

Lattice 的 Diamond 是支持 MachXO2 的集成化软件开发系统，是 Lattice 最先进的设计和实现工具

- ✓ 支持混合的 Verilog、VHDL、EDIF 和原理图源文件
- ✓ 实现的概念，允许在一个项目下的设计拥有多个版本，易于设计探索
- ✓ 策略使实现“方法”用于一个项目中的任意实现或在多个项目中共享
- ✓ 管理并选择文件用于约束、时序分析、功耗计算和硬件调试
- ✓ 使用运行管理器视图，用于多个实现的并行处理，以探索不同的设计方法寻求最佳的结果

本章节将带领你搭建 Lattice Diamond 开发环境，包括软件下载，软件安装及软件免费 License 的获取，最终完成 STEP 开发平台开发环境的搭建：

- 1) Lattice Diamond 软件下载
- 2) Lattice Diamond 软件安装
- 3) Lattice Diamond 软件配置

### 1、Lattice Diamond 软件下载

- 1) Lattice 的[官方网站](#)提供该软件的下载，并有相应的使用说明文档供用户参考，[下载地址](#)



Windows

The Diamond Base executable contains all of the design tools and features for you to use Lattice FPGAs from design entry to bitstream download. The supported Windows Operating Systems are Windows 7 (32-bit or 64-bit) and Windows 8 (32-bit or 64-bit).

Package	Operating System	Version	Date	Format	Size
Lattice Diamond	Windows 32-bit	3.7	2/22/2016	ZIP	1.6 GB
Lattice Diamond	Windows 64-bit	3.7	2/22/2016	ZIP	1.6 GB



Linux

The Diamond Base executable contains all of the design tools and features for you to use Lattice FPGAs from design entry to bitstream download. The supported Linux Operating Systems are Red Hat Enterprise Linux version 4.X, 5.X, 6.X, or Novell SUSE Linux Enterprise 10 SP1 or 11 operating system.

Package	Operating System	Version	Date	Format	Size
Lattice Diamond	Linux 32-bit	3.7	2/22/2016	RPM	1.1 GB
Lattice Diamond	Linux 64-bit	3.7	2/22/2016	RPM	1.2 GB

Software Downloads & Documentation

- 2) 根据自己电脑的操作系统选择下载软件，点击 **Download** 进行下载

Before downloading the file **Diamond 3.7 64-bit for Windows**, please read and agree to the following Softw.

LATTICE SG PTE. LTD.

**License Agreement**  
This is a legal agreement between you, the end user, and Lattice SG Pte. Ltd. By proceeding with the installation or use of the Software: (1) You acknowledge you have read this Agreement, you understand it, and you agree to be bound by the terms and conditions of this Agreement; and (2) You represent that you are not an employee, agent of or otherwise affiliated with the following companies: Cadence Design Systems, Inc. or Mentor Graphics Corporation. If you do not agree to the terms and conditions of this Agreement, do not use, download, or install the Software, and if you have already obtained the Software from an authorized source, promptly return the media package and all accompanying items (including written materials and binders or other containers) to the place you obtained them for a full refund of any applicable license fees.  
Lattice SG Pte. Ltd. ("Lattice") and the individual or entity acquiring the Software ("Licensee") agree as follows:  
1. DEFINITIONS

I have read and agree to the above License Agreement.

