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SEPIC LED Driver

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Device	Application	Input Voltage	Output Power	Topology	I/O Isolation
CS5171	Miners Light	4 Vdc	2 W	SEPIC	NO

Other Specifications				
	Output 1	Output 2	Output 3	Output 4
Output Voltage	3.5 V	N/A	N/A	N/A
Nominal Current	350 mA	N/A	N/A	N/A

Minimum Efficiency	70%
Operating Temp. Range	0 to +70°C

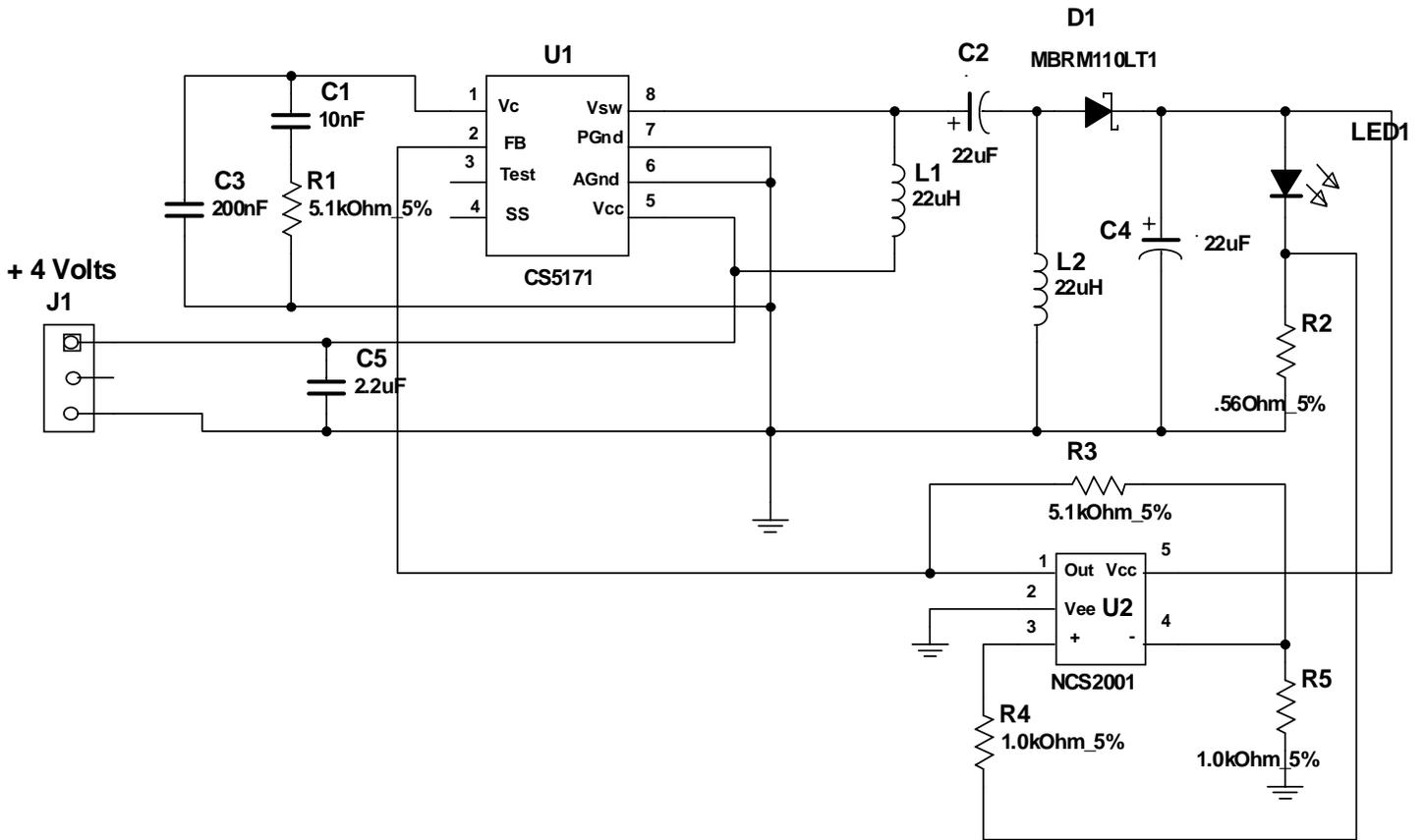
Circuit Description

This application is for the LED driver to be powered from a source that can be higher or lower than the LED voltage and must be efficient as possible. The SEPIC topology was chosen. The schematic in the following page shows a 4 V SEPIC LED driver using the CS5171 as a DC-DC boost regulator. The CS5171 operates at 260 KHz with about 65% efficiency with a 4.0V input. The MBRM110LT1 is a 10V schottky diode with a forward drop of < 0.3V. The NCS2001 operates as amplifier for the current sense voltage across R2 and drives the feedback pin on the CS5171.

