

# *Partlocator by Alkgrove*

## Introduction

The distributor Digi-Key has an API to retrieve the same information that you get when you browse a component page from Digi-Key (<https://www.digikey.com>) Partlocator is an application written in Python 3 that retrieves the data and puts it into a MariaDB database. It also has rudimentary search and modification of the data. It has the ability to update and add pricing information to the BOM. This database can be used by eCAD tools although currently designed for Altium. Other distributors, like Mouser, have similar APIs and this could be adapted.

This was designed for an engineer or small group of engineers wanting to get accurate data into a database. Digi-Key was picked as they are one of the largest distributors and they keep their data aggressively up to date. (I've reported minor errors and have had the website update within hours)

Digi-Key limits the number of queries per day from an user and therefore uses a mechanism for authentication and a restrictive version of [OATH2](#) for this. The down side is that you need to run a SSL local webserver for the authentication. Fortunately, this is only required for the initial authentication or if the token becomes corrupt. For all other queries, authentication is taken care of by the partlocator application.

## Status

This is current a beta release. It has been tested with Windows 7 x64 and Altium 17.

## Prerequisites

This is not a one-click install. This requires python and xampp to be installed and some setup. For a small business, you may want to use an intranet server that has apache, php, cURL and MariaDB. If you want to use Microsoft server, I'd use the application provided by Digi-Key.

This is designed to work only on local networks and workstation/laptops. Since this has rights to a SQL database and even though we took steps to minimize risk, SQL injection still remains a possibility.

I will describe single user install and provide some guidelines for local server install. The initial implementation works with Altium Designer but can be adapted to other eCAD tools if they support database.

You need both the basic customer account and an API-Portal account from Digi-Key. To get the API portal account, go to <https://api-portal.digikey.com/> Click on "create an account" button, and put in the necessary information. If you are in a small business and using shared servers, the account can be shared and you can invite others to the account.

Once you have an account, login into the API-Portal account. Then click on My Apps and click the "create new application" button. You can fill in the title, description and the redirect URI. The redirect URI for a single user will be <https://localhost/digikey/auth.php>. The redirect URI for intranet server would be whatever the domain name and path to the auth.php file. The API Portal allows this to be edited later. You then need to go to the API section standard and subscribe your application. this App uses partsearch/partdetails.

Once you signed up, you will be provided with a secret key and a user ID. Copy the following into a text file and paste in the secret key and client ID number into the appropriate spots.

```
[authentication]
client_secret=<paste client secret here>
client_id=<paste client id here>
redirect_uri=https://localhost/digikey/auth.php
customer=<paste customer id number here>
timezone=<paste timezone here>
```

Save this temporarily. It will be pasted into the partlocator.cfg file later.

## Installing

Unzip(or git clone) the partlocator project into the directory you want to run it out of. It can be installed anywhere that windows allows scripts to run. (Program Files(x86) folder is the standard). You can also use command line git clone of the project and then to get updates, you can then git pull origin master.

Partlocator is written in python and requires Python 3<sup>1</sup>, tkinter and PIP. PIP is the package installer and is now bundled with Python 3<sup>2</sup>. If you don't have it already, download Python 3 from <https://www.python.org/> as Windows x86-64 executable installer. While installing, make sure PIP, tck/tk wiith idle<sup>3</sup> and Py Launcher are installed and check the boxes to associate files with Python, add python to environment variables and precompile standard libraries.

### XAMPP – Single User

For single user (local use), download XAMPP from <https://www.apachefriends.org/download.html> this contains Apache webserver, OpenSSL, PHP, and MariaDB database.

Run the windows installer for XAMPP. When installing you need Apache, MySQL<sup>4</sup>, php, and phpMyAdmin. The other apps can be unchecked. This guide will use the default directory C:\xampp as the path to xampp. If you choose to install it elsewhere, please adjust the path.

In the startup menu, go to XAMPP -> XAMPP Control Panel. For convenience, click on the config button in the top right corner and browse you favorite text editor or notepad. We'll need to edit some files to set it up.

