



SEPIC LED Driver Demoboard with High Dimming Ratio and Excellent Current Regulation

Input 15..32VDC, Output 0.4A / 0.55A, 20...30V (16.5W max.)

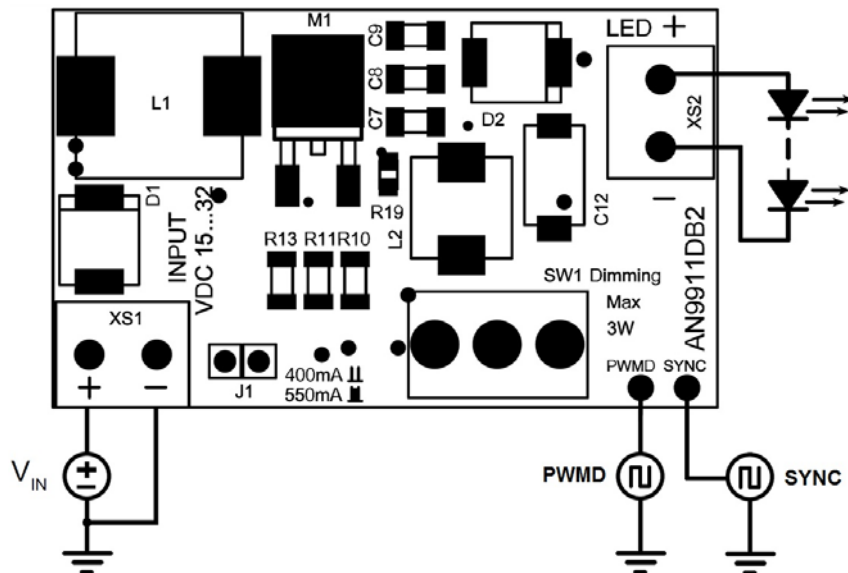
General Description

The AN9911DB2 demoboard uses Angstrom's AN9911 in a SEPIC topology to drive LED string voltages higher or lower than the input voltage. The converter has a very good initial regulation (+/-5%), and excellent line and load regulation over the entire input and output voltage range (<+/-1%). The full load efficiency of the converter is typically greater than 80%.

The AN9911DB2 is also protected against open LED and output short circuit conditions. It is protected against over load conditions by limiting the input current. It has an excellent PWM dimming response. The switching frequency of the AN9911DB2 can be synchronized to other HV9911 boards or to an external 200kHz clock by connecting the clock to the SYNC pin of the AN9911DB2.

Specifications	
Input voltage	15VDC to 32VDC
Output voltage:	20 to 30V
Output current:	0.4A +/-5% / 0.55A +/-5%
Output power:	16.5W
Efficiency (full load)	82%
Output 100Hz current ripple	<1%
Output short circuit protection	Yes
Open LED protection	Yes
Switching frequency	200kHz
Dimensions:	50 x 30 x 30 mm

Board Layout and Connections



Connections:

Input - The input is connected between the terminals of connector XS1 as shown in the connection diagram.

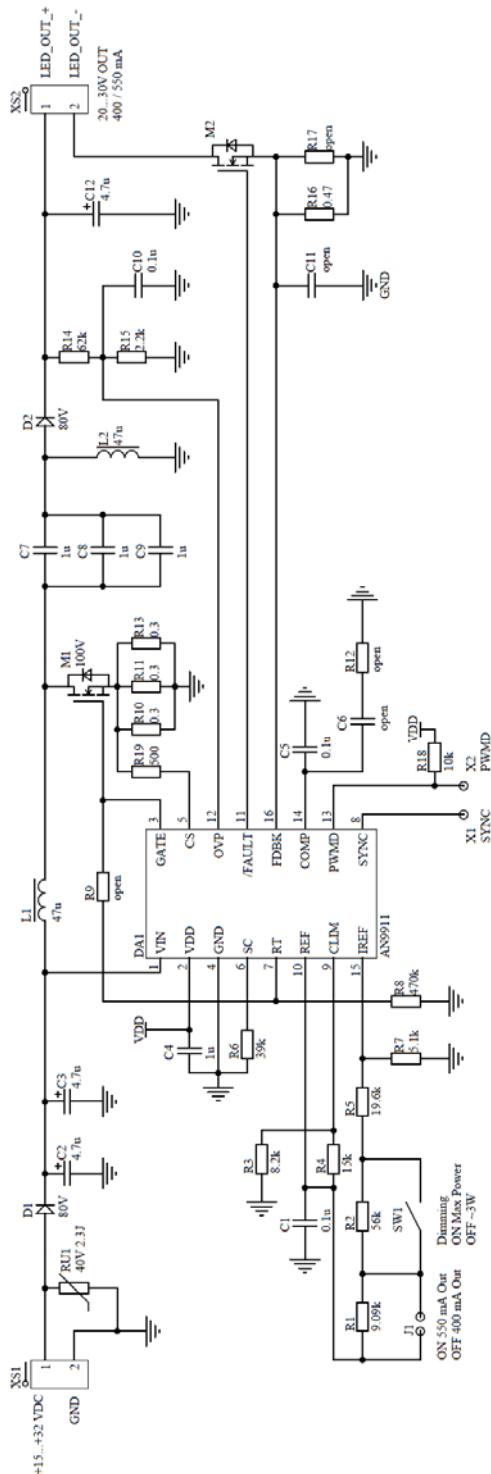
Output - The output is connected between the terminals of connector XS2 as shown.