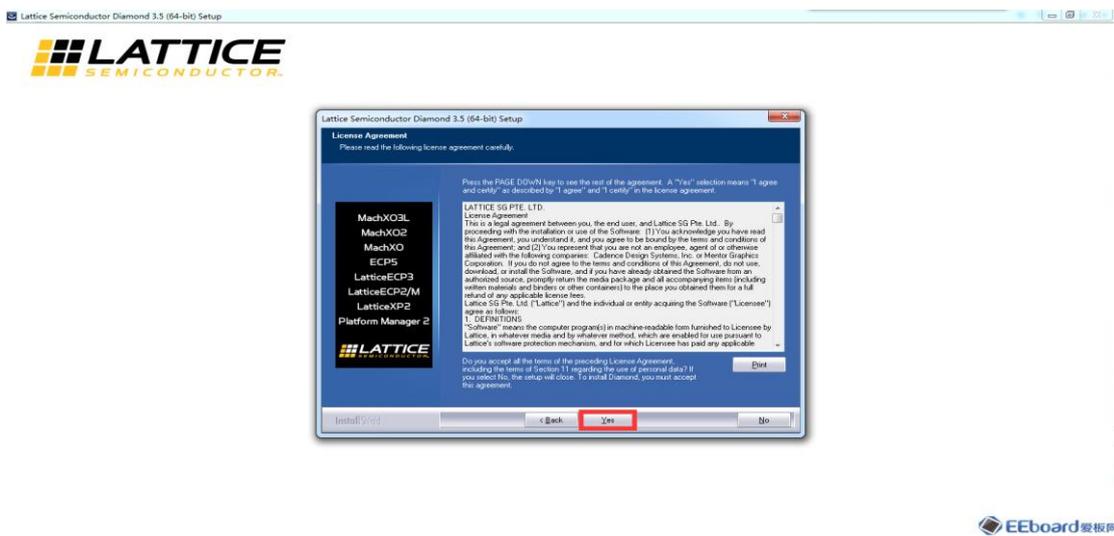
[Download](#)

## 2、Lattice Diamond 软件安装

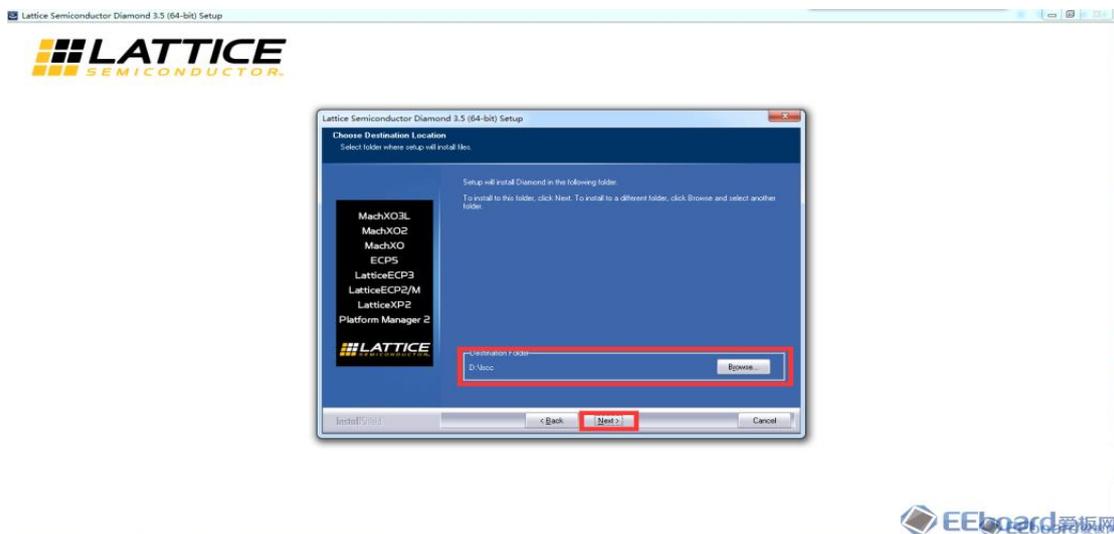
- 1) 将下载的压缩包解压得到可执行安装文件 3.5 版本为例 (3.5.x.xx.x\_Diamond\_x64.exe)
- 2) 双击运行可执行安装文件, 进入安装首页



