

DETAIL Solution 5

40 **VBUS**

39 **VSYS**

38 **GND**

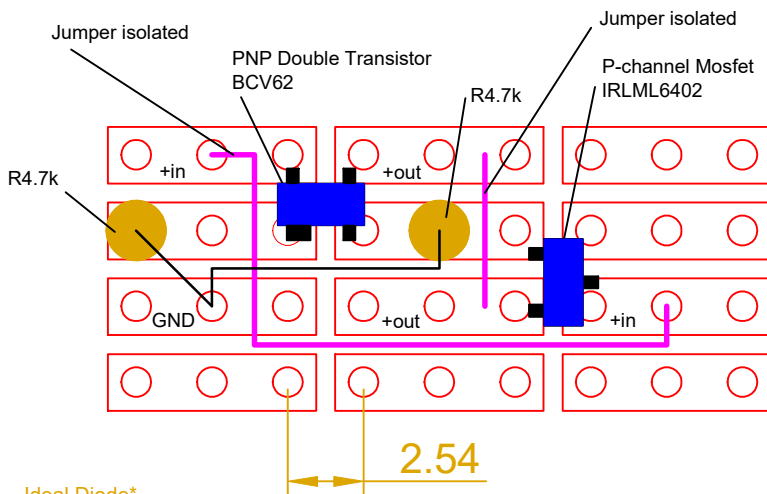
37 **3V3EN**

36 **3V3**

35

3.3V >>>
max. 300mA

Close to the **Ideal Diode**



Ideal Diode*

The ideal diode, consisting of a P-channel Mosfet and a PNP double transistor, can reduce the loss voltage down to 0.05V. For this example the IRLML6402 and the BCV62 are used.

For more details see:

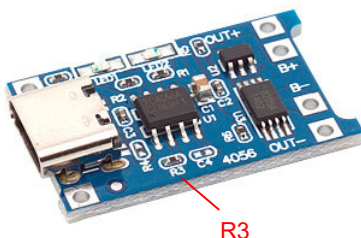
<https://praktische-elektronik.dr-k.de/Praktikum/Analog/DiodenTransistoren/Le-Ideale-Diode.html>
Sorry only in German, use Google Translate.

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Popular Battery Charger

Based on chipset TC4056A

R3 can be changed for charging currents other than 1000 mA.



30 kΩ = 50 mA
20 kΩ = 70 mA
10 kΩ = 130 mA
5 kΩ = 250 mA
4 kΩ = 300 mA
3 kΩ = 400 mA
2 kΩ = 580 mA
1.5 kΩ = 780 mA
1.33 kΩ = 900 mA
1.2 kΩ = 1000 mA

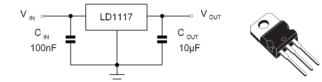
Voltage Regulators Solution 4

Digital Step-Down Regulators



High efficiency (> 93%) but also voltage ripples. This prevents high quality analog use cases.

Low Drop Regulators



Lower efficiency (> 73%). For high quality analog use cases.

Examples:

LD1117 0.8A DV = 1.20V 73%
LF33CV 0.5A DV = 0.45V 88%

Dropout Voltages of LF33CV

Io = 200 mA typ. 0.2V max. 0.35V
Io = 500 mA typ. 0.4V max. 0.70V