To use the **PWM** dimming feature of the board, connect an external push-pull square wave source to PWM D pad.

SYNC: To synchronize two or more boards, connect the SYNC pins of all the boards. To synchronize the AN9911DB2 to an external 200kHz clock, connect the clock to SYNC pad.

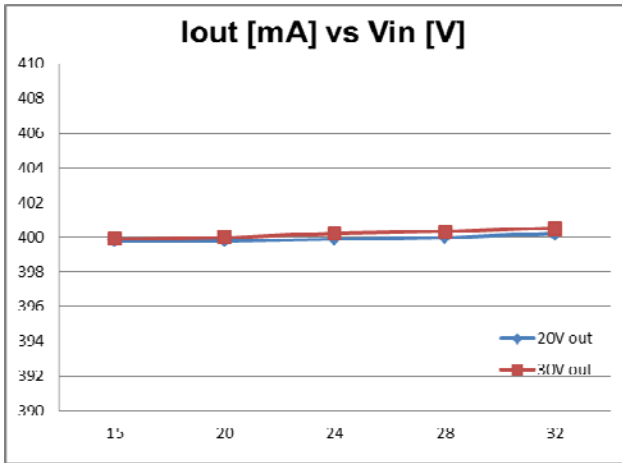
Schematic Diagram



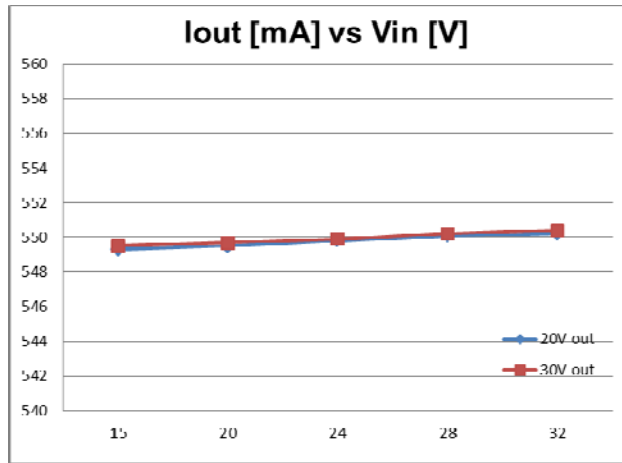


