Rx

File: Rx.kicad_sch

All polarized capacitors are tantalum unless otherwise noted
All non-polarized capacitors are ceramic unless otherwise noted
All resistors are 1%, 1/4W unless otherwise noted

Use generic wall-wart style
PSU -7.5V~9V @ ~500mA

OUTPUT VOLTAGE PROGRAMMING GUIDE

OUTPUT VOLTAGE	R1	R2	UNIT
2.5 V	191	169	kΩ
3.3 V	309	169	kΩ
3.6 V	348	169	kΩ
4 V	402	169	kΩ
5 V	549	169	kΩ
6.4 V	750	169	kΩ

Set R6, R9 to 549kΩ
Set R7, R10 to 169kΩ

High Bandwidth front-end TIA

Front-end transimpedance amplifier. Assuming peak current of 90µA, Vo(pk-pk) -= 500mV. BW > 1MHz.

Since PD reverse biased, this is noninverting config

Cap coupled DC offset buffer, HPF @ input

Noninverting amplifier with HF roll-off, 4x gain

Passive RC LPF <-7MHz

1 bit ADC w/ ext hyst for noise immunity

Set +-100mV ext. hysteresis

Hand match to noninv. input of U3C

Unused - see datasheets and design guides for handling of unused pins

200mV bias via VCC bypass

1% C0G or NP0

TIA

100pF causes envelope drift on the signal path
To alleviate this and preserve the filtering,
one might employ an active filter topology with
the necessary RC values in an Op Amp FB path,
as demonstrated at the front end.

Hand match to noninv. input of U4C

Mylar Polyester

LiFiRx0
LiFiRx1

TPS7301QP — U5, U6
ADA4807-4ARUZ — U3A, U3B, U3C, U1B, U3D, U4A, U4B, U4C, U2B, U4D
TLV3502 — U1A, U1B, U2A, U2B
SFH_213 — D2, D3
2N7000 — Q1, Q2
HC-SR04 — U9
LDR NSL-5112
1N4001 — D1
NANO — TB0, TB1
I2C_OLED — J2, J3

Sheet: /Rx/
File: Rx.kicad_sch
Title:
Size: A3   Date:
Rev:
KiCad E.D.A. eeschema (6.0.10)
Id: 2/2