9 pin breakout

Circuit Board Documentation

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Abstract

This small circuit provides a breakout board that may be interposed between two 9-pin sub D connectors, allowing easy access to the conductors with a multimeter or oscilloscope, etc.

Contents

Safety Instructions

In order to operate the circuit properly and safely, review the following guidelines before installing and using the unit:

Diese Schaltung verwendet Kleinspannung ($< 50\,V_{AC}$ und $< 75\,V_{DC}$) und unterliegt daher nicht den Bestimmungen der *Niederspannungsrichtlinie* (2006/95/EC).

Sicherheitshinweise

Nehmen Sie vor Aufbau und Inbetriebnahme des Geräts folgende Empfehlungen zur Kenntnis, um die Schaltung korrekt und sicher zu betreiben:

Diese Schaltung verwendet Kleinspannung ($< 50\,V_{AC}$ und $< 75\,V_{DC}$) und unterliegt daher nicht den Bestimmungen der *Niederspannungsrichtlinie* (2006/95/EC).

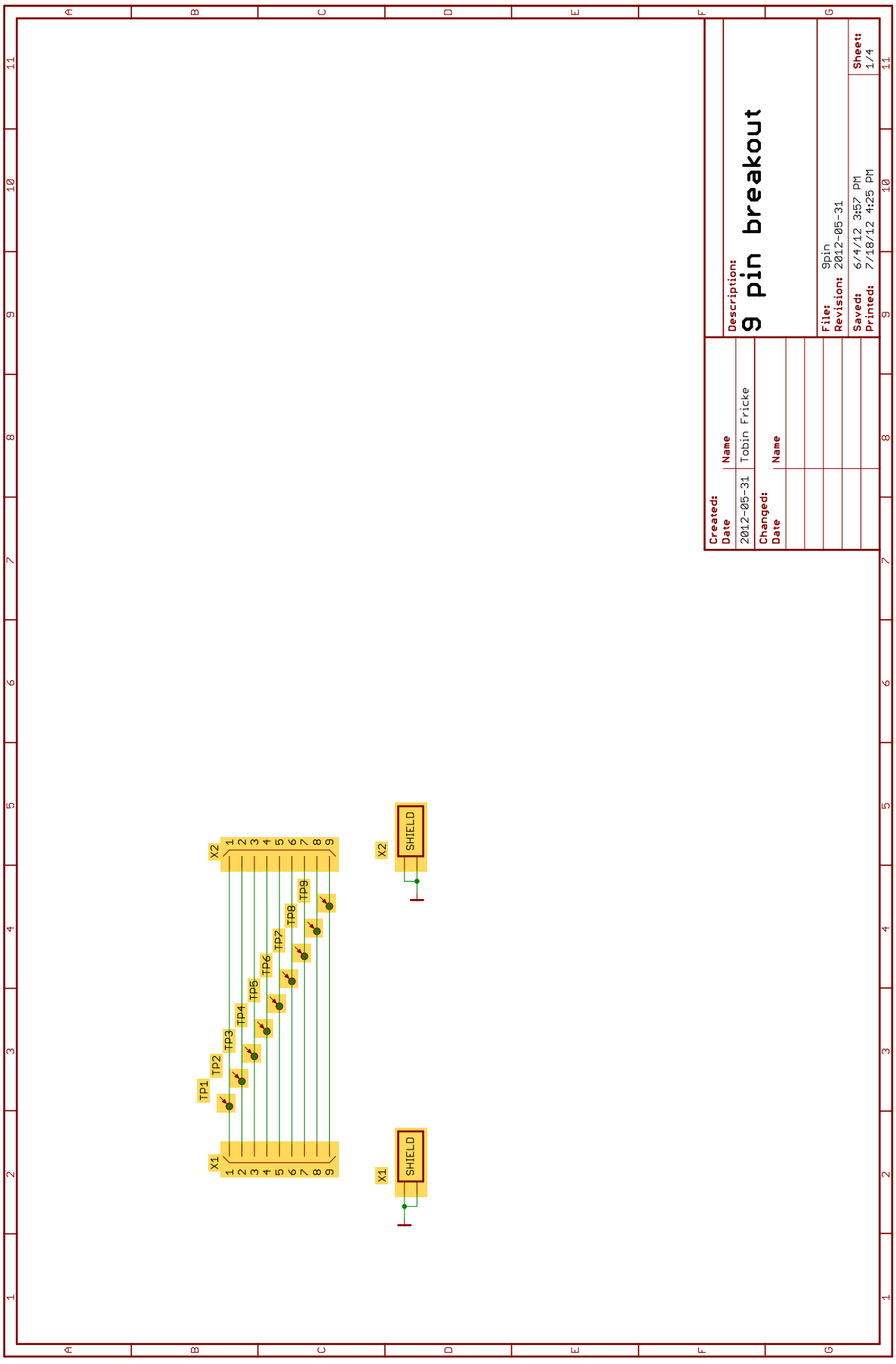

Figure 1: *Project schematics (sheet 1)*
Parts with undefined values are highlighted in orange