Key Features

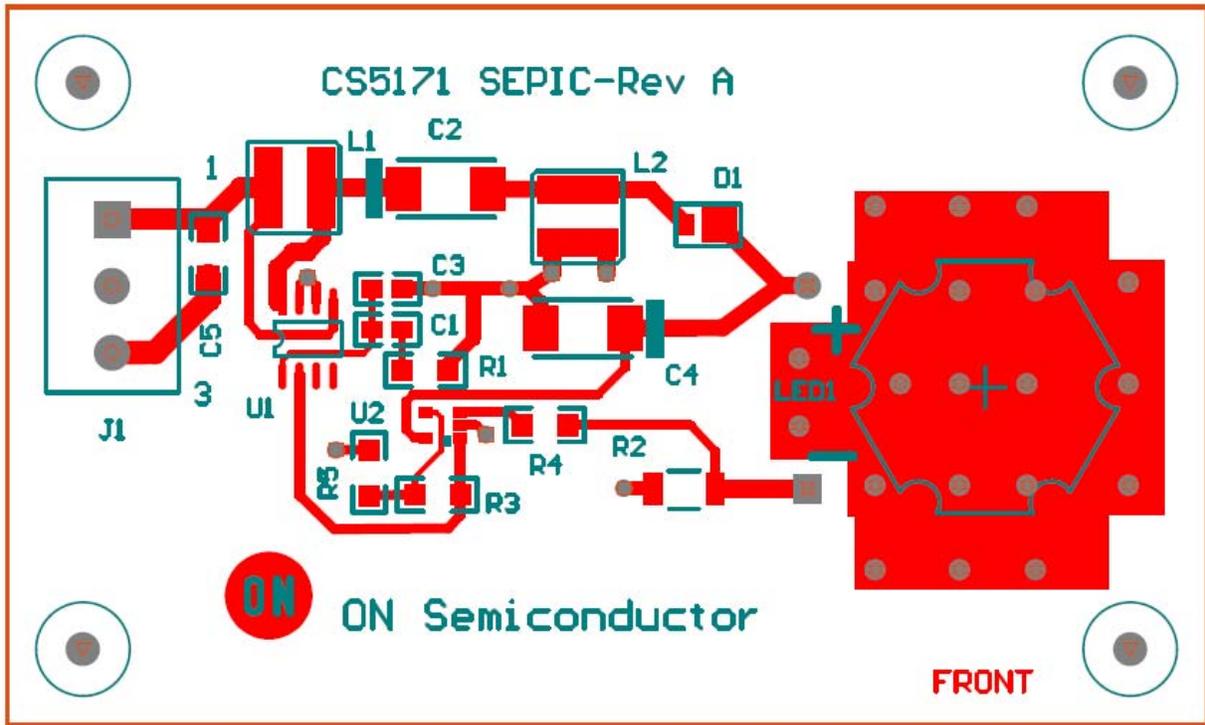
- SEPIC LED Driver
- 350 mA LED Current

Schematic

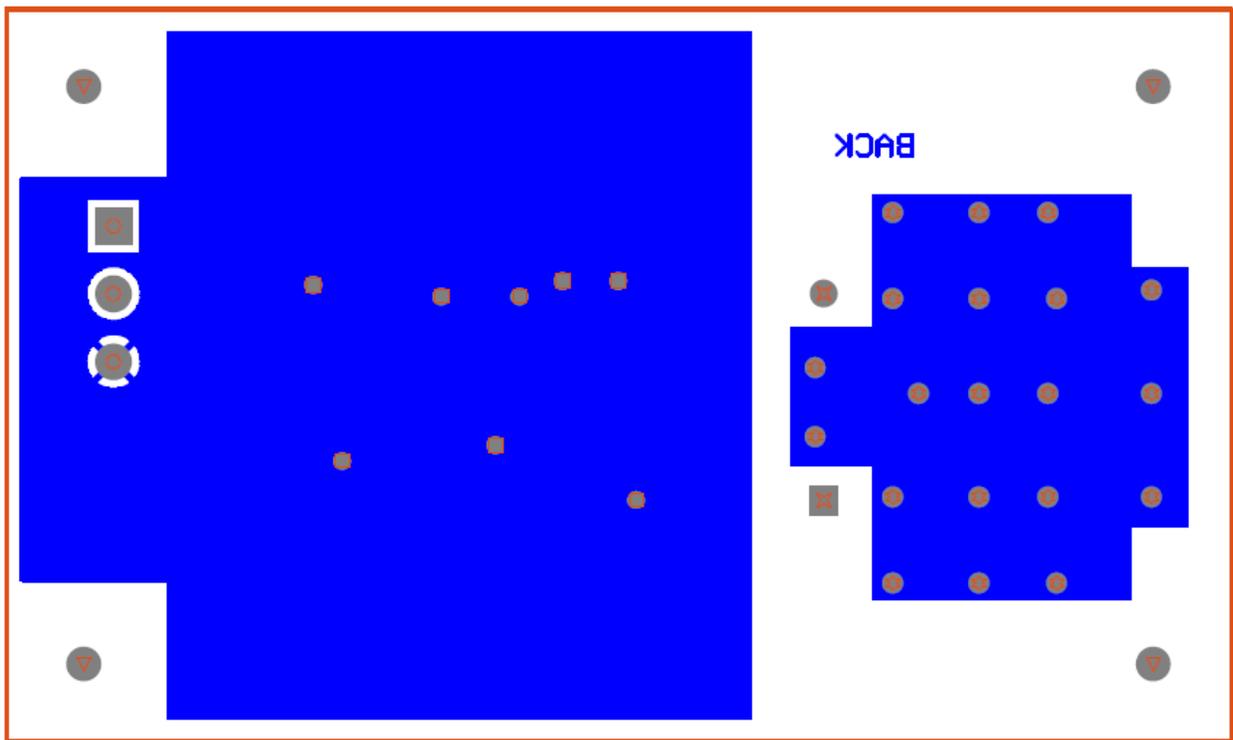


DN06004/D

Layout

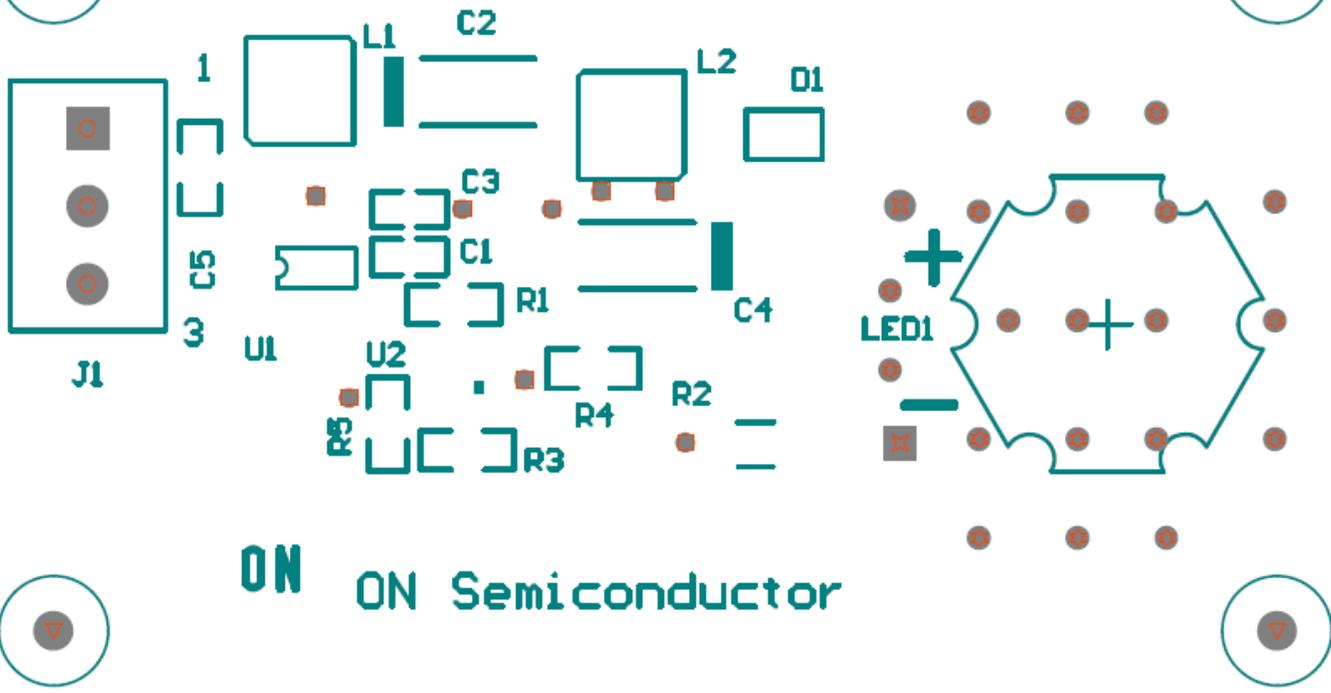


3550 (mil)



3550 (mil)

CS5171 SEPIC-Rev A



3550 (mil)

DN06004/D

Bill of Materials

Ref.	Qty.	Description	Value	Package	Vendor	Vendor PN	Digikey #
U1	1	IC Boost Controller		SO-8	ON Semi	CS5171ED8	
U2	1	Amplifier		SOT23-5	ON Semi	NCS2001SN2T1	
