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T.1 - Historical Review

Concept, Design, Prototyping & Project Management

Printed Circuits Technologies 15

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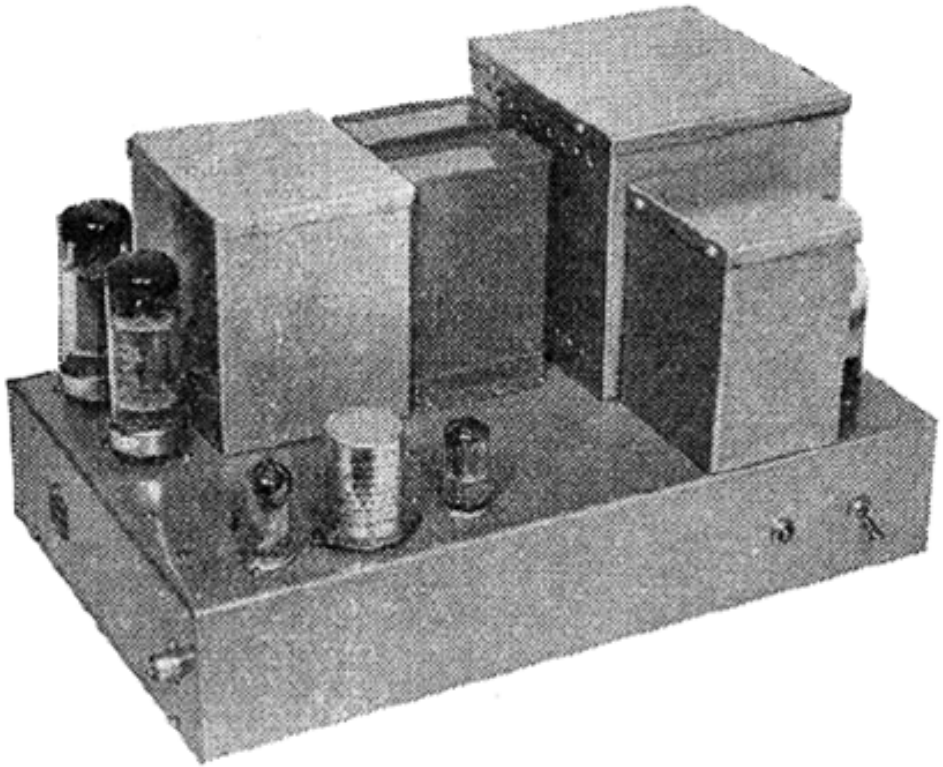
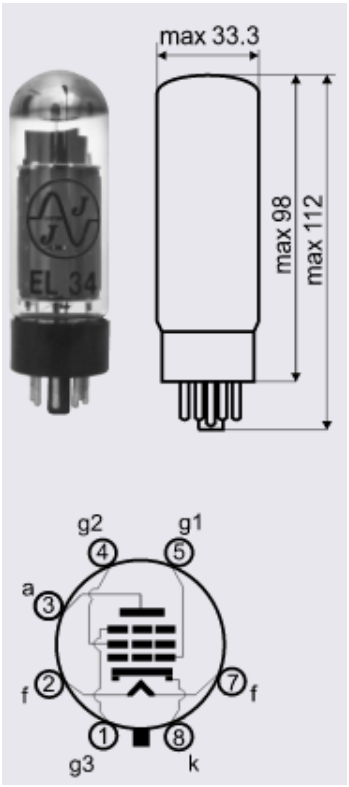
Before 1943

Audio 20 W power amplifier based on EL34 Output thermionic valve

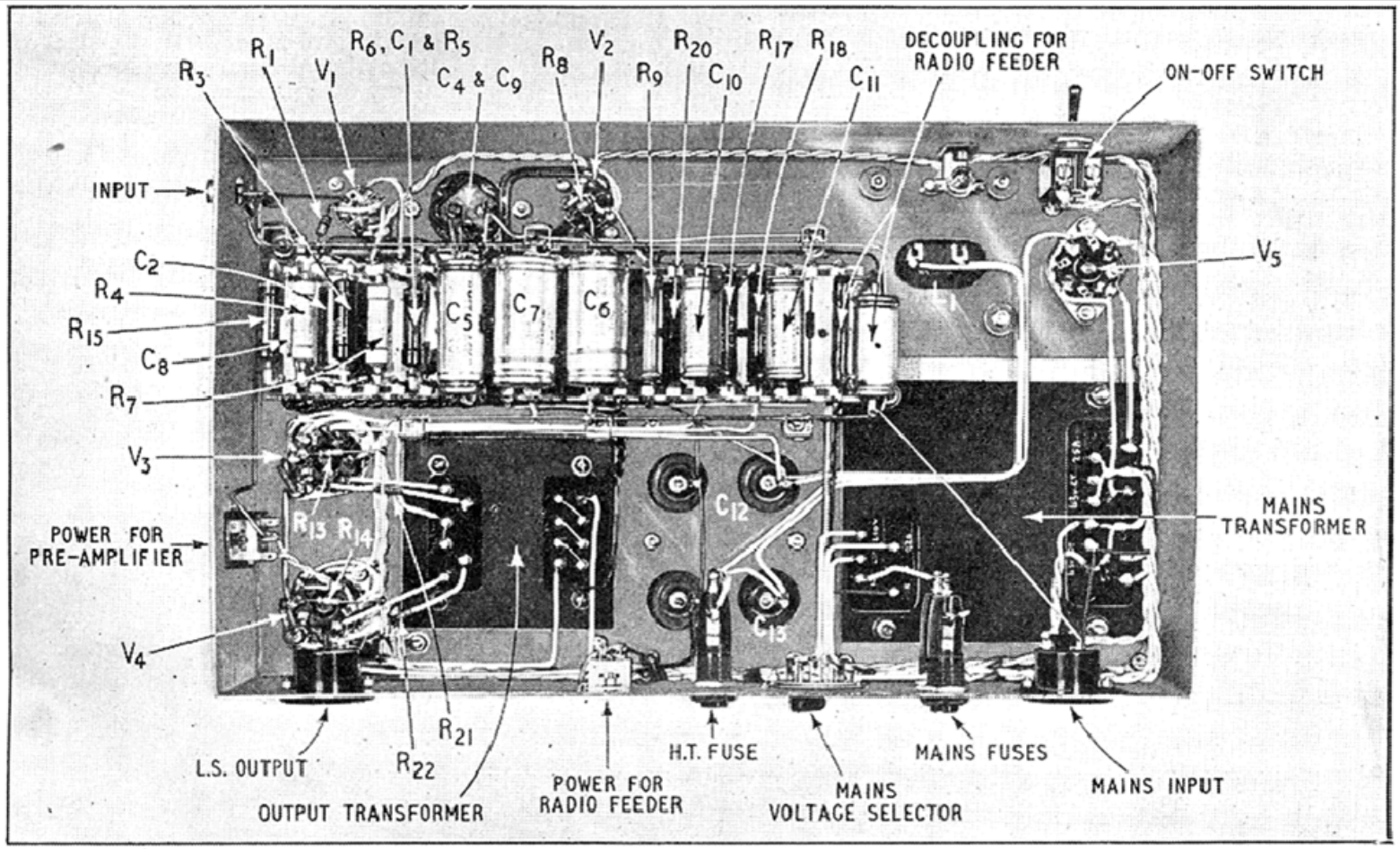




- Let's open the EL34 Valve Data Sheet!