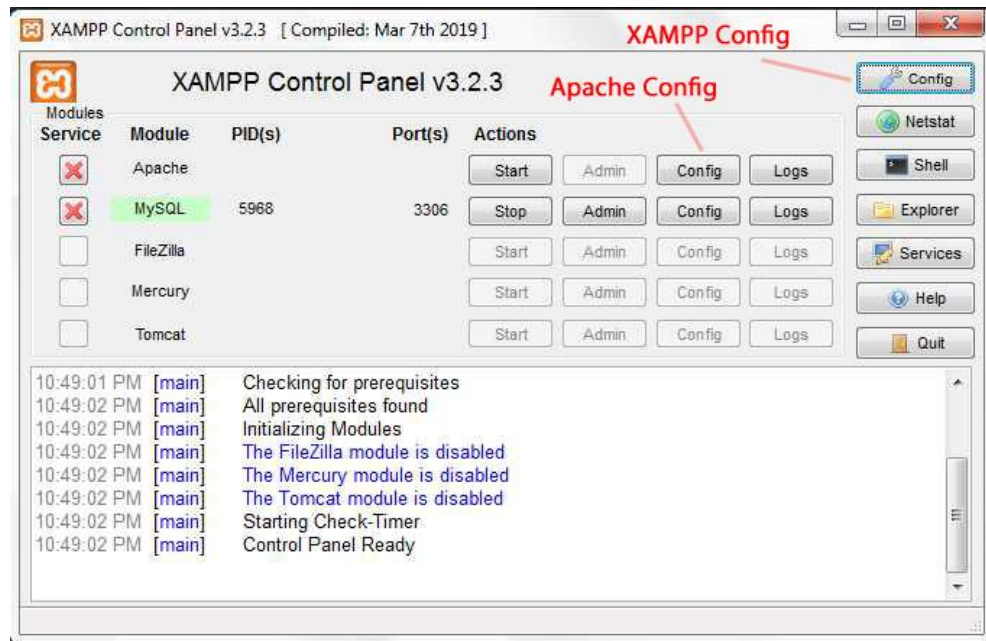
---

<sup>1</sup> I suggest using Python 3.7.2, rather than Python 3.7.3. 3.7.3 has a small bug that affects the GUI in a minor way.

<sup>2</sup> We are using Python 3 instead of 2 because pip on 2 is pain to install.

<sup>3</sup> You can't get tkinter, the UI, without the idle editor. Python has a view that everyone using python is a developer.

<sup>4</sup> It says Mysql, but it really is MariaDB



Configure the webserver with SSL. In the XAMPP Control Panel click on the Apache row Config and select Apache (httpd-ssl.conf). Search for <VirtualHost \_default\_:443> and change the line

```
ServerName www.example.com:443
to
ServerName localhost:443
```

change the ServerAdmin to admins email address  
Save and close

Adding certificate authority to xampp

XAMPP has certificates but I had trouble with them when using cURL, this was the recommended fix.

With windows explorer. browse into C:\xampp\apache\conf and create a folder ssl.ca

Download a cacert.pem from <https://curl.haxx.se/docs/caextract.html> into the C:\xampp\apache\conf\ssl.ca directory. This is a large file of CA certificates extracted from Mozilla and is needed by PHP/cURL. You should now have a file cacert.pem in the ssl.ca directory.

In the XAMPP control panel on the Apache row. select config and php.ini.

Find the line with [curl] and change curl.cainfo to:

```
curl.cainfo="C:\xampp\apache\conf\ssl.ca\cacert.pem"
```

Find the line with [openssl] and change openssl.cafile to:

```
openssl.cafile="C:\xampp\apache\conf\ssl.ca\cacert.pem"
```

Save and close

Generate a Self Signed Certificates for SSL

To run https, you need a certificate and since this is on the local net, it is a self-signed certificate – the illegitimate child of the internet. It does provide encryption but not authentication – then again you are on a network where everyone knows your name.

Run C:\xampp\apache\makecert.bat by going into the C:\xampp\apache folder and double clicking on makecert.bat. It will ask some questions.

You are asked to generate a pass phrase and to enter the same thing again.

You will be asked for distinguished name. It shows up in the certificate. The common name must be localhost.

Enter country name as two letter code (they are from here [https://www.ssl.com/country\\_codes/](https://www.ssl.com/country_codes/))

Enter state or province

Enter Locality name (city)

Enter Organization name

Enter Common name-> this must be localhost (or hostname of intranet server)

Enter email address

Leave the challenge password and optional company name blank by hitting enter

You will be asked to enter the pass phrase again.

This generates a self-signed certificate and as with self-signed certificates, they work but they are considered invalid.

To test, start the apache server by going into the XAMPP control panel and clicking the start button in the apache row. After a few seconds the module background for apache should turn green

with a browser, go to <https://localhost>. If the browser is working properly, it will complain.

In firefox, click Advanced and Accept the Risk and continue

In IE, click Continue to this website (not recommended).

