THE DATASHEET OF

ZLLS500TA

ZLLS500

SURFACE MOUNT SCHOTTKY BARRIER DIODE

Product Summary

- V_R = 40V
- I_F = 0.7A
- I_R = 10μA

Description and Applications

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.

- DC – DC Converters
- Strobes
- Mobile Telecomms
- Charging circuits
- Motor Control

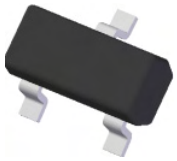
Features and Benefits

- 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
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

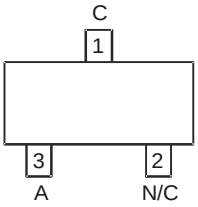
- Case: SOT23
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Weight: 0.0089 grams (approximate)

SOT23



Top View

Device Schematic



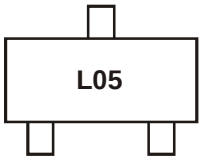
Top View
Pin Configuration

Ordering Information (Note 1)

Device	Packaging	Shipping
ZLLS500TA	SOT23	3000/Tape & Reel
ZLLS500TC	SOT23	10000/Tape & Reel

Notes: 1. For Packaging Details, go to our website at http://www.diodes.com.

Marking Information



L05 = Product Type Marking Code

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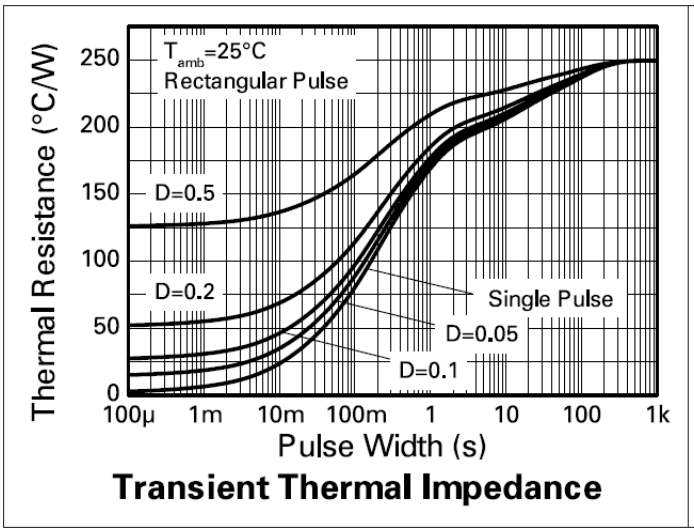
Maximum Ratings @T_A = 25°C unless otherwise specified

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

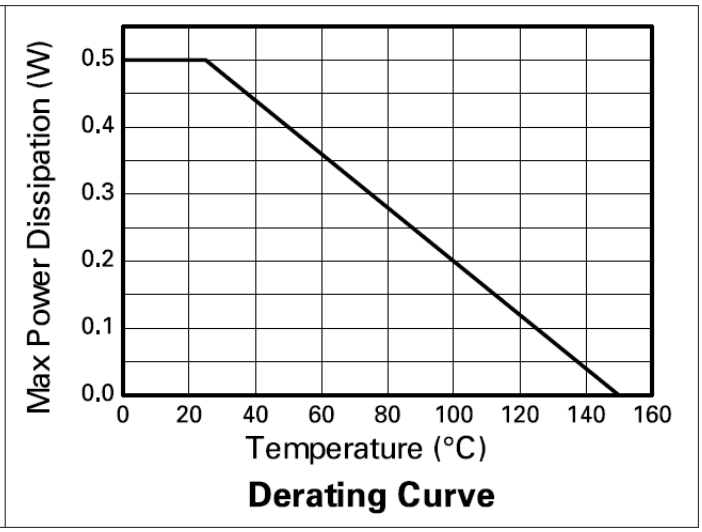
Thermal Characteristics

Characteristic		Symbol	Value	Unit
Power Dissipation, T_A = 25°C Single Die Continuous Single Die Measured at t < 5 secs		P_D	 500 630	mW
Thermal Resistance, Junction to Ambient	(Note 2) (Note 3)	$R_{\theta JA}$	250 198	
Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{STG}	-55 to +150	°C

Notes: 2. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
3. For a device surface mounted on FR4 PCB measured at t < 5 secs.



