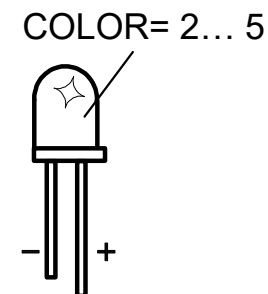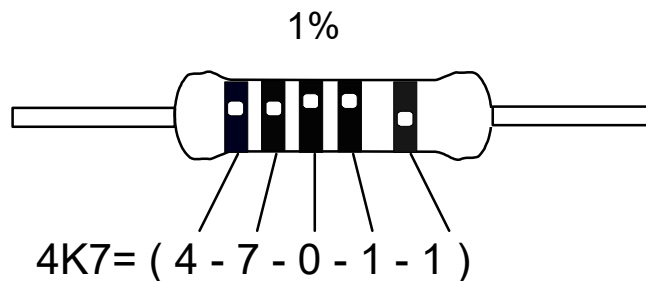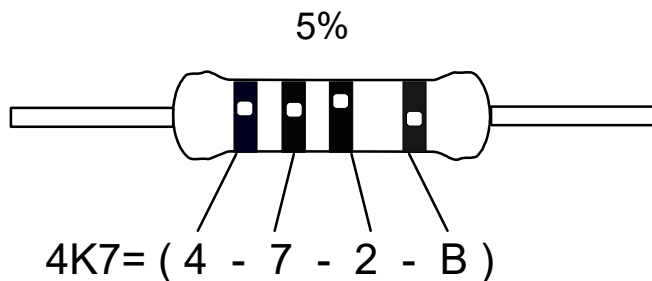HIGH-Q

velleman·kit

K4307

LED AUDIO POWER METER

☑ 10 x LED scale, up to 2000Wrms power measurement.
☑ No power supply needed, directly driven from the loudspeaker output.
☑ Four display windows included:
     1. from 0.15W to 200W at 8Ω speaker, low power mode.
     2. from 0.3W to 400W at 4Ω speaker, low power mode.
     3. from 5W to 1000W at 8Ω speaker, high power mode.
     4. from 10W to 2000W at 4Ω speaker, high power mode.
☑ Ideal for car audio systems and P.A. systems
☑ Can also be used with bridged power amplifiers.
☑ Aluminium front panel included for easy panel mounting inside
  speaker cabinet.
☑ Horizontal or vertical mounting possibility.

Specifications

- Scale at 4Ω load in low power mode:
  0.3 - 1 -2 - 4 - 10 - 20 - 50 - 100 - 200 - 400W
- Scale at 4Ω load in high power mode:
  10 - 20 - 40 - 60 - 120 - 200 - 400 - 700 - 1100 - 2000W
- Scale at 8Ω load in low power mode:
  0.15 - 0.5 - 1 - 2 - 5 - 10 - 25 - 50 - 100 - 200W or
- Scale at 8Ω load in high power mode:
  5 - 10 - 20 - 30 - 60 - 100 - 200 - 350 - 550 - 1000W
- Minimum input sensitivity: 1.1Vrms (low power mode)
- Maximum input voltage: 130Vpeak (high power mode)
- Current consumption: 25mA at full scale
- Luminous intensity: 8 to 20mcd / led
- Dimensions (W x L x H): 120 x 40 x 28mm

modifications reserved

5%

4K7= (4 - 7 - 2 - B)

1%

4K7= (4 - 7 - 0 - 1 - 1)