Chrome and Opera may work or they will have issues. If it works, it will pop up a complaint dialog box, just press continue button. One issue I encountered was an antivirus, such as ESET, will actively block https traffic that it considers having a valid certificate. This should show the XAMPP start page.

MariaDB setup – local machine

Go into the XAMPP control panel and start Apache and MySQL. With a browser go to

<https://localhost/phpmyadmin/>

Click on the User Accounts and then the add user account button. Put in the username (same as the one in the partlocater.cfg file), host name is localhost (or host name of the intranet server), and password (same as in partlocater.cfg). You will need all of the data and structure privileges at a minimum or global privileges.

Then push the go button at the very bottom right to commit the change. Leave MariaDB running for next step,

Install MariaDB connector

To communicate with the database whether it is on the local machine or a server requires an ODBC connector. The MariaDB connector can be downloaded from <https://downloads.MariaDB.org/connector-odbc/> get the mariadb-connector-odbc-x.x.x-win32.msi for 32 bit connector or mariadb-connector-odbc-x.x.x-win64.msi for 64 bit connector.

The connector needs to match with application accessing it. For example, Altium designer 17 and earlier are 32 bit apps and need a 32 bit connector. Altium designer 18 and later are 64 bit apps and require the 64 bit connector. Double click on the .msi file you downloaded and install the connector.

To configure the 64 bit, go into control panel and administrative tools and start the data sources ODBC.

For the 32 bit connector on Win7 64 bit, go to the start->run and paste

c:\windows\sysWOW64\odbcad32.exe

In the User DSN tab, click add and choose the MariaDB driver. Give your connection a name and description. The name identifies the connection in the User DSN menu. Click next, and select TCP/IP, Server Name is localhost (or server's host name), Port is set to 3306. If the database is on the local machine, the username and password are the MariaDB credentials you assigned above

If the database is running, you can push the Test DSN to see if the setup is correct. The remaining selections are fine as default, just click next until you get to the finish button and click that. Click ok in the ODBC Source Administrator to finish the installation.

### Setting up partlocater

You can setup the partlocater.cfg file in the assets directory before running setup.bat file. See the section below. I have provided default copies in the asset directory. These should not be modified only copied in case your partlocater.cfg or map.cfg goes south.

Double click on setup.bat in the partlocater top directory. It will ask if you are using xampp, an intranet server or if you want to remove partlocater. It will check what has been installed, add the necessary packages to python plus copy files needed by xampp. This also creates a shortcut that can be dragged to the start menu to pin it to the menu. It also creates an user environment variable PARTLOCATER\_CFG with a path to the partlocater.cfg file. Stop apache and mariadb if they are running and exit out of the browser you've been using.

Edit the partlocater.cfg file.

If you are using xampp, the partlocater.cfg file is C:\xampp\apache\conf\partlocater.cfg otherwise it is in the toplevel partlocater directory. If you set it up in the assets directory, then skip this step.

Open it with your favorite text editor or notepad. The config file is in the ini style configuration format.

Database credentials are in the database section. The section name starts with database concatenated with a number or identifier ie database0

It has required properties host, username, password and database. host is localhost for local PC database; username and password are the database username and password. database is the name assigned to the database.

For the intranet server, host is the domain name of the server, username and password and the login credentials that have access to the database and database is the name assigned to the database. The name should be lower case letters only and can use underscore ('\_').

export and import are optional. They are command line for exporting the database to an external file or importing a database from an external file.

These can contain macro expanded for this sections database. The macros are:

%(username) is username for database section

%(password) is password for database section

%(host) is hostname for database section

%(savefile) opens a save file dialog and macro replaces with filename (must end with .sql) %(openfile)

opens a open file dialog and macro replaces with the opened filename

%(date) replaces with MMDDYYYY string of current date

%(time) replaces with HHMM string of current time

Note that savefile and openfile only work for the local machine.

Example (this works for localhost running xampp):

```
export="C:\xampp\mysql\bin\mysqldump" --user=%(username) --password=%(password) --opt --  
databases %(database) > %(savefile)
```

```
import="C:\xampp\mysql\bin\mysql" --user=%(username) --password=%(password) %(database) <  
%(openfile)
```

On a remote server this will work if you set up key exchange for ssh and have a decent shell.

```
export="C:\cygwin\bin\ssh %(username)@%(host) "/usr/mariadb/x.x/bin/mysqldump --  
user=%(username) --password=%(password) --opt --databases %(database) >  
/export/home/parts/%(database)_%(date)%(time).sql"
```

#### **[database0]**

host=localhost

username=<your username for database>

password=<your password for database>

database=<your name for the database>

export=<command script>

import=<command script>

The authentication section contains the information required for the Digi-Key authentication process.