- 3) 点击 Next, 进入协议界面, 选择同意, 点击 Next

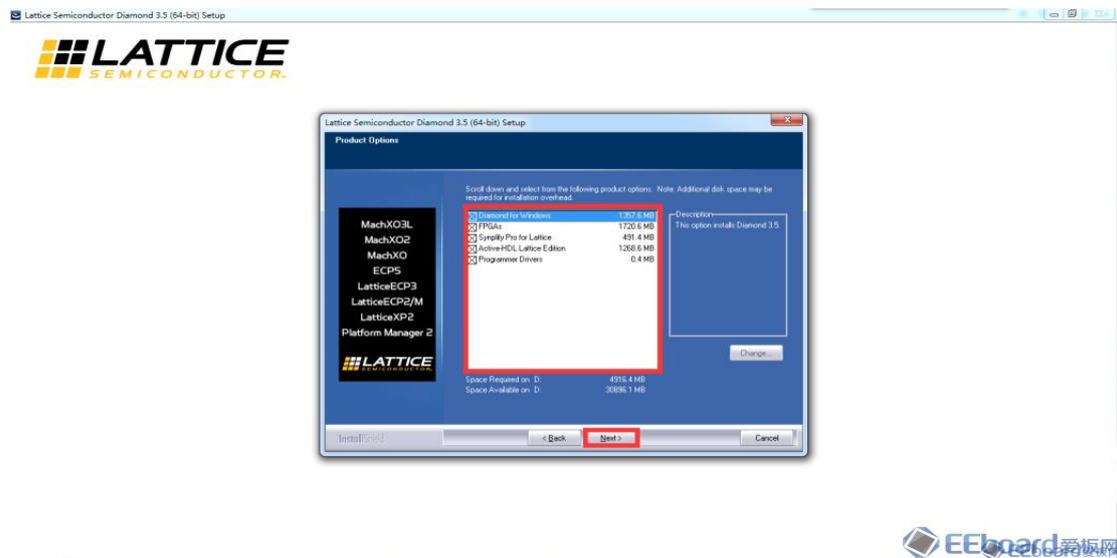


- 4) 修改安装路径, 默认是 C 盘, 本例程软件安装到 D 盘 (安装目录不要有中文)。

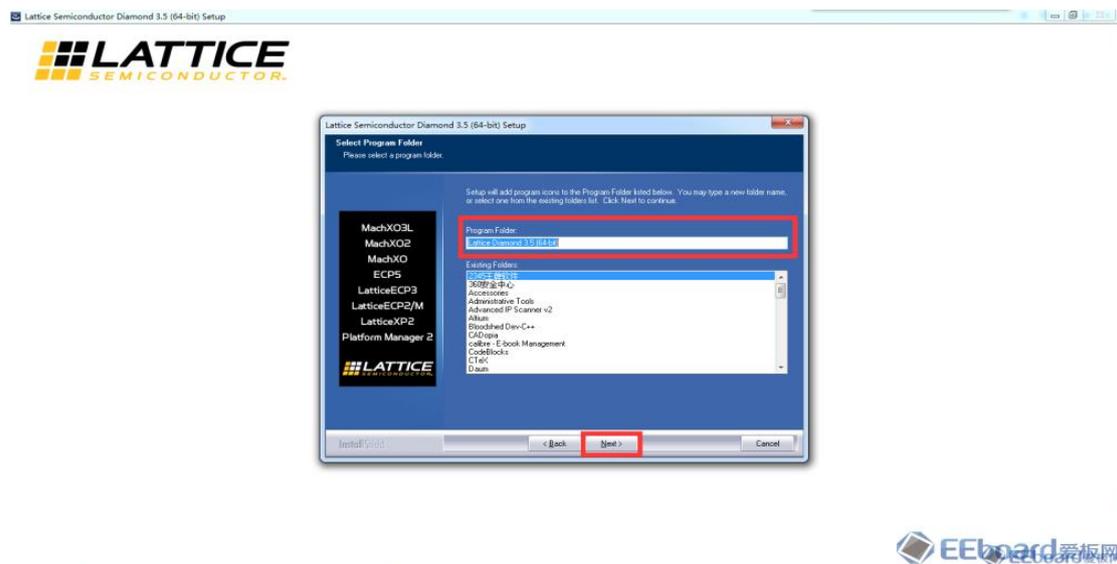


## Lab. STEP Lattice Diamond 安装配置

