

Be smart. Prototype online.



Infineon Designer 入门简介

2018年5月18日

技术支持: <mailto:support@infineon.com>



Agenda

- 1 Infineon Designer 仿真简介
- 2 Infineon Designer 仿真新特性和新电路
- 3 入门例子
- 4 技术支持

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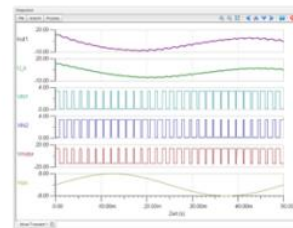
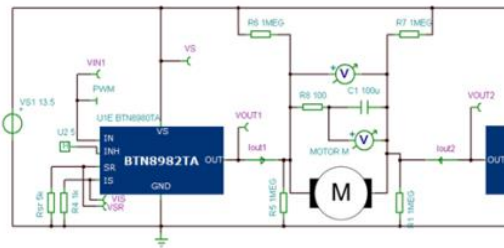
Infineon Designer - Online Digital Prototyping Engine (www.infineon.com/ifxdesigner)



绝佳的用户体验

- › 多浏览器支持 (IE, Safari, Chrome, Firefox等等)
- › 无需安装
- › 无限免费仿真授权
- › 服务器配置16核CPU内核，支持快速仿真

powered by...

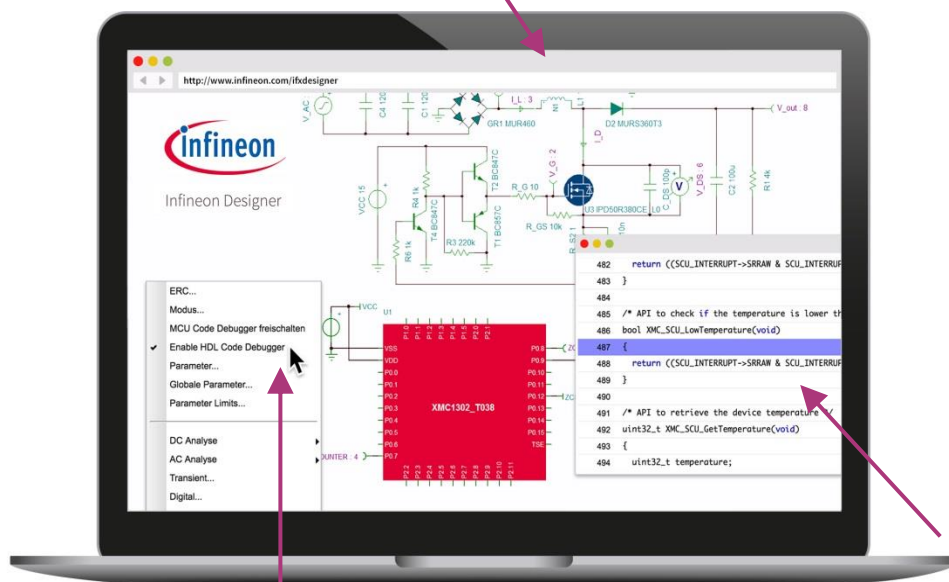


特性

- › 精准的时域信号仿真+系统能效仿真
- › 快速参数设置
- › 数字/模拟交互仿真
- › 已发布超过150个应用电路

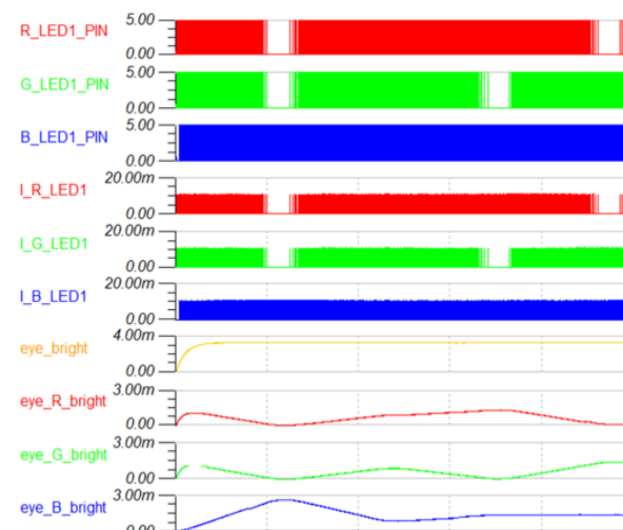
发布的全球首款结合数字（处理器代码）和模拟信号交互仿真的在线工具 [Electronica 2016](#)

1 选择 [XMC1200](#) 电路



2 选择仿真模式

样例电路: [32-bit MCU XMC1200 controlling the RGB color walk with constant brightness](#)