D1	1	Diode	10 V Schottky	Powermite	ON Semi	MBRM110LT1	
LED1	1			STAR / O	LUXON	LXHL-NW98	
J1	1				Phoenix Contact	1715035	
C1	1	Capacitor	.01 uf	805	Panasonic	ECJ-2VB1H103K	PCC103BNCT-ND
C2	1	Capacitor	22 uf	smd	Panasonic	EEF-CD1B220R	PCE3168CT-ND
C3	1	Capacitor	200 nf	805	Panasonic	ECJ-2VB1C224K	PCC1816CT-ND
C4	1	Capacitor	22 uf	smd	Panasonic	EEF-CD1B220R	PCE3168CT-ND
C5	1	Capacitor	2.2 uf	1206	Panasonic	ECJ-3YB1C225K	PCC1931TR-ND
R1	1	Resistor	5.1 K ohm	1206	Panasonic		P5.1KECT-ND
R2	1	Resistor	.56 ohm 1%	1206	Panasonic		P.56RCT-ND
R3	1	Resistor	5.1 K ohm 1%	1206	Panasonic		P5.1KFCT-ND
R4	1	Resistor	1 K ohm 1%	1206	Panasonic		P1.0KFCT-ND
R5	1	Resistor	1 K ohm 1%	1206	Panasonic		P1.0KFCT-ND
L1	1	Inductor	22 uh	smd	Coil_craft	MSS6132-223MXD	
L2	1	Inductor	22 uh	smd	Coil_craft	MSS6132-223MXD	
PCB	1	CS5171 SEPIC raw board				CS5171 Rev A	

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Design note created by Roger Miller, e-mail: roger.miller@onsemi.com