Before 1943

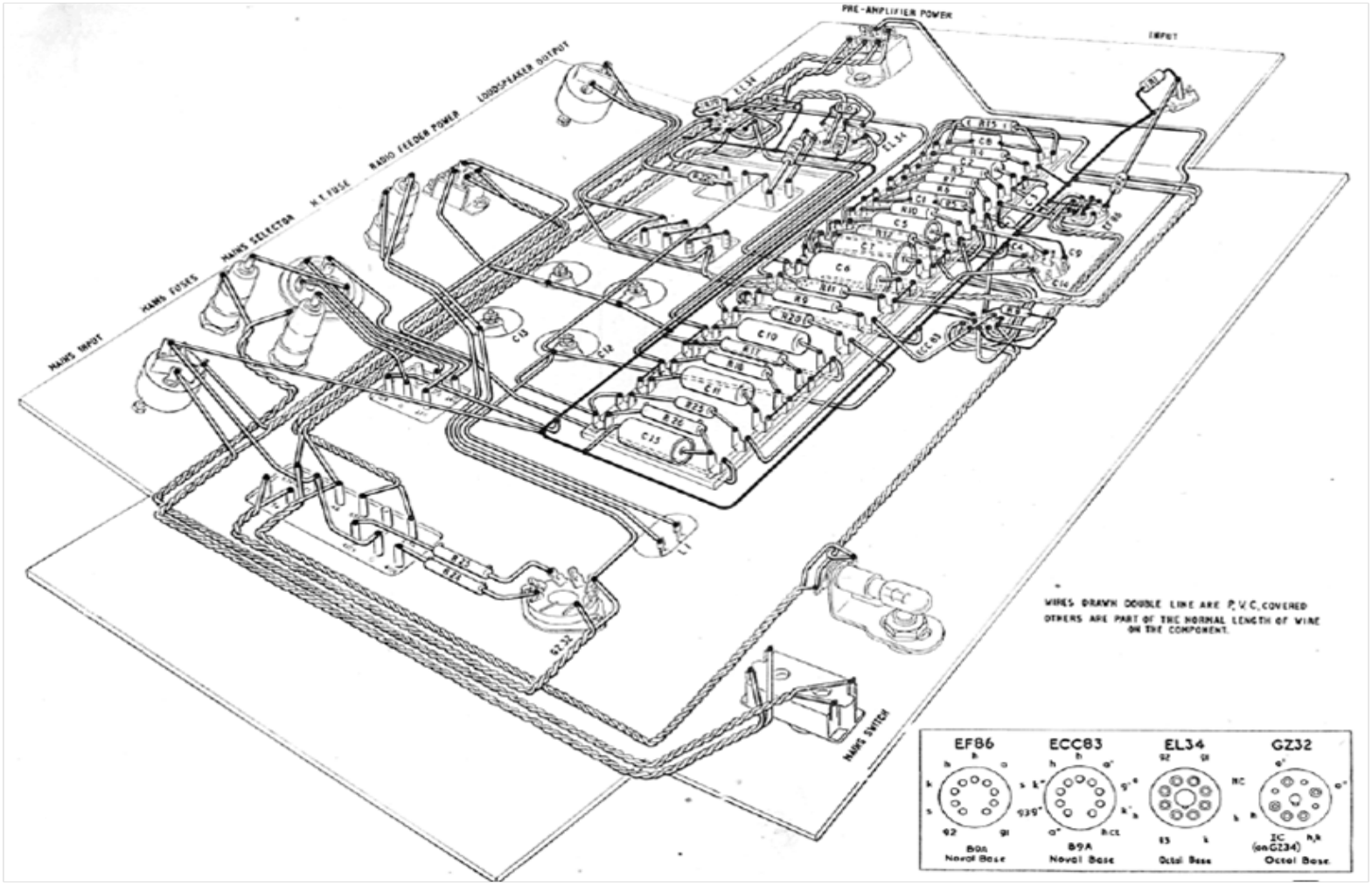
Audio 20 W power amplifier based on EL34 Output thermionic valve



Underside of chassis showing one possible grouping of the smaller components.

Before 1943

Wiring example



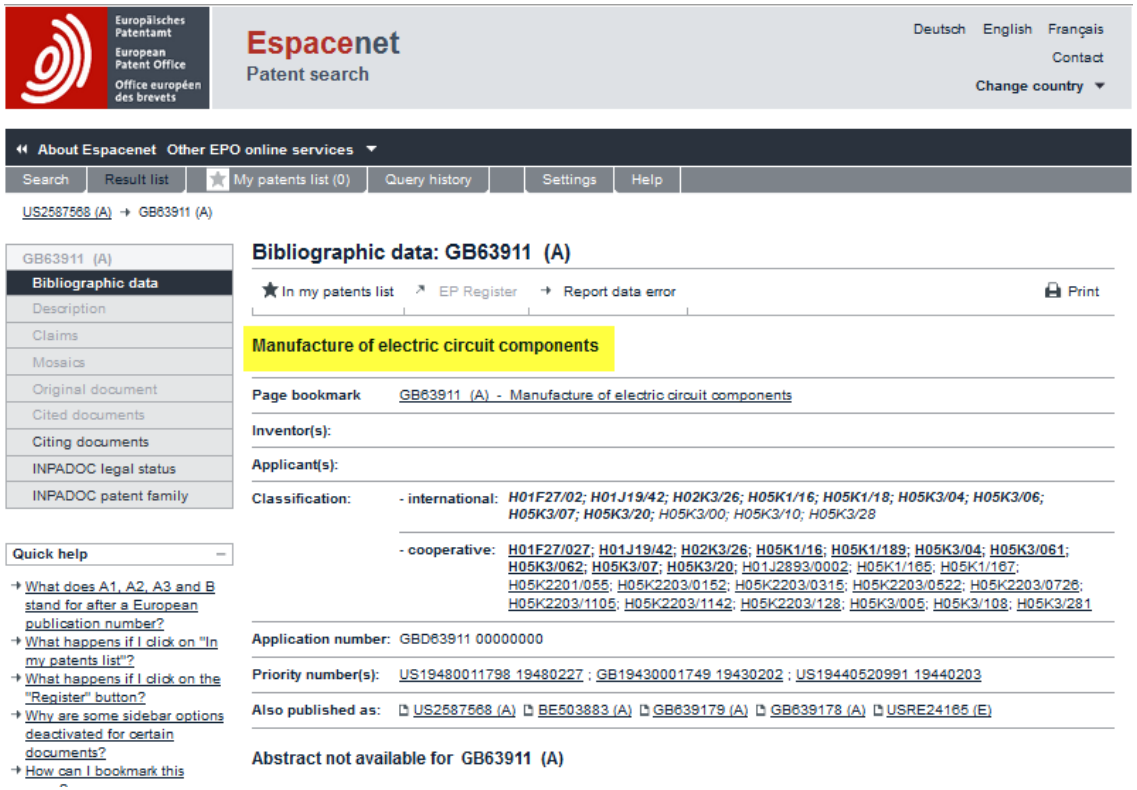
Dr. Paul Eisler (Viena, 1907 – London, 26/10/1992)

Invented the Printed Wiring Board.First 5 valves radio

He developed the **first** 5 valve radio with Printed wiring board.

Fig. 1: 5 valve radio receiver patent

The patent document GB639178A



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US2587568 (A) → GB63911 (A)

GB63911 (A)
Bibliographic data
Description
Claims
Mosaics
Original document
Cited documents
Citing documents
INPADOC legal status
INPADOC patent family

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Bibliographic data: GB63911 (A)

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Manufacture of electric circuit components

Page bookmark GB63911 (A) - Manufacture of electric circuit components

Inventor(s):

Applicant(s):

Classification: - international: *H01F27/02; H01J19/42; H02K3/26; H05K1/16; H05K1/18; H05K3/04; H05K3/06; H05K3/07; H05K3/20; H05K3/00; H05K3/10; H05K3/28*

- cooperative: H01F27/027; H01J19/42; H02K3/26; H05K1/16; H05K1/189; H05K3/04; H05K3/061; H05K3/062; H05K3/07; H05K3/20; H01J2893/0002; H05K1/165; H05K1/167; H05K2201/055; H05K2203/0152; H05K2203/0315; H05K2203/0522; H05K2203/0726; H05K2203/1105; H05K2203/1142; H05K2203/128; H05K3/005; H05K3/108; H05K3/281

Application number: GBD63911 00000000

Priority number(s): US19480011798 19480227 ; GB19430001749 19430202 ; US19440520991 19440203

Also published as: US2587568 (A) BE503883 (A) GB639179 (A) GB639178 (A) USRE24165 (E)

Abstract not available for GB63911 (A)

▸ Let's go deeper into the Patent !