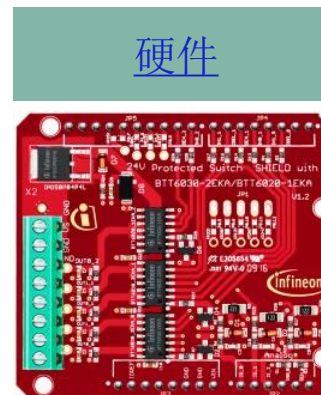
3 交互仿真处理器软件和模拟电路

Infineon Designer实例：汽车级在线设计 24V Arduino Shield PROFET™ + 24V Family

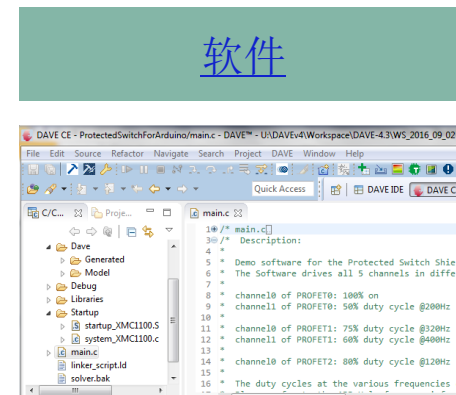


独特的附加价值

- 通过点击鼠标在线探索评估板特性，无需阅读冗长的规格书和应用手册
- 根据应用需求，在购买样片前，直接在线快速配置硬件和软件参数，熟悉评估板性能



硬件

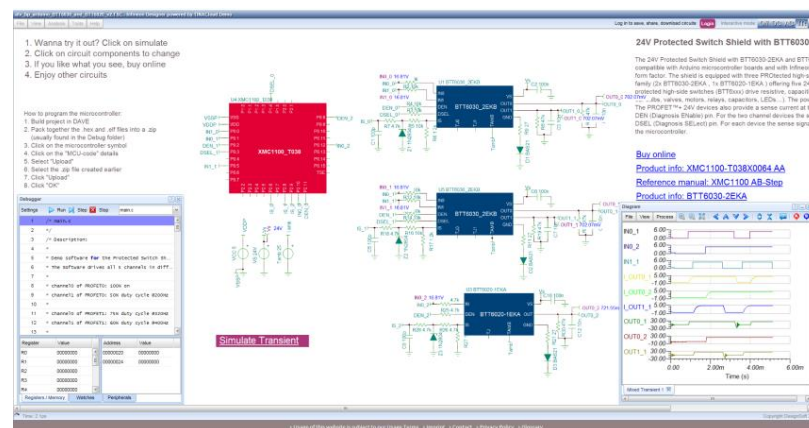


软件

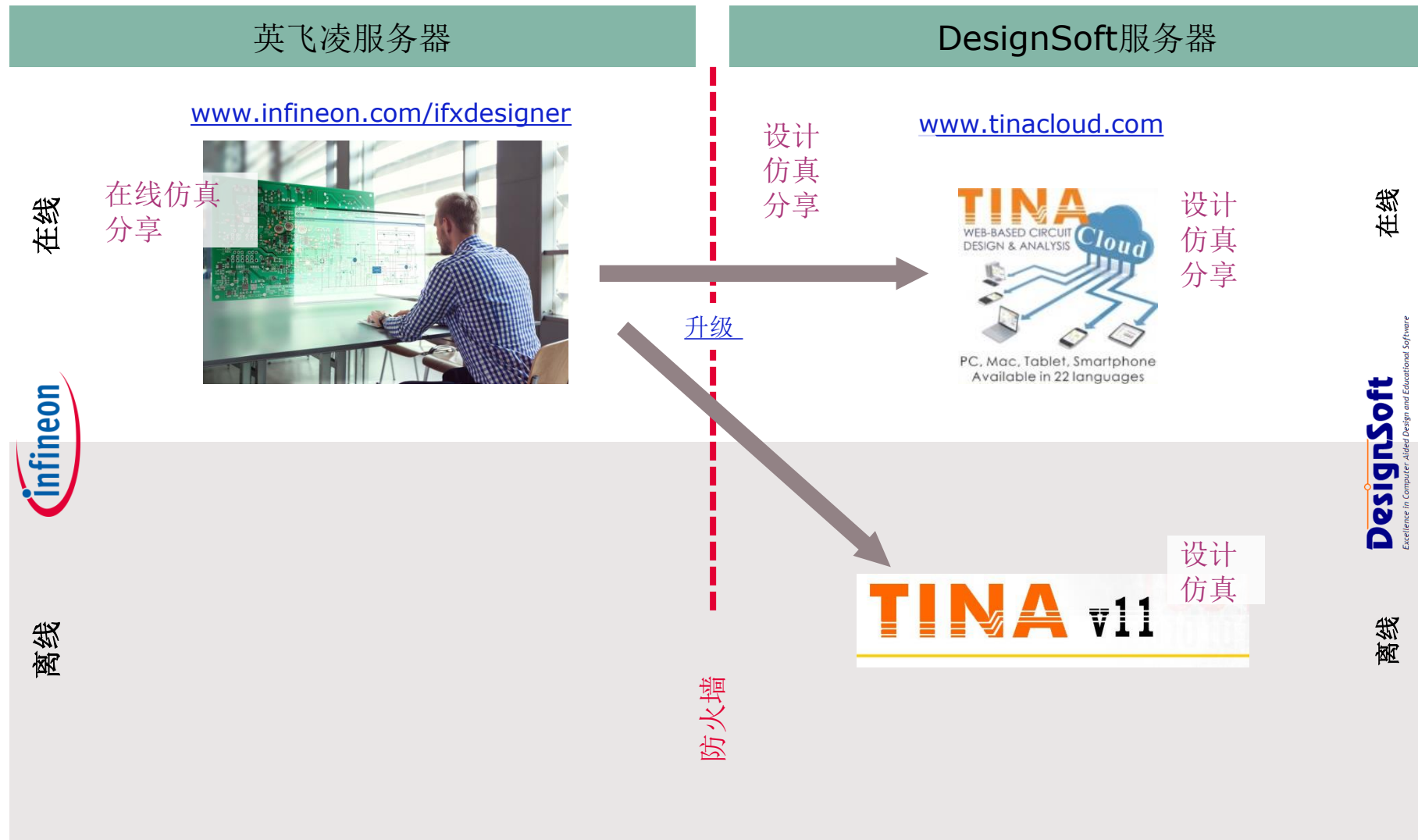
在线仿真全套硬件和软件设计

- 硬件：Arduino Shield
- 软件：DAVE
- 在线仿真：Infineon Designer (Spice)
- 仿真引擎：DesignSoft

在线仿真：结果快速可视化



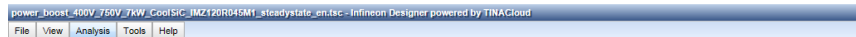
Infineon Designer不同版本



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应用电路：可自由配置参数



1. Wanna try it out? Click on "Simulate Transient"
2. Set application parameters below or directly change any component

{1. click here to set application parameters}
{2. click on "Run" to calculate components}
{3. click on "OK" and Simulate Transient.}

