

LP1  
Leiterplatte  
LP-DCF-77 A4510D

Title <b>DCF-77 A4510D</b>		S.Hofmann info@shotech.de www.shotech.de Revision: 0.3	
Size: A4	Description: DCF77 FA		
Date: 24.07.2020	Time: 23:57:32	Sheet 1 of 1	
File: DCF_77_Sheet1.SchDoc			

85,00

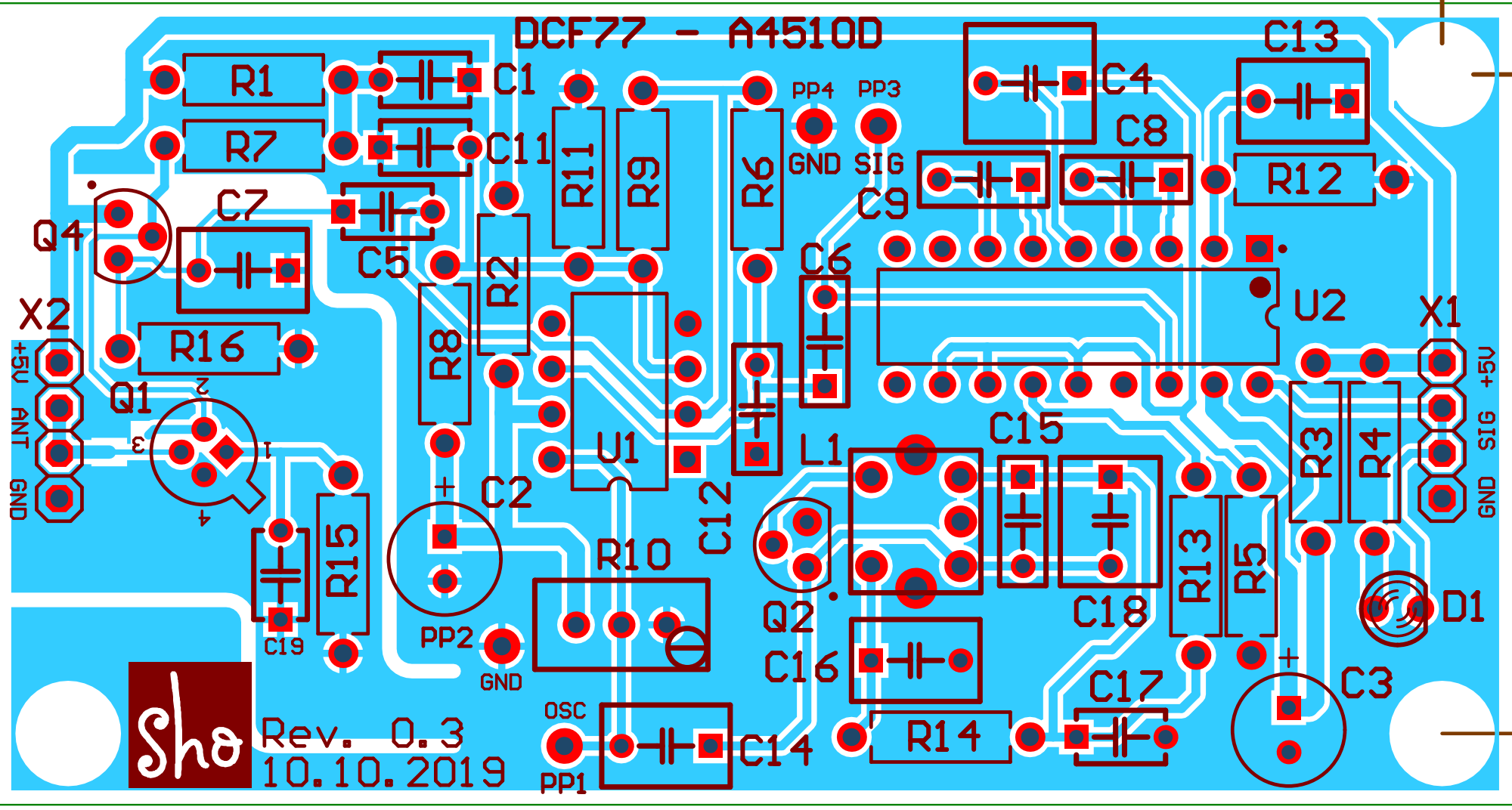
4,00

# DCF77 - A4510D

4,00

45,00

M3.0



X2  
+5V  
ANT  
GND