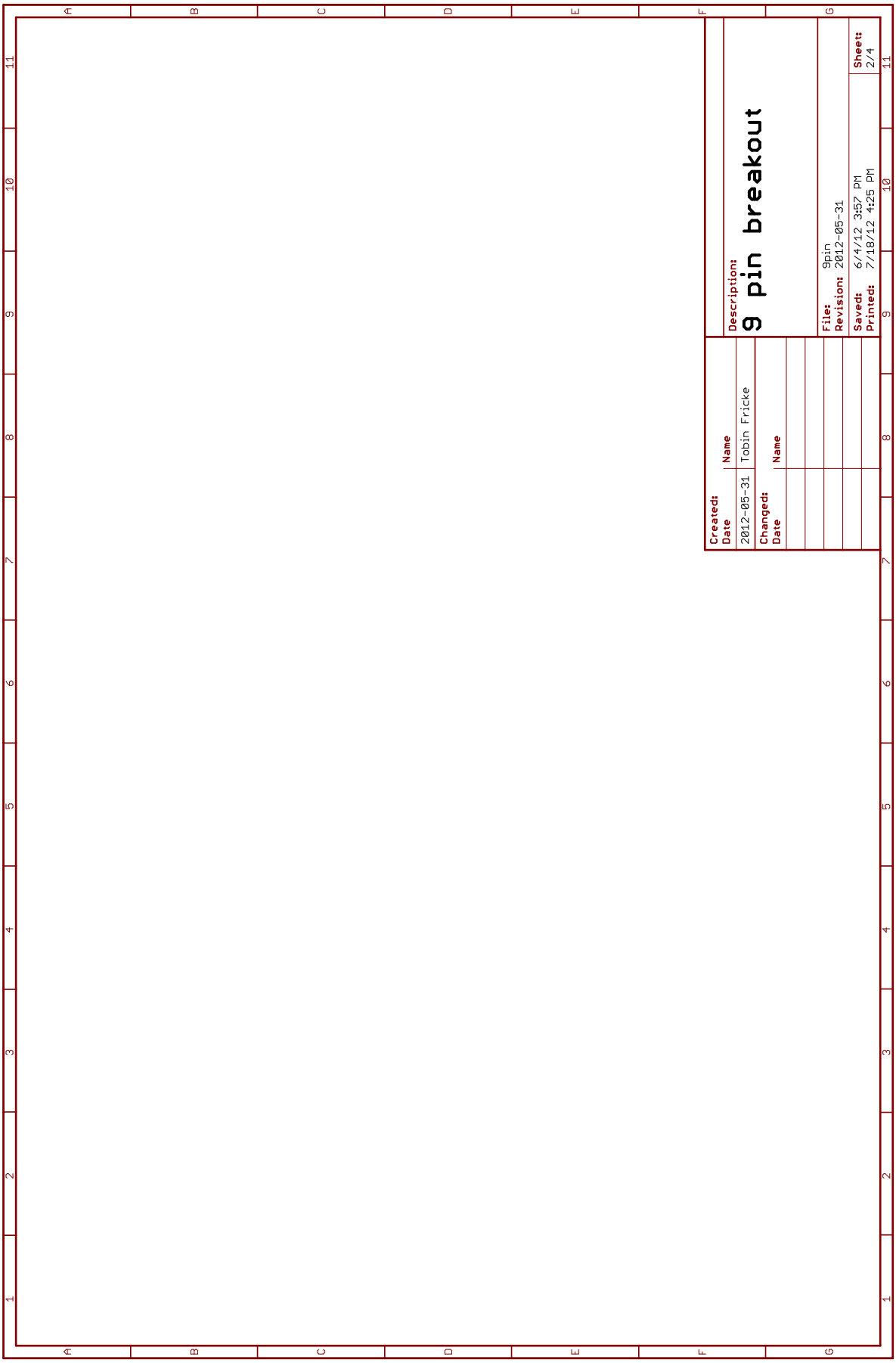

Figure 2: *Project schematics (sheet 2)*

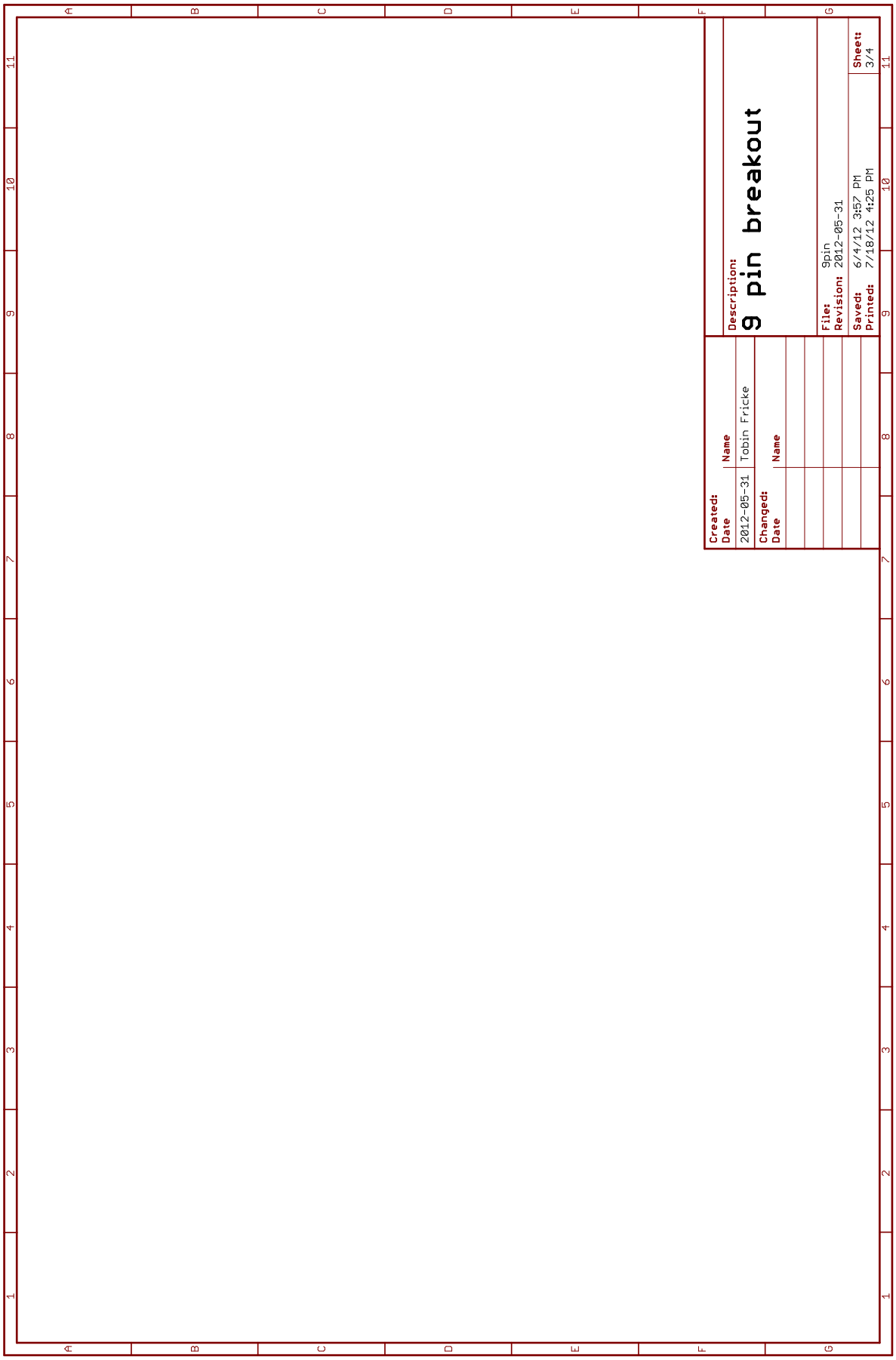

Figure 3: *Project schematics (sheet 3)*

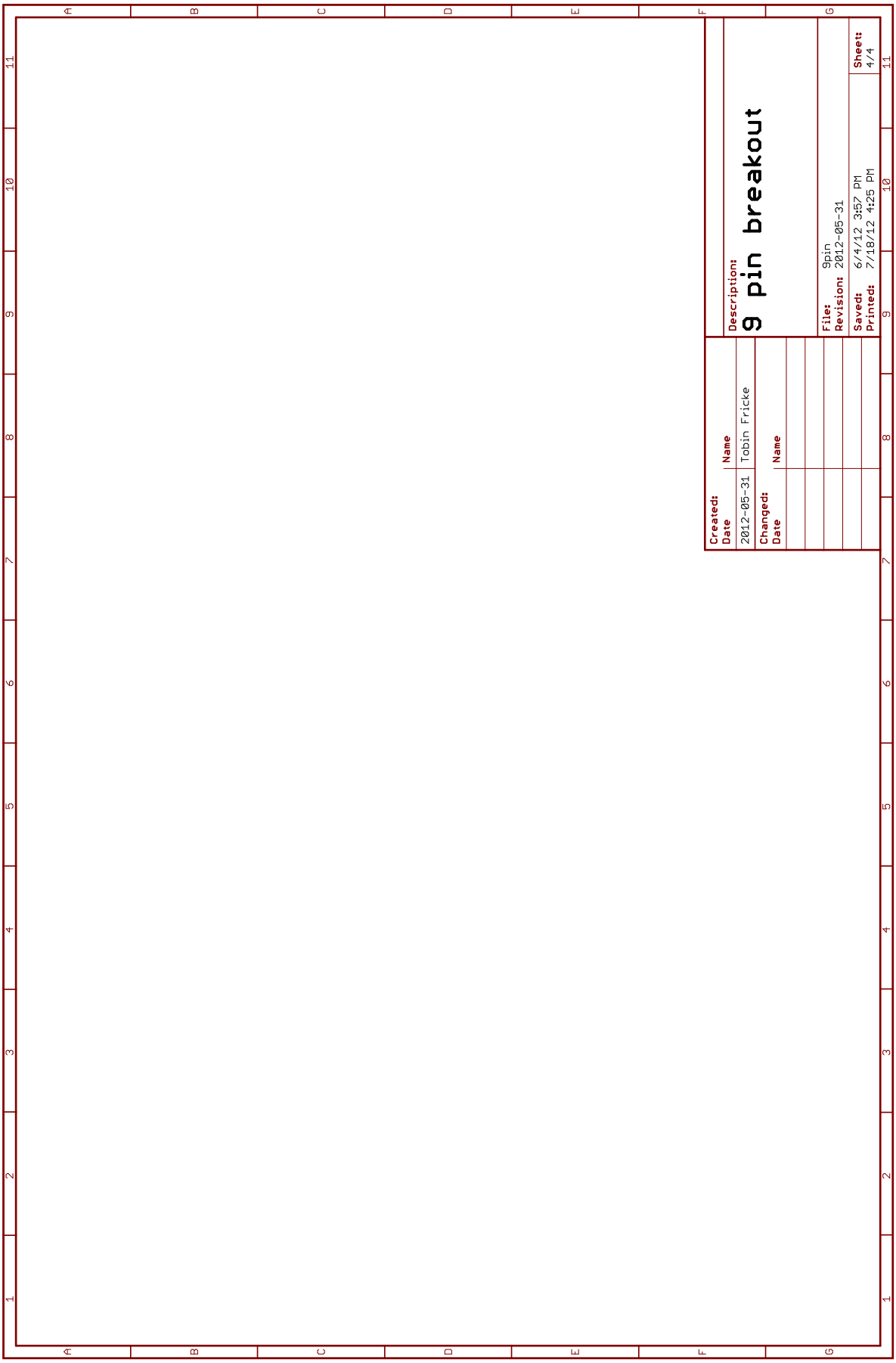