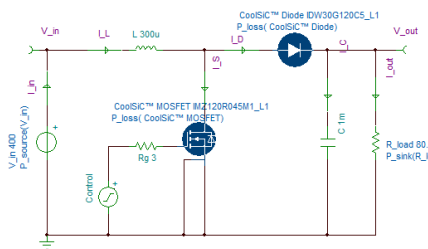
{Input voltage [V]}
V_in = 400 (use 5... 1000)
{Output voltage [V]}
V_out = 750 (use higher than V_in)
{Output current [A]}
I_out = 9.3 (<= 20)
R_load = V_out / I_out
R_load = [80.6452]

{Set inductance L [H]}
L = 300u
{Set capacitance C [F]}
C = 1000u
{Set gate resistance Rg [Ohm]}
Rg = 3

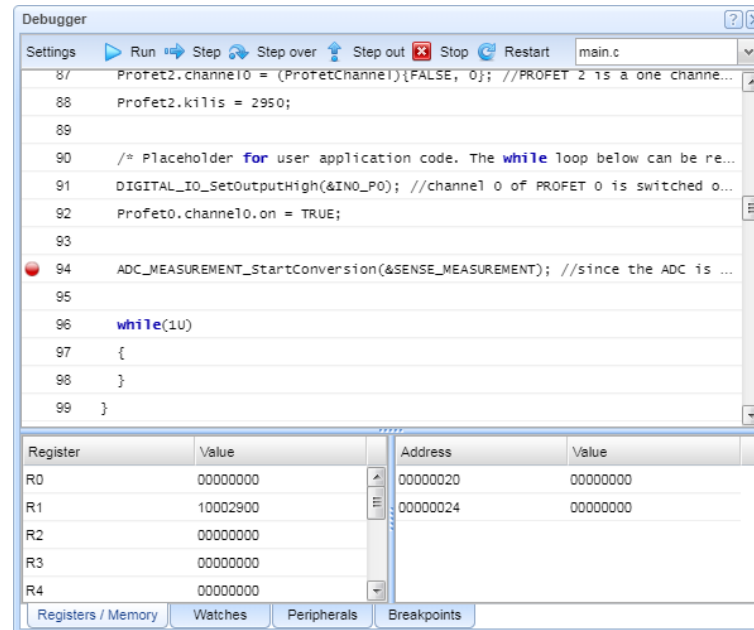
{= Control settings: change with care! =}
{Switching frequency [Hz]}
fs = 100k (use 10k ... 200k)
Duty = 1 - (V_in / (V_out + offset))
Duty = [473.6842m]
L_INIT = L_out / (1 - Duty) (inductor initial value)
C_INIT = V_out (capacitor initial value)
T = 1fs
T_on = Duty * T
T_off = T - T_on
ControlT2 = T_on
ControlT5 = T_off

Simulate Transient [Reset circuit](#)

[Click to select startup circuit](#)
[Click to select steady-state circuit](#)