When signing up we suggested filling out the authentication section. If you have done so, copy what you filled into the partlocater replacing the authentication section with your own.

The client\_secret and client\_id are provided when the application is registered and need to be placed here. The redirect URI must be identical to the one that was registered with Digi-Key. customer is the users Digi-Key customer number. Timezone is the Olson timezone format ie America/Los\_Angeles, America/Chicago, America/New\_York, etc.

[authentication]

client\_secret=<paste client secret here>

client\_id=<paste client id here>

redirect\_uri=https://localhost/digikey/auth.php

customer=<paste customer id number here>

timezone=<paste timezone here>

You can also edit the preferences section. For debugging, uncomment the line in the preferences section:

**log=../pl.log**

You also need to tell the webserver which database is default for getting the token. default=<section of database to receive the token>

**default=database0**

Once complete, save the text file.

## Get the first token

Start apache and MySQL (MariaDB) running from the XAMPP control panel. With a browser go to <https://localhost/digikey>. The browser will complain or downright not work about an insecure connection.

IE says insecure site exit (recommended) -> ignore that and continue

chrome and opera will complain with a pop-up, ignore and continue to website. Some antivirus software will block you (like eset). Turn off the https checking and try again.

Firefox will complain, click advanced and continue to website.

It should bring up a page with a link on it. Take the link and it should ask for Digi-Key credentials. These are the username/password for your Digi-Key ordering username/password. It will ask (only once) to identify the application. Click ok. If all goes well, it should say token stored in database.

This will also create the database for the part and for the token. You can turn off apache and will only need to repeat this if the token is lost or becomes corrupt.

## Running Partlocater

Start up partlocater and connect to your database. It will get the token and check if needs refreshing. If it does it will go to Digi-Key to update it and store that in the database. Partlocater should say Host <hostname> Database <name> connected.

The screenshot shows the Partlocater application window. The title bar is 'Partlocater'. The menu bar has 'File' and 'Help'. The main area is titled 'Part Info: 311-10.0KLRCT-ND'. It contains a table with two columns: 'Parameter Name' and 'Parameter Value'. The table lists various parameters for the part, including Pricing, Category, RoHS, Packaging, Part Status, Resistance, Tolerance, Power, Composition, and Features. To the right of the table is a 'Part Number' input field containing '311-10.0KLRCT-ND' and three buttons: 'Locate', 'Clear', and 'Commit'. Below the table is a 'Modify Name/Value' section with a text input field and 'Update' and 'Cancel' buttons. At the bottom is a 'Status' section with a message: 'Found part 311-10.0KLRCT-ND, not in database, commit to add.'

Parameter Name	Parameter Value
Pricing 1	1=0.1, 10=0.016, 100=0.007, 1000=0.00328, 2500=0.00288, 5000=0.0025
Category	Resistors
RoHS	RoHS Compliant
Packaging	Cut Tape (CT)
Part Status	Active
Resistance	10 kOhms
Tolerance	±1%
Power (Watts)	0.063W, 1/16W
Composition	Thick Film
Features	Moisture Resistant

Part Number: 311-10.0KLRCT-ND

Locate Clear Commit

Modify Name/Value: [ ] Update Cancel

Status: Found part 311-10.0KLRCT-ND, not in database, commit to add.

Put a Digi-Key partnumber such as 311-10.0KLRCT-ND in the locate box and click locate. It should bring up all the properties that Digi-Key sent to the part info box. Scrolling in this you will see three parameters which are highlighted: Basename, Library Ref and Footprint Ref. They will contain best guess but probably need editing and must be modified before committing the part. Library ref is the name of the schematic symbol that you have or have generated. For example, my resistors are RES and capacitors are CAP. The Footprint Ref is the footprint name in the PCB library.



To change these click on the parameter, which copies it below to a text field, make the changes and click update. Once the part is updated, click commit.

You can use the search database to change any of the parameters later on. There is a about->system which will show information about the environment that partlocater is working in and there is about->help which is a text guide for using partlocater.

## Connecting to Altium

You still need a schematic library to hold the symbols and reference designator and PCB library for the footprints. We now need a database library. Go into File->New->Library->Database Library

This will bring up a form which needs to be filled out. Click on the button "use connection string", then scroll to the right and click on the build button. This brings up a wizard,

In the provider tab, click on Microsoft OLE DB Provider for ODBC Drivers then next

In the connection tab, click on use a connection string and push the build button.

