

Product Summary

- $V_R = 40V$
- $I_F = 0.7A$
- $I_R = 10\mu A$

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.

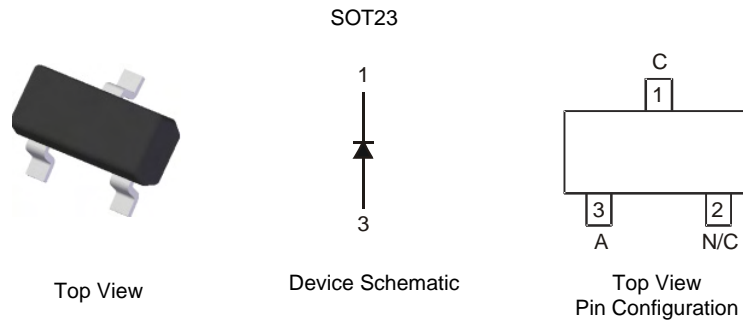
- DC – DC Converters
- Strobes
- Mobile Telecomms
- Charging circuits
- Motor Control

Features and Benefits

- Extremely low leakage (10 μA @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)

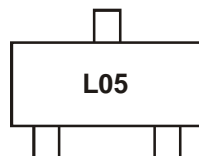


Ordering Information (Note 1)

| 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

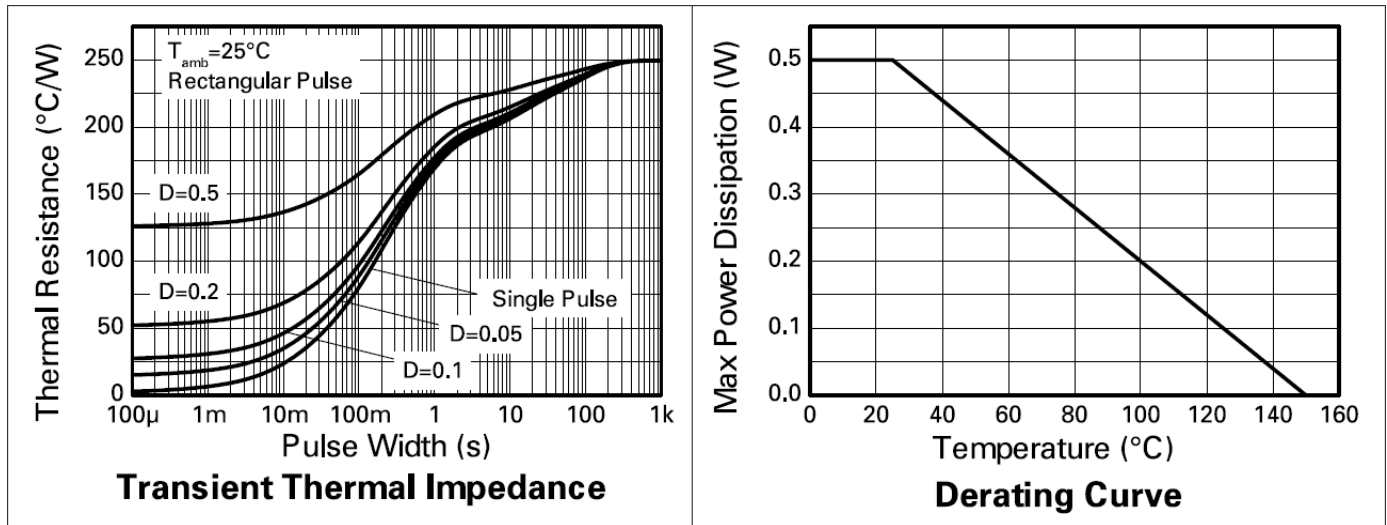
Maximum Ratings @T_A = 25°C unless otherwise specified

| 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 | 13 |
| | | t ≤ 10ms | 3.2 |

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 | R _{θJA} | 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.

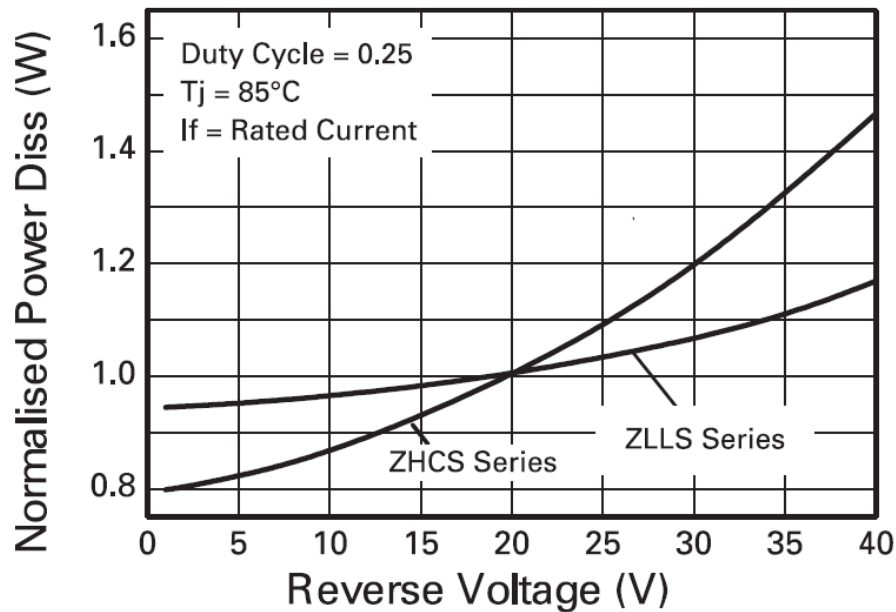


Electrical Characteristics @T_A = 25°C unless otherwise specified

| 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 |
| Reverse Recovery Charge | Qrr | - | 210 | - | pC | di/dt = 500mA/ns. R _{source} = 6Ω; R _{load} = 10Ω |

