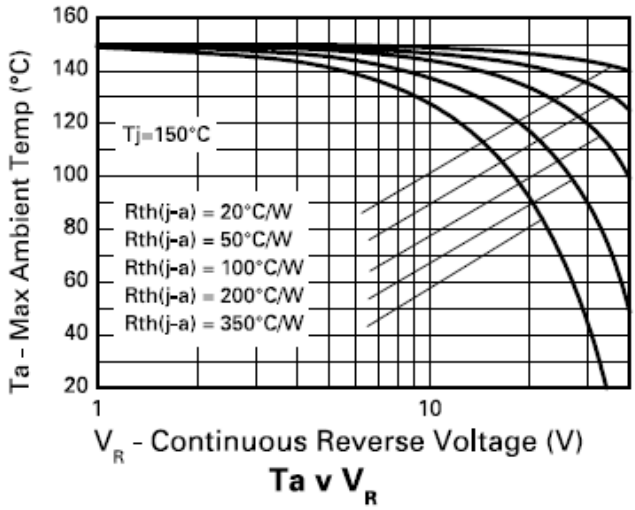
$I_{R\ v\ V_R}$



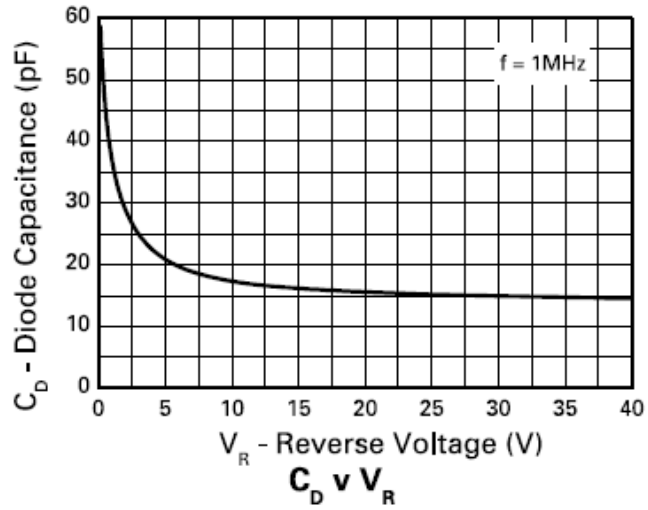
T_C v $I_{F(av)}$



$P_{F(av)}$ v $I_{F(pk)}$



Ta v V_R

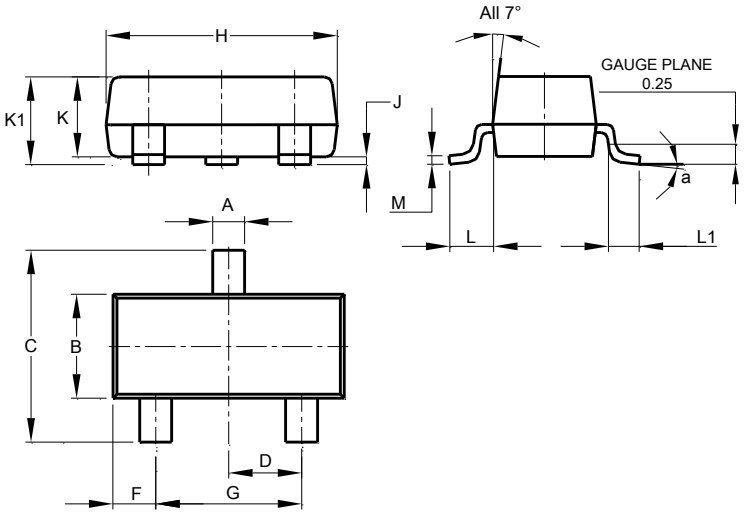


C_D v V_R

Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.

SOT23

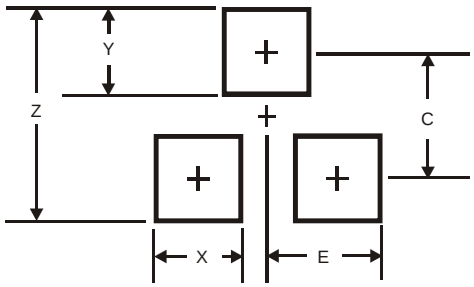


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	8°		
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.

SOT23



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

www.diodes.com

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Diodes Incorporated:
ZLLS500QTA