Figure 4: *Project schematics (sheet 4)*

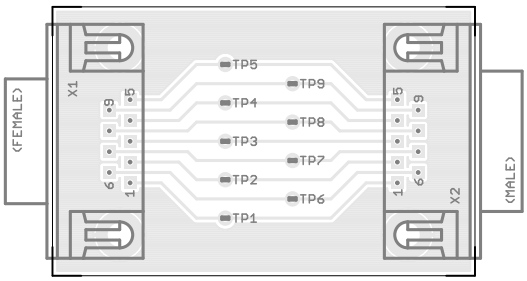

Figure 5: *Board top view (with bottom copper tracks) showing placeplan with component names*
Components with undefined values are shown in grey

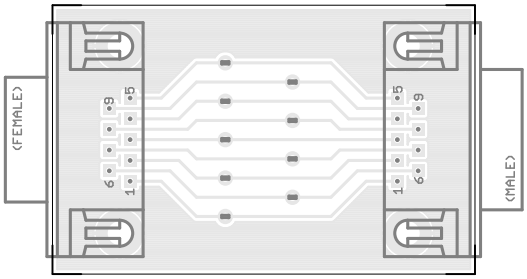

Figure 6: *Board top view (with bottom copper tracks) showing placeplan with component values*
Components with undefined values are shown in grey

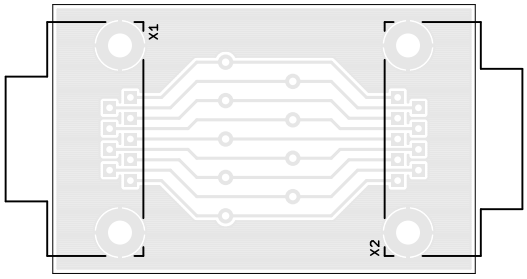

Figure 7: *Board top view (with bottom copper tracks) showing connectors, test points and wired components*