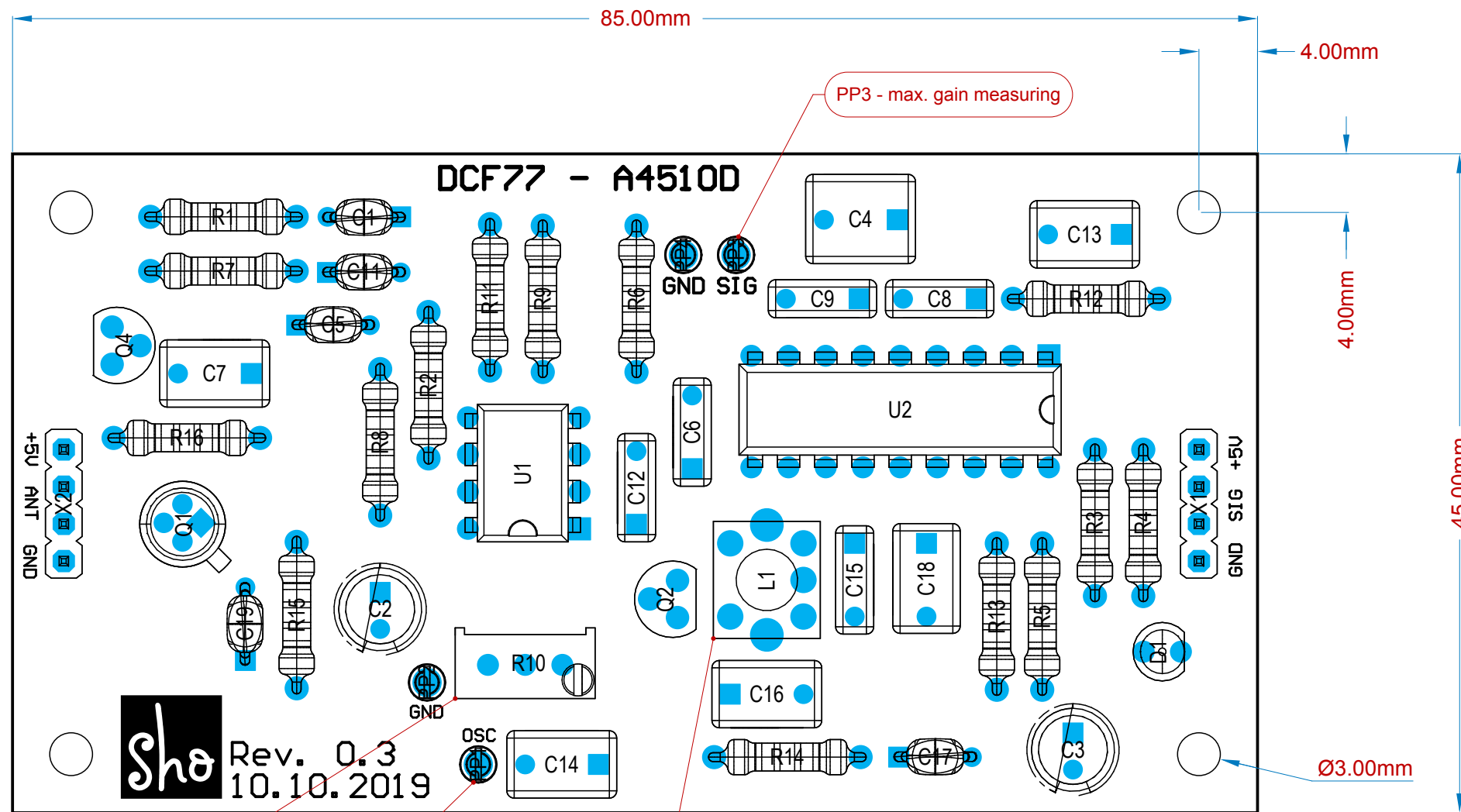
X1  
GND  
SIG  
+5V



Rev. 0.3  
10.10.2019

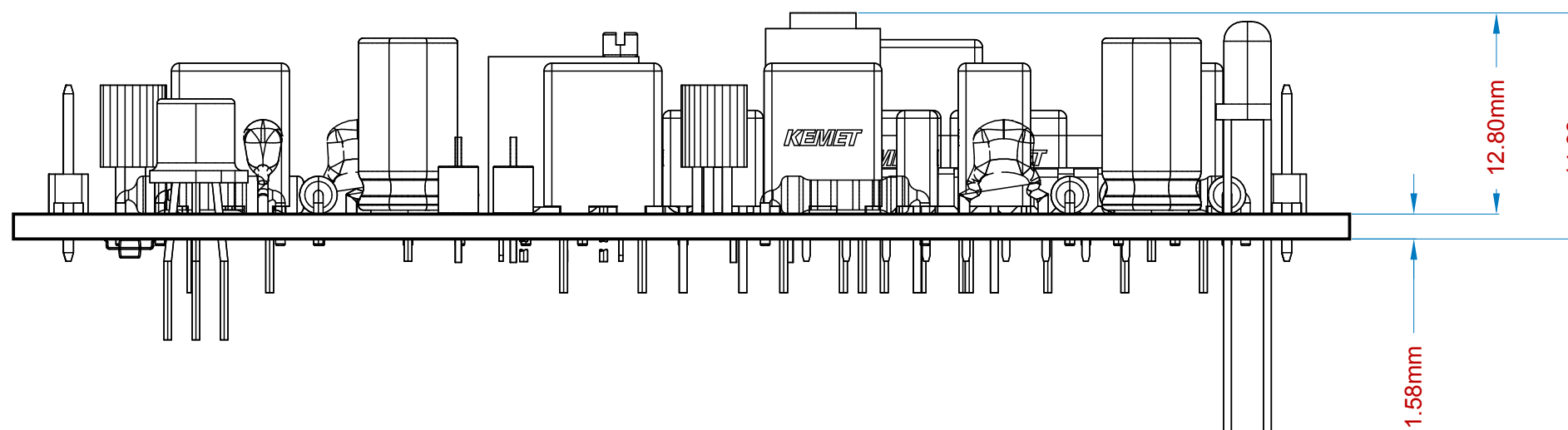
OSC  
PP1

PP4  
PP3  
GND  
SIG  
C9



Item	Designator	Comment	Quantity
1	C12	27n	1
2	C13	1n5	1
3	C14	1n	1
4	C15	2n2	1
5	C16	680p	1
6	C1, C11, C17	100nF/50V	3
7	C18	22n	1
8	C2, C3	100µF/16V	2
9	C4	10n	1
10	C5, C19	10nF	2
11	C7	39nF	1
12	C6, C8	100nF	2
13	C9	220n	1
14	D1	LED_3mm_RED_E	1
15	L1	3910	1
16	PP1-PP4	Prüfpunkt	4
17	Q1	2N4416A	1
18	Q3	SST4416	1
19	Q2, Q4	BC538B	2
20	R10	470k	1
21	R7, R8, R11	22k	3
22	R12	13k	1
23	R1, R13	2k2	2
24	R14	82k	1
25	R15	39k	1
26	R16	10k	1
27	R2	330R	1
28	R3	47R	1
29	R5	3k3	1
30	R6	100k	1
31	R4, R9	1k	2
32	U1	UA776CN	1
33	U2	A4510D	1
34	X1, X2	CON-1x4	2