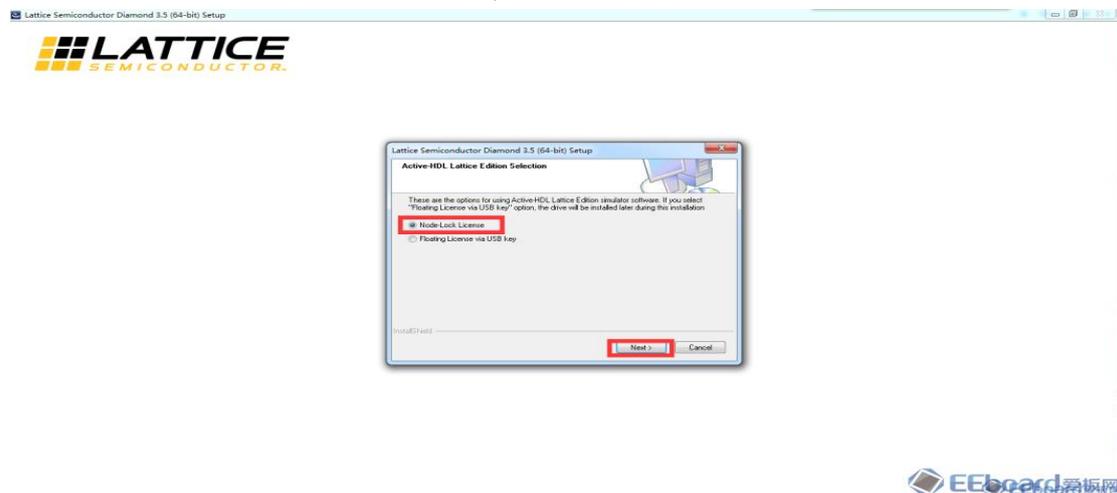
5) 修改完路径后，点击 **Next**，进入工具选项界面。



6) 选择默认设置，即全部安装。注意叉叉是表示选择。点击 **Next**，进入文件夹名设置，然后直接 **Next**

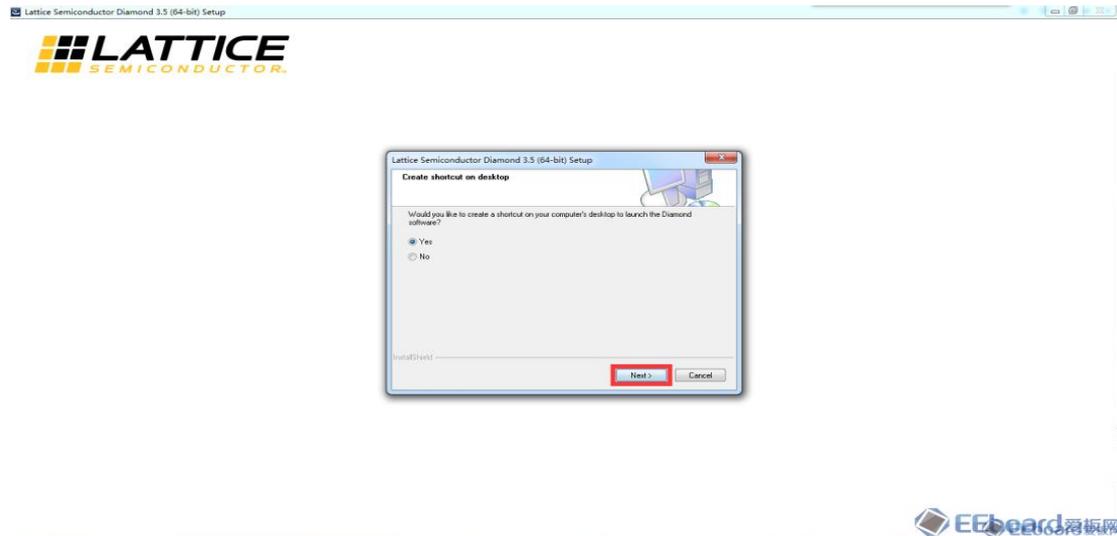


7) 接下来就是认证设置。没有 USB key，就只能选择 Node-Lock License。

