

ZLLS2000

40V SILICON HIGH CURRENT LOW LEAKAGE SCHOTTKY DIODE

SUMMARY

Schottky Diode $V_R = 40V$; $I_F = 2.2A$; $I_R = 40\mu A$

DESCRIPTION

This compact SOT23-6 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 4.



Key benefits:

Performance capability equivalent to much larger packages

Improved circuit efficiency & power levels

PCB area savings

FEATURES

- Low equivalent on resistance
- Extremely low leakage ($40\mu A$ @30V)
- High current capability ($I_F = 2.2A$)
- Low V_F , fast switching Schottky
- SOT23-6 package
- ZLLS2000 complements low temperature equivalent ZHCS2000
- Package thermally rated to 150°C

APPLICATIONS

- DC - DC converters
- Strobes
- Mobile phones
- Charging circuits
- Motor control

ORDERING INFORMATION

| DEVICE | REEL (inches) | TAPE WIDTH (mm) | QUANTITY PER REEL |
|------------|------------------|--------------------|----------------------|
| ZLLS2000TA | 7 | 8mm embossed | 3000 units |
| ZLLS2000TC | 13 | 8mm embossed | 10000 units |

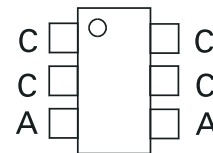
DEVICE MARKING

LL20

Cathode



Anode



Top view

ZLLS2000

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | VALUE | UNIT | |
|---|-----------|--------------------|------------|---|
| Schottky Diode | | | | |
| Continuous reverse voltage | V_R | 40 | V | |
| Forward current | I_F | 2.2 | A | |
| Peak repetitive forward current Rectangular pulse duty cycle | I_{FPK} | 3.55 | A | |
| Non repetitive forward current | | $t \leq 100 \mu s$ | 36 | A |
| | | $t \leq 10 ms$ | 12 | A |
| Package | | | | |
| Power dissipation at $T_{amb}=25^\circ C$ single die continuous single die measured at $t < 5$ secs | P_D | 1.1 | W | |
| | | 1.71 | W | |
| Storage temperature range | T_{stg} | -55 to +150 | $^\circ C$ | |
| Junction temperature | T_j | 150 | $^\circ C$ | |

THERMAL RESISTANCE

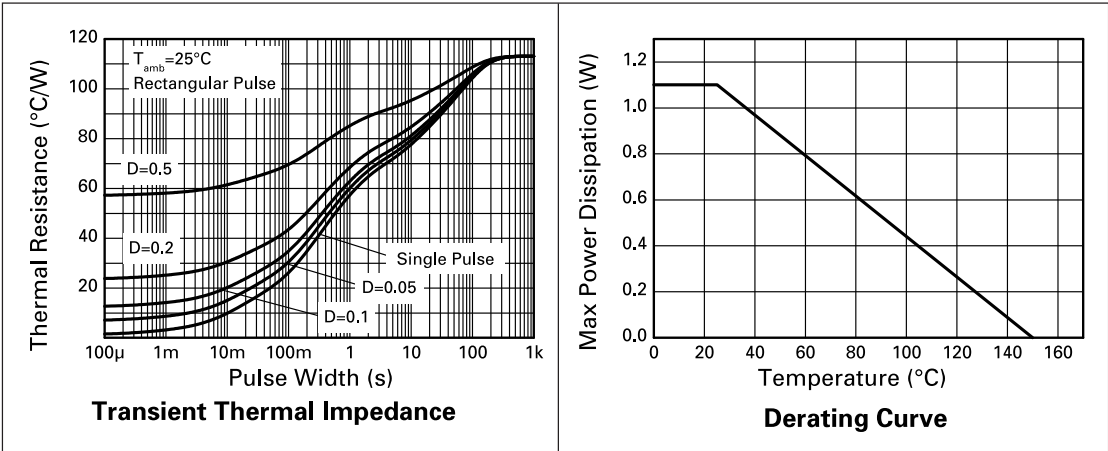
| PARAMETER | SYMBOL | VALUE | UNIT |
|-------------------------|-----------------|-------|--------------|
| Junction to ambient (a) | $R_{\theta JA}$ | 113 | $^\circ C/W$ |
| Junction to ambient (b) | $R_{\theta JA}$ | 73 | $^\circ C/W$ |