Transient Thermal Impedance



Derating Curve

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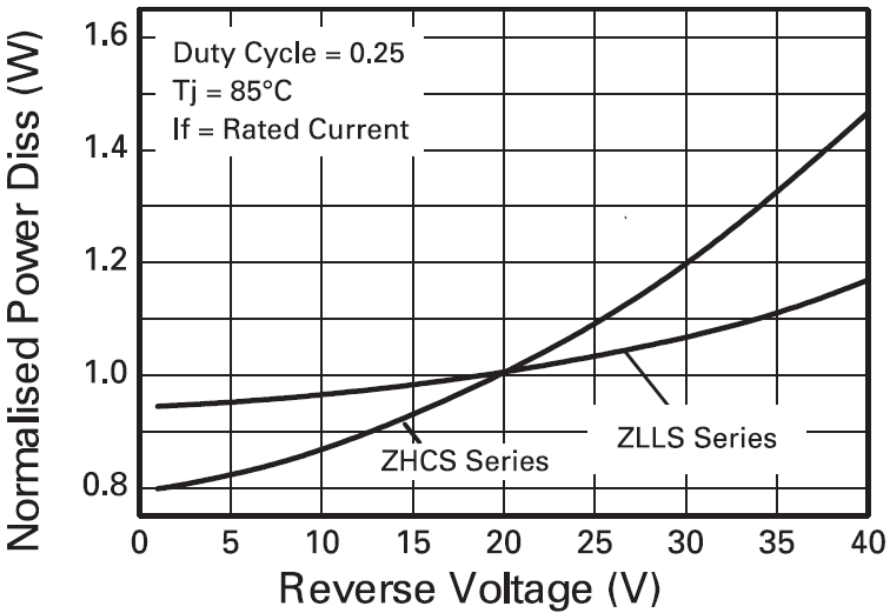
Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage	$V_{(BR)R}$	40	-	-	V	I_R = 200μA
Forward Voltage (Note 4)	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	trr	-	3	-	ns	Switched from I_F = 500mA to V_R = 5.5V Measured @ I_R = 50mA di /d t = 500mA/ ns. R_{source} = 6Ω; R_{load}= 10Ω
Reverse Recovery Charge	Qrr	-	210	-	pC	

Notes: 4. 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, higher temperature operation. Circuits requiring low voltage low temperature operation will benefit from using Zetex low V_F ZHCS series diodes.

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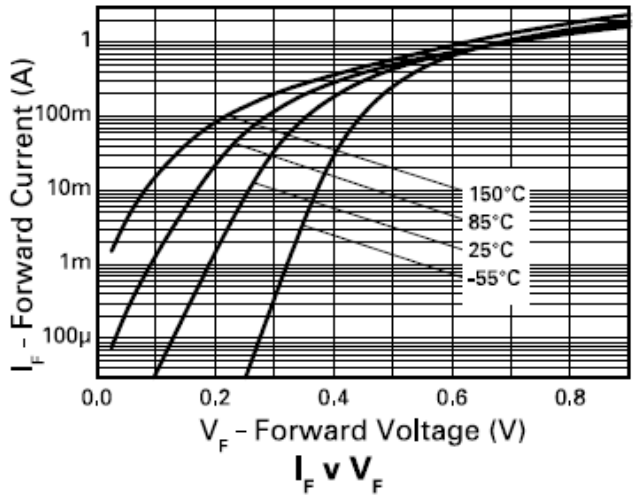
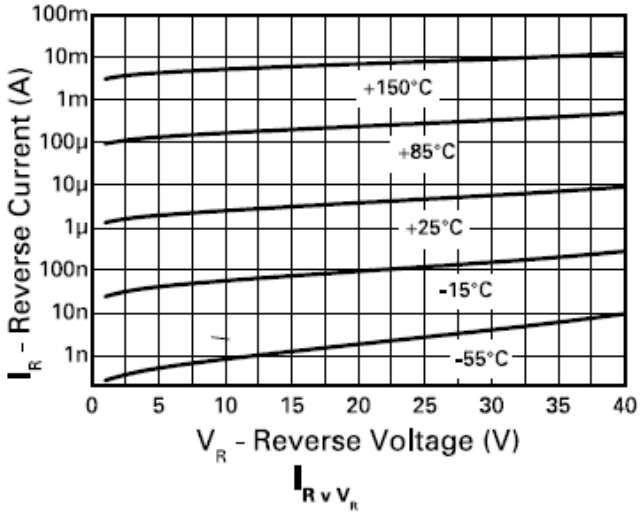
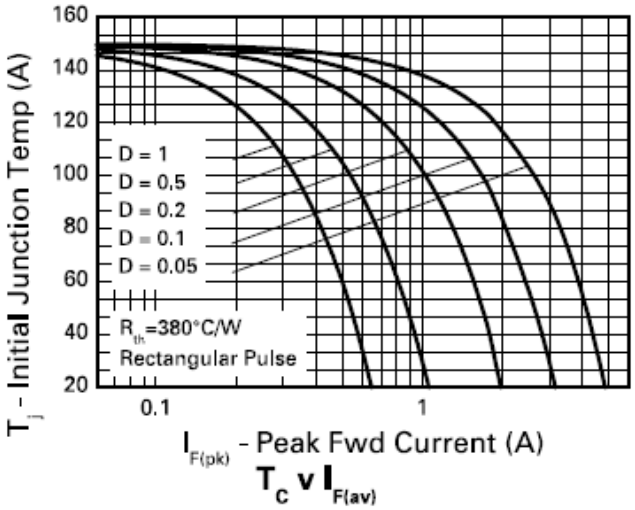