进阶MCU代码调试功能



功率损耗和效率计算

Compare Window

Compare with: Power dissipation 1 ☐ Zoom in synch

Efficiency: 98.92% Total Input: 7.05k W Total Output: 6.97k W

Component	Power type	Power dissip...	Percentage (...)	Pass/Fail
V_in	Source	7.05k	100	Pass
R_load	Sink	6.97k	98.92	Pass
CoolSiC™ MOSFET	Loss	31.31	0.44	Pass
CoolSiC™ Diode	Loss	13.67	0.19	Pass

信号处理，比如：纹波

Compare Window

Compare with: Ripple 1 ☐ Zoom in synch

Signal Label	Absolute Ripple	Relative Ripple
V_out	44.20m	0.01%
I_out	548.10u	0.01%

Infineon Designer: 新增电路

- › 电机控制（汽车级产品）
 - [24V DC Motor Control Shield with BTN8982TA for bi-directional DC brushed motor \(with torque simulation\)](#)
 - [12V DC Motor Control Shield with BTN8982TA for two uni-directional or one bi-directional DC brushed motor](#)
 - [12V DC Motor Control Shield with BTN8982TA and XMC1100 for two uni-directional or one bi-directional DC brushed motor](#)
- › 智能低边/高边开关（汽车级产品）
 - [24V PROFET™ shield with BTT6030-2EKA and BTT6020-1EKA for Arduino](#)
 - [13.5V low side over-temperature protection with HITFET™ BTF3050TE](#)
 - [24V high side over-current and over-temperature protection with PROFET™ BTT6020-1EKA](#)
 - [13.5V high side short-circuit protection and thermal shutdown with restart using PROFET™ BTS4140N](#)
- › 静电保护ESD
 - [ESD Protection Diode with Low clamping voltage bi-directional ESD237-B1-W0201 Electrical Characteristics](#)
 - [ESD Protection Diode with Low clamping voltage bi-directional ESD241-B1-W0201 Insertion Loss](#)
- › 功率转换（Expert Talk系列）
 - [200V Boost Converter with CoolMOS™ P6 and EiceDRIVER™ 2EDN7523F](#)
 - [Expert Talk: What is a Power Converter \(SMPS\)?](#)
 - [Expert Talk: What is a DC-DC Converter \(SMPS\)?](#)

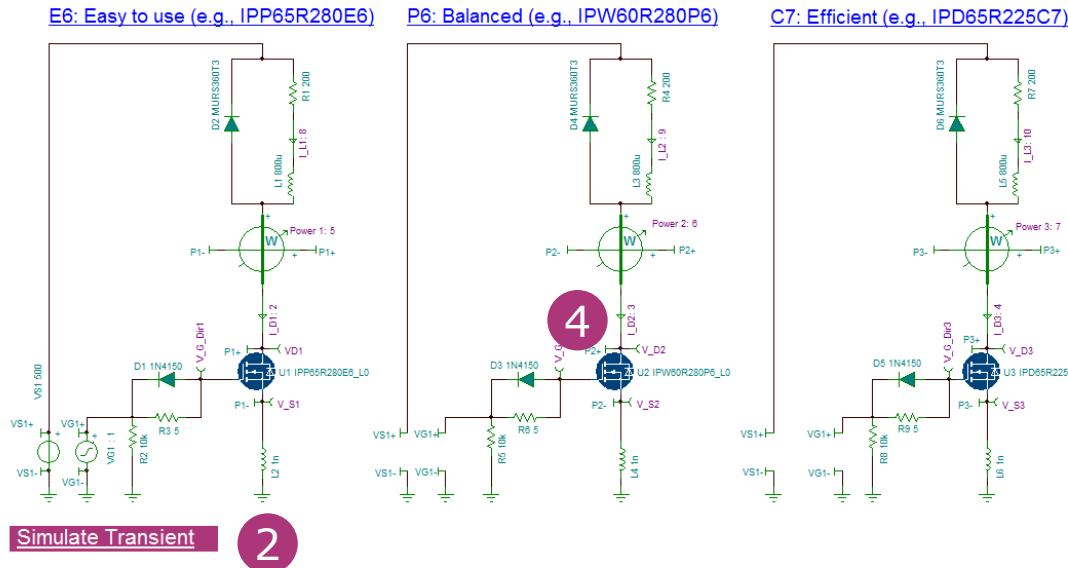
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Infineon Designer: 实例

MOSFET性能比较

1. Wanna try it out? Click on simulate
2. Click on circuit components to change
3. If you like what you see, buy online
4. Enjoy other circuits



Need support?
[Technical Assistance](#)

6

Log in to save, share, download circuits:

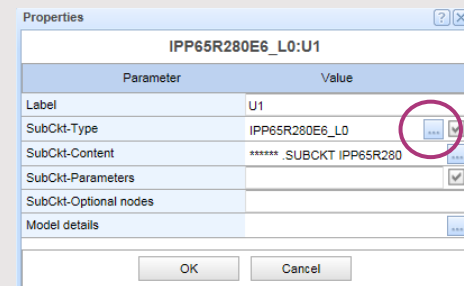
Login

eMail Address

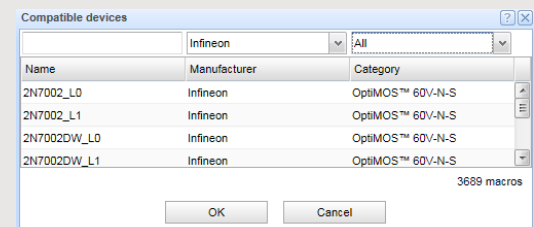
Password

Logon

1. 点击打开电路 [MOSFET性能比较](#)
2. 点击启动仿真 [Simulate Transient](#)
3. 通过电路图了解应用电路功能和信号
4. 点击MOSFET图标后选择“SubCkt-type”行的“...”