COLOR= 2... 5

− +

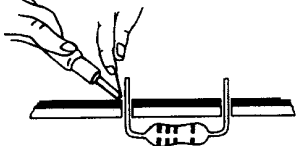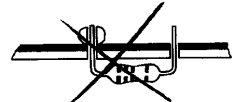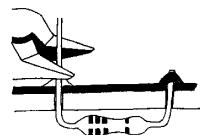|	I	P	E	SF	S	DK	N	D	GB	F	NL	
CODE	*CODICE COLORE*	*CODIGO DE CORES*	*CODIGO DE COL-ORES*	*VÄRI KOODI*	*FÄRG SCHEMA*	*FARVE KODE*	*FARGE KODE*	*FARB KODE*	*COLOUR CODE*	*CODIFI-CATION DES COU-LEURS*	*KLEUR KODE*	**CODE**
0	Nero	Preto	Negro	Musta	Svart	Sort	Sort	Schwarz	Black	Noir	Zwart	**0**
1	Marrone	Castanho	Marrón	Ruskea	Brun	Brun	Brun	Braun	Brown	Brun	Bruin	**1**
2	Rosso	Encarnado	Rojo	Punainen	Röd	Rød	Rød	Rot	Red	Rouge	Rood	**2**
3	Aranciato	Laranja	Naranjado	Oranssi	Orange	Orange	Orange	Orange	Orange	Orange	Oranje	**3**
4	Giallo	Amarelo	Amarillo	Keltainen	Gul	Gul	Gul	Gelb	Yellow	Jaune	Geel	**4**
5	Verde	Verde	Verde	Vihreä	Grön	Grøn	Grønn	Grün	Green	Vert	Groen	**5**
6	Blu	Azul	Azul	Sininen	Blå	Blå	Blå	Blau	Blue	Blue	Blauw	**6**
7	Viola	Violeta	Morado	Purppura	Lila	Violet	Violet	Violet	Purple	Violet	Paars	**7**
8	Grigio	Cinzento	Gris	Harmaa	Grå	Grå	Grå	Grau	Grey	Gris	Grijs	**8**
9	Bianco	Branco	Blanco	Valkoinen	Vit	Hvid	Hvidt	Weiss	White	Blanc	Wit	**9**
A	Argento	Prateado	Plata	Hopea	Silver	Sølv	Sølv	Silber	Silver	Argent	Zilver	**A**
B	Oro	Dourado	Oro	Kulta	Guld	Guld	Guldl	Gold	Gold	Or	Goud	**B**

ASSEMBLY STEPS

Required tools to assemble the kit:
Use a small soldering iron of max. 40W.
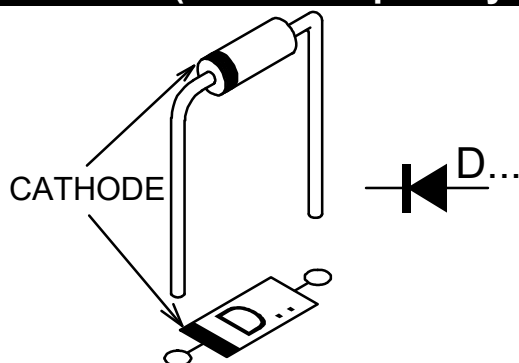Use thin (1mm) solder, do not use any flux.
Use a small cutter to trim the excess wires.

1.
Mount the compo-
nents against the
PCB surface and
carefully solder the
leads in place.

2.
Obtain cone- shaped,
shiny soldered joints
by heating up the
component leads suf-
ficiently.

3.
This solder joint
results in a bad
connection.

4.
Trim the excess
wires up to the
level of the sol-
der

- Careless assembly will certainly lead to problems.
- Insert the part, oriented correctly, into its correct holes in the PCB.
- Mount the components in the correct order as stated in this manual.
- Watch out for important remarks.
- The component values in the circuit diagram are for reference only.
  The values in this parts list are correct and must be followed.
- Use the boxes ❑ to check off your progress.
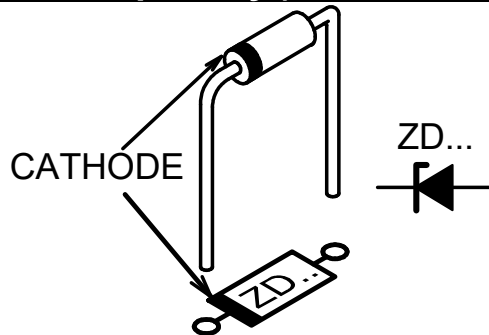☞Before starting to build, read also the general guidelines

1. DIODES (Check the polarity!)

CATHODE

D...