Typical Characteristics

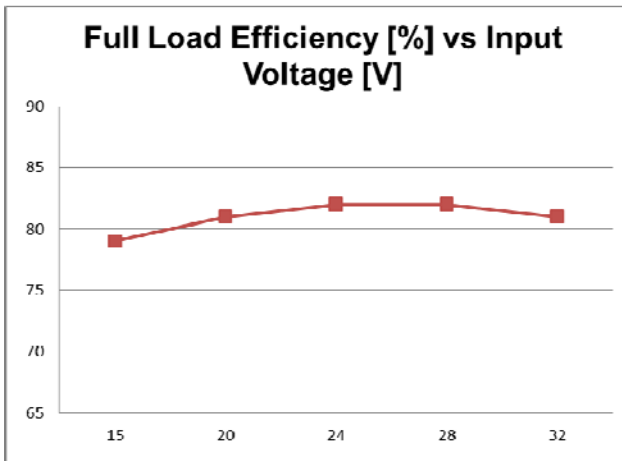
400mA Out Regulation



550mA Out Regulation

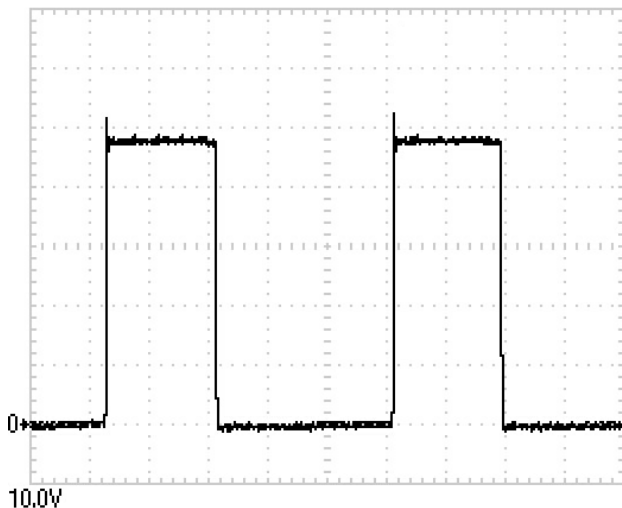


Efficiency (550 mA out)



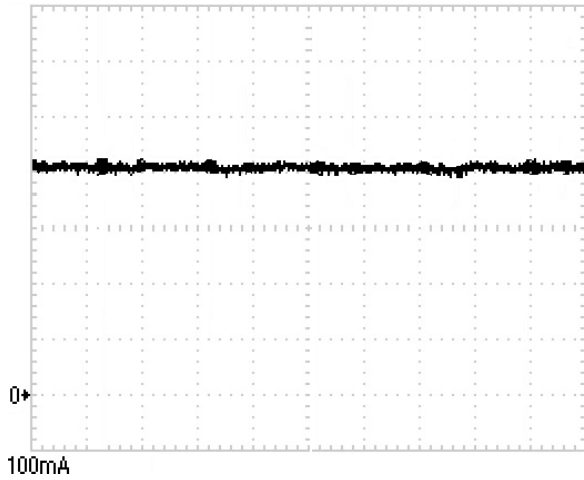
Waveforms

Drain voltage

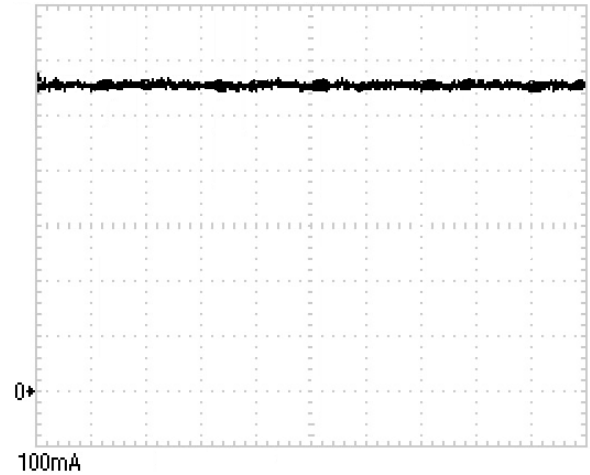




Output current (400mA)

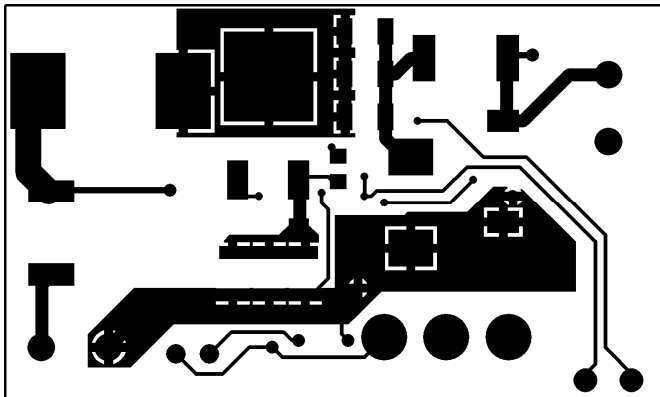


Output current (550mA)