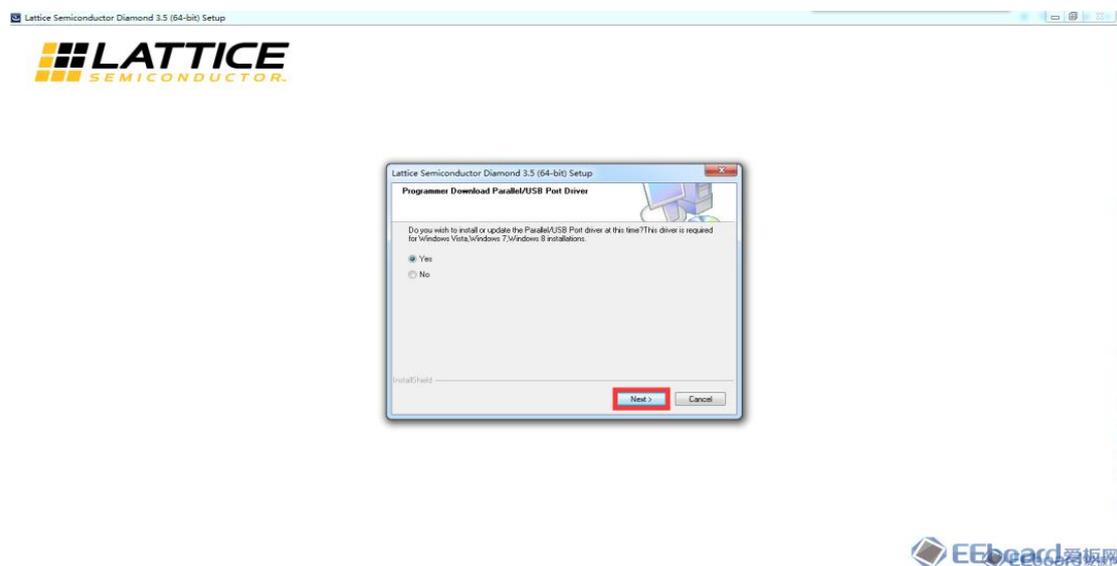


## Lab. STEP Lattice Diamond 安装配置

8) 点击 Next, 选择是否创建桌面快捷键。



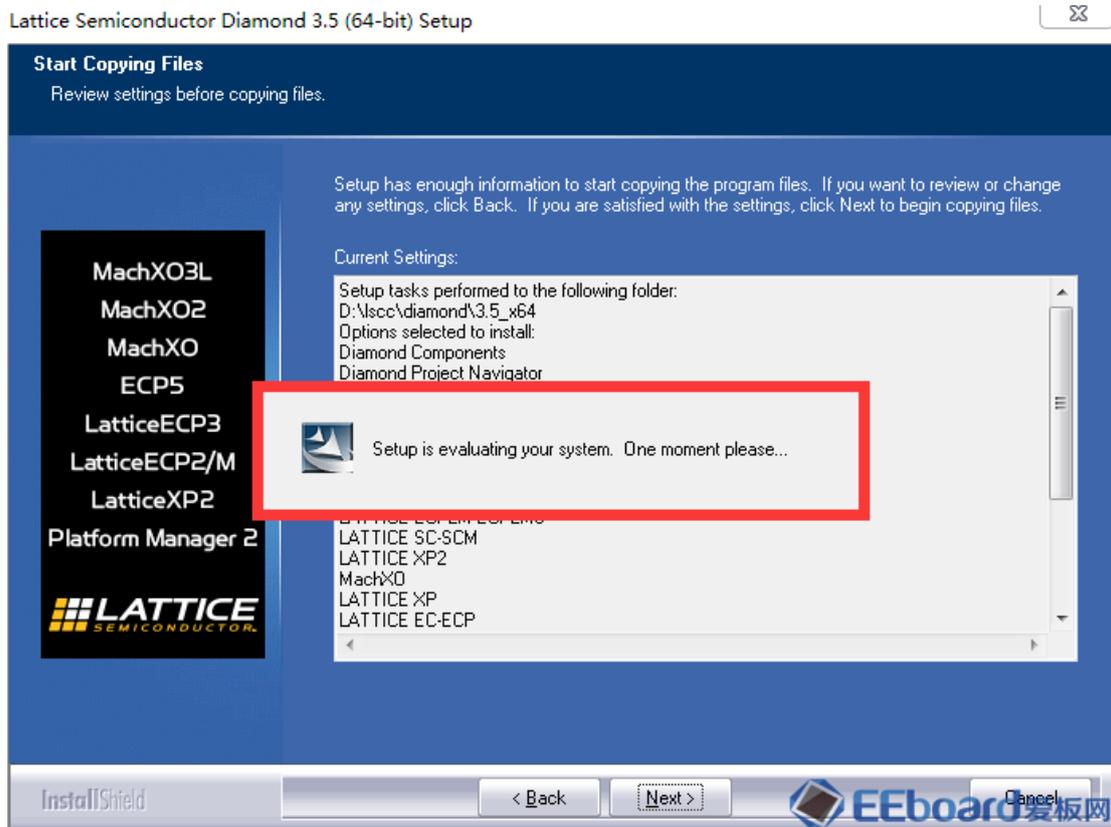
9) 点击 Next, 选择是否安装 USB 驱动, 这个必须同意!!!