Yet another wizard pops up, Click on the Machine Data Source tab and the name you gave to a ODBC connector earlier should be there. Double click that name and the wizard to setup the connector will popup. Since this is already set up earlier, you have to click next until finish and finish. This should put the information as text into text box.

Enter the login credentials either as a user for a server or the windows login/password for local access and check the save password box. Push the test connection button to see if the connector and database is working. Then click OK, this should fill in a text box with a long string of text. In the box marked Schema name put the same name as your database name for the partlocater. Now click the advanced button and replace the left quote character default [ to ` (backtick) and the right quote character default ] to ` (backtick).

Save the database and give it a name. As you add parts to this database with part locator, the number of categories will grow. If you add this file to a project, then all of the categories show up as individual libraries. You select each library and drag a part onto schematic. The parameters and footprint will be automatically set.

## Removing Partlocater

Run setup.bat in the partlocater directory and select remove.

Go the location where partlocater was installed and delete the partlocater folder.

If you are using xampp and Python 3 only for partlocater, you can uninstall the apps with the start -> Control Panel -> Programs and Features panel.

## Operation

### Main Window File Menu

- Connect To... -> Opens sub menu list of databases listed in the configuration file. You must connect to a database first before locating a part on Digi-Key. It will authenticate and possibly update a token. Changing databases will automatically disconnect from current database and connect to the selected one.
- Disconnect -> Disconnect from current open database.
- Search Database -> Opens a search window for exploring and modifying the database.



- Sync Tokens -> If there is more than one database, this copies the most recent token to the other databases
- Export -> Saves the current connected database to a .sql file. This only works for localhost server databases. This requires mysqldump and mysql executables with a mysql\_path defined in preferences section of the partlocater.cfg file.
- Import -> Import from an .sql file into the current connected database. This removes any prior version of that database and replaces it with the imported data. This only works for localhost server databases. This requires mysqldump and mysql executables with a mysql\_path defined in preferences section of the partlocater.cfg file.
- Update BOM -> Opens the Update BOM window and used to update BOM with database pricing and inventory. It can also update the database from Digi-Key.
- Quit -> Exits the application

### Main Window Help Menu

- About -> Opens about box
- System -> Opens system information window. Useful for troubleshooting.
- Help -> Opens this window

### Main Window Locate Frame

- Part Number - Enter the exact Digi-Key part number into this field to locate the part at Digi-Key.
- Locate - After the exact Digi-Key part number is entered in the Part Number field, clicking Locate queries Digi-Key and retrieves the parameter data. This data is displayed in the Part Info view as name/value properties.
- Clear - Clears the Part Info, Modify Name/Value and Part Number fields. Any information that was not committed will be lost.
- Commit/Overwrite - The data from Digi-Key that is showing in the Part Info view will be written to the database when the Commit/Overwrite button is clicked. If the Overwrite button is showing (rather than Commit), then that part number is already in the database. Also the Commit button will change to Overwrite, once it is pushed.

### Main window Part Info View

This displays the parameter data from a Digi-Key query with the parameter name and parameter value on each line. When a line is selected, Control-C will copy the value of the selected property or properties to the clipboard. Control-A will select all properties and Escape will clear selection.

When any of the parameter lines are selected, the name and value is copied to the Modify Name/Value view. The parameter value can be modified and can be cut, copy or pasted to and from the clipboard and the property updated. Note that this does not change the database, only the current view. You will need to click the Commit/Overwrite to put the changes here into the database.

Four fields: Base Part Number, Alternate Packaging, Footprint Ref and Library Ref have a different background. The Library Ref is the name of the library schematic symbol for the part and Footprint Ref is the name of the library PCB footprint for the package. The optional base part name is the basic canonical name ie SN74LVC1G04DBVR could have a base part number of 74LVC1G04. The Alt package identifies

one of the many package types and part number associated with this part. These are highlighted because they represent fields that should be set before committing to the database. The software tries to guess the best match, but these fields should be checked prior to committing them.

One issue is that part numbers were used for volume pricing and custom reeling. It was easy to get this wrong and costly. This tool warns of part numbers that are for volume packaging or custom reels although allows these to be stored.

### Modify Name/Value

If you click on a property, it will show up in the modify Name/Value view. It would have been nice to have it show up in the property view but this is based on a very old GUI that did not have the feature built in. Once a selection is made in the part info, the value can be cut, copy or pasted with the clipboard. Once modified, it can be updated to the local view by clicking the update button (or cleared/canceled by the Cancel button).

