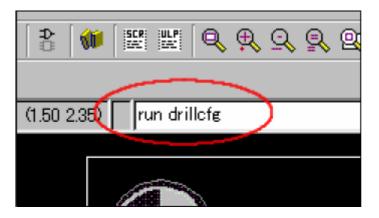


## Convert your Eagle files to Gerber files:

Follow all the steps below. After you finish all the steps, the Gerber files will be generated in the same directory as your .brd file. You can zip this Gerber files and upload the .rar or .zip file to makepcb.com.

Open the .brd file in Eagle (board file).

Create a Drill Rack file:



Type in "run drillcfg" to a command bar, and push an enter key.

| Eagle: Drill Configuration  |      | × |
|-----------------------------|------|---|
| Select unit for output file | OK   |   |
| • inch                      | Quit | t |

Choose an inch as a unit, and push the OK button.

| 💳 Eagle: Edit Drill Configuration 👘 👂                                   | < |
|---|---|
| Edit only if you are sure what you do!                                  |   |
| T01 0.024in<br>T02 0.031in<br>T03 0.032in<br>T04 0.044in<br>T05 0.126in |   |
| Ok  |   |
| Cancel  |   |

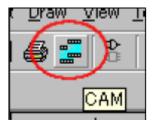
The list of the drill size used now is displayed. On this screen, push the OK button.



| Save Configuration F                   | ile di la companya di seconda di s |   |   |   |            | ? ×             |
|--|---|---|---|---|------------|-----------------|
| 保存する場所①:                               | 🔁 flip_flop   | • | £ |   | <u>e</u> * | <b></b>         |
|  |   |   |   |   |            |                 |
|  |   |   |   |   |            |                 |
|  |   |   |   |   |            |                 |
|  |   |   |   |   |            |                 |
| <br>ファイル名(N):                          | test.drl  |   |   |   | 保ィ         | ( <u>字(S</u> )  |
| ファイルの種類(工):                            | *.drl   |   |   | 1 |            | <u>、</u><br>ンセル |
| TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT | Light   |   |   |   | -1 r.      | 11.             |

The dialog which saves a Drill Rack file (\*. drl) is displayed. You have to save this file in the same folder as a board file (\*. brd). The information written to the board file is used in CAM Processor

Create the Excellon drill file:



Choose "CAM" with an icon bar. Thereby, the following dialog of CAM Processor is displayed.



| 🚝 3 CAM Processor          |  |
|----------------------------|--|
| File Layer Window Help     |  |
| Job<br>Section *<br>Prompt | Style       Nr       Layer         Mirror       Top         Rotate       Top         Upside down       17 Pads         pos. Coord       19 Unrouted         Quickplot       20 Dimension         Quickplot       23 tOrigins         Fill pads       25 tNames         26 bNames       27 tValues         29 tStop       30 bStop         31 tCream       32 bCream         33 tFinish       ▼ |
| Process Job Process Sect   | tion Description Add Del   |

| 🚰 3 CAM Processor           |                   |
|-----------------------------|-------------------|
| <u>File</u> Layer Window He | elp               |
| <u>O</u> pen ▶              | Board             |
| <u>S</u> ave job Ctrl+S     | <u>S</u> chematic |
| <u>C</u> lose               | Drill rack        |
| E <u>×</u> it               | Wheel             |
| Prompt                      | Job               |
| · · · ·                     |                   |

Choose "Open" by the file menu of a CAM Processor dialog, and choose "Job" further.



| Open CAM Job   |                                 |   |   |     |          | ? ×     |
|--|---------------------------------|---|---|-----|----------|---------|
| ファイルの場所①:  | am Cam                          | - | £ |     | <u> </u> | <b></b> |
| excellon.cam<br>gerb274x.cam<br>gerber.cam<br>layout2.cam<br>schematic.cam |                                 |   |   |     |          |         |
| ファイル名(N):  | excellon.cam                    |   |   |     | 開        | (©      |
| ファイルの種類(工):  | CAM Processor Job Files (*.cam) | _ |   | ] [ | キャン      | ンセル /   |

Choose "excellon.cam" from the list displayed, and push the open button.

