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USB-R1

Beschrieb V 1.0

**einfacher USB-Spannungsregler
simple USB voltage regulator
semplice USB regolatore di tensione**

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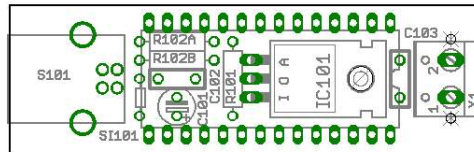
Shortform



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USB-R1 USB voltage regulator



| | |
|--------------|---|
| S101 | USB connector B |
| X1 | Output terminal |
| DIL28 | 28 pin socket for breadboard interconnection (optional) |

Dimension: 65mm x 20mm

Version 1.0

Beschrieb / Description / Descrizione

Diese einfache Schaltung ermöglicht eine Speisung von Geräten mit einer Versorgungs-Spannung unter 3,5V. Der maximale Strom sollte 350mA nicht überschreiten. Die Ausgangs-Spannung kann mit Hilfe von R102A und R102B eingestellt werden. Aus Sicherheits-Gründen wurde auf den Einsatz eines Potentiometers verzichtet. Angaben für die Berechnung der nötigen Widerstände finden Sie im Anhang.

This simple circuit may power devices with a voltage of less than 3.5V. The maximum current may not exceed 350mA. The output voltage can be adjusted with the resistors R102A and R102B. We have omitted the use of a potentiometer for safety reasons. For calculating the values of the resistors you are pleased to look up in the appendix.

Questo dispositivo semplice permette l'alimentazione di apparecchi che hanno bisogno di una tensione meno di 3,5V. La corrente massima non può superare 350mA. La tensione in uscita può essere aggiustato con le resistenze R102A e R102B. Per ragioni di sicurezza non abbiamo usato un

potenziometro. Per calcolare i valori delle resistenze basta rivolgersi al appendice.

Steckerbelegung / Pinout / Connessioni

USB

| | |
|---|-----|
| 1 | +5V |
| 2 | NC |
| 3 | NC |
| 4 | GND |

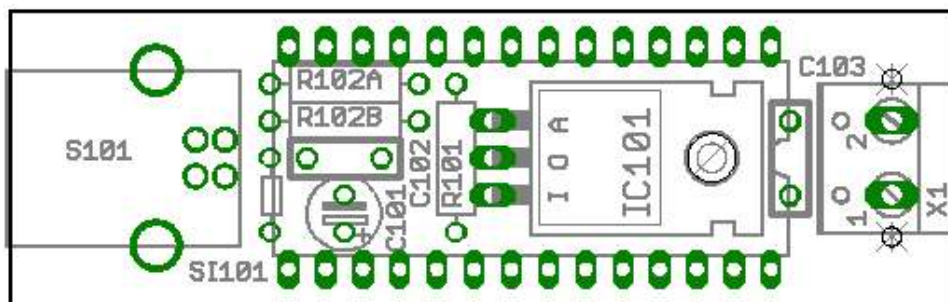
X1

| | |
|---|--------|
| 1 | + UOUT |
| 2 | GND |

DIL28

| | | | |
|----|-----|----|-------|
| 1 | GND | 28 | +UOUT |
| 2 | GND | 27 | +UOUT |
| 3 | GND | 26 | +UOUT |
| 4 | GND | 25 | +UOUT |
| 5 | GND | 24 | +UOUT |
| 6 | GND | 23 | +UOUT |
| 7 | GND | 22 | +UOUT |
| 8 | GND | 21 | +UOUT |
| 9 | GND | 20 | +UOUT |
| 10 | GND | 19 | +UOUT |
| 11 | GND | 18 | +5V |
| 12 | GND | 17 | +5V |
| 13 | GND | 16 | +5V |
| 14 | GND | 15 | +5V |

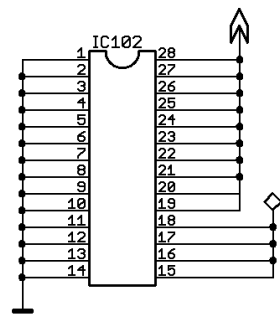
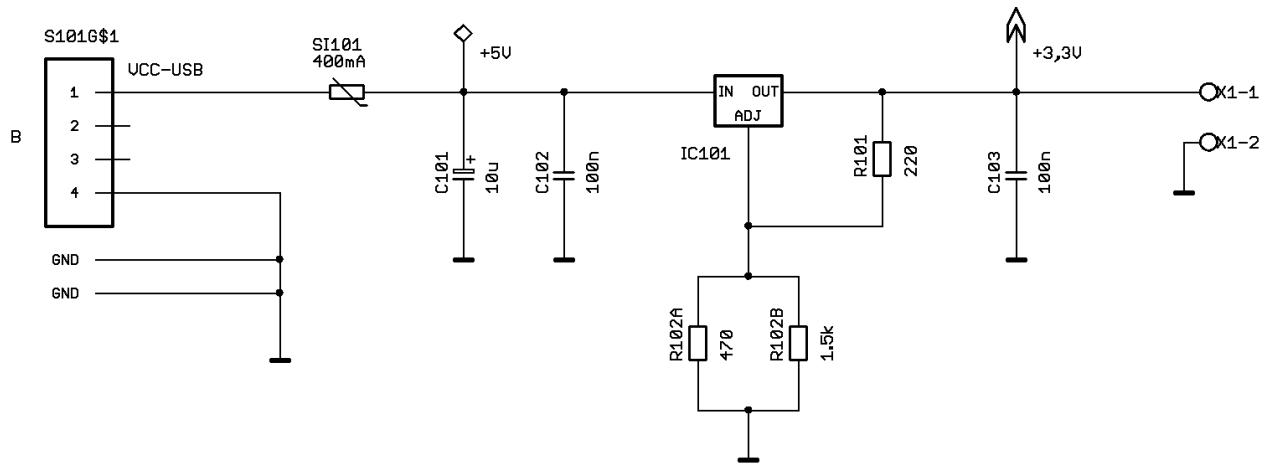
Bestückungsplan / Component Placement / Pinao di montaggio



