

# PCB "FAB-IN-A-BOX"

Our "Direct Etch" technique enables you to transfer toner printed images in minutes from any conventional laser printer with high etch precision.

Make SINGLE and DOUBLE-sided circuit boards up to 8"x10" in under 10 minutes with trace widths down to .005" using any standard 1,200dpi B&W laser printer (or conventional photo-static copier).

There is also a "MINI" kit. See contents below for differences in the two kits.

## Make Your Own PCB's In Minutes!

PCB

FAB  
-IN-A-  
BOX



Create high quality single and double-sided circuit boards using any laser printer\* or photo-copier in just a few minutes!

**Used by...**

- Hobbyists
- Midnight Engineers
- Educators
- R&D Labs
- Commercial Engineers



Photo courtesy of Paul Messer (WAZZY) Newport, OR. \*Oregon Coast Repeater Group, www.ocrg.org

From simple single-sided thru-hole circuits to advanced double-sided and SMT boards, as easy as 1, 2,3!

**1. Design...**



**2. Print...**



**3. Transfer...**



## Simple, Fast and Efficient!

\* Photo courtesy of Erik Walhinsen, Portland, OR. This double-sided board is a scant 1.5" diameter drawn with .008" traces for a TQFP-32 and LCC-20 chips

**Full Kit:**

- **Toner Transfer Paper:**  
20-sheets, 8-1/2" x 11" (2 TTP packs)
- **GreenTRF:**  
Toner Reactive Foil, 8" wide x 15" long  
Seals toner images for pit-free etching
- **White TRF:**  
Toner Reactive Foil, 8" wide x 15" long  
Converts silkscreen layer to white
- **Blank PCB Boards:**  
FR-4 / G10 Laminate, 1/2oz Copper  
2ea 8"x10" .032" SINGLE-Sided  
2ea 8"x10" .032" DOUBLE-Sided
- **Pre-Printed Test Images:**  
Validates printer's performance  
Acetate sheet for iron calibration

**Mini Kit:**

- **Toner Transfer Paper:**  
10-sheets, 8-1/2" x 11" (1 TTP pack)
- **GreenTRF:**  
Toner Reactive Foil, 8" wide x 15" long  
Seals toner image for pit-free etching
- **Blank PCB Boards:**  
FR-4 / G10 Laminate, 1/2oz Copper  
4ea 6" x 8" .032" SINGLE-Sided  
4ea 6" x 8" .032" DOUBLE-Sided
- **Pre-Printed Test Images:**  
Validates printer's performance  
Acetate sheet for iron calibration

### ALL "PulsarProFX" PRODUCTS:

#### KITS:

- PCB "Fab-In-A-Box" [50-1003](#)
- PCB "Fab-In-A-Box" (MINI kit) [50-1006](#)
- Combo (PCB + DecalPro) [50-1004](#)
- DecalPRO (10min Graphics) [50-1001](#)

#### LAMINATOR:

- Applicator (12" 120 vac) [50-1301C](#)

#### SUPPLIES:

- PAPER: Toner Transfer Paper [50-1101](#)
- FOIL: GreenTRF (Etching) [50-1225](#)
- FOIL: WhiteTRF (Silkscreen) [50-1226](#)
- FOILS: "DecalPro" [50-1201](#) ~ [50-1299](#)
- CARRIER BOARD: "DecalPro" [50-1503](#)

#### COPPER CLAD: 8" x 10"

- 2pk Rigid .032" Single Sided [50-1501](#)
- 2pk Rigid .032" Double Sided [50-1502](#)
- 2pk Flex .005" Single Sided [50-1504](#)
- 2pk Flex .005" Double Sided [50-1505](#)

#### COPPER CLAD: 6" x 8"

- 4pk Rigid .032" Single Sided [50-1507](#)
- 4pk Rigid .032" Double Sided [50-1508](#)
- 4pk Sampler (Mixed)... [50-1506](#)  
(.005" SS+DS and .032" SS+DS)

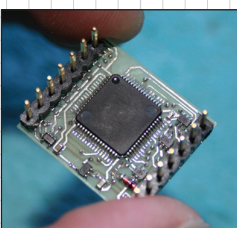
**No more photographic negatives, expensive pre-sensitized UV boards or developing chemistry. Just Design, Print, Transfer and etch... done!**