5. 在列表中重新选择一款别的MOSFET进行性能比较

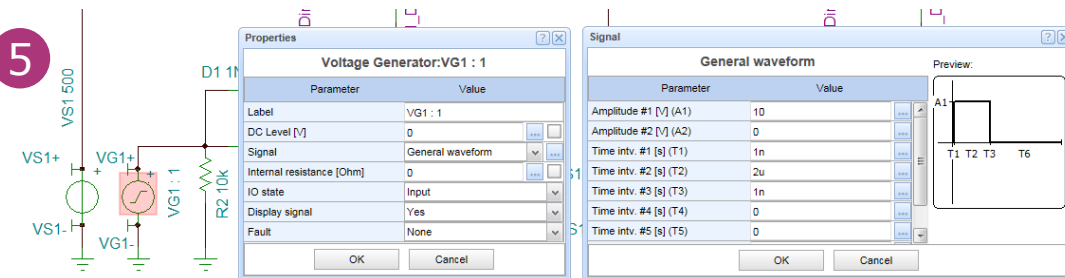
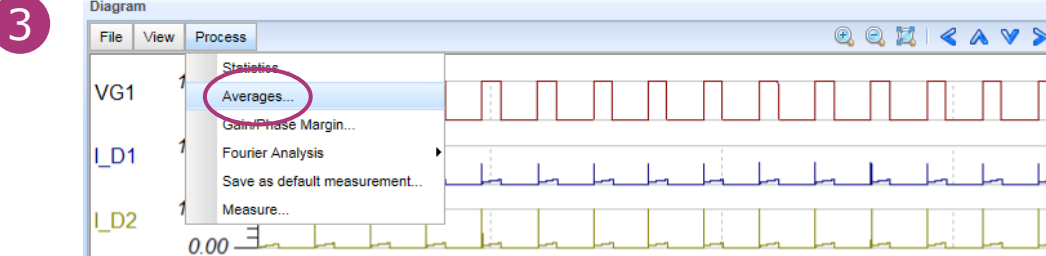
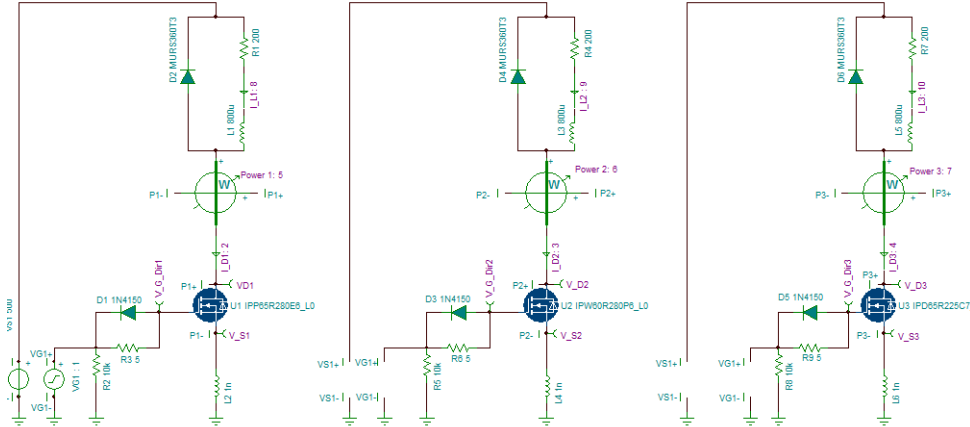