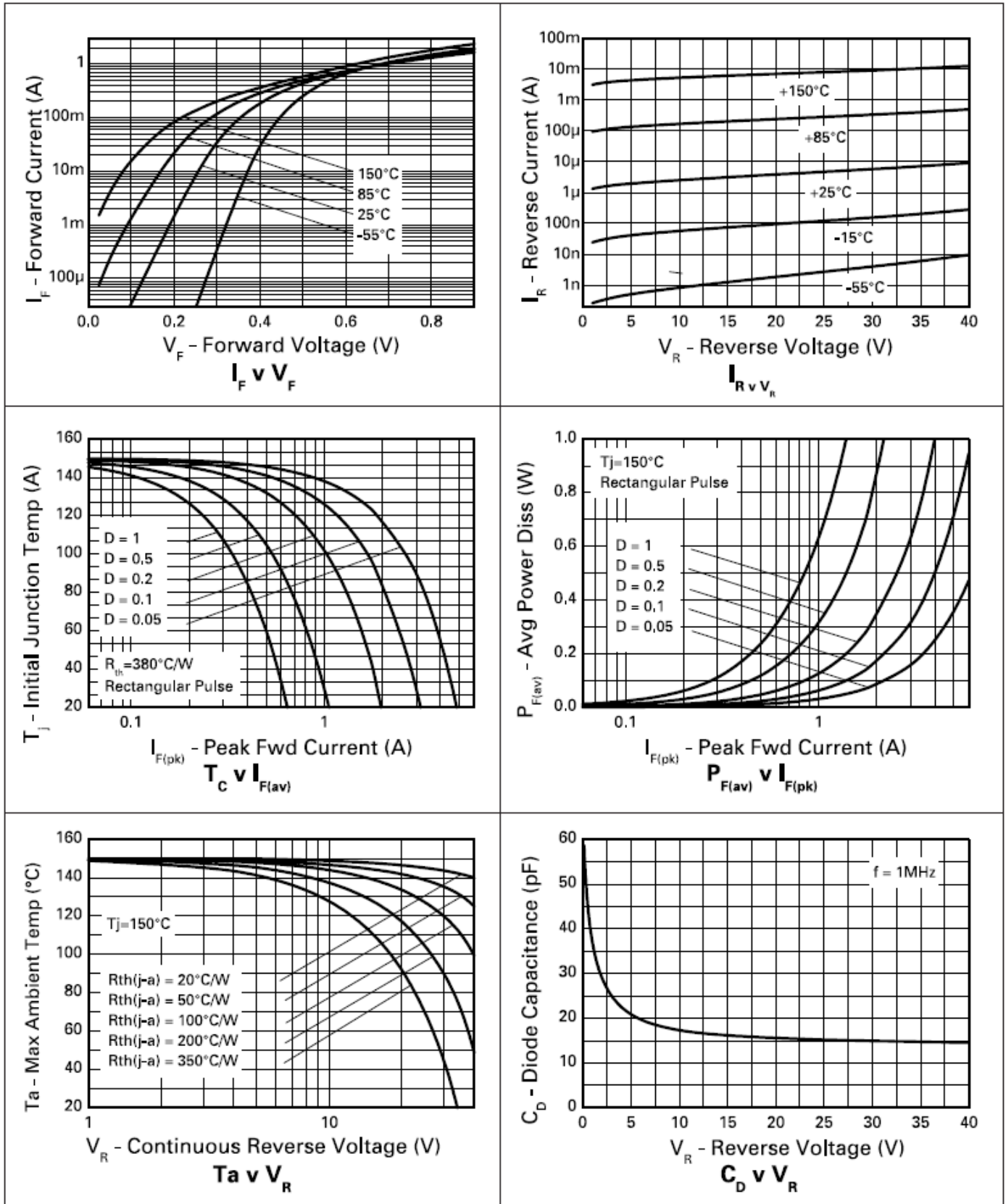
Notes: 4. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%.

Operational efficiency chart

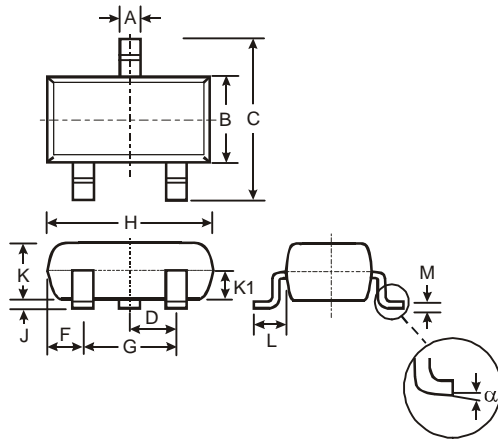


Operational Efficiency Example

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.

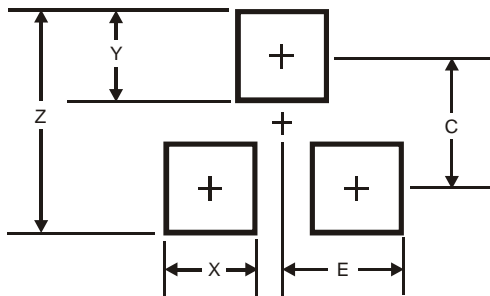


Package Outline Dimensions



| 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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