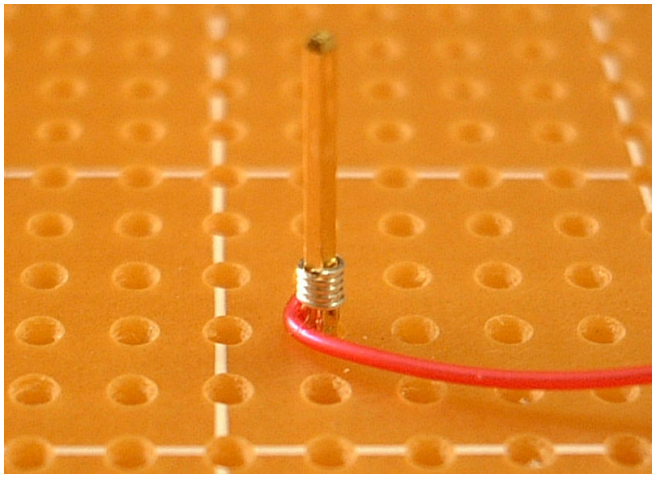
Dr. Paul Eisler life

He managed to convince a lithograph company in Camberwell to take on his idea of printed circuits in 1941. As a sign of faith, he signed the contract without reading it and unwittingly signed away his future rights.
In 1943 he took out a patent for using printed circuits in a variety of products: *cables, interconnections, aerials, transformers, motors, valves and heated wallpaper*. However, he found no demand for his product until the Americans started work on the proximity fuse to bring down **V1** Nazi rockets, and for which printed circuits were vital.
Following the end of the war, the USA released the secret of printed circuits, and from 1948 all electronics in airborne instruments were printed.
Eisler was responsible for a number of other popular developments, including the **rear windscreen heater**, heated clothes and also a pizza warmer, to enable a customer to keep his take out pizza warm by plugging the box into a battery powered by the car.

Like so many of Eisler's inventions, however, it never made the transition from idea to commercial success.

Wire wrap Technology

popular for large-scale manufacturing in the 60s and early 70s



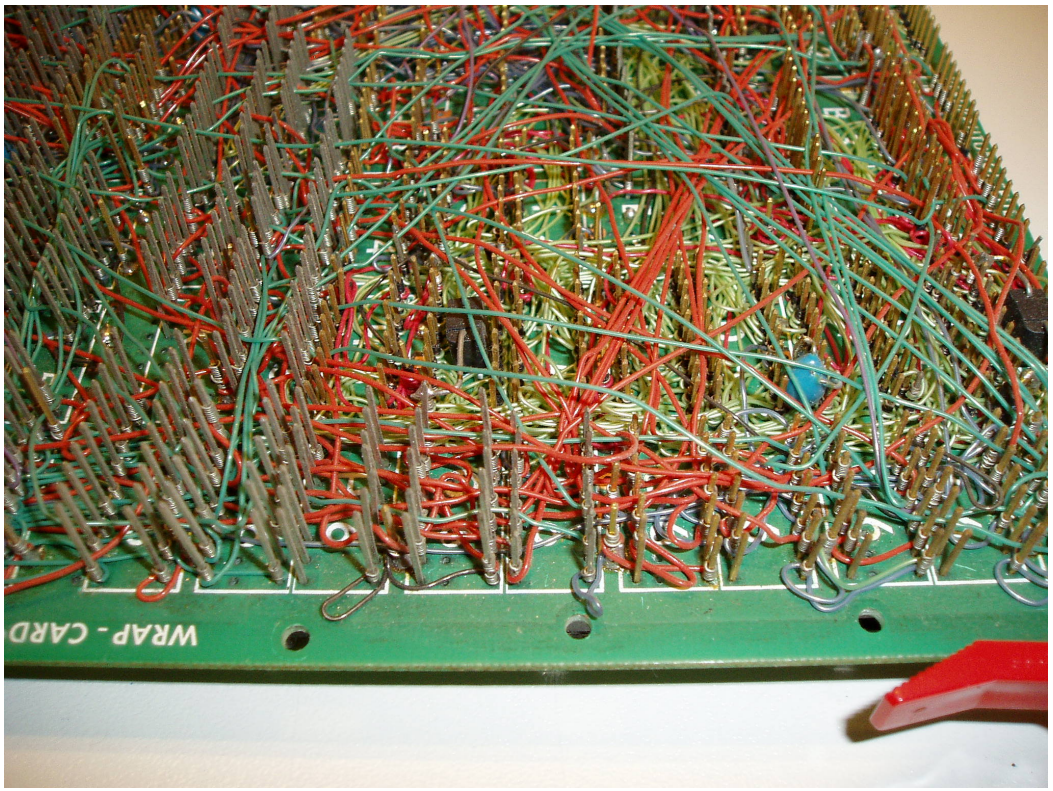


Fig. 2: Computer Wire-wrap backplane detail **Z80** 1977

▸ Wire-wrap WIKI

Wire-Wrap Tutorial for electronics

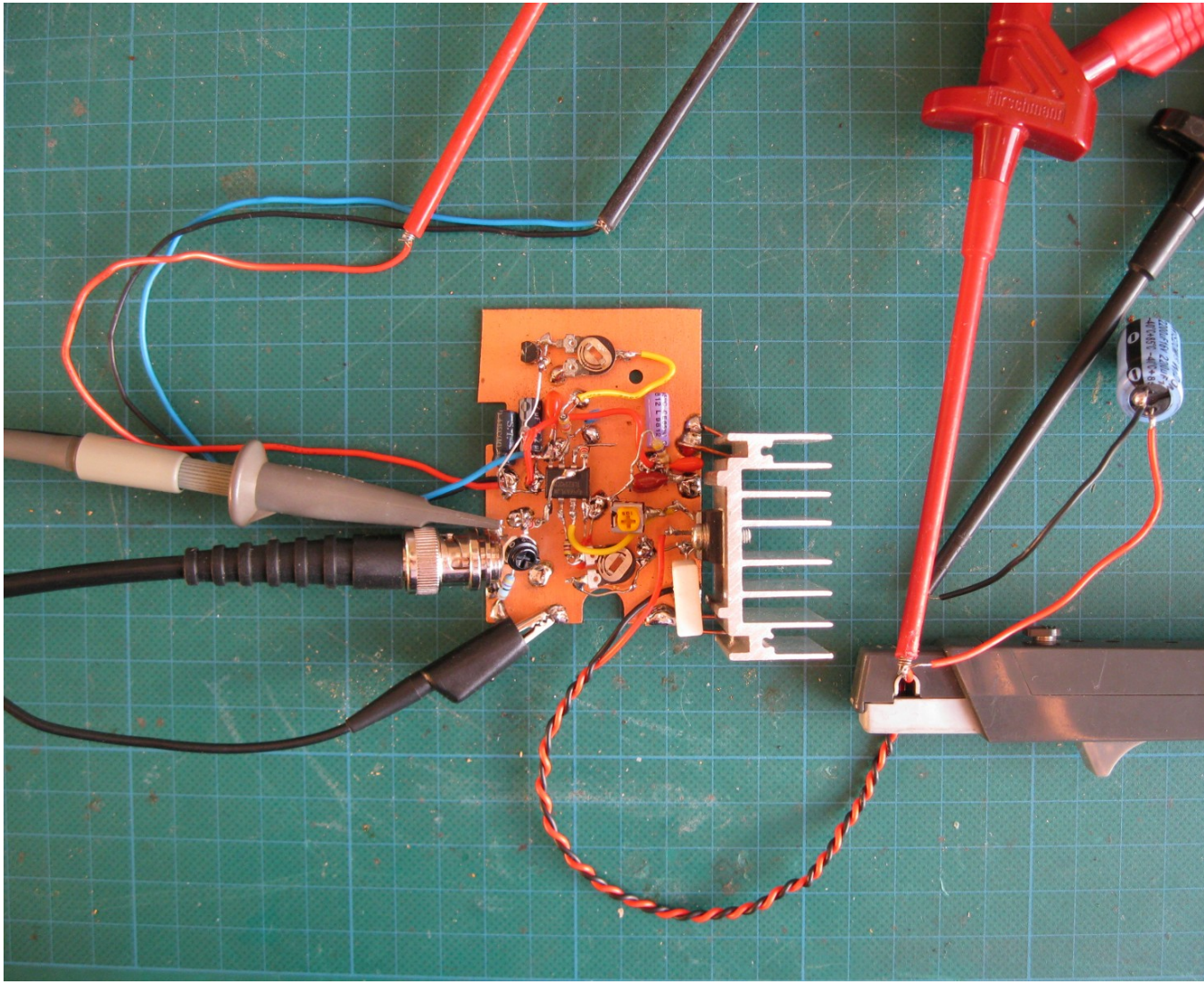
Open with Adobe Reader 9 or higher.