set to maximum gain on PP3 (SIG)  
 83.5KHz measuring  
 83.5KHz preset

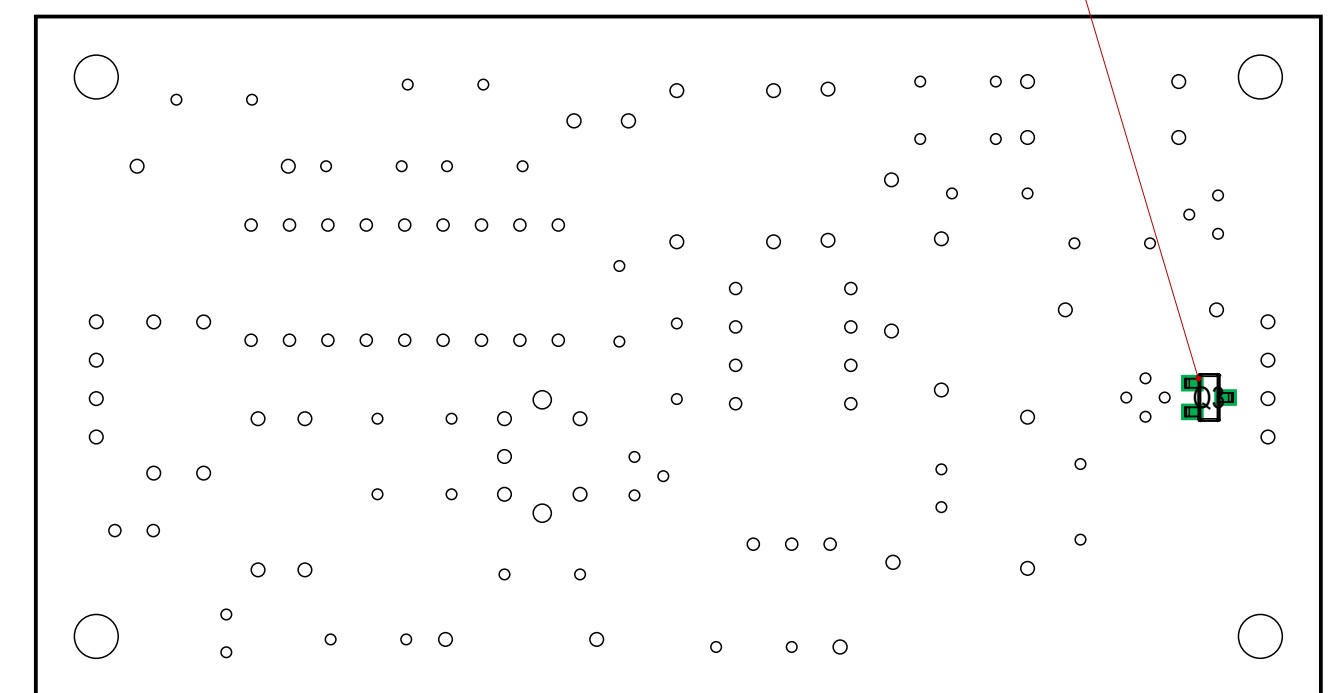


**adjustment !**

1. preset 83,5 KHz on L1
2. set maximum gain with R1 (measurement on PP1)
3. optimal alignment of the ferrite antenna
4. Fine adjustment of L1 until PLL locks (High to Low clock on the LED)

Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Paste			Paste Mask	GTP
	Top Overlay			Legend	GTO
Surface Material	Top Solder	0.01mm	Solder Resist	Solder Mask	GTS
Copper	Top Layer	0.04mm		Signal	GTL
		1.51mm	FR-4	Dielectric	
Copper	Bottom Layer	0.04mm		Signal	GBL
Surface Material	Bottom Solder	0.01mm	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO
	Bottom Paste			Paste Mask	GBP

Total thickness: 1.60mm



THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF shotech Steffen Hofmann. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PROPRIETARY AND CONFIDENTIAL

		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	shotech Steffen Hofmann	
		DIMENSIONS ARE IN INCHES		DRAWN	24.07.2020	TITLE	
		TOLERANCES:		CHECKED		DCF77 A4510D - V3	
		FRACTIONAL ±		ENG APPR.		SIZE DWG. NO.	
		ANGULAR: MACH ± BEND ±		MFG APPR.		SCALE: 1:1 WEIGHT: SHEET 1 OF 1	
		TWO PLACE DECIMAL ±		Q.A.			
		THREE PLACE DECIMAL ±		COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL					
		FINISH					
NEXT ASSY	USED ON	DO NOT SCALE DRAWING					
APPLICATION							



Bearbeiter: S. Hofmann  
 Tel: 040 /  
 Fax: 040 / 76906856  
 Email: shop@shotech.de

## Bill of Materials

<b>Datum:</b>	24. Juli 2020
<b>Zeit:</b>	23:57:47
<b>Variante:</b>	Variant of DCF-77-A4510_3-3911
<b>Bezeichnung:</b>	DCF-77 A4510D
<b>Revision:</b>	0.3