Stückliste / BOM / Elenco componenti

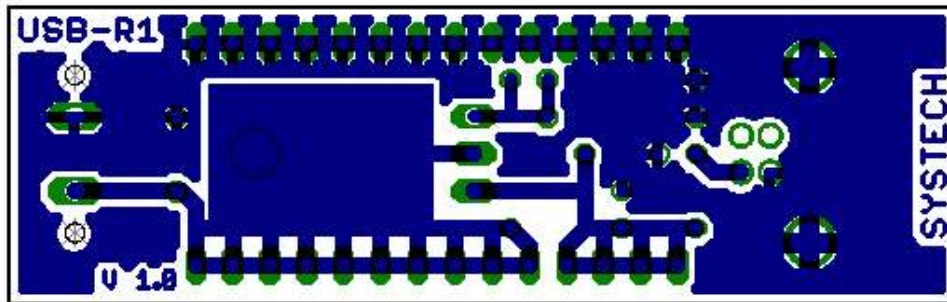
| Name | ID | Value | Case |
|-------|---------------|---------|----------|
| C101 | E-2.5-10U-10V | 10U-10V | E-2.5 |
| C102 | C-5-100N | 100N | C-5 |
| C103 | C-5-100N | 100N | C-5 |
| R101 | R-10-220 | 220 | R-10 |
| R102A | R-10-470 | 470 | R-10 |
| R102B | R-10-1K5 | 1K5 | R-10 |
| IC101 | LM1117T-ADJ | | TO220-3 |
| DIL28 | ST-DIL28 | | DIL28 |
| SI101 | SI-5-0A40-72V | 400mA | SI-5 |
| S101 | ST-USB-B | | ST-USB-B |
| X101 | ST-KL508-2 | | |
| PRINT | USB-R1 | | |

Schema / Schematics / Schema elettrico

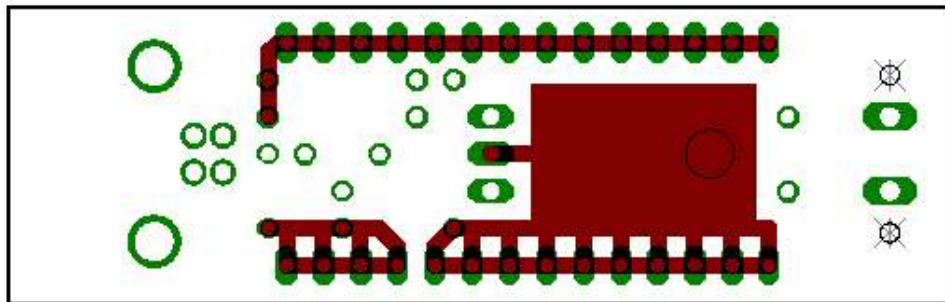


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|---------------------------|--|-----------------------|------------|
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| TITLE: USB-R1 | | | |
| Document Number: | | | REV: |
| Date: 14.12.2007 21:13:54 | | | Sheet: 1/1 |

Print / PCB / Circuito stampato



Print bottom



Print top (optioal)

Anhang / Appendix / Appendice

Werte für R102A und R102B / Values for R102A and R102B / valori per R102A e R102B

basierend auf: / based on / basato su:

$$R101 = 220 \text{ Ohm}; \quad I_q = 50 \mu\text{A} \rightarrow I_R = 1.25\text{V}/R101 + I_q = 5.732\text{mA}$$

$$R = (U_{\text{out}} - 1.25\text{V})/I_R = R102A/R102B$$

| Spannung / Voltage | R | R102A | R102B |
|--------------------|-----|-------|-------|
| 3.5V | 392 | 560 | 1'300 |
| 3.3V | 358 | 470 | 1'500 |
| 3.0V | 305 | 560 | 680 |
| 2.7V | 256 | 470 | 560 |
| 2.5V | 218 | 220 | ----- |

R102A und R-102B gewählt aus der E12 Reihe

Links / Colegamenti

System J.Schnyder GmbH

www.systech-gmbh.ch

Entwicklung von Hard- und Software, Schulungs-Systeme Layout-Programme