6. 通过MyInfineon账户登录，保存或分享您配置的电路

Infineon Designer: 实例

MOSFET性能比较

1. E6: Easy to use (e.g., IPP65R280E6) P6: Balanced (e.g., IPW60R280P6) C7: Efficient (e.g., IPD65R225C7)

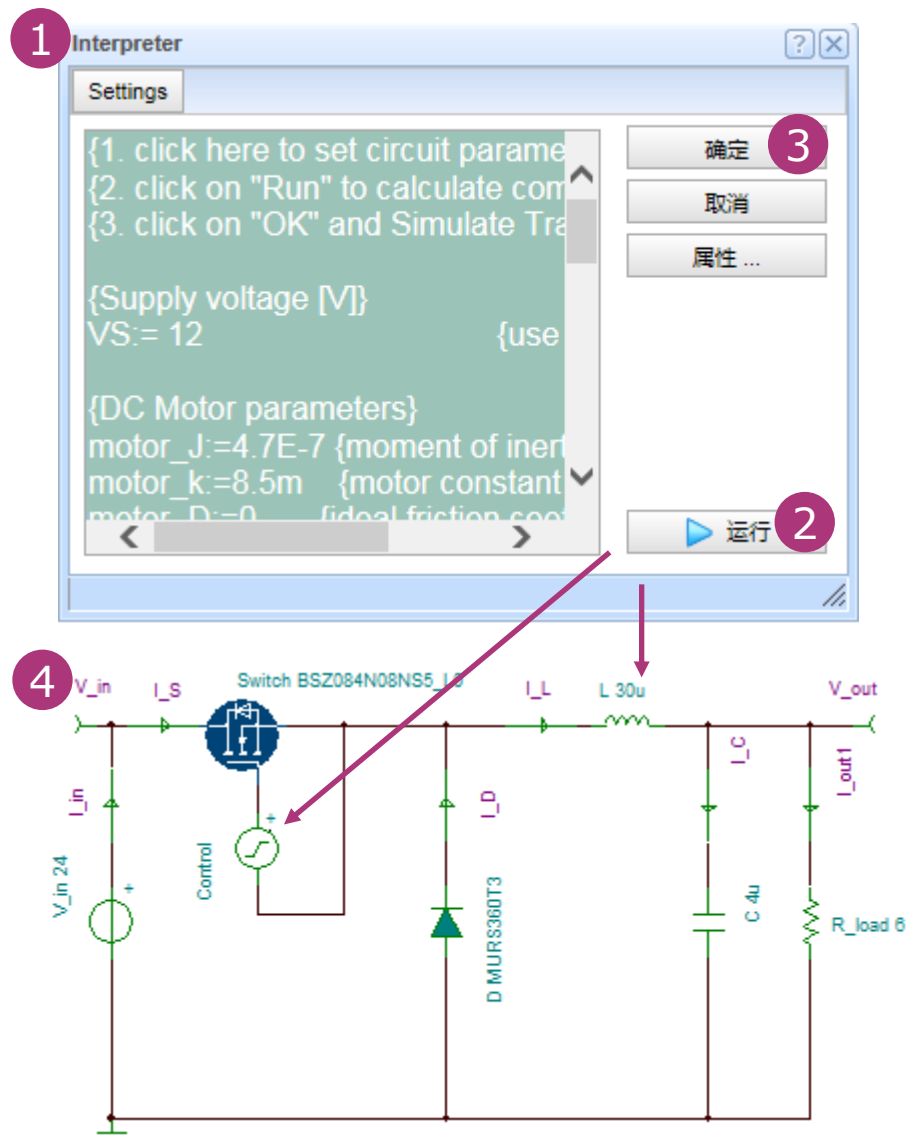


1. 点击打开电路 [MOSFET性能比较](#)
2. 点击启动仿真 [Simulate Transient](#)
3. 点击图表窗口菜单栏“过程” → “平均...”

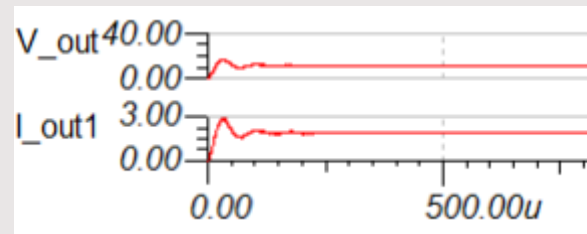
	Average Val...	Absolute Av...	RMS Value:
VG1 : 1	3.47	3.47	5.89
I_D1 : 2	320.69m	321.70m	566.59m
I_D2 : 3	313.58m	318.56m	580.67m
I_D3 : 4	301.69m	302.14m	543.93m
Power 1: 5	3.32	3.70	60.11
Power 2: 6	2.85	4.02	72.90
Power 3: 7	1.92	2.02	58.28

4. 比较3个不同MOSFET的功率损耗
5. 改变VG1信号发生器的PWM信号，并重新启动仿真，用同样方式再次比较不同MOSFET的功率损耗
6. 点击 [Buy online](#) 比较不同MOSFET的价格区别

Infineon Designer新增特性: 电路参数配置器



1. 打开电路 [Design a 24V Buck Converter in CCM mode](#)
2. 点击浅绿色窗口，在电路参数配置器编辑直流转换器的输入输出特性参数
3. 点击“运行”计算其他参数，参数配置器将并自动配置相应电路元件参数。（占空比，电感值，等等）
4. 点击“确定”，然后再次启动仿真 [Simulate Transient](#)
5. 在仿真图表窗口查看仿真结果和直流转换器输入输出值