### Search Window

The fields in this area are filters to search on. Leaving fields empty ignores the field as a filter. That is, Category of All and all other fields empty will find all parts in the database.

The screenshot shows the 'Partlocator - Advanced Database Search' window. It has a search section with fields for Category (set to 'All'), ManufacturerName, ManufacturerPartNumber, DigiKeyPartNumber, and ProductDescription (set to '0.1uF 50V'). Below these are 'Find' and 'Clear' buttons. The 'Found Components' section displays a table with columns: Description, Manufacturer, Manufacturer Part Number, Supplier Part Number 1, and Category. The first row is selected, showing details for a capacitor. Below the table are 'Copy Selected To Part Find' and 'Delete Part from Database' buttons. At the bottom, there is a 'Modify Name/Value' section with a text input field and 'Update' and 'Cancel' buttons. A status bar at the very bottom indicates '1 items found'.

Description	Manufacturer	Manufacturer Part Number	Supplier Part Number 1	Category
CAP CER 0.1UF 50V X7R 0603	Samsung Electro-Mechanics	CL10B104KB85FNC	1276-1936-1-ND	Capacitor

Category	Capacitors
Ratings	-
Voltage - Rated	50V
Part Status	Active
Supplier 1	Digi-Key
Supplier Part Number 1	1276-1936-1-ND
Temperature Coefficient	X7R
Capacitance	0.1µF
Operating Temperature	-55°C ~ 125°C

- Category – The category is selected by the menu. You can search all categories (All - default) or narrow the search to one of the specific categories ie Capacitors, Resistors, etc.  
Manufacturer - Put the full or part of the manufacture name in to filter on Manufacture name (case insensitive) ie samsung will find products from Samsung Electro-Mechanics
- Manufacture Part Number - Put the full or partial part number in to filter for that part.

- Supplier Part Number 1 - Find the Digi-Key part number
- Description - This is the Digi-Key description containing package, ratings, type, etc. Each of these can be entered in, in any order. For example to find 0.1UF X7R capacitors, you can enter that or X7R 0.1UF and it will find CAP CER 0.1UF 25V X7R 0402, CAP CER 0.1UF 50V X7R 0603. To find all of the 0402 package, enter 0402 in description and All in category.
- Find - Using the above filters, searches the database and displaying the Description, Manufacturer, Manufacture Part Number, Distributor Part Number and Category. Enter Key does the same thing as clicking on Find.
- Clear - Resets all field to defaults and clears the search.

## Found Components

This shows each component that met the above filtered results when Find (or Enter) was pushed. It will show columns for Description, Manufacturer, Manufacture Part Number, Distributor Part Number and Database Category. This is the summary line. The small box on the left of each line can be clicked on to expand to show all of the properties for that part or property lines. Clicking on it again will collapse the property lines back to just the summary line. Selecting the summary line will enable the Copy Selected to Part Find and Delete Part from Database buttons.

Selecting any of the property lines will bring the selected property down to the Modify Name/Value field. Most values can be edited and updated in the database. On a selected summary line, control-C will copy the Supplier Part Number 1 into the clipboard. On a selected property line, Control-C will copy the value of the property to the clipboard.

- Copy Selected To Part Find - This is enabled only when a summary line is selected. The selected lines Supplier Part Number 1 value is copied to the part number field in the main window. Note that a Digi-Key locate overwrite will remove any changes made to the part in the database.
- Delete Part from Database - This is enabled only when a summary line is selected. This will bring up a dialog box confirming that you wish to delete (or cancel) the selected part in the database.
- Modify Name/Value  
This is enabled only when a property line is selected. The contents of the property are copied to the fields. The value field can copied, cut or pasted to. It will error if you change the field and go to another property. You can save the changes or cancel. The changes can be committed to the database by clicking the update button or cleared by clicking the cancel button.

## Syncing and Backing Up

- sync token - This is enabled if there is more than one database and they are all accessible. It will check the token on each database finding the most recent. It will update the databases with the older tokens.
- export - runs a script in partlocator.cfg that uses mysqldump to save the current database that is connected.

- import - runs a script in partlocater.cfg that uses mysql to import a saved database to the current connected database. It will delete (drop) the current database and replace it with the imported database.
- Update BOM - This will update an Altium BOM with current pricing information or pricing from database.

