DN85
ZXSC400 1W/3W buck LED drivers

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Description

In Figure 1, ZXSC400 is configured as a high efficiency buck LED driver. The target applications are either 1W (350mA) or 3W (700mA) drivers for white LED driven from a 4 cell battery, or a 2 alkaline cell input for flashlights. The supply voltage for ZXSC400 reference design is:

V_{IN} = 3.8V to 6V.

Parts lists for 1W and 3W design are shown in Table 1 and Table 2 respectively. Performance data is measured based on two different LED's V_F binning with 0.3V V_F difference.

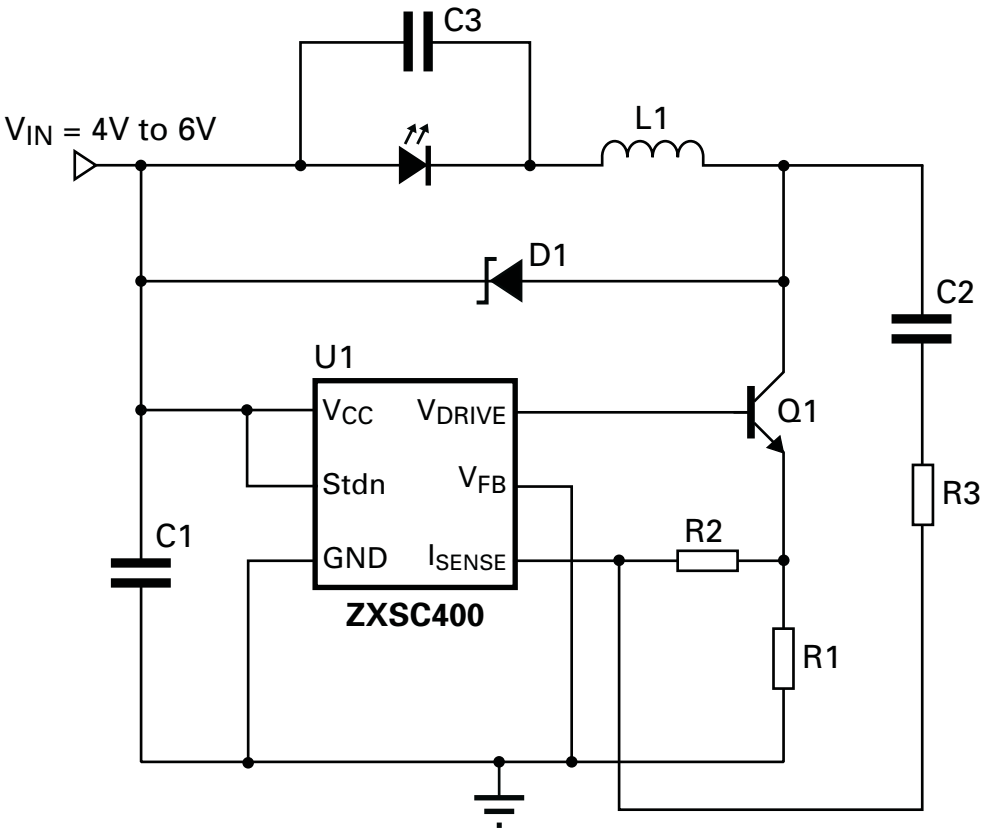

Figure 1 Schematic diagram

Ref.	Value	Package	Part number	Manufacturer	Contact details	Notes
U1	N/A	SOT23-6	ZXSC400E6	Zetex	www.zetex.com	LED Driver
Q1	N/A	SOT23	ZXTN25012EFL	Zetex	www.zetex.com	Low sat NPN transistor
D1	40V/0.75A	SOT23	BAT750	Zetex	www.zetex.com	40V/0.75A Schottky diode
L1	47μH	N/A	744052470	Wurth Elektronik	www.we-online.com	I_{SAT} = 520mA
R1	62mΩ	0805		Generic	N/A	0805 1%
R2	10Ω	0805		Generic	N/A	0805 5%
R3	47Ω	0805		Generic	N/A	0805 5%
C1	4.7μF/10V	1206		Generic	N/A	X7R/X5R
C2	100pF/10V	0805		Generic	N/A	COG/NPO
C3	1uF/10V	0805		Generic	N/A	X7R/X5R optional