Infineon Designer新增特性: 功率损耗和电路效率计算

1

Buck startup Buck steady-state

2

3

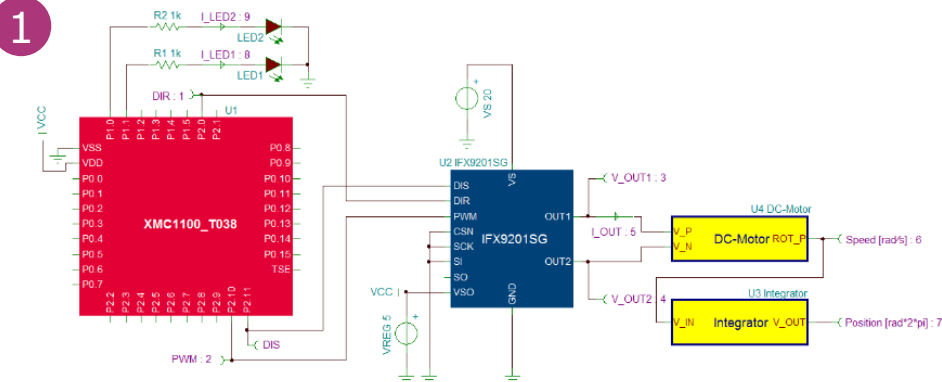
Component	Power type	Power dissipati...	Percentage (%)	Pass/Fail
V_in	Source	22.79	100	Pass
R_load	Sink	21.65	95.01	Fail
Switch	Loss	161.75m	0.71	Pass
C		5.46m	0.02	Pass
Control		465.46u	0.00	Pass
D		960.36m	4.21	Pass
L		7.5m	0.03	Pass

Efficiency: 95.01% Total Input: 22.79 W Total Output: 21.65 W

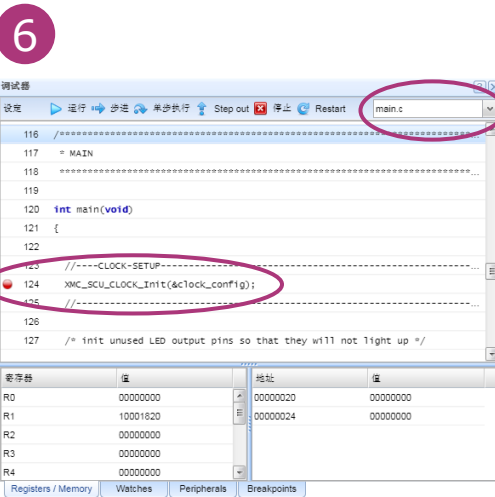
Transient 1 X Transient 2 X Power dissipation 1 X

1. 打开带有已设置功率类型的元件的电路，比如CoolSiC™ Boost
2. 打开菜单栏“分析” -> “瞬态...”并勾选“Power dissipation analysis enabled”
注意：把起始显示时间和终止显示时间设置在电路稳态情况。（计算电路效率时电路必须已处于稳态）
3. 点击启动仿真
Simulate Transient
4. 仿真结束后，在结果图表窗口中打开“Power dissipation”页面
 - 电路效率Efficiency
 - 各个元器件功率数据，分为功率源、功率损耗、有效功率
 - 基于器件最大额定功率决定：通过或失败（Pass/Fail）

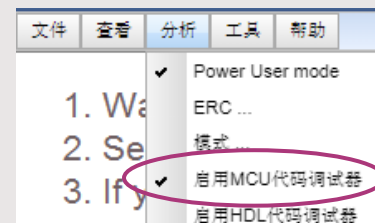
Infineon Designer新增特性: 增强型MCU程序调试 ([H-bridge Kit 2Go](#))



2 Simulate Transient



1. 点击打开电路 [H-bridge Kit 2Go](#)
2. 点击启动仿真 **Simulate Transient**
3. 通过电路图了解应用电路功能和信号
4. 启用MCU代码调试器



5. 用TR交互模式开始交互瞬态仿真



6. 在调试器窗口选择调试代码文件，设定断点并一步步调试

7. 在线购买样片或评估板



[Buy online](#)

Infineon Designer XMC™ 软件示例

H-bridge Kit 2Go (上传软件)