- ❑   D1: BAT85
- ❑   D2: 1N4148
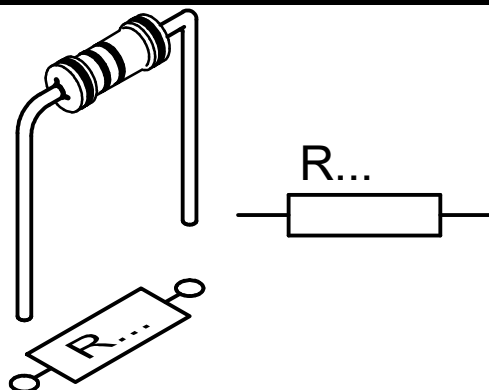- ❑   D3: 1N4148
- ❑   D4: 1N4007
- ❑   D5: 1N4007

velleman-kit HIGH-Q
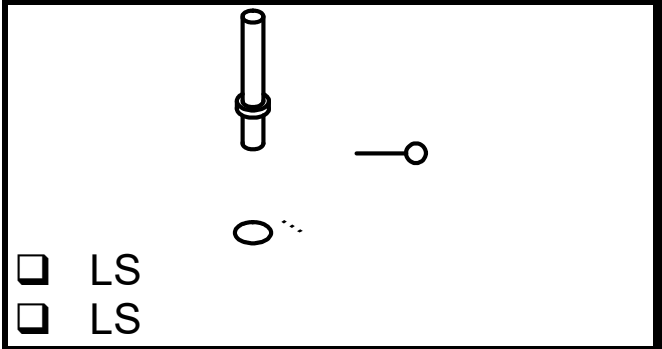
2. ZENER DIODES
(Check the polarity!)

CATHODE

ZD...

❑ ZD1: 2V4
❑ ZD2: 3V9
❑ ZD3: 6V8
❑ ZD4: 10V
❑ ZD5: 18V
❑ ZD6: 27V
❑ ZD7: 36V
❑ ZD8: 51V

3. ¼W RESISTORS

R...
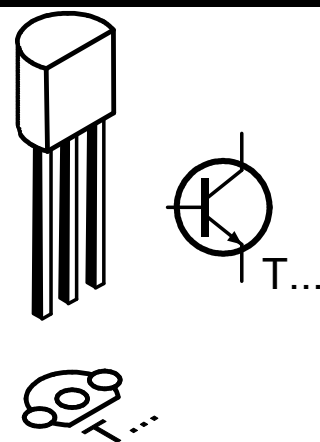
❑ R1: 470 (4 - 7 - 1 - B)
❑ R2: 150 (1 - 5 - 0 - B)
❑ R3: 150 (1 - 5 - 0 - B)
❑ R4: 150 (1 - 5 - 0 - B)
❑ R5: 150 (1 - 5 - 0 - B)
❑ R6: 150 (1 - 5 - 0 - B)
❑ R7: 150 (1 - 5 - 0 - B)
❑ R8: 150 (1 - 5 - 0 - B)
❑ R9: 150 (1 - 5 - 0 - B)
❑ R10: 150 (1 - 5 - 0 - B)
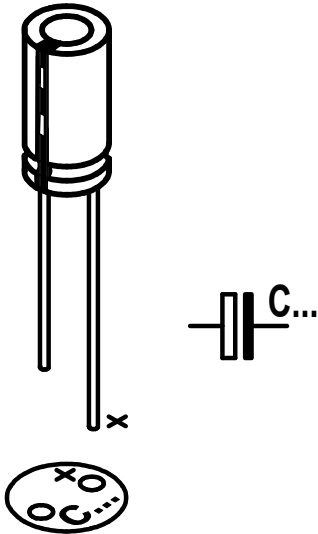❑ R11: 150 (1 - 5 - 0 - B)
❑ R12: 150K (1 - 5 - 4 - B)

4. PCB PINS

❑ LS
❑ LS

5. TRANSISTORS

T...