| 🚰 3 CAM Processor - C:/Program Files/EAGLE-4.09r2/cam/excellon   | .cam   |  |
|--|--|--|
| <u>F</u> ile <u>L</u> ayer <u>W</u> indow <u>H</u> elp   |  |  |
| Generate drill data  |  |  |
| Job   Section   Generate drill data   Prompt     Qutput   Device   EXCELLON     Rack   .drl   File   .drd     Offset   X   0inch   Y   Oinch     Drill - 2.5%     + 2.5% | Style<br><u>Mirror</u><br><u>Botate</u><br><u>Upside down</u><br><u>pos. Coord</u><br><u>Quickplot</u><br><u>Quickplot</u><br><u>Fill pads</u> | Nr       Layer         1 Top         16 Bottom         17 Pads         18 Vias         19 Unrouted         20 Dimension         21 tPlace         22 bPlace         23 tOrigins         24 bOrigins         25 tNames         26 bNames         27 tValues         28 bValues         29 tStop         30 bStop         31 tOream         32 bOream         33 tFinish |
| Process Job Process Sec  | tion Description   | Add Del  |
| c:/Mp_eagle/projects/flip_flop/test.brd  |  |  |

Check the items setup of Generate drill data, and push the "Process Job" button. The setting items are left default when details are not known. The Excellon drill files (\*. drd, \*.dri) are made by this processing.



Create the Gerber files:

| 🚰 3 CAM Processor                         |                   |
|---|-------------------|
| <u>File</u> Layer <u>W</u> indow <u>H</u> | elp               |
| <u>O</u> pen ▶                            | <u>B</u> oard     |
| <u>S</u> ave job Ctrl+S                   | <u>S</u> chematic |
| <u>C</u> lose                             | Drill rack        |
| E <u>×</u> it                             | Wheel             |
| Prompt                                    | Job               |
| · · · · · · · · · · · · · · · · · · ·     |                   |

Choose File -> Open -> Job like creation of Excellon drill files.

| Open CAM Job                      |                                 |   |   |          | ? ×         |
|-----------------------------------|---------------------------------|---|---|----------|-------------|
| ファイルの場所型:                         | 🔄 cam                           | • | £ | <u>e</u> |             |
| excellen.cam                      |                                 |   |   |          |             |
| Rerber.com                        |                                 |   |   |          |             |
| a) layout2.cam<br>) schematic.cam |                                 |   |   |          |             |
|                                   |                                 |   |   |          |             |
| <br>                              | gerb274x.cam                    |   |   | <br>88   | ((0)        |
| ファイル名( <u>N</u> ):                | jgerb274x.cam                   |   |   | <br>開    | ( <u>@)</u> |
| ファイルの種類(工):                       | CAM Processor Job Files (*.cam) |   |   | キャ       |             |

Choose "gerb274x.cam" from the displayed list, and push the open button.

## **MakePCB**

| 🚰 3 CAM Processor - C:/Program Files/EAGLE-4.09r2/cam/gerb274x   | ccam   | _ <b>_ _</b> ×   |
|--|--|--|
| <u>F</u> ile <u>L</u> ayer <u>W</u> indow <u>H</u> elp   |  |  |
| Component side Solder side Silk screen CMP Solder stop r   | mask CMP   Solder s  | top mask SOL   |
| Job<br>Section Component side<br>Prompt<br>Qutput<br>Device GERBER_RS274X<br>File .cmp<br>Offset<br>X Dinch<br>Y Dinch | Style<br>Mirror<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>Solution<br>S | Nr     Layer       1     Top       16     Bottom       17     Pads       18     Vias       19     Unrouted       20     Dimension       21     tPlace       22     bPlace       23     tOrigins       24     bOrigins       25     tNames       26     bNames       27     tValues       28     bValues       29     tStop       30     bStop       31     tCream       32     bCream       33     tFinish |
| Process Job Process Sec  | tion Description   | Add Del  |
| c:/Mp_eagle/projects/flip_flop/test.brd  |  | li   |

Check the items setup of Generate drill data, and push the "Process Job" button. The setting items are left default when details are not known.

The Gerber files ( \*.cmp, \*.sol, \*.plc, \*.stc, \*.sts, \*.gpi ) are made by this processing.

The following Gerber files can be made from the above processing.

- \*.drl Drill rack data
- \*.drd Excellon drill description
- \*.dri Excellon drill tool description
- \*.cmp Component side data
- \*.sol Solder side data
- \*.plc Component side silk screen data
- \*.stc Component side solder stop mask data
  \*.sts Solder side solder stop mask data
  \*.gpi Gerber photoplotter information data