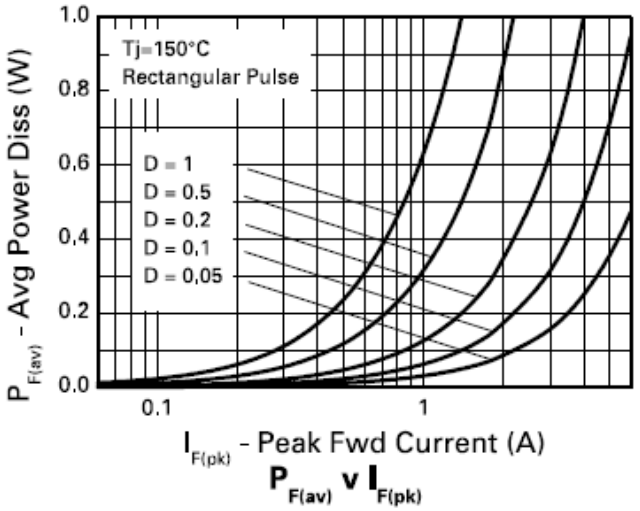
I_F v V_F



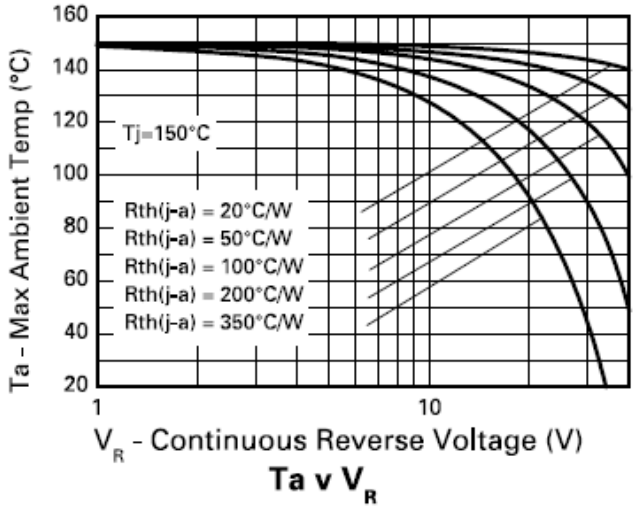
$I_{R\ v\ V_R}$



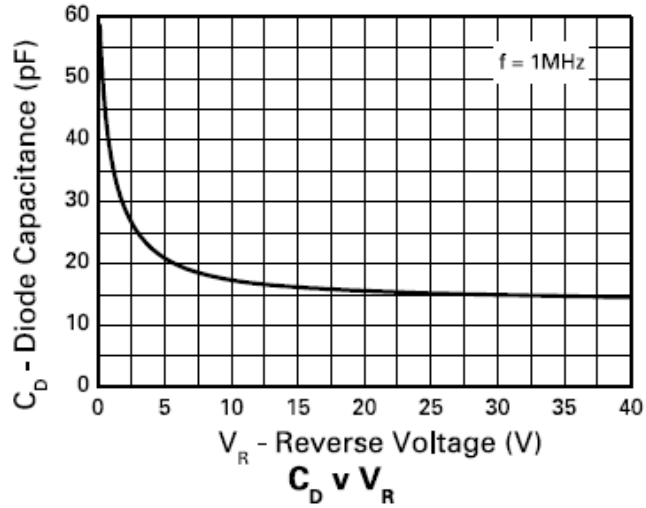
T_C v $I_{F(av)}$



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



Ta v V_R



C_D v V_R

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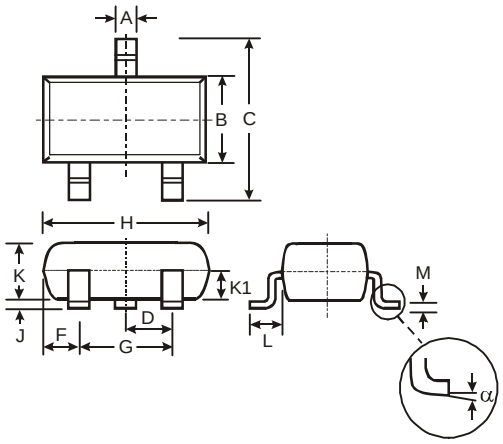
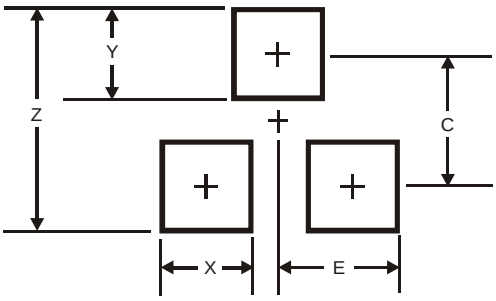
Package Outline Dimensions



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	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout



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

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