1 Log in to save, share, download circuits: **Login**

2 Software

3

4

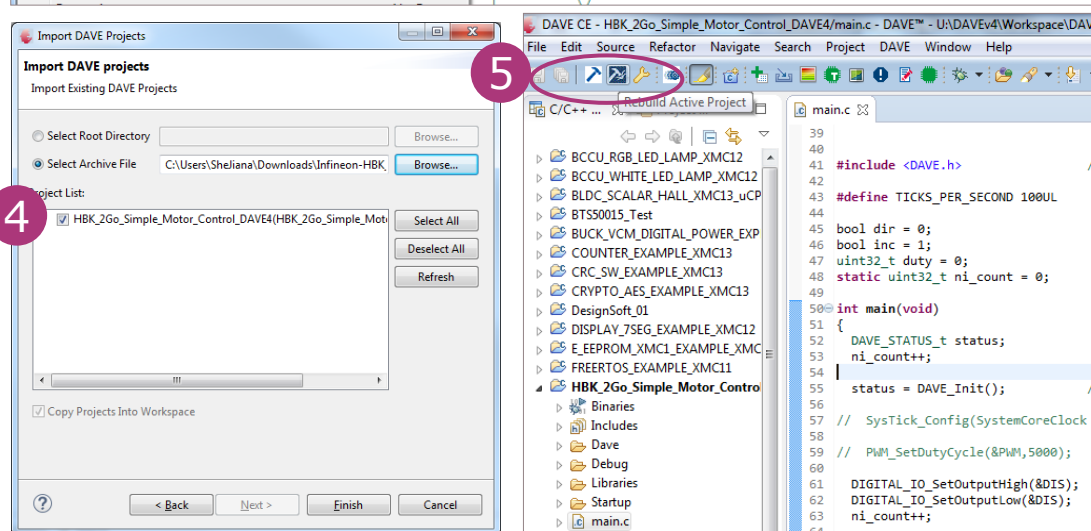
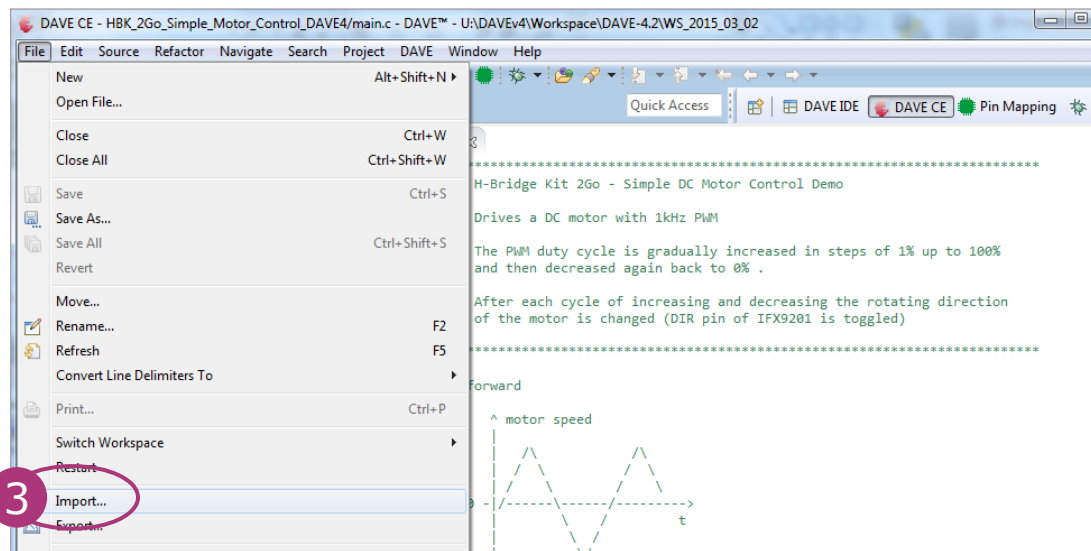
5

6

1. 点击打开电路[H-bridge Kit 2Go](#)并用MyInfineon账户登录
2. 下载代码压缩包文件.zip
[H-bridge Kit 2Go – default simple example routine](#) 评估板H-bridge Kit 2Go产品页[软件](#)和[工具选项卡](#)
3. 点击红色的XMC1100器件打开属性对话框
4. 点击MCU-code行的“...”打开上传代码
5. 选在路径确认已下载的代码压缩包（包括.elf, .hex 编译文件和源代码）
6. 上传代码Infineon-HBK_2Go_simple_motor_control_DAVE4.zip-SW-v01_00-EN.zip
7. 点击启动仿真 **Simulate Transient**
8. 查看仿真结果

Infineon Designer XMC™ 软件示例

H-bridge Kit 2Go (修改代码并重新编译)



1. 下载并安装DAVE™开发套件
[DAVE™ for windows](#)
2. 下载代码压缩包文件.zip
[H-bridge Kit 2Go – default simple example routine](#) 评估板H-bridge Kit 2Go产品页[软件和工具选项卡](#)
3. 启动DAVE™并导入代码项目File → Import → Infineon DAVE™ Project
4. 点击“Next”，选择已下载代码压缩包路径并勾选项目
5. 修改代码并重新编译
6. 到DAVE™的Workspace工作空间目录并把整个项目目录打包成.zip
7. 重新回到电路点击红色XMC1100器件并上传修改后的代码

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技术支持

› 请访问 www.infineon.com/support

Support Page

Support is available in English, German and Mandarin from our talented team of experts.



› Start chat session with our support team



› Get product support from our technical experts



› Call us toll-free 24/7

Find an answer to your question

Please state your question (with at least 3 words)

FAQ

1. Technical Support [CN] [DE]
2. Chip Card and Security Distis [CN] [DE]
3. HiRel Discretes for special applications, e.g. Aero and Space [CN] [DE]
4. Supplier Service, Supplier Page, page registration [CN] [DE]
5. Use Infineon Designer for Simulation and Development of your Circuit [CN] [DE]
6. How to login to myInfineon [CN] [DE]



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