❑ T1: MPSA92 or 2N5401
❑ T2: MPSA42 or 2N5551
❑ T3: BC546B
❑ T4: BC546B
❑ T5: BC546B
❑ T6: BC546B
❑ T7: BC546B
❑ T8: BC546B
❑ T9: BC546B
❑ T10: BC546B
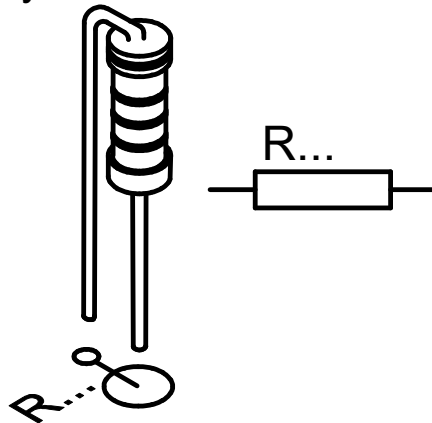❑ T11: BC546B

6. ELECTROLYTIC CAPACITOR (Check the polarity!)

C...

- ❑ C1: 47µF/63V
- ❑ C2: 47µF/63V

7. Mode setup

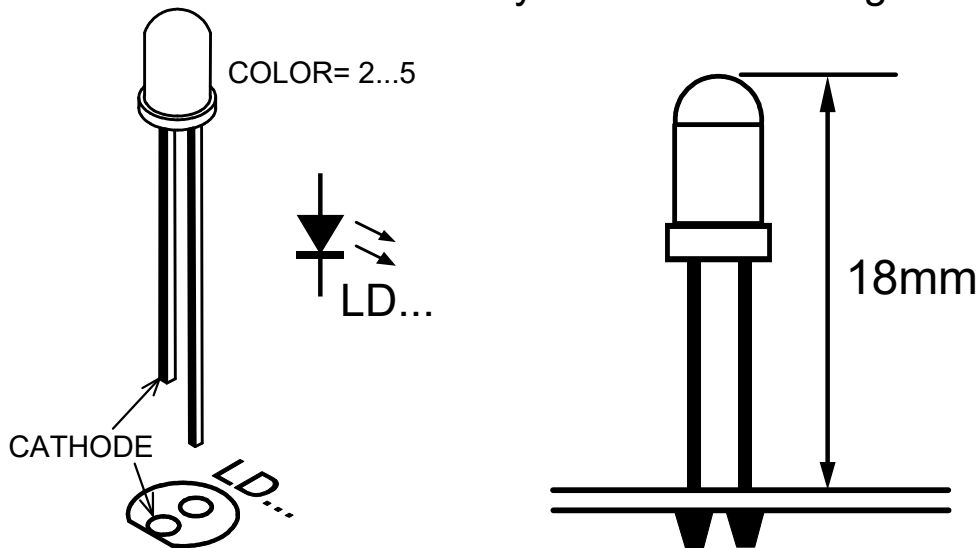Depending on the resistor mounted for R13, a measurement selection can be made.

The power meter may be set up for low power measurements (typical consumer amplifiers) or for high power measurement, this mode can be used in high power P.A. systems.

R...

- ❑ R13: 10 / 1/4W (1 - 0 - 0 - B) for low power mode.
- ❑ R13: 1K / 1W (1 - 0 - 2 - B) for high power mode.

8. LED's (Check the polarity!)

Mount the LED exactly like in the drawing:

COLOR= 2...5

LD...

CATHODE

LD...