▸ Youtube video

Copper Clad

Usage from 1945s to the mid-1970s

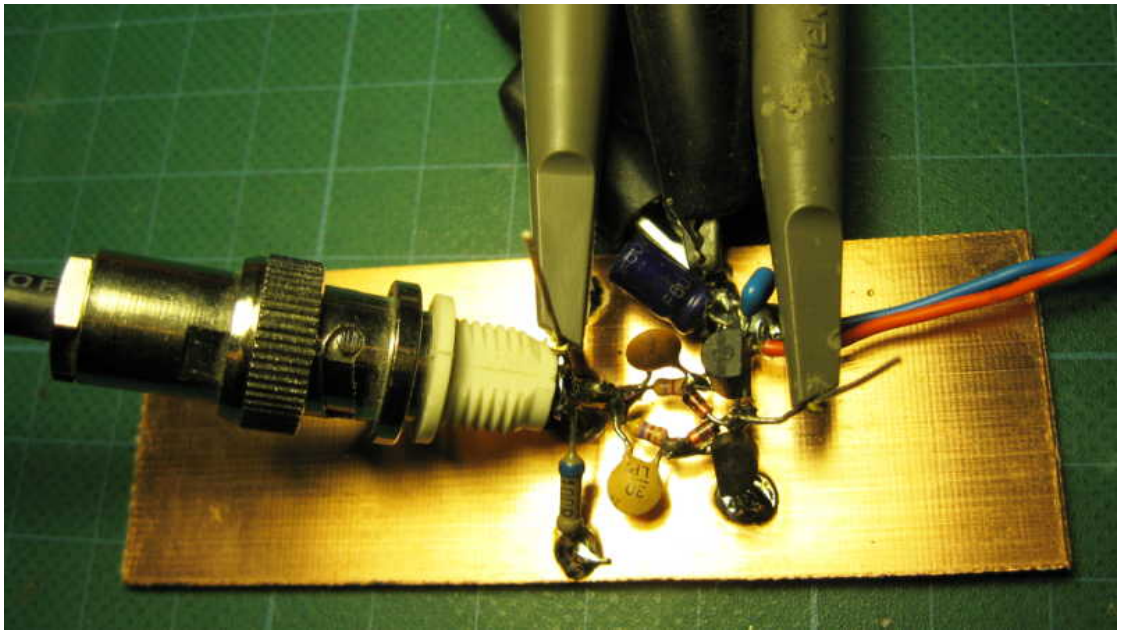
- Example 1
- Example 2



Copper Clad

Usage from 1945s to the mid-1970s

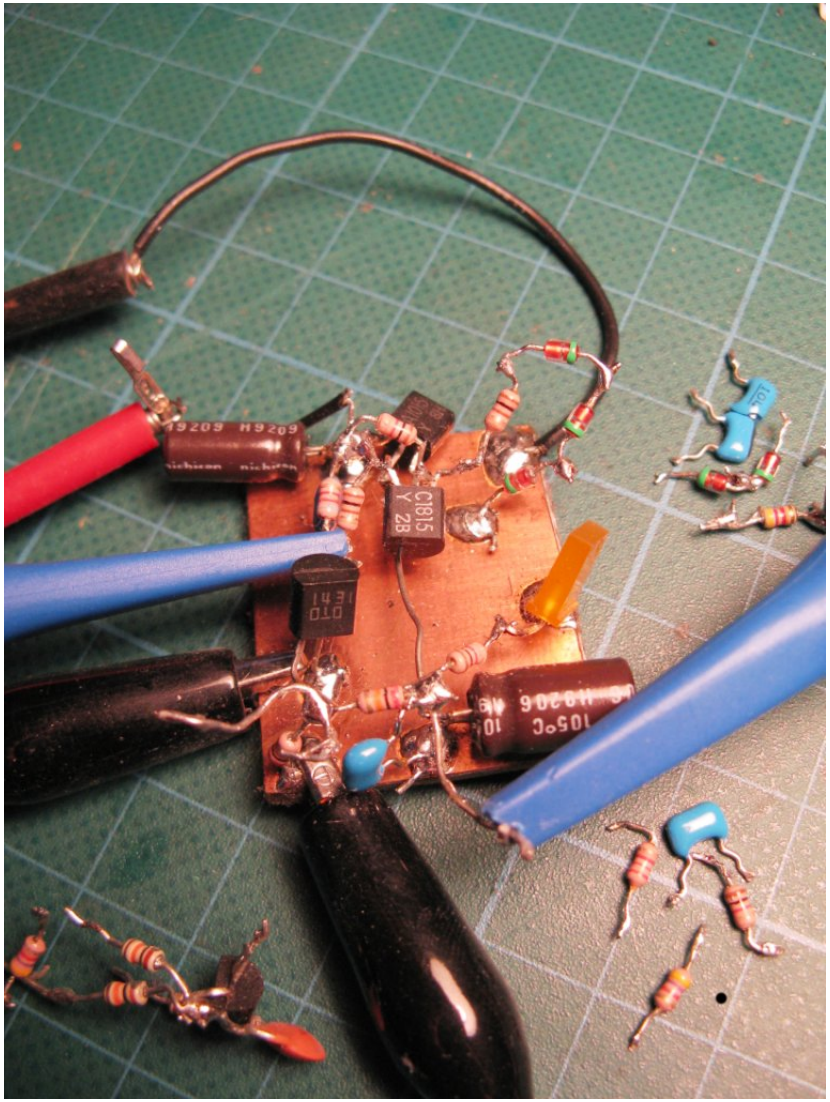
- Example 1
- Example 2
- Example 3



Copper Clad

Usage from 1945s to the mid-1970s

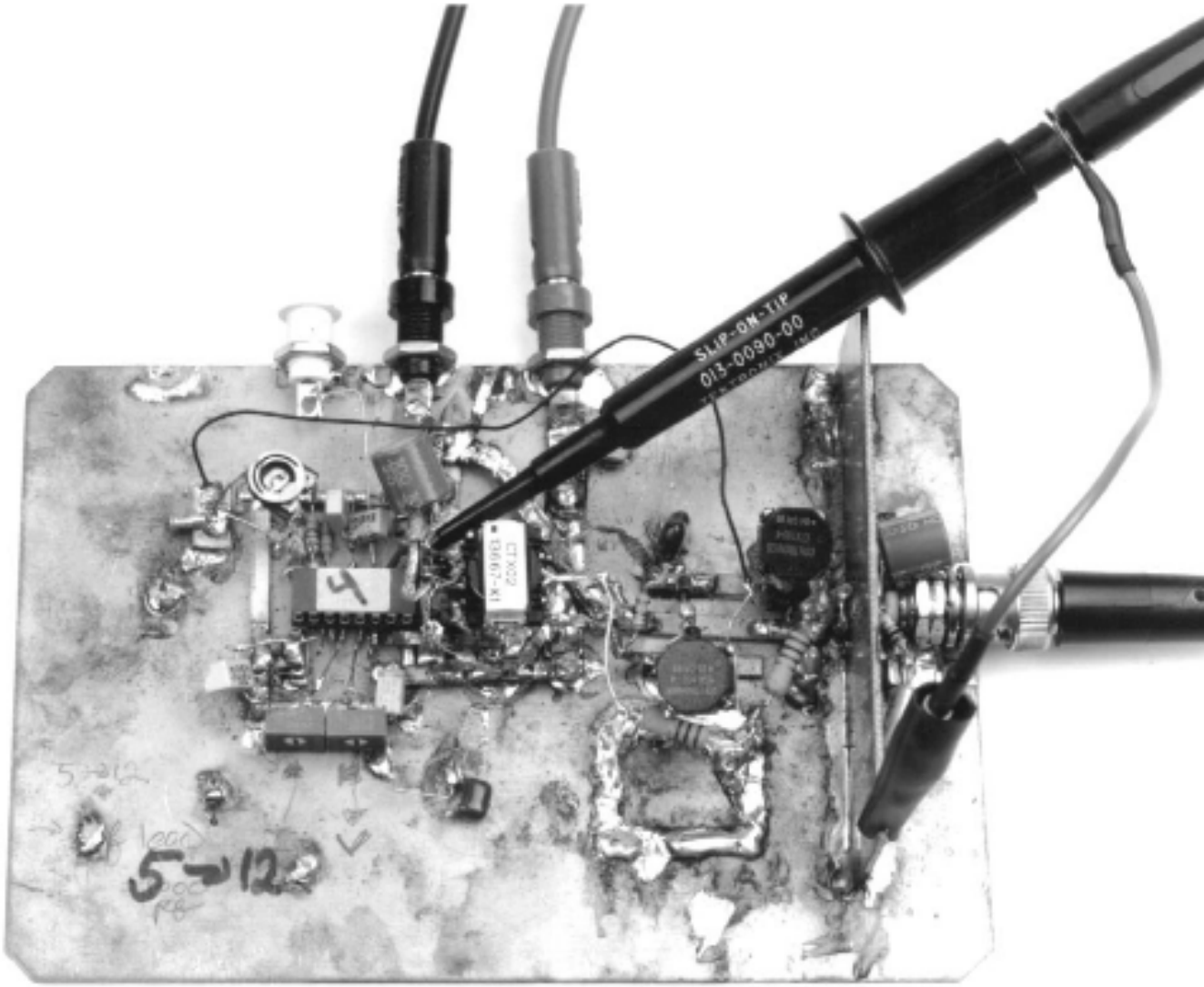
- Example 1