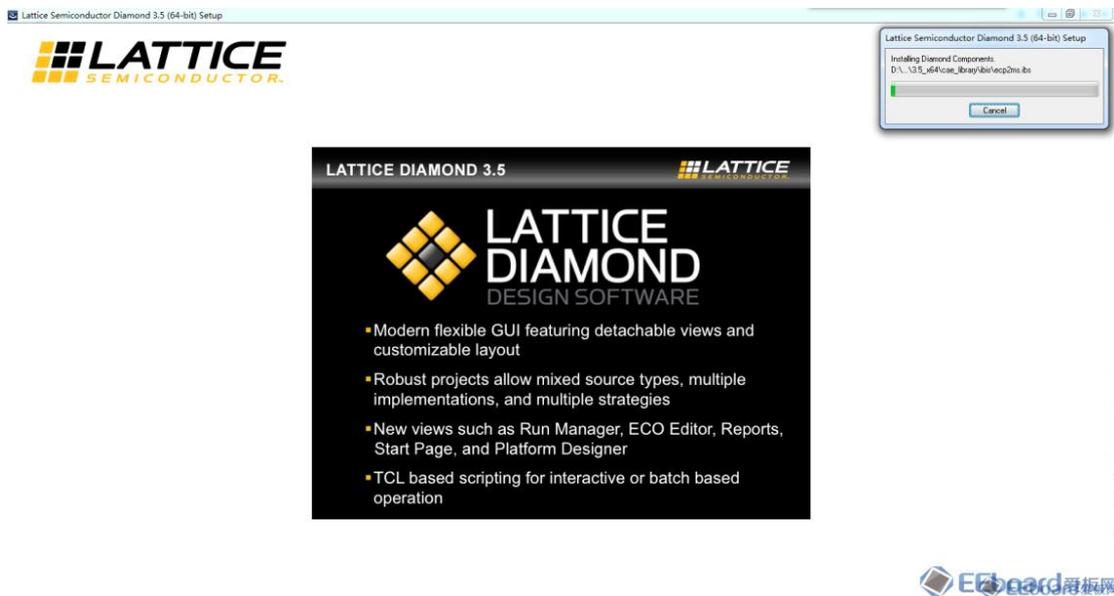
10) 完成这一系列设置后, 软件列出所有设置内容。



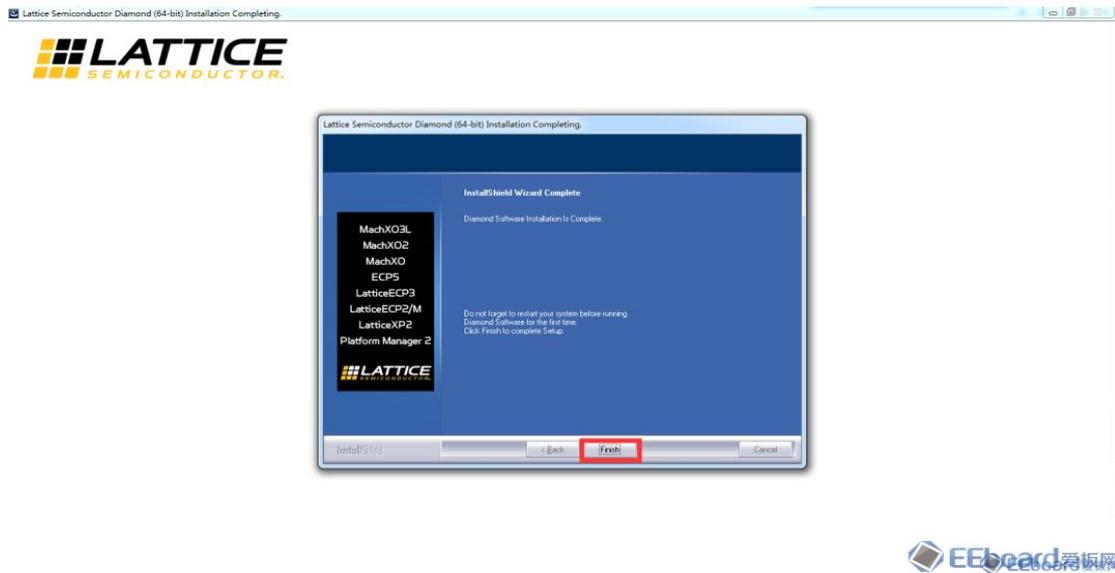
11) 点击 Next，正式进入安装环节。软件会评估一下本机系统，决定是否继续安装。