18mm

❑ LD1: 3mm red, low current L-934LSRD (2)
❑ LD2: 3mm red, low current L-934LSRD (2)
❑ LD3: 3mm red, low current L-934LSRD (2)
❑ LD4: 3mm red, low current L-934LSRD (2)
❑ LD5: 3mm red, low current L-934LSRD (2)
❑ LD6: 3mm red, low current L-934LSRD (2)
❑ LD7: 3mm red, low current L-934LSRD (2)
❑ LD8: 3mm red, low current L-934LSRD (2)
❑ LD9: 3mm red, low current L-934LSRD (2)
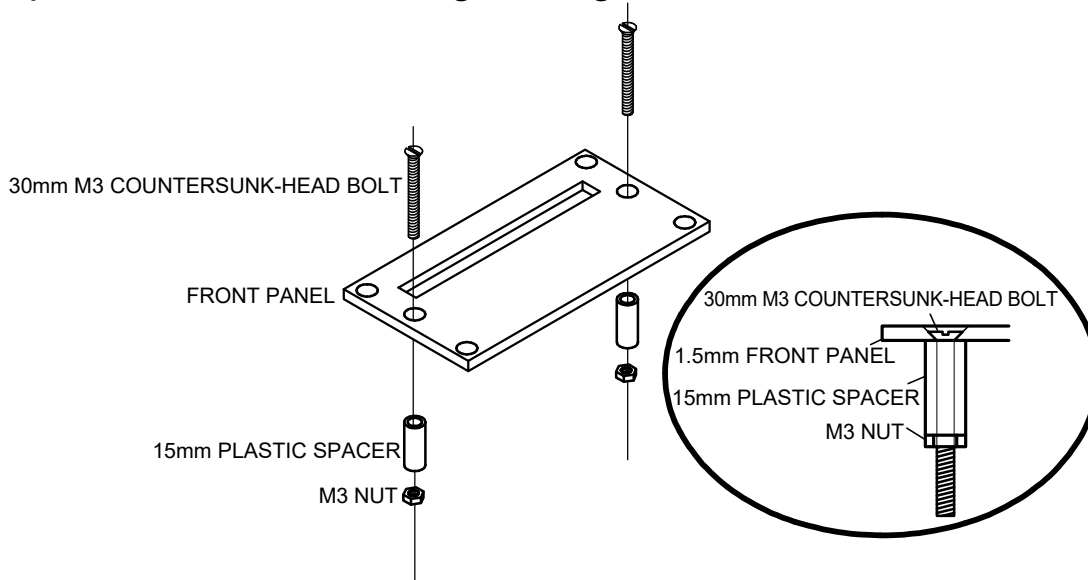❑ LD10: 3mm red, low current L-934LSRD (2)

Tip: For easy mounting at the correct height, you can first mount the front panel on the PCB (see next point), then:
1. Insert the LED (watch the polarity).
2. Turn over the unit with the front panel on a flat surface.
3. Let the LED touch the table surface.
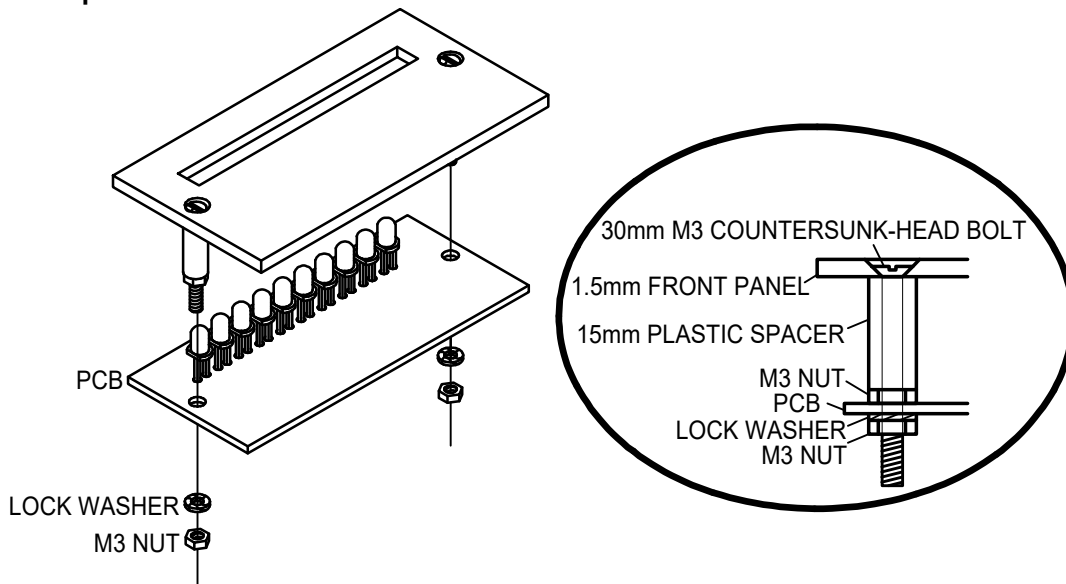4. Solder the connections.

9. MOUNTING THE FRONT PANEL

A. Mount the suitable spacers:

Pass the bolts through the conical holes of the front panel and put the spacers over it before tightening them with nuts.

30mm M3 COUNTERSUNK-HEAD BOLT

FRONT PANEL

15mm PLASTIC SPACER

M3 NUT

30mm M3 COUNTERSUNK-HEAD BOLT

1.5mm FRONT PANEL

15mm PLASTIC SPACER

M3 NUT

B. Mount the PCB onto the spacers:

Fix the PCB on the front panel by using two lock washers and nuts. Check the LED's position and correct if necessary by heating the solder points.

PCB

LOCK WASHER

M3 NUT

30mm M3 COUNTERSUNK-HEAD BOLT

1.5mm FRONT PANEL

15mm PLASTIC SPACER

M3 NUT

PCB

LOCK WASHER

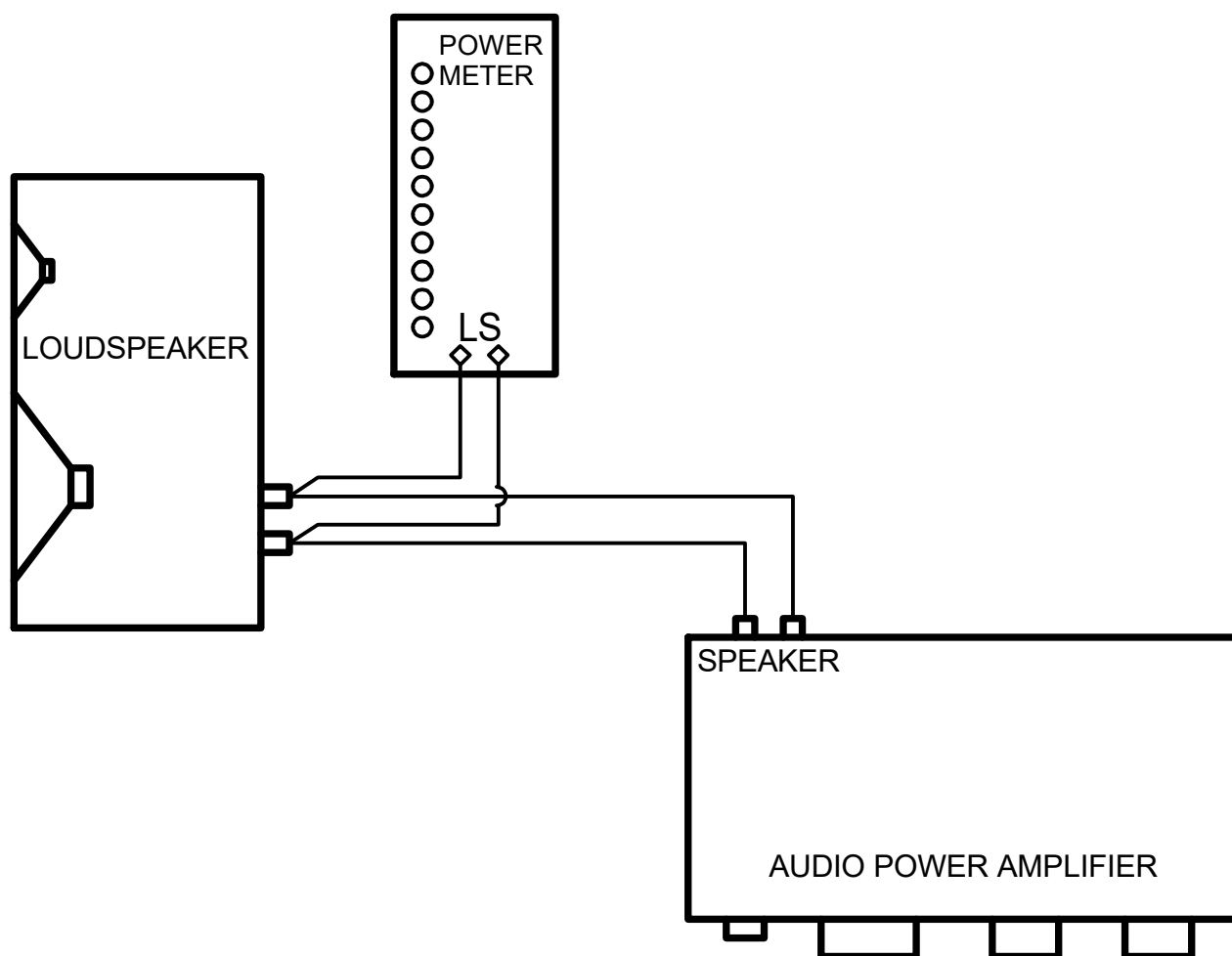M3 NUT

C. Stick the display window:

Depending the loudspeaker impedance you have to mount the correct front panel:

- for 8 Ohm speakers use the scale 0.15 to 200W or 5 to 1000W

- for 4 Ohm speakers use the scale 0.3 to 400W or 10 to 2000W

REMARK: IF YOU MOUNT THIS POWER METER INTO THE SPEAKER CABINET, ENSURE THE METER STAYS COMPLETELY AIRTIGHT.
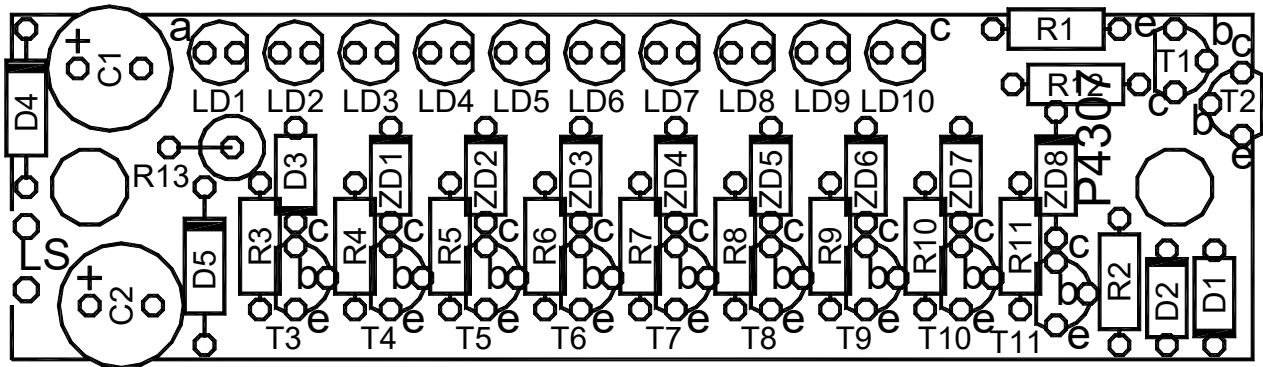
10. CONNECTING

Connect the LS-leads in parallel with the loudspeaker or output of the amplifier.

11. PCB

12. DIAGRAM