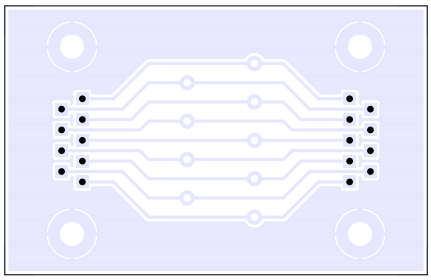

Figure 8: *Board bottom view showing drills with 0.9 mm (0.035 in) diameter*

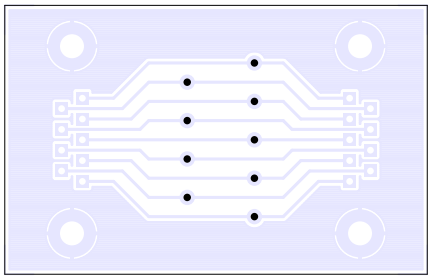

Figure 9: *Board bottom view showing drills with 1.0 mm (0.039 in) diameter*

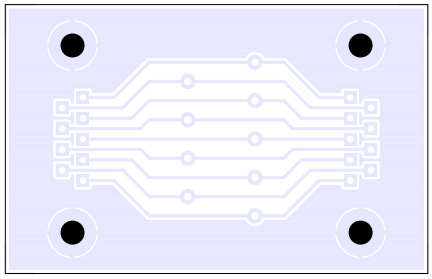

Figure 10: *Board bottom view showing drills with 3.2 mm (0.125 in) diameter*

Circuit Lists

Drill list: The following table shows all *final* drill diameters used in the board. When manually drilling the clearance holes, round up to the nearest available drill bit diameter, ensuring that all components fit well. When manufacturing *through-plated* boards, adjust for the additional copper coating by increasing the diameter accordingly.

∅ [µm]	∅ [mm]	∅ [in]	Count
889	0.9	0.035	18
990	1.0	0.039	9
3175	3.2	0.125	4
		Total	31

Table 1: *Drill diameters used in the board*

Standard properties: If not explicitly stated otherwise in the schematics or value and part lists, the circuit components have the following standard properties. Parts with 'better' properties can be easily substituted, but care should be taken if the specifications are *not* met.

- Wired resistors: Metal film 0.6 W, 1%, 200 V, TK 100
- SMD resistors: 1%, 150 V, TK 50, MiniMELF in thin film, other packages in thick film technology

Value list: The following list shows all components available on the board (sorted by part *values*) and can be used to quickly gather components. Names of components with undefined values are shown in **red**. Additional information can possibly be found directly on the board (or in the schematics).

```
1  EAGLE Version 5.12.0 Copyright (c) 1988-2011 CadSoft
2  Board value list of '9pin.brd'
3  Exported at 2012-07-18 16:32
4  Created with macro 'plot.ulp' (c) Andreas Weidner
5  Shown are: Value/Type,Package,Number,Names (Library)
6
7  ---TP---
8  [undefined]  XT-1.0METAL-N          (9*)    TP1,TP2,TP3,TP4,TP5,TP6,TP7,
   TP8,TP9
9                                               (connectors)
10
11 ---X---
12 [undefined]  D-SUB:9-pin/US/female  (1*)    X1 (connectors)
13              D-SUB:9-pin/US/male    (1*)    X2 (connectors)
```

Part list: The following list shows all components available in the schematics (sorted by part *names*) and can be used to quickly locate components. Additional information can possibly be found directly in the schematics.

```
1  EAGLE Version 5.12.0 Copyright (c) 1988-2011 CadSoft
2  Schematics part list of '9pin.sch'
3  Exported at 2012-07-18 16:32
4  Created with macro 'plot.ulp' (c) Andreas Weidner
5  Shown are: Name,Value/Type,Package,Device,Layer/Cell,Sheets/Cells
6
7  ---TP---
8  TP1  [undefined]  XT-1.0METAL-N          XT-1.0METAL-N      T  1-B3
9  TP2  [undefined]  XT-1.0METAL-N          XT-1.0METAL-N      T  1-B3
10 TP3  [undefined]  XT-1.0METAL-N          XT-1.0METAL-N      T  1-B3
11 TP4  [undefined]  XT-1.0METAL-N          XT-1.0METAL-N      T  1-C3
12 TP5  [undefined]  XT-1.0METAL-N          XT-1.0METAL-N      T  1-C3
13 TP6  [undefined]  XT-1.0METAL-N          XT-1.0METAL-N      T  1-C4
```

```
14 TP7   [undefined]  XT-1.0METAL-N          XT-1.0METAL-N      T  1-C4
15 TP8   [undefined]  XT-1.0METAL-N          XT-1.0METAL-N      T  1-C4
16 TP9   [undefined]  XT-1.0METAL-N          XT-1.0METAL-N      T  1-C4
17
18 ---X---
19 X1    [undefined]  D-SUB:9-pin/US/female  X09-2S-DSUBFEMALE  T  1-C2,1-D2
20 X2    [undefined]  D-SUB:9-pin/US/male    X09-2S-DSUBMALE-U  T  1-C5,1-D4
```