Table 1 Bill of materials for 1W LED

Performance

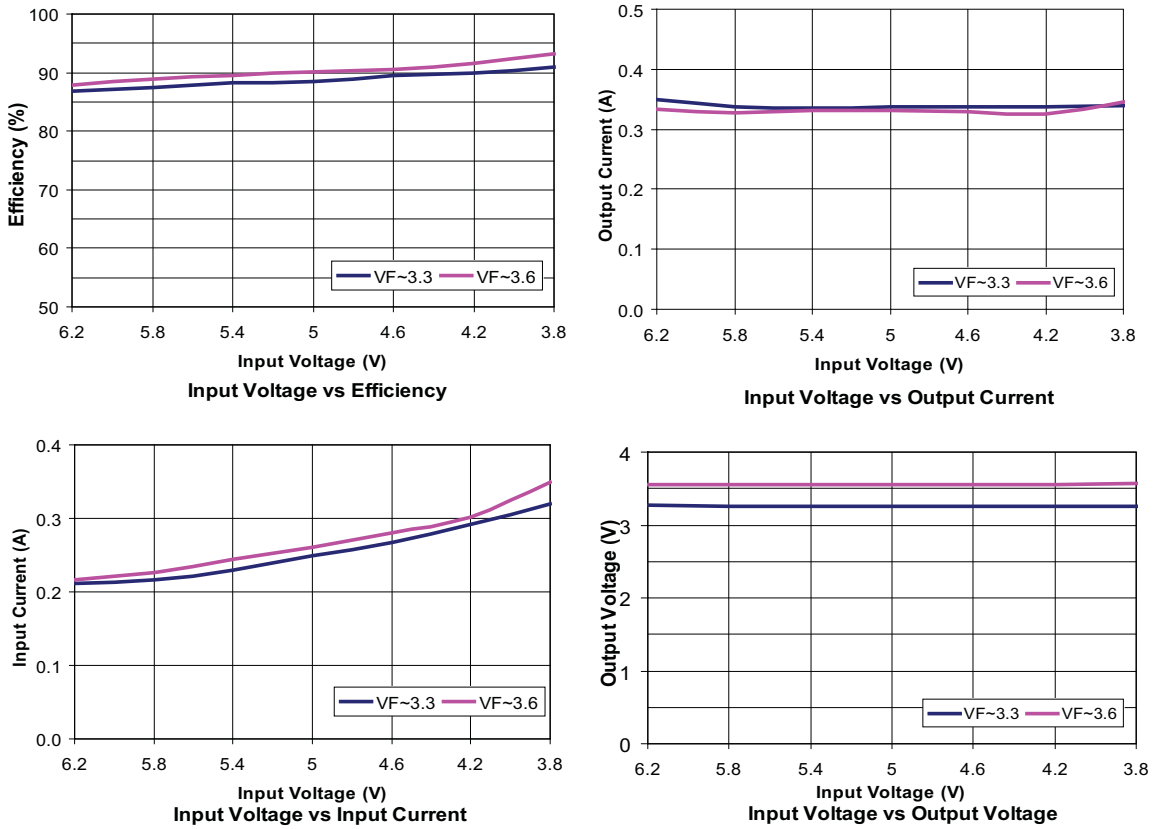

Figure 2 Performance graphs for 1W design

Ref.	Value	Package	Part number	Manufacturer	Contact details	Notes
U1	N/A	SOT23-6	ZXSC400E6	Zetex	www.zetex.com	LED Driver
Q1	N/A	SOT23	ZXTN25012EFL	Zetex	www.zetex.com	Low sat NPN transistor
D1	40V/1A	SOT23	ZHCS1000	Zetex	www.zetex.com	40V/1A Schottky diode
L1	33μH	N/A	722065330	Wurth Elektronik	www.we-online.com	Isat=1.6A