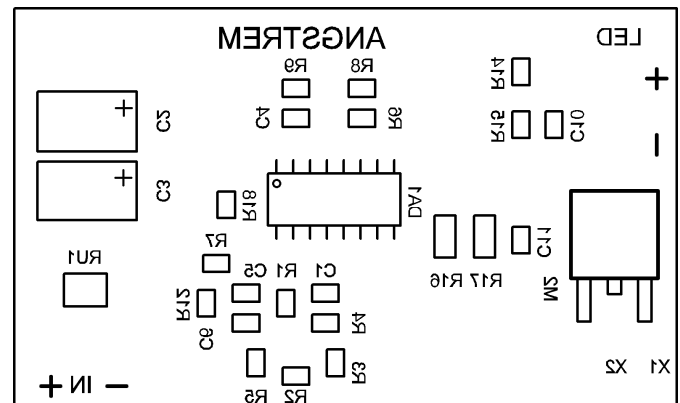
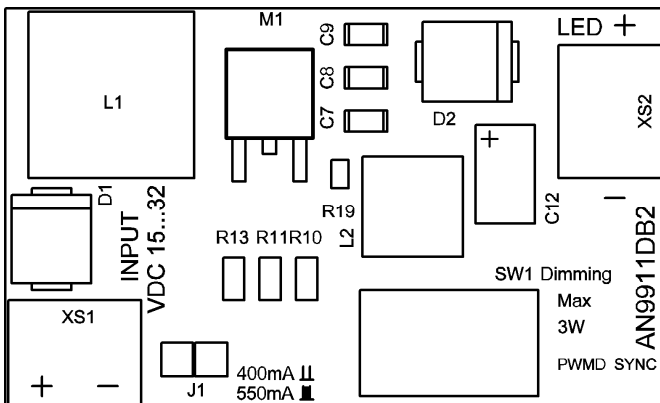
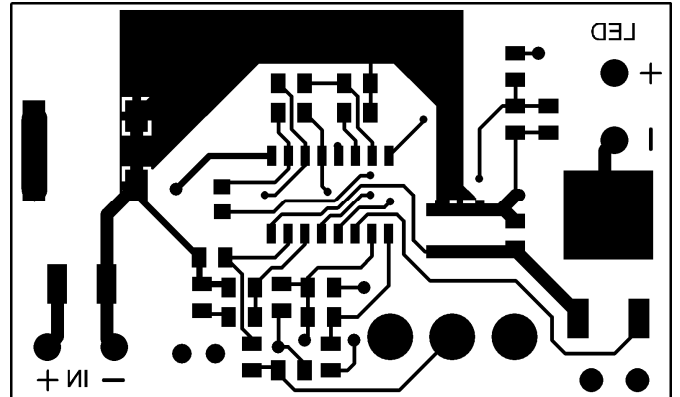


PCB Layout

Top



Bottom



**Bill of Materials**

Qty	REF	Description	Manufacturer	Product Number
3	C1, C5, C10	Cap Cer X7R 0805 0.1uF 50V	-	-
3	C2, C3, C12	Cap Tantalum Type D 4.7uF 50V	-	-
1	C4	Cap Cer X7R 0805 1uF 25V	-	-
2	C6, C11	Open	-	-
3	C7, C8, C9	Cap Cer X7R 1206 1uF 50V	KEMET	C1206C105K5RACTU
2	D1, D2	Diode Shottky SMC 80V 3A	Micro Commercial Co	SK38-TP
1	DA1	IC LED Driver SO-16	Angstrom	AN9911
1	J1	Jumper	-	PLS-2
1	L1	Inductor 47uH 2.95A	Coiltronics	DR127-470-R
1	L2	Inductor 47uH 1.41A	Coiltronics	DR74-470-R
2	M1, M2	Transistor N-MOS DPAK 100V 9.1A 0.21Ohm 16.7 nC	International Rectifier Corporation	IRFR120N
1	R	Res 0805 1% 9.09 kOhm	-	-
1	R2	Res 0805 1% 56 kOhm	-	-
1	R3	Res 0805 1% 8.2 kOhm	-	-
1	R4	Res 0805 5% 15 kOhm	-	-
1	R5	Res 0805 1% 19.6 kOhm	-	-
1	R6	Res 0805 5% 39 kOhm	-	-
1	R7	Res 0805 1% 5.1 kOhm	-	-
1	R8	Res 0805 5% 470 kOhm	-	-
3	R9, R12, R17	Open	-	-
3	R10, R11, R13	Res 1206 5% 0.3 Ohm	-	-
1	R14	Res 0805 5% 62 kOhm	-	-
1	R15	Res 0805 5% 2.2 kOhm	-	-
1	R16	Res 1206 1% 0.47 Ohm	-	-
1	R18	Res 0805 5% 10k Ohm	-	-
2	R14, R15	Res 1206 5% 16k Ohm	-	-
1	R16	Res 1206 1% 1.1 Ohm	-	-
1	R17	Res 1206 1% 1.2 Ohm	-	-
1	R18	Res 0805 5% 47 kOhm	-	-
1	R19	Res 0805 5% 500 Ohm	-	-
1	RU1	Varistor 1210 40V 250A 2.3J	Epcos	B72530T400K62
1	SW1	Switcher ON-ON 3A 250VAC	Jietong Switch	MTS-102-A1
2	XS1, XS2	Terminal Block 16A 300V	Deca Switchlab	MA522-500M2