## Update BOM

This requires Excel 2010 (with file extension .xlsx) Bill of Materials. Older Altium write the older 1997 xls files. This can be fixed by opening them in Excel 2010 and saving as .xlsx.

### Setting up Update BOM

The BOM is based on a template file and is highly customizable. We need some hooks to both grab information from the BOM and where to put the information.

Edit the file <partlocater>/assets/map.cfg and edit the option lines to customize for your BOM.

In the section [BOM], if you have the option ProductionQuantity and it is assigned to a cell in the spreadsheet (with the syntax ProductionQuantity=<column letter><row number>), update BOM will use that cell for the build quantity. . If the template has that cell set to Field=ProductionQuantity, then Altium will update the BOM with the Production Quantity. If it is commented out, update BOM will expect a value entered in the Production Quantity entry on the Update BOM window.

With the same syntax you can specify Project Number (ProjectNumber=<column letter><row number>), and Revision Number (RevisionNumber=<column letter><row number>). Do not put these after the growable section as the row columns will change dynamically.

If the BOM has multiple sheets, you can specify which sheet should be used by update BOM with the ActiveSheet option (ActiveSheet=<active sheet name>) otherwise it uses the current active sheet.

If you want to choose the default selection to always round part quantities up, set the option BestPrice=1. If you don't want the default selection to always round part quantities then comment out or set BestPrice=0. Update Database Check box is always cleared. Update database will do a large number of queries to Digi-Key possibly hitting the daily limit (and it's slow). It should be used only when necessary. Save the file and restart partlocater.

### Setting up the BOM Template

This requires a few restrictions on the BOM template used. Images in the template will disappear after the conversion. It requires 2010 or later excel spreadsheet with .xlsx file extension. It can have optional fields such as PartNumber, Revision, ReportDate, Author and ProductionQuantity. These fields will be added to a report file written if the cell location is written to the assets/map.cfg file under [bom] section.

Bill Of Materials	
Part Number	Field=PartNumber
Revision	Field=Revision
Release Date	Field=ReportDate
Author	Field=Author
Build Quantity	Field=ProductionQuantity

These fields should be before the growable BOM area or the cell locations may move.

The BOM template has a row of column and text header which defines what the columns beneath is. The following are required for update BOM:

1. Column=Quantity
2. Column=Supplier 1
3. Column=Supplier Part Number 1
4. Column=Supplier Unit Price 1
5. Extended Quantity
6. Column=Supplier Stock 1

They must be on the same row and can be organized to be in any column. Extended Quantity is not filled in by Altium BOM and is just text indicating a place holder of where to place the extended quantity values from Update BOM. You should also have a column for Extended Cost with equation below it multiplying the Extended Quantity times the Supplier Unit Price 1. You will also need to insure that Quantity, and in solution 1, Supplier1 and Supplier Part Number 1 are selected in the report window.

### Using Update BOM

A data base must be connected first. From the file menu, open update BOM window. With the browse key, open the .xlsx BOM file you want updated. If you want to update the database from Digi-Key from every part in the BOM, check the Update Database button. This will be slow and will not work if the line item count exceeds the daily query limit. This will query Digi-Key for every part and update pricing and available stock only.

If the best price button is checked, it will increase the extended quantities, if the quantity at the next price break cost is less that extended quantity times the price break otherwise it will use exact quantities.

Press update button to run the process which should end with BOM updated. If you go into the BOM you should see the Unit Price, Extended Quantities and Stock columns updated for Digi-Key Supplier.

## Design Flow

So everything is installed and working. You have your schematic editor open, browser is open to Digi-Key, the database is running and partlocator is started. First, connect to your database. If the token is expired, it should update.

If you have two databases, and the one you opened wasn't the last one you used, it may give an Error 200 from Digi-Key. Just sync tokens and try again.

So your design needs a 0.047uF 50V X7R capacitor in an 0603 package. You look this up in the Digi-Key and there are 180 of them. We pick the Kemet 0603B473K500CT in Cut Tape packaging. On the browser we click the copy button next to the Digi-Key Part Number and paste it into partlocator's locate entry field and push locate. The view should fill with the parameter name and values. Scroll down to the hilited text.

