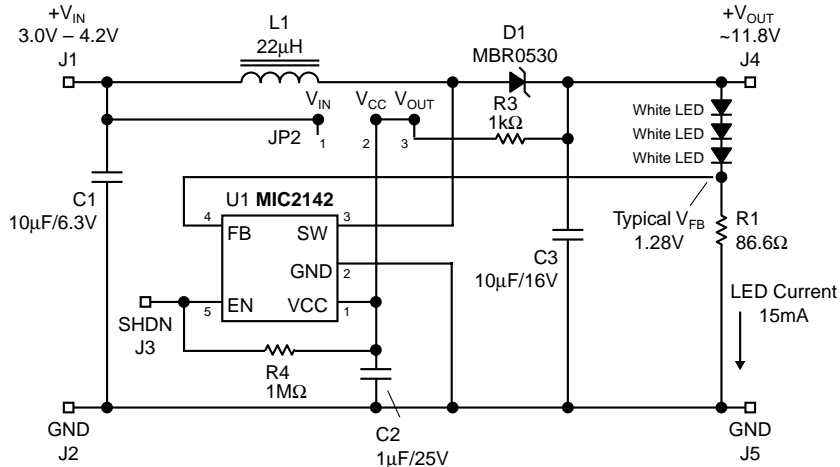


The following circuit shows how the MIC2142 evaluation board can be modified to tightly control the current going through a string of series LEDs in 3.0V to 4.2V 1-cell Li-Ion applications.

### Circuit Performance

- White/blue LED driver
- 1-Cell Li-Ion (3.0V to 4.2V)
- Efficiency > 80% at 3V input (min.) and at 15mA load
- Output ripple voltage < 100mV
- Low-profile solution



Circuit 1. Constant-Current LED Driver

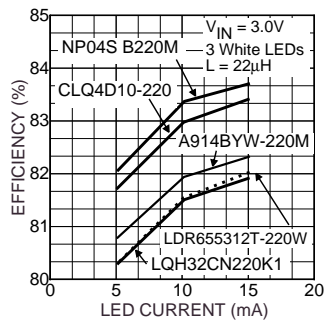


Figure 1. Typical Efficiency vs. LED Current with Various Inductor Types

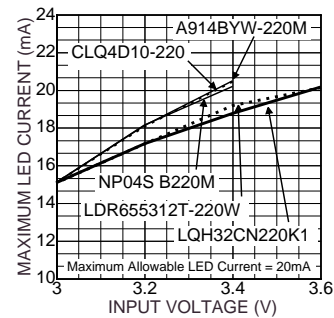


Figure 3. Maximum LED Current vs. Minimum Input Voltage

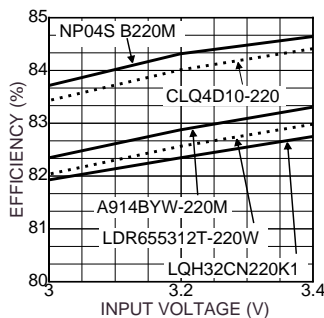


Figure 2. Typical Efficiency at Maximum LED Current

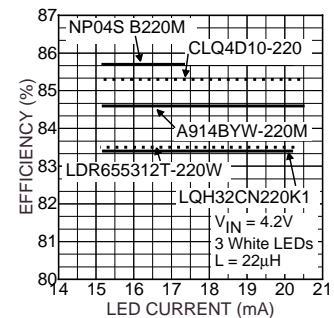


Figure 4. Typical Efficiency at 4.2V Input Voltage

Part Number	Manufacturer	Max. Height (mm)
CLQ4D10-220	Sumida	1.2
LDR655312T-220W	TDK	1.2
LQH32CN220K21	Murata	2.0 ± 0.02
A914BYW-220M	Toko	2.0
NP04S B220M	Taiyo Yuden	2.0

Table 1. Recommended Inductors

## Bill of Materials

Reference	Part Number	Manufacturer	Description	Qty
C1	GRM40X5R106K6.3	Murata <sup>(1)</sup>	10 $\mu$ F, 6.3V Ceramic	1
C2	GRM235Y5V105Z25	Murata <sup>(1)</sup>	1 $\mu$ F, 25V Ceramic	1
C3	GRM42-2X5R106K16	Murata <sup>(1)</sup>	10 $\mu$ F, 16V Ceramic	1
D1	MBR0530 MBR0530 B0530W	On Semiconductor <sup>(2)</sup> Micro Commercial Corp. <sup>(3)</sup> Diodes, Inc. <sup>(4)</sup>	0.5A, 30V Schottky Rectifier	1
L1	LQH32CN220K21 CLQ4D10-220 LDR655312T-220W A914BYW-220M NP04S B220M	Murata <sup>(1)</sup> Sumida <sup>(5)</sup> TDK <sup>(6)</sup> Toko <sup>(7)</sup> Taiyo Yuden <sup>(8)</sup>	22 $\mu$ H	1
R1	CRCW060386R6FRT1	Vishay-Dale <sup>(9)</sup>	86.6 $\Omega$ , 1% 1/16W, Size 0603	1
R3	CRCW06031001JRT1	Vishay-Dale <sup>(9)</sup>	1k $\Omega$ , 5% 1/16W, Size 0603	1
R4	CRCW06031004JRT1	Vishay-Dale <sup>(9)</sup>	1 M $\Omega$ , 5% 1/16W, Size 0603	1
U1	<b>MIC2142BM5</b>	<b>Micrel Semiconductor<sup>(10)</sup></b>	Micro-power Boost Converter	1

1. Murata tel: 949-916-4000

2. On Semiconductor tel: 800-344-3860

3. Micro Commercial Corp. tel: 800-346-3371

4. Diodes Inc. tel: 408-342-1220

5. Sumida tel: 510-668-0600

6. TDK tel: 847-390-4366

7. Toko tel: 408-432-8281

8. Taiyo Yuden tel: 408-573-4150

9. Vishay-Dale tel: 402-644-4218

10. Micrel Semiconductor tel: 408-944-0800

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