- Example 2
- Example 3
- Example 4



Copper Clad

Usage from 1945s to the mid-1970s

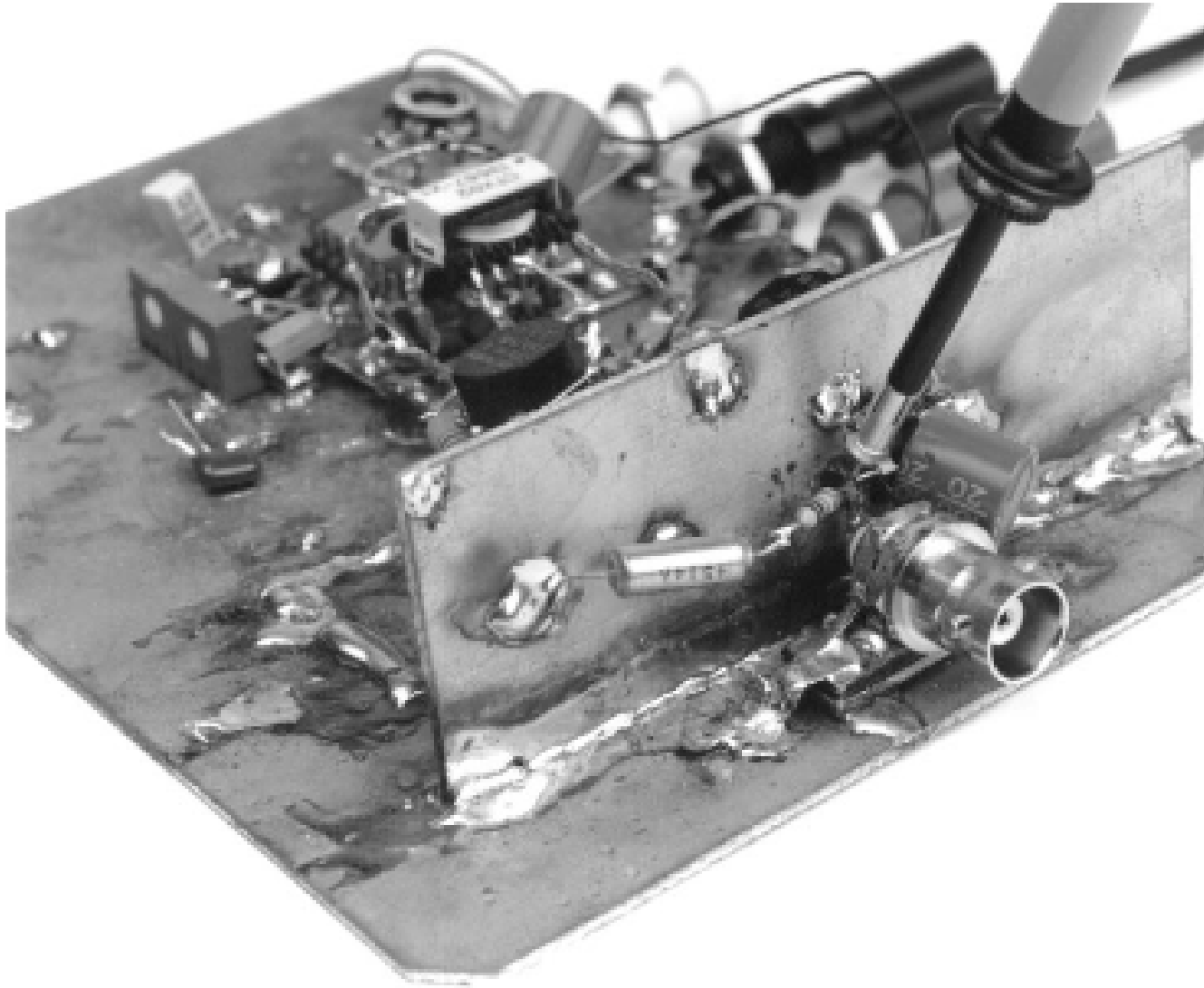
- Example 1
- Example 2
- Example 3
- Example 4
- Example 5



Copper Clad

Usage from 1945s to the mid-1970s

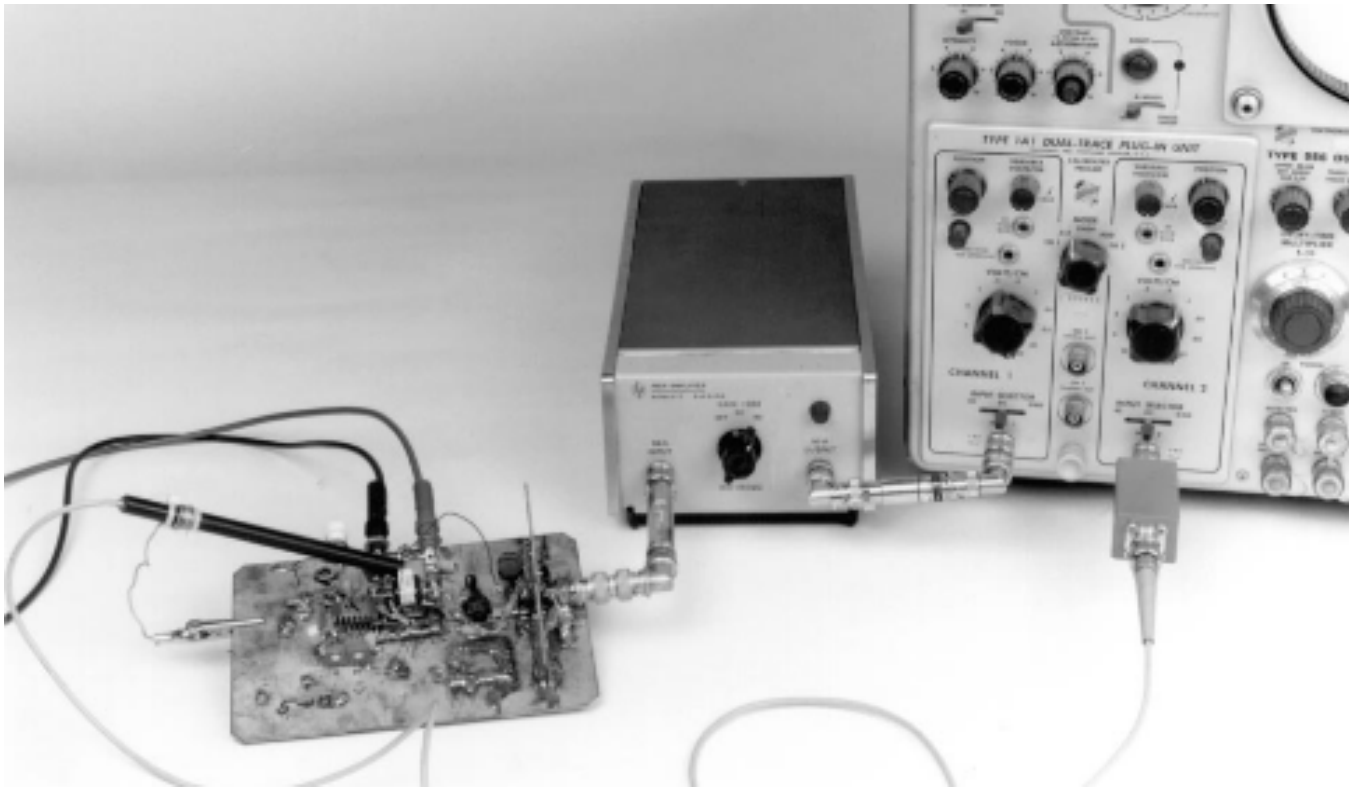
- Example 1
- Example 2
- Example 3
- Example 4
- Example 5
- Example 6