R1	30mΩ	0805		Generic	N/A	0805 1%
R2	10Ω	0805		Generic	N/A	0805 5%
R3	47Ω	0805		Generic	N/A	0805 5%
C1	10μF/10V	1210		Generic	N/A	X7R/X5R
C2	100pF/10V	0805		Generic	N/A	COG/NPO
C3	2.2uF/10V	1206		Generic	N/A	X7R/X5R optional

Table 2 Bill of materials for 3W LED

Performance

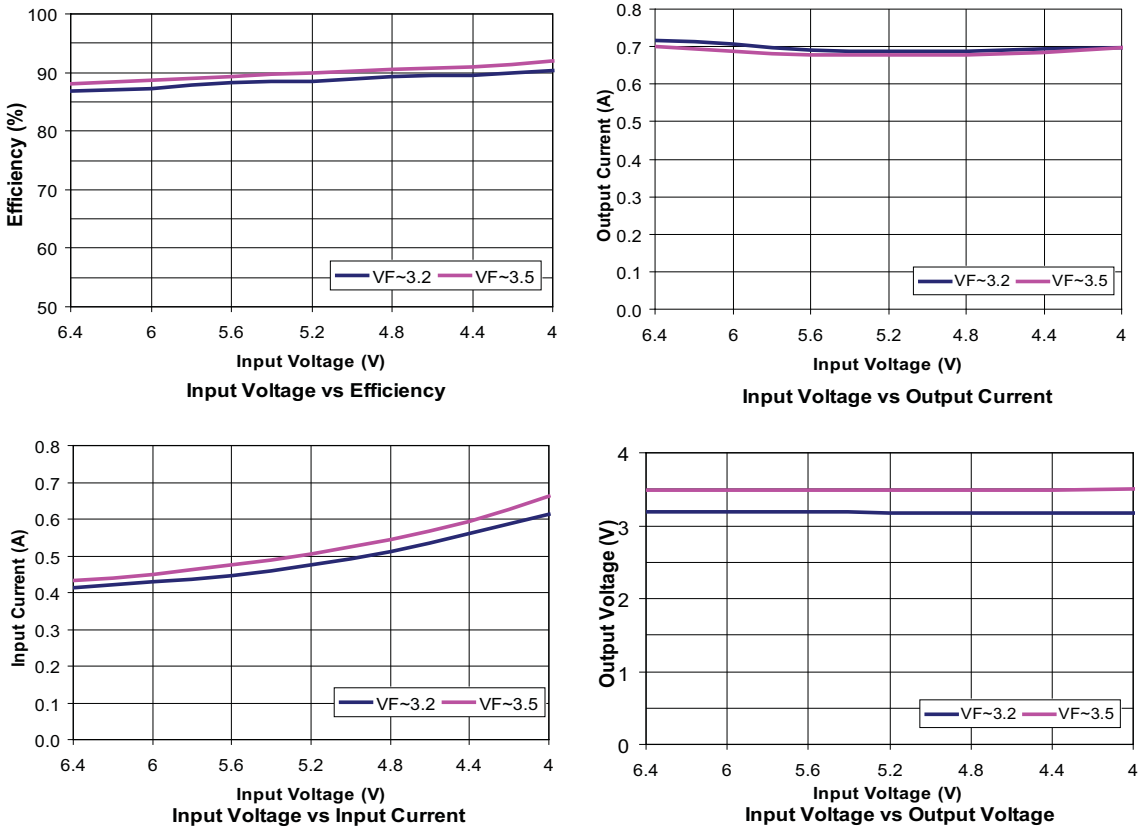

Figure 3 Performance graphs for 3W design

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