

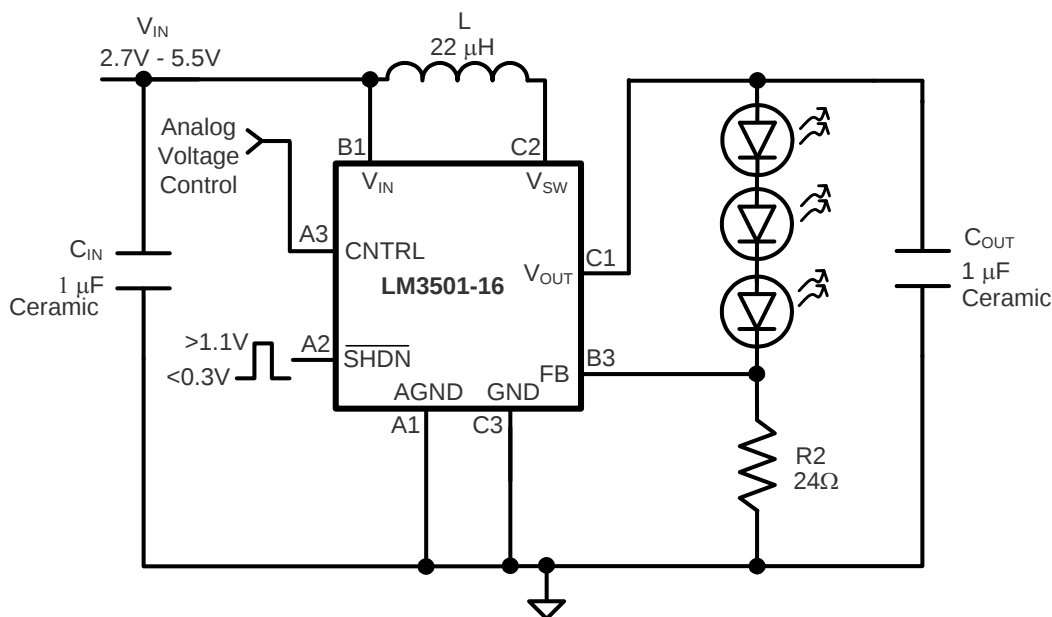
AN-1318 LM3501 Evaluation Board

1 Introduction

The LM3501 is a synchronous step-up DC/DC converter designed for white LED applications. The evaluation board is set up to drive 3 standard V_F white LEDs from a single Li-Ion battery. A fourth LED pad (D4) is included for testing of up to 4 low V_F white LEDs.

The LED current is set using the resistor R2 and the equation $I_{LED} = V_{FB}/R2$. V_{FB} is determined by the voltage applied to the CNTRL pin. The maximum value of V_{FB} is 0.515V and occurs with a CNTRL voltage of approximately 2.7V. This condition translates into approximately 20mA LED current. A lower CNTRL voltage will translate into a lower V_{FB} voltage and a lower LED current. The feedback voltage can be calculated using the equation $V_{FB} = 0.191 \times \text{CNTRL}$. A CNTRL voltage of 125mV or greater turns the LEDs on while a CNTRL voltage of 75mV or less turns the LEDs off. Please note that for correct operation the SHDN pin must have a voltage greater than 1.1V applied to it.

2 Schematic



3 Bill of Materials

Designator	Component	Manufacturer
U1	LM3501, DSBGA 8-lead	Texas Instruments
L	22 μ H, DT1608C-223	Coilcraft
C _{IN}	1 μ F, 25V Ceramic C3216X7R1E105K	TDK
C _{OUT}	1 μ F, 25V Ceramic C3216X7R1E105K	TDK
D1–D3	White LED, LWT67C	Osram
D4	0 Ω Resistor, 1206 Case, CRCW1206–000J	Vishay
R1	24 Ω , 1206 Case, CRCW1206–240J	Vishay

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