

DN79

ZXSC400 1W LED driver

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Description

ZXSC400 is configured to the reference design below. The target application is a 1W white LED driven from a two cell NiCd/NiMH or alkaline battery input for flashlights and high powered LED driving.

The supply voltage for ZXSC400 reference design is: $V_{IN} = 1.8V \sim 3V$.

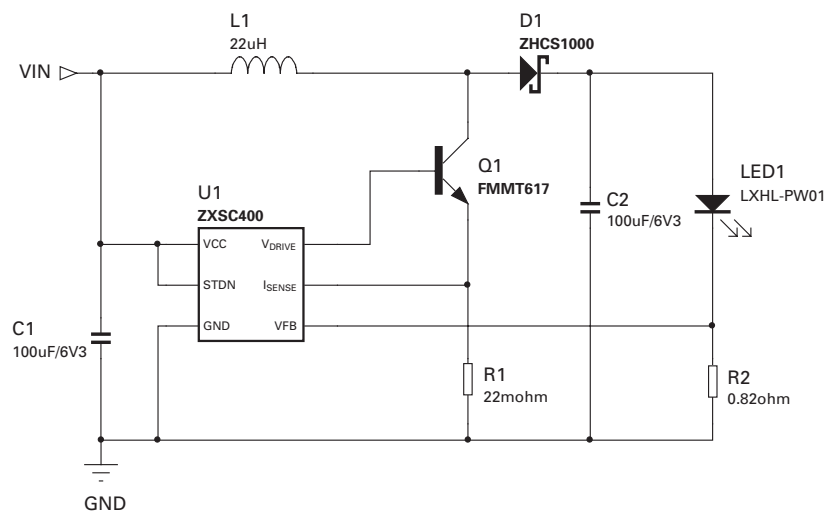


Figure 1 Schematic diagram

| Ref. | Value | Package | Part number | Manufacturer | Contact details | Notes |
|------|-----------|---------|----------------|--------------|-------------------|------------------------|
| U1 | N/A | SOT23-6 | ZXSC400E6 | Zetex | www.zetex.com | Boost converter |
| Q1 | N/A | SOT23 | FMMT617 | Zetex | www.zetex.com | Low sat NPN transistor |
| D1 | 40V/1A | SOT23 | ZHCS1000 | Zetex | www.zetex.com | 40V/1A Schottky diode |
| L1 | 22uH/2.5A | N/A | DO3316P-223 | Coilcraft | www.coilcraft.com | 22uH/2.5A SMT inductor |
| R1 | 22mΩ | 0805 | | Generic | NA | 0805 5% tolerance |
| R2 | 0.82Ω | 0805 | | Generic | NA | 0805 5% tolerance |
| C1 | 100μF/6V3 | 1812 | 18126D107KAT2A | AVX | www.avx.com | 100μF/6V3/X5R/1812 |
| C2 | 100μF/6V3 | 1812 | 18126D107KAT2A | AVX | www.avx.com | 100μF/6V3/X5R/1812 |
| LED1 | 1W | N/A | LXHL-PW01 | Lumileds | www.lumileds.com | 1W white LED emitter |

Table 1 Bill of materials

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Performance

Increasing efficiency

On ZXSC400 reference design, R1 is set to 22mΩ to ensure that the LED current is regulated over the full input voltage range of 3V ~ 1.8V. For improved efficiency R1 can be changed to a 33mΩ resistor but LED current will not be regulated below 2V. See Figure 2, Performance graphs.

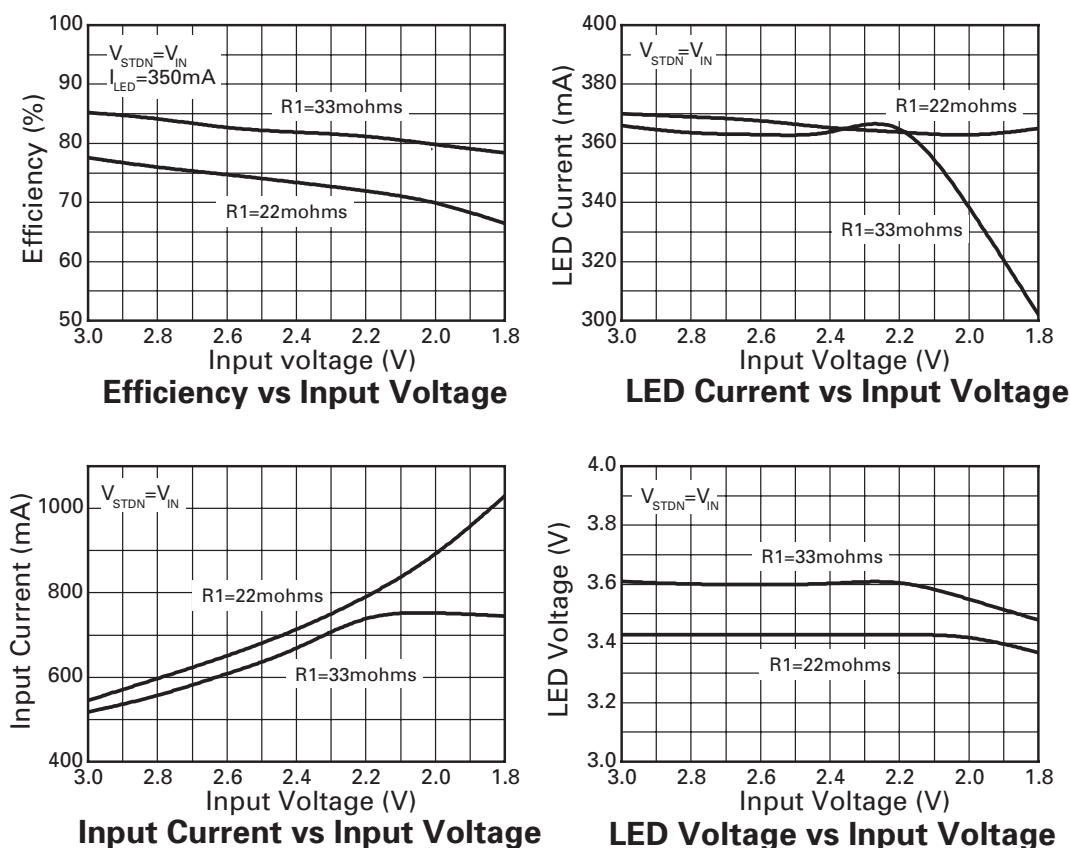


Figure 2 Performance graphs

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