Notes

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

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TYPICAL CHARACTERISTICS



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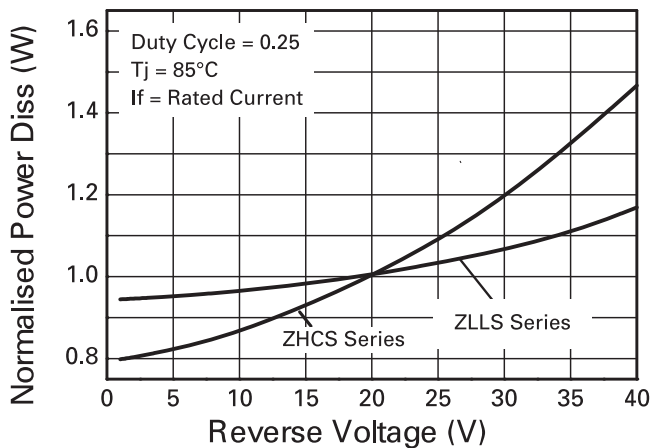
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

| SCHOTTKY DIODE CHARACTERISTICS | | | | | | |
|--------------------------------|-------------|------|------|------|---------------------|---|
| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS |
| Reverse breakdown voltage | $V_{(BR)R}$ | 40 | | | V | $I_R = 1\text{mA}$ |
| Forward voltage | V_F | | 260 | - | mV | $I_F = 50\text{mA}^*$ |
| | | | 290 | - | mV | $I_F = 100\text{mA}^*$ |
| | | | 322 | - | mV | $I_F = 250\text{mA}^*$ |
| | | | 345 | 370 | mV | $I_F = 500\text{mA}^*$ |
| | | | 395 | 430 | mV | $I_F = 1000\text{mA}^*$ |
| | | | 440 | 490 | mV | $I_F = 1500\text{mA}^*$ |
| | | | 475 | 540 | mV | $I_F = 2000\text{mA}^*$ |
| | | | 550 | 640 | mV | $I_F = 3000\text{mA}^*$ |
| Reverse current | I_R | | 25 | 40 | μA mA | $V_R = 30\text{V}$ $V_R = 30\text{V}, T_a = 85^{\circ}\text{C}$ |
| Diode capacitance | C_D | | 65 | | pF | $f = 1\text{MHz}, V_R = 30\text{V}$ |
| Reverse recovery time | t_{rr} | | 6 | | ns | Switched from $I_F = 500\text{mA}$ to $V_R = 5.5\text{V}$ |
| Reverse recovery charge | Q_{rr} | | 685 | | pC | Measured @ $I_R = 50\text{mA}$. $di / dt > 500\text{mA} / \text{ns}$. $R_{source} = 6\Omega; R_{load} = 10\Omega$ |

