

DN79

ZXSC400 1W LED driver

Neil Wolstenholme, Applications Engineer, Zetex Semiconductors plc

Introduction

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: $V_{IN} = 1.8V \sim 3V$.

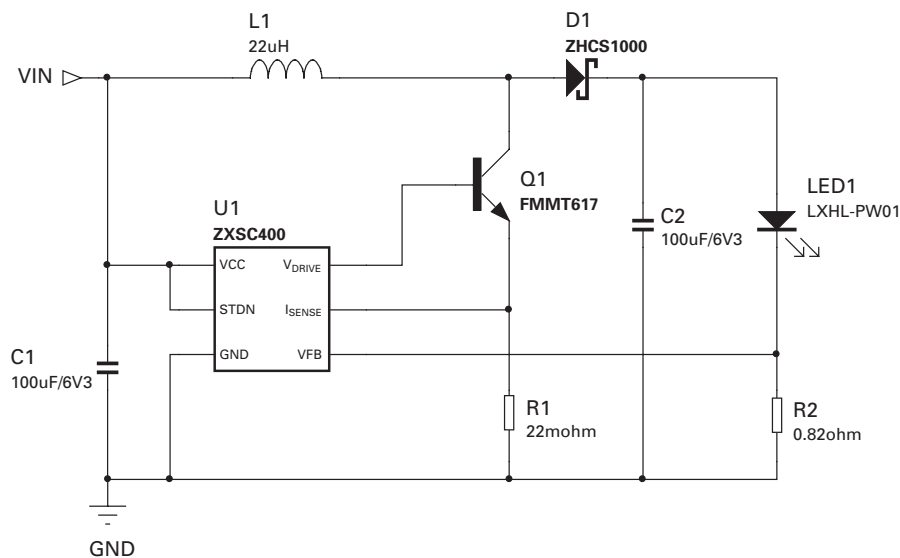


Figure 1 Schematic diagram

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

Table 1 Materials list

DN79

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.

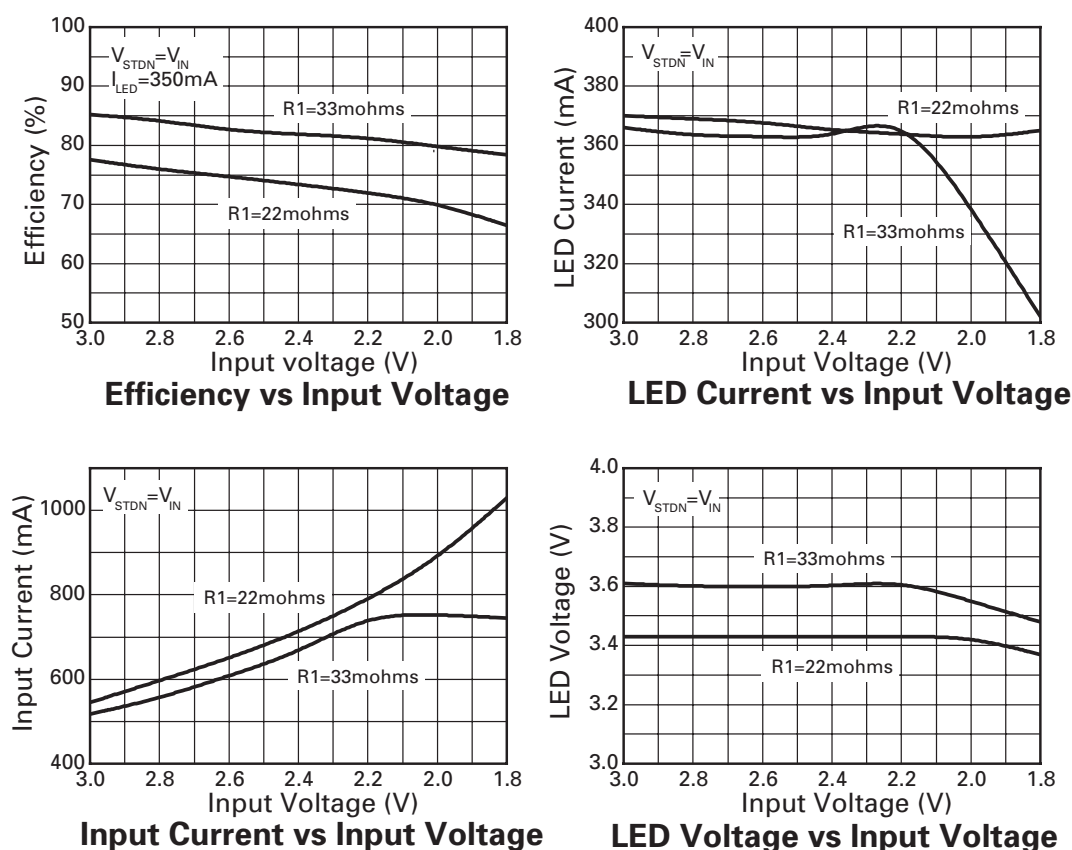


Figure 2 Performance graphs

Europe

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany

Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49
europe.sales@zetex.com

Americas

Zetex Inc
700 Veterans Memorial Highway
Hauppauge, NY 11788
USA

Telephone: (1) 631 360 2222
Fax: (1) 631 360 8222
usa.sales@zetex.com

Asia Pacific

Zetex (Asia Ltd)
3701-04 Metroplaza Tower 1
Hing Fong Road, Kwai Fong
Hong Kong

Telephone: (852) 26100 611
Fax: (852) 24250 494
asia.sales@zetex.com

Corporate Headquarters

Zetex Semiconductors plc
Zetex Technology Park, Chadderton
Oldham, OL9 9LL
United Kingdom

Telephone (44) 161 622 4444
Fax: (44) 161 622 4446
hq@zetex.com

These offices are supported by agents and distributors in major countries world-wide.

This publication is issued to provide outline information only which (unless agreed by the company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.