



## Usage of Online design simulator Easy DesignSim®

### 1. Login & Registration

#### 1.1 Execute login procedures

The login ID is E-Mail address

The password is the character string that you input in Registration

Please click Login button after input



#### 1.2 New registration

Please register from the "Register Now" button under the Login button use at the time of the first use.

##### 1.2.1 Registration

###### 1.2.1.1 The following items are required.

E-mail address : It is also used for Login ID

Password

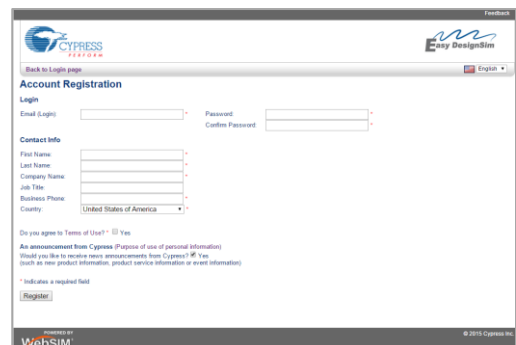
First Name

Last Name

Company Name

Country

agree to Terms of use



###### 1.2.1.2 Terms of use (The details are checked by a click)

Please check Yes in the box.

###### 1.2.1.3 Announcement from Cypress

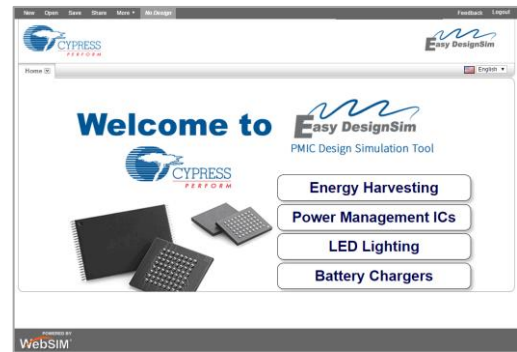
Please check Yes in the box.

(Yes: Cypress sends the information such as new product, the product service or the seminar)

(The details are checked by a click of "purpose of use of personal information")

## 2. Select of product

### 2.1 Select "Energy Harvesting" or "Power Management ICs" or "LED Lighting" or "Battery Chargers"



### 2.2 Search

2.2.1 Set the desired input voltage, output voltage and load current on each channel of DCDC converter.

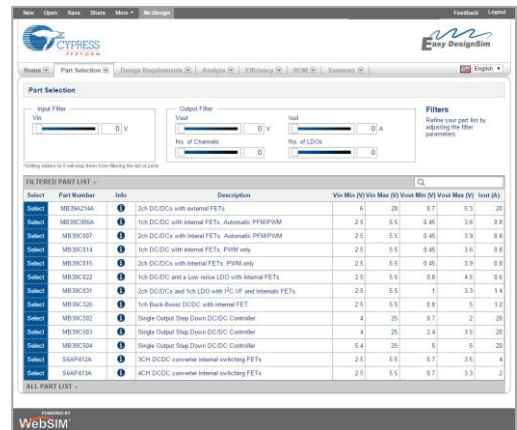
2.2.2 Set of channels. Click of "Output n".

2.2.3 Set the number of channels of LDO ( Linear regulator ).

### 2.3 Selection

Select the desired product from the products list and click "select" button in the left end.

### 2.4 Click the button on Info to see the product information(data sheet).



## 3. Set operating parameter

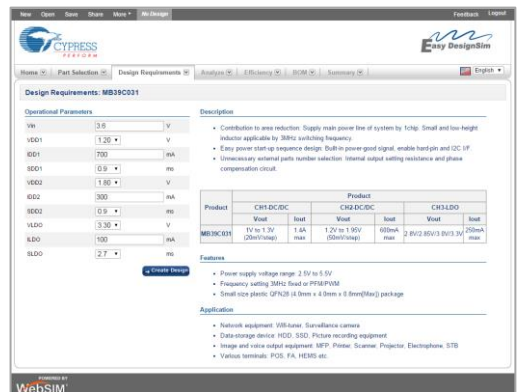
### 3.1 Set the parameters

- input voltage
- output voltage
- output current
- Switching Frequency (According to a product)

### 3.2 Mode selection (According to a product)

- mode setting (PFM/PWM,PWM fixed or Frequency etc.)

### 3.3 A schematic is drawn when clicking the button of "Create Design".



## 4. Set simulation parameters and start analysis

### 4.1 Set the parameters

The setting of the output current and Tr/Tf for transient analysis can be changed. And also the external parts can be changed.

To set the external parts, there are two ways by setting own selected components or setting pre-selected components from the BOM list.

### 4.2 Start analysis

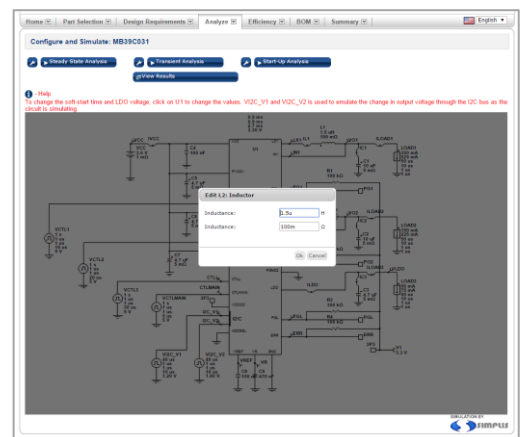
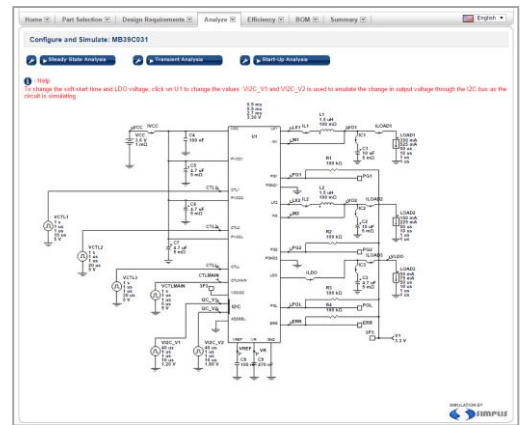
Start the simulation with clicking the button of the following items in the schematic upper part.

- AC Analysis
- Transient Analysis(quick response of output voltage by changed load current)
- Steady-state Analysis
- Startup
- Shut down

### 4.3 Set the parameter of parts

The external parts on the schematic can be changed.













To set the external components, there are two ways by setting own selected parts or setting pre-selected parts from the BOM list.

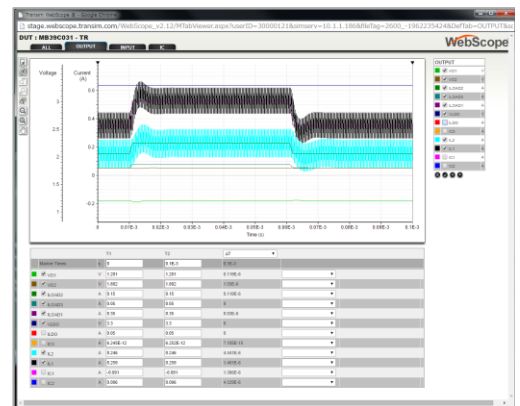


## 5. Verify simulation results

### 5