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

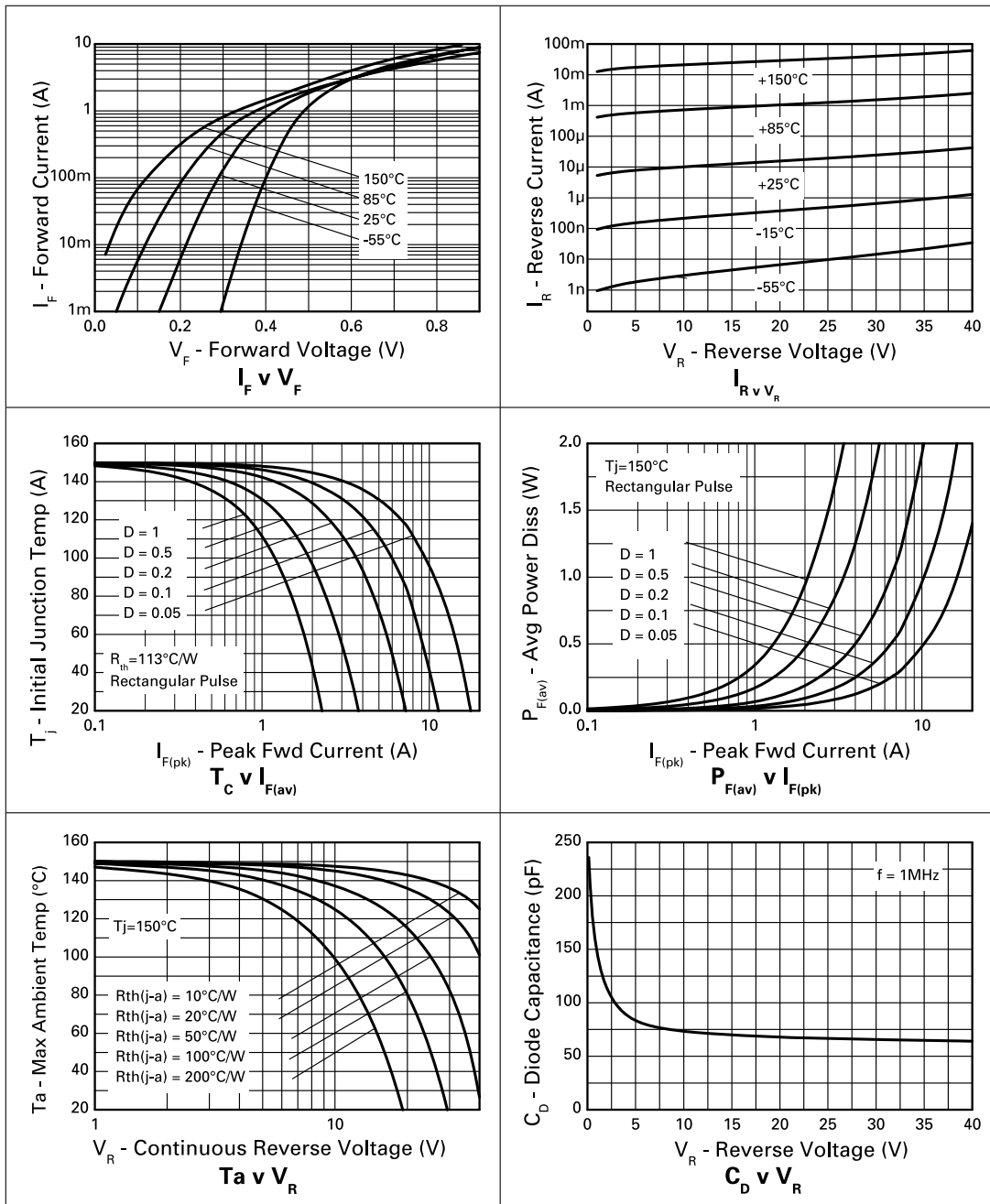
Operational efficiency chart

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.



Operational Efficiency Example

TYPICAL CHARACTERISTICS



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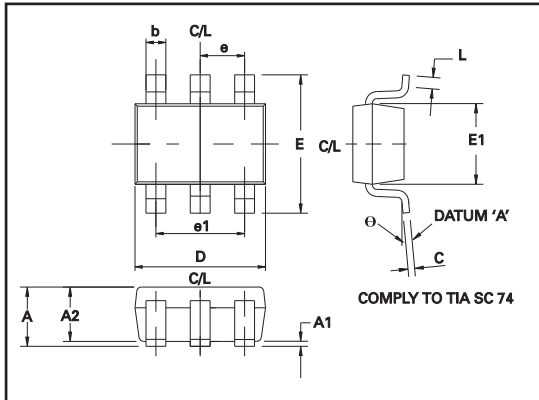
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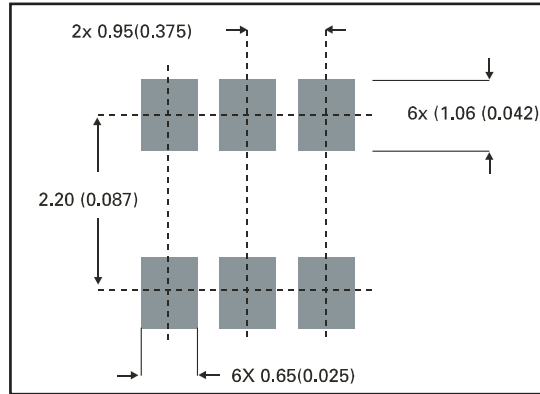


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PACKAGE DIMENSIONS



PAD LAYOUT DETAILS



| DIM | Millimeters | |
|-----|-------------|------|
| | Min. | Max. |
| A | 0.90 | 1.45 |
| A1 | 0.00 | 0.15 |
| A2 | 0.90 | 1.30 |
| b | 0.20 | 0.50 |
| C | 0.09 | 0.26 |
| D | 2.70 | 3.10 |
| E | 2.20 | 3.20 |
| E1 | 1.30 | 1.80 |
| L | 0.10 | 0.60 |
| e | 0.95 REF | |
| e1 | 1.90 REF | |
| θ | 0° | 30° |

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