Quantity	Designator	Footprint	Bemerkung	Value	MFT	Order-Code	Second-source	shotech
3	C1, C11, C17	CAP_Radial_5MM	Keramik-Vielschichtkondensator MLCC – bedrahtet 0.1uF 50volts 10% X7R 5mm LS	100nF/50V	Vishay / BC Components	K104K15X7RF53H5		001347
2	C2, C3	CAPPR5-6.3x11	Subminiatur-Elko, radial, 100 µF, 16 V, RM 2,5, 85°C, 1000h	100µF/16V	REC	Artikel-Nr.: SM 100/16RAD	MCMR16V107M6.3X7 /	001740
1	C4	CAP_Radial_5MM_7k2_6k5	Folienkondensator, 10nF, 100V, RM5, 2,5%	10n	WIMA	FKP2D021001I00HSSD	Multcomp	
2	C5, C19	CAP_Radial_5MM	DC-Folienkondensator, 10000 pF, 100 V, 5% RM5	10nF	KEMET	R82EC2100Z350J		001744
2	C6, C8	CAP_Radial_5MM_7k2_2k5	Folienkondensator, 100nF, 63V, RM5, 10%	100nF	KEMET	R82DC3100AA50K		001682
1	C7	CAP_Radial_5MM_7k2_4k5	Folienkondensatoren .039uF 5% 100volts	39nF	EPCOS / TDK	B32529C1393J189		001736
1	C9	CAP_Radial_5MM_7k2_3k0	Folienkondensator, 220nF, 63V, RM5, 5%	220n	WIMA	MKS2C032201B00JSSD		
1	C12	CAP_Radial_5MM_7k2_2k5	Folienkondensator, 27nF, 63V, RM5, 5%	27n	KEMET	MMK5273J63J01L16.5TR18		
1	C13	CAP_Radial_5MM_7k2_4k5	Folienkondensator, 1,5nF, 100V, RM5, 2,5%	1n5	WIMA	FKP2D011501D00HSSD	ERO KP 1834 / 1,5nF / 2,5%,	001741
1	C14	CAP_Radial_5MM_7k2_4k5	Folienkondensator, 1,0nF, 100V, RM5, 2,5%	1n	WIMA	FKP2D011001D00HSSD	160V / RM5	
1	C15	CAP_Radial_5MM_7k2_2k5	Folienkondensator, MKT 0,0022 µF, ± 10 %, 100 V-	2n2	frei	MKT 0,0022 µF, ± 10 %, 100 V-		001745
1	C16	CAP_Radial_5MM_7k2_4k5	Folienkondensator, 680pF, 100V, RM5, 2,5%	680p	WIMA	FKP2D006801D00HSSD	KT1808168164 / Roederstein	001743
1	C18	CAP_Radial_5MM_7k2_5k5	Folienkondensator, 22nF, 63V, RM5, 5%	22n	WIMA	MKS2C022201A00JSSD	FKP2C022201J00J / WIMA	001742
1	D1	LED3MM	LED diffus rot 80mcd 45° 3mm	LED_3mm_RED	Everlight	204-10SURD/S530-A3		001321
1	L1	DDR-Minifilter	Minifilter 3911, 160µH	3911	Hochfrequenzwerk Meuselwitz	Minifilter 3911	3910 mit Änderung des Cap.	001732
1	LP1	DCF77	DCF77 A4510D PCB V3	LP-DCF-77 A4510D	shotech	DCF77 A4510D PCB V3		001475
4	PP1, PP2, PP3, PP4	VERO_Testpoint_Blue	Prüfpunkt					
1	Q1	TO-206AF	2N4416A Series 35 V 5 mA Through Hole N-Channel JFET - TO-206AF	2N4416A	Vishay/Central-Semiconductor	2N4416A	KP303E	000997
2	Q2, Q4	SC_TO-92	Bipolar (BJT) Transistor NPN 30V 100mA 300MHz 500mW Through Hole TO-92-3	BC548BU	On-Semiconductor	BC548BU	BC548B	001739
2	R1, R13	RES10-7.8X2.8 - 2k2	WIDERSTAND, 207, axial, 1%	2k2	frei	RMGK002.2		001238
1	R2	RES10-7.8X2.8 - 330R	WIDERSTAND, 207, axial, 1%	330R				001588
1	R3	RES10-7.8X2.8 - 47R	WIDERSTAND, 207, axial, 1%	47R				001735
2	R4, R9	RES10-7.8X2.8 - 1k	Metallsch. 0207 1/4W 1%	1k	frei	RMGK001		001235
1	R5	RES10-7.8X2.8 - 3k3	WIDERSTAND, 207, axial, 1%	3k3				001589
1	R6	RES10-7.8X2.8 - 100k	WIDERSTAND, 207, axial, 1%	100k				001610
3	R7, R8, R11	RES10-7.8X2.8 - 22k	WIDERSTAND, 207, axial, 1%	22k				001672
1	R10	RFT 513_59	470k Spindeltrimmer	470k	RFT	RFT 513.59, 470K	3296-Suntan, 500k	001746
1	R12	RES10-7.8X2.8 - 13k	WIDERSTAND, 207, axial, 1%	13k				001733
1	R14	RES10-7.8X2.8 - 82k	WIDERSTAND, 207, axial, 1%	82k				001734
1	R15	RES10-7.8X2.8 - 39k	WIDERSTAND, 207, 1%	39k				001730
1	R16	RES10-7.8X2.8 - 10k	WIDERSTAND, 207, axial, 1%	10k	frei	RMGK010		001233
1	U1	P008	Programmable Low-Power Single Operational Amplifier	UA776CN	ST-Microelectronic	UA776CN	B176D	001293
1	U2	DIP-18/D22.4	Stereodecoder I2L Bipolartechnik DIP-18	A4510D	RFT	A4510D	TCA4510	
2	X1, X2	1X4						