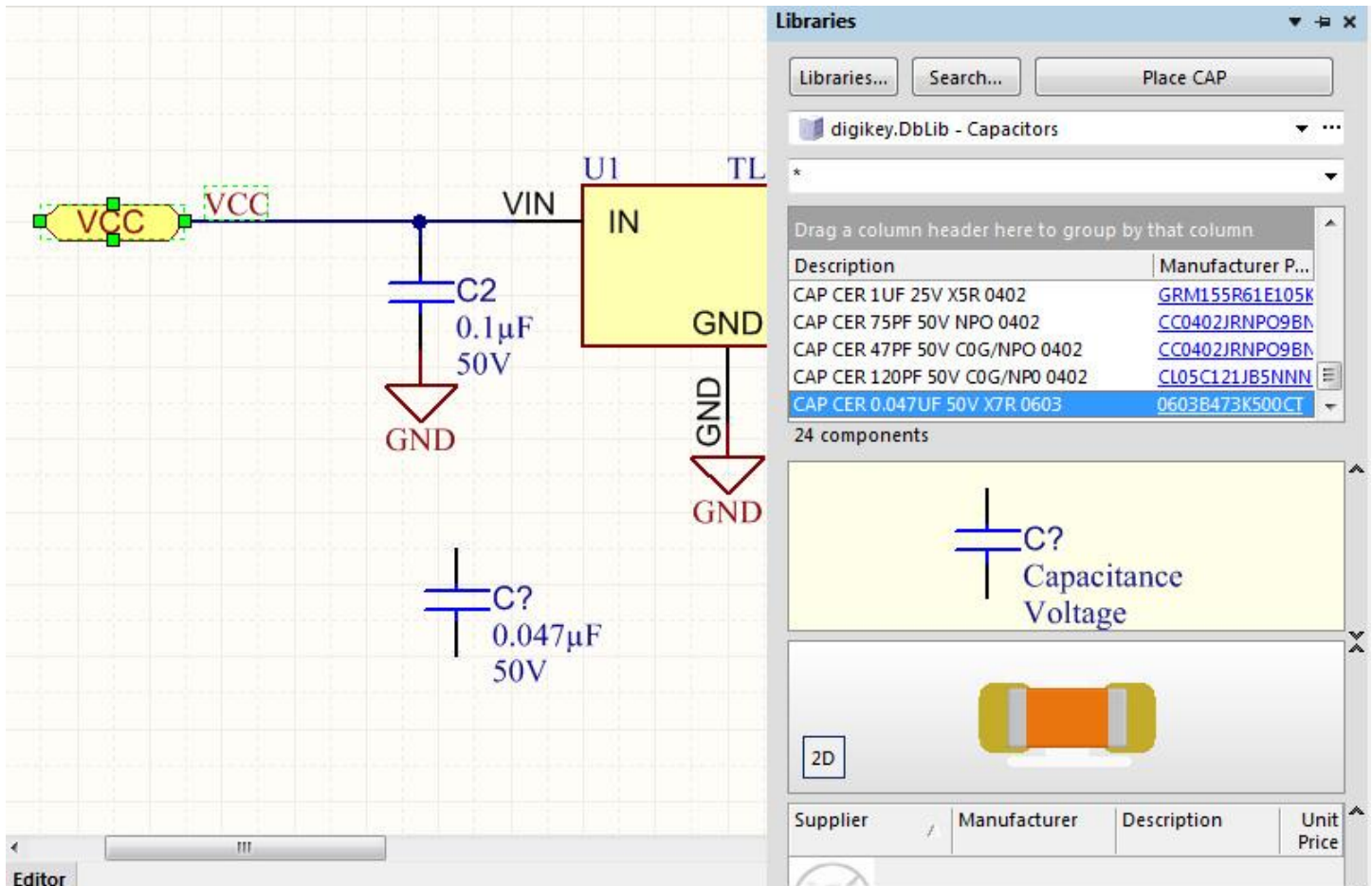
So I want to change the Footprint Ref from 0603 (1608 Metric) to C0603 (my PCB Library package for 0603 capacitor). Click on Footprint Ref and change the entry field to C0603 and press update.

The Library Ref guesses CAP as the symbol - my non-polarized capacitor in symbol library. This is fine as default and as there are no more changes I click commit.

Now Altium specific funkiness. If you added any new columns while Altium is open, it will not see that. The way I found to fix this is to open the Database Library file. (Projects -> Library -> Database Library Files. Click Select Database Type and then click Use Connection String. The greyed out connection box should turn to reconnect. Push Reconnect and save the library.

Second piece of funkiness, is that Altium doesn't know the database is updated and if you have foo.Dblib – capacitors, you need to click on any other library and go back to capacitors. You should find the line

CAP CER 0.047UF 50V X7R 0603 0603B473K500CT. You can drag that to the schematic and should now look like.



If you click on the capacitor symbol, you should see all the parameters.