Copper Clad

Usage from 1945s to the mid-1970s

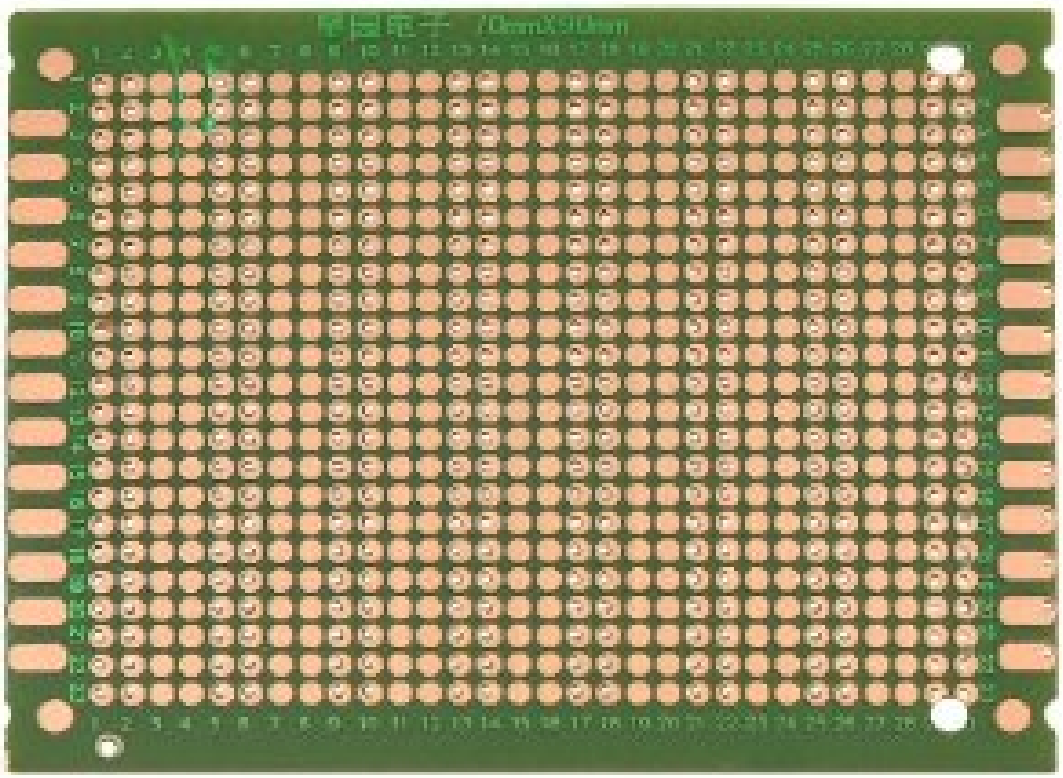
- Example 1
- Example 2
- Example 3
- Example 4
- Example 5
- Example 6