**A Simple, Fast and Efficient way to make single, double and Flex PCB's, both thru-hole and SMT!**

# NO

- ✓ **Negatives**
- ✓ **Darkroom**
- ✓ **Developing**

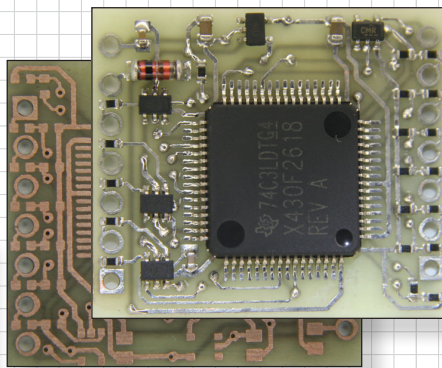
*"This project uses 0402 resistors, 0603 caps, and a 64-pin LQFP device on .008" traces w/.006" air-gap, .020" vias, and .010" via holes."*



Photos courtesy of David Coombs, Tucson, AZ

#### "Fine-Line" Capability!

Create circuit boards with traces as fine as .006" using any standard B&W laser printer\* and a suitable 10mil type laminator\*\*



To achieve super-fine traces you must have fast etch times to eliminate under-cutting. By using 1/2oz copper (vs. conventional 1oz) coupled with an .032" fiberglass base, you get fast etch times, good rigidity, reduced overall project height and boards that cut using a standard paper cutter. (We also make paper-thin .005" FlexPCB which cuts with scissors!) See our website for our "Contact Etch" technique to etch these boards in under 2 minutes... without using an etching tank!

#### Customer Comments...

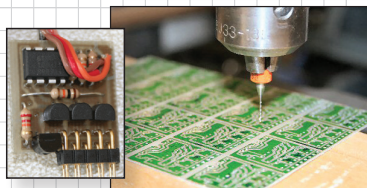
*"Your system is truly excellent! Everything worked exactly as described. Having never created a pcb before, I couldn't believe how well they turned out."*

**BRETT J, VANCOUVER, BC CANADA**

*"My company has a pcb router, but I have to get in line to use it. I have the budget to send stuff out, but that takes time. Sometimes, I just can't wait! I ordered your system with a laminator. Great stuff! I am delighted with the performance. Nothing but success."*

**DAVID E, PH.D., ZEELAND, MI**

**Ideal for proto-types and short-run custom fabricated in-house products!**



Photos courtesy of Tom Laureanno "www.djirc.com"

## The Process Steps:

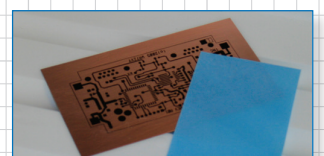
**PRINT** your PCB layout to the Toner Transfer Paper using any laser printer\* (or conv. photo-copier)



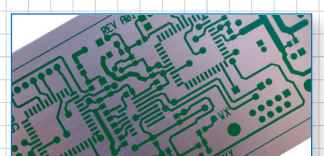
**FUSE** the toner image to the copper board by using either a household iron or a suitable laminator\*\*



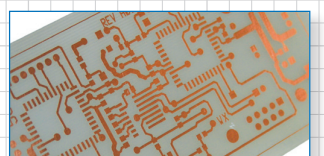
**WATER BATH** for 1 minute to release the toner image from the Toner Transfer Paper



**SEAL** the toner by covering and fusing the GreenTRF the same way as the paper above

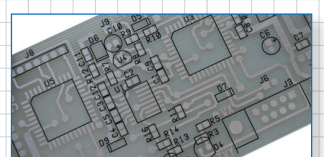


**ETCH** the board. When done, wipe off the toner and GreenTRF with Acetone... all done!



### Optional Steps

**SILKSCREEN** layer can be added to the component side after the board has been etched



**WhiteTRF** foil can be added over the black image for a more conventional silkscreened look



**\* PRINTERS:** Use this product only on B&W laser printers (or conventional photo-static copiers). Note however, that BROTHER® and SAM-SUNG® laser printers do not work well with our process due to their non-standard, very high-temperature toner formulations.

**\*\* IRON vs. LAMINATOR:** Household irons can be used to reliably transfer circuit images to copper-clad boards with traces down to .015" wide (after simple calibration). Finer traces require greater control over heat & pressure by using recommended pouch laminators. See our site for info at "PCBfx.com".