12) 一般配置的 PC 机都可以通过评估。进入安装。



13) 耐心等待=====→

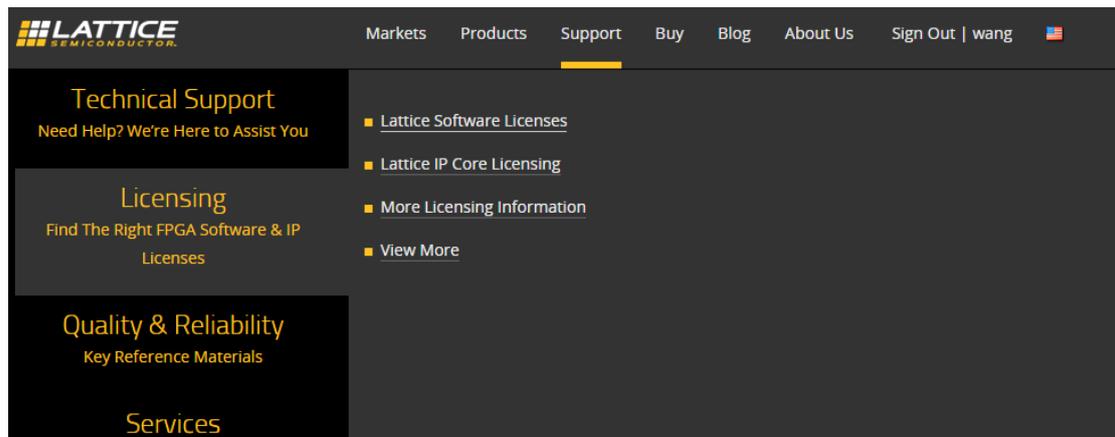


14) 点击 Finish，完成安装。

### 3、Lattice Diamond 软件配置

Lattice Diamond 软件安装完成后还需要配置 License, License 可以从 Lattice 官网上免费获取。

1) 登陆 Lattice 官网，需要提前注册账户并登陆，依次选择 Support → Licensing → Lattice Software Licenses



2) 选择 Request a Free License (获取一个免费许可证)



#### Lattice Diamond Free License

Lattice Diamond design software offers leading-edge design and implementation tools optimized for cost sensitive, low-power Lattice FPGA architectures. The free license enables users to design and evaluate the performance of non-SERDES based Diamond supported devices.

To request a license you will need the following:

- Physical MAC address (12-digit hexadecimal value)

[Request a Free License](#)

- 3) 获取免费的许可证需要电脑的 physical address (物理地址), 运行 cmd.exe 进入 DOS 界面, 输入指令 ipconfig/all 查看物理地址,
- 4) 填写物理地址, 勾选 required field 选项, 然后点击 Generate License

### Software License Request Form

**Note:** The license file will be sent to the web account email address:

wanganran2011@163.com

Host NIC (physical address) \*:

XXXXXXXXXXXX

\* required field

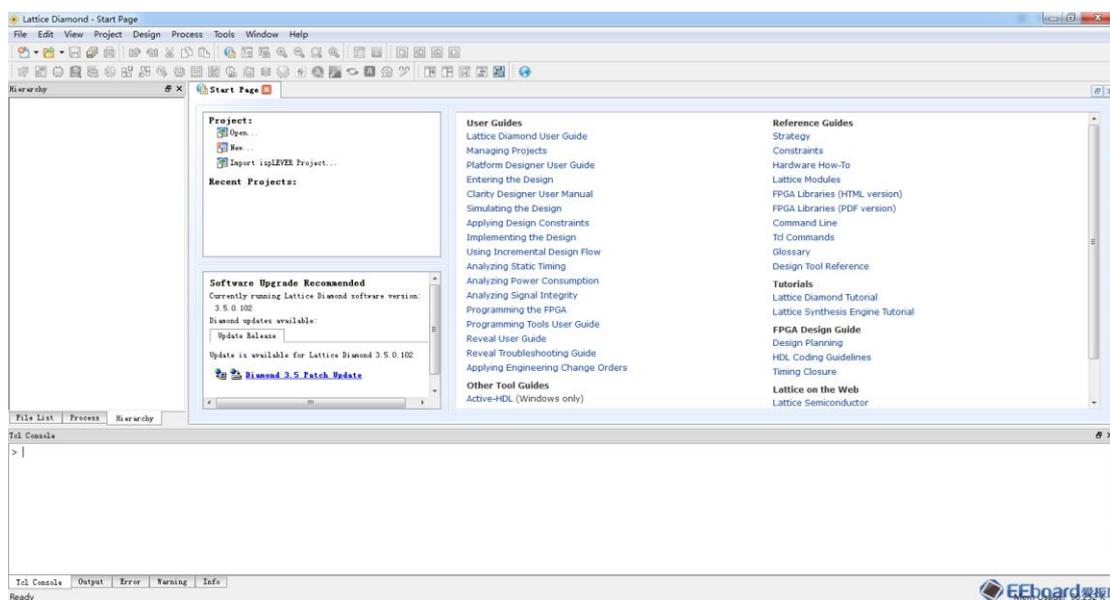
I verify that I am not an employee of Cadence Design Systems, Mentor Graphics Corporation, or Magma Design Automation

**Generate License**

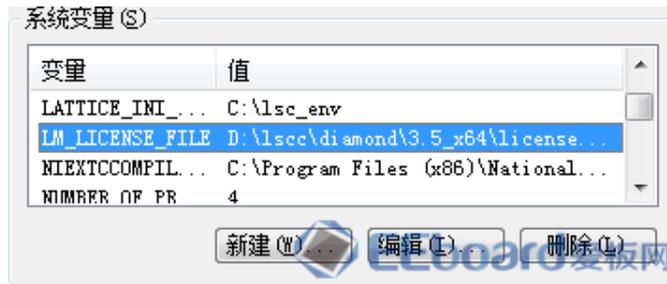
(click once)

**NOTE:** This form requires JavaScript to be enabled in your web browser in order to process your request.

- 5) 查看注册账户用的电子邮箱, 获取 license.dat 文件拷贝到安装目录下的 license 文件夹中例如 (D:\lsc\diamond\3.5\_x64\license\license.dat), 完成注册, 运行 Diamond 软件。



- 6) 若运行 Diamond 时出现错误 License checkout failed, 说明软件注册有问题, 请检查:
  - A. 检查用于注册 License 的 MAC 地址是否正确!
  - B. 检查获取到的 License 文件被放置在软件安装目录下! 如 D:\lsc\diamond\3.5\_x64\license\
  - C. 检查环境变量是否正确!
    - a) 我的电脑 → 右键选择属性 → 高级系统设置 → 高级 → 环境变量 → 系统变量, 变量和值分别为
    - b) LM\_LICENSE\_FILE
    - c) D:\lsc\diamond\3.5\_x64\license\license.dat;



注：在使用 Diamond 软件对小脚丫 FPGA 开发板下载时需要 USB 驱动，通常情况下 Diamond 软件安装后就可以自动识别，如果不能自动安装驱动程序，需要自行下载驱动程序：

<http://www.ftdichip.com/Drivers/VCP.htm>