Prototyping

For early prototype development

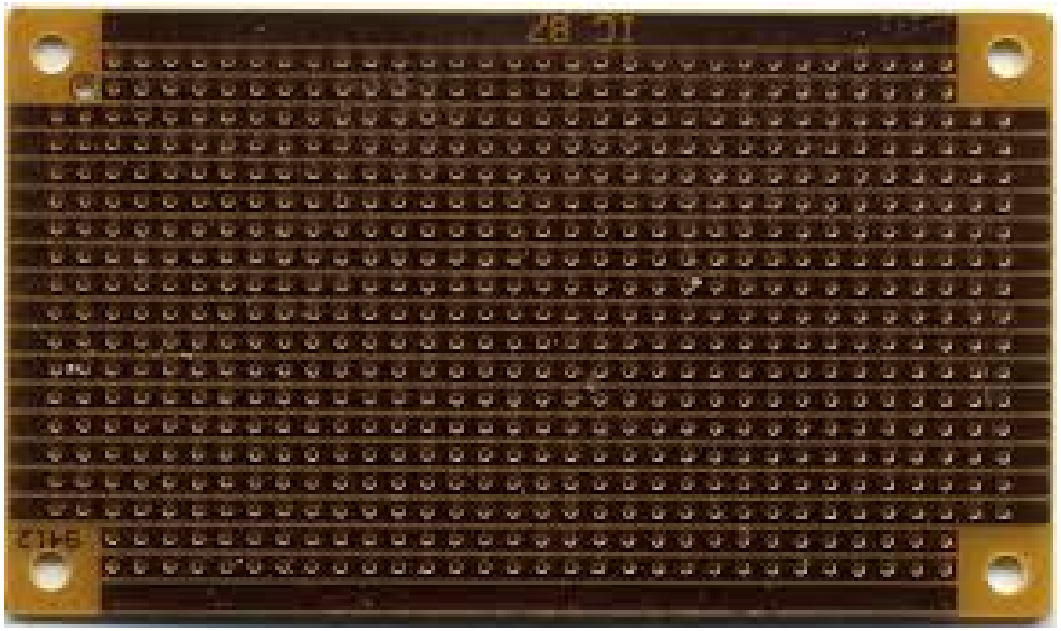
- Example 1
- Example 2



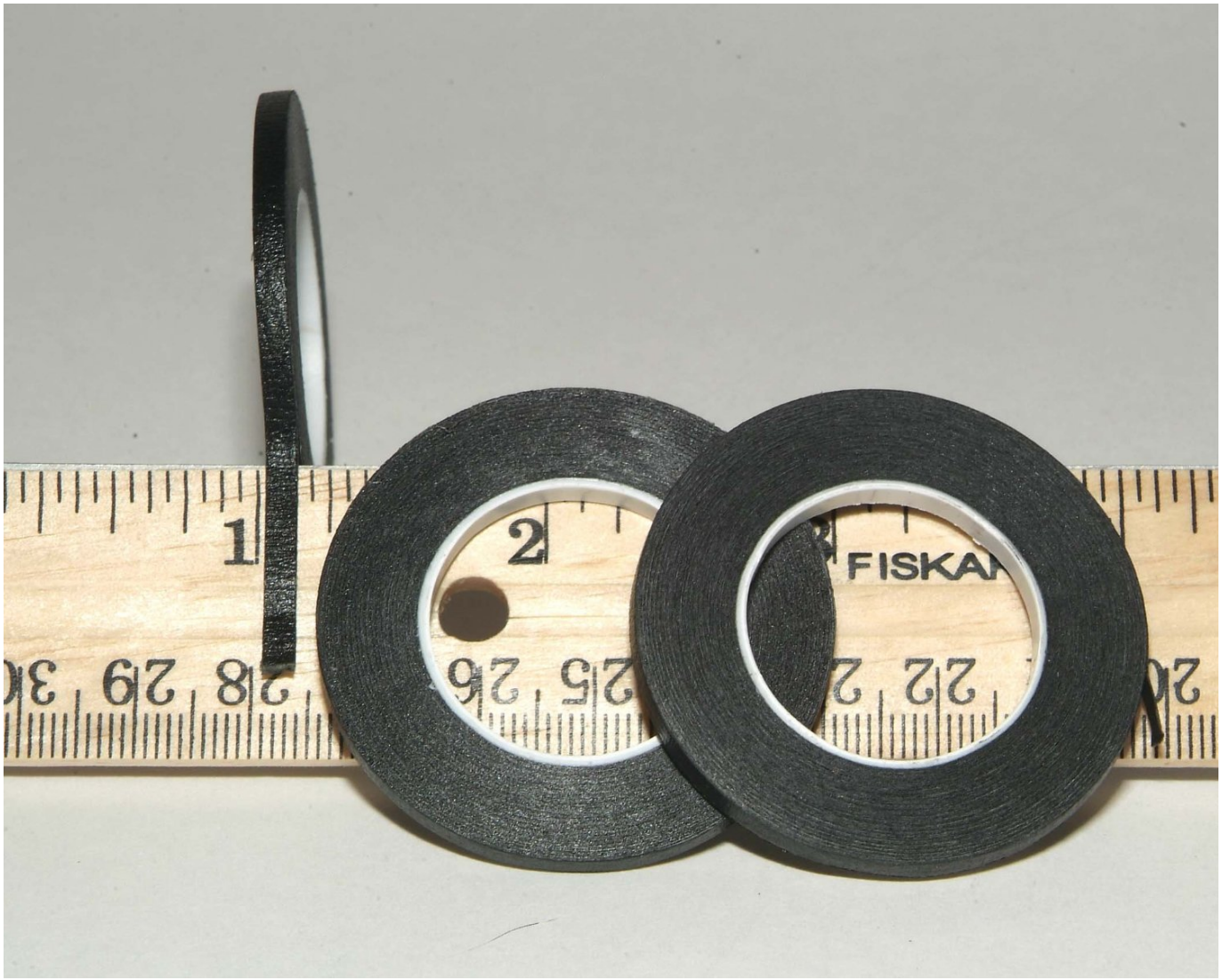
Prototyping

For early prototype development

- Example 1
- Example 2

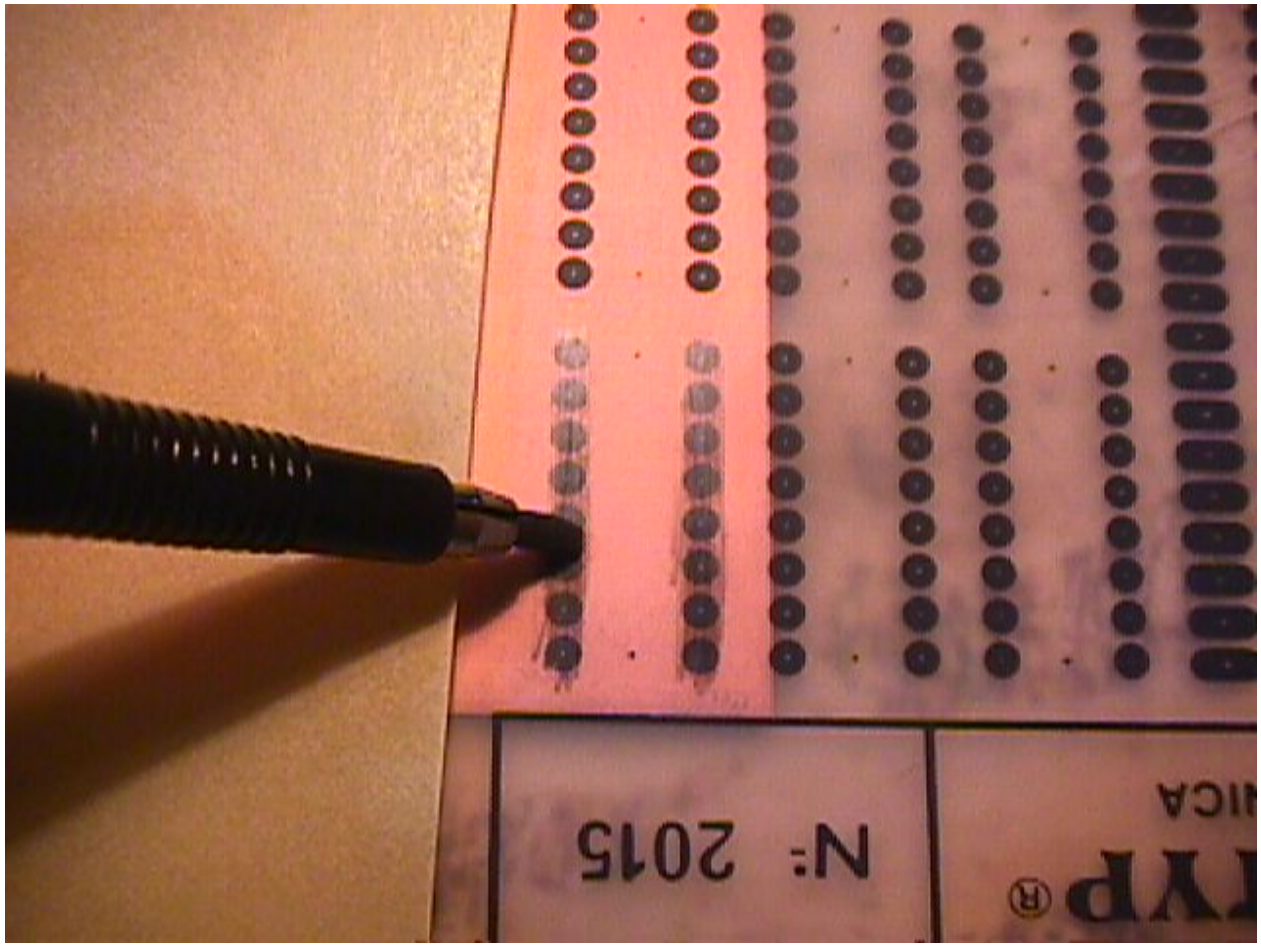


Graphic Chart ,Black Crepe Paper Tape, 1/8 ″x 324 ″, 1960



Letraset®

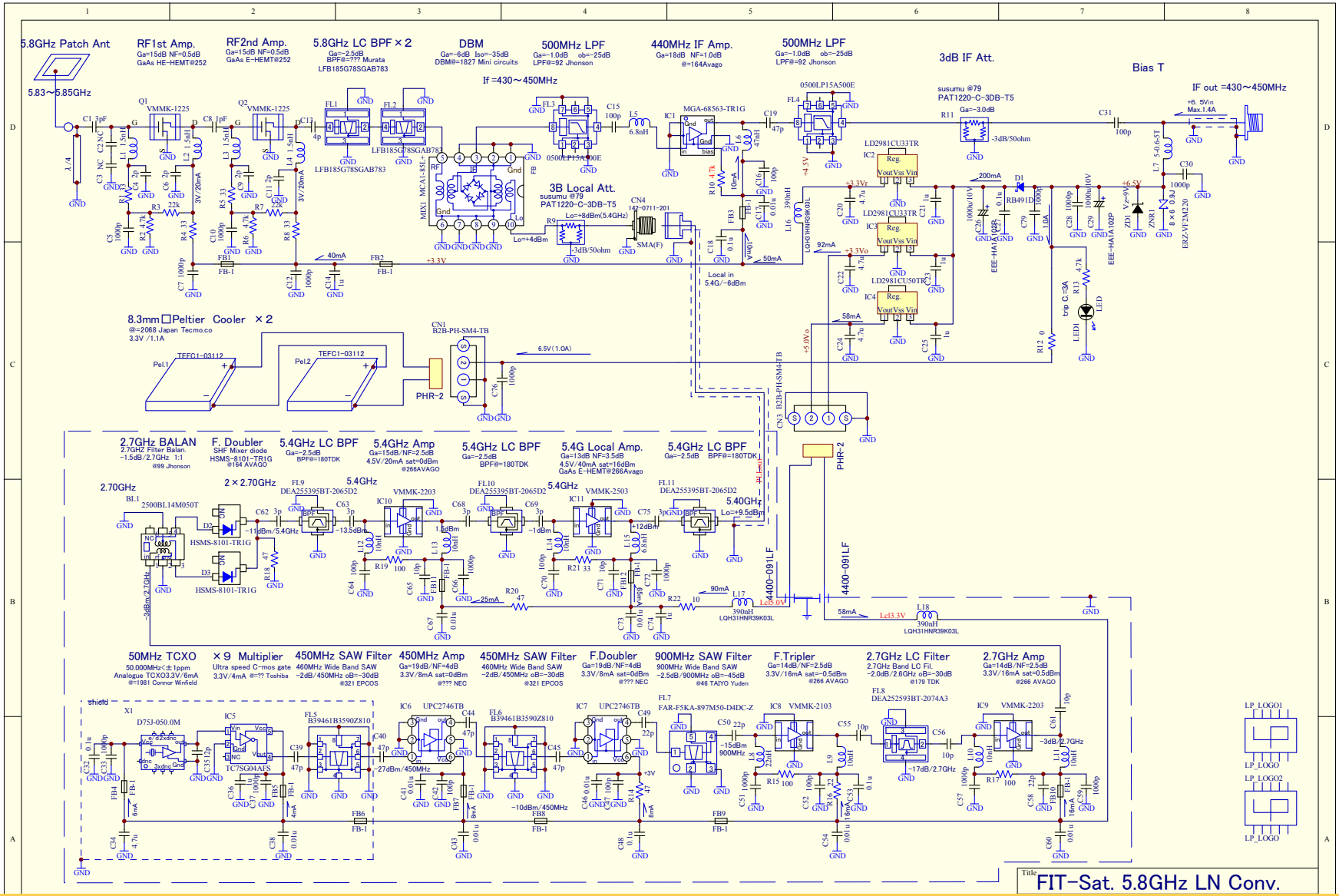
Usage from 1960s to the mid-1980s



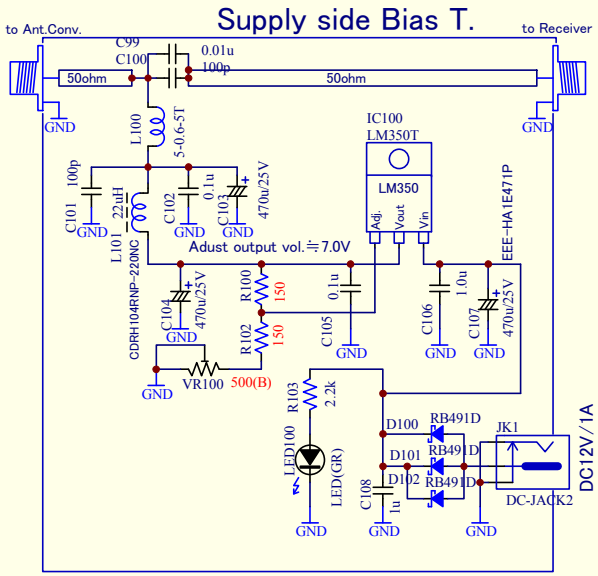
▸ Letraset Information ▸ Kalkitos (Gillette) Information

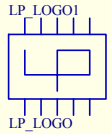
Low Noise Converter

Nowadays FIT-Sat. 5.8GHz Low Noise Converter



Supply side Bias T.





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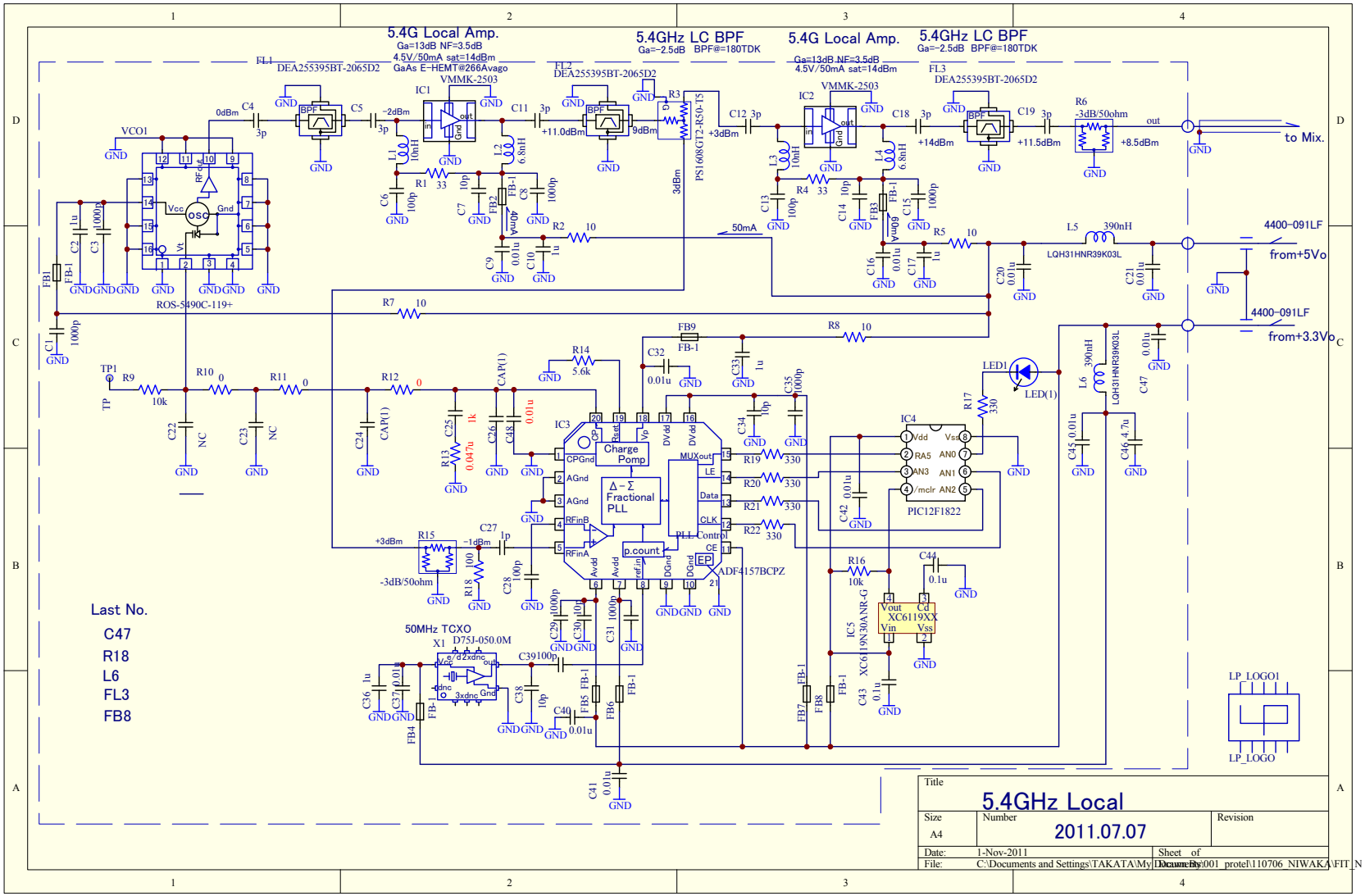
Date: 1-Nov-2011	Sheet of	
File: C:\Documents and Settings\TAKATA\My Documents\001_protel\110706_NIWAKA\FIT_N	Drawn By:	

5.4GHz Local Oscilator



SMT Real Cubesat PCB

5.84 GHz, RF Power 2 W, DC Power 15 W, Speed 115 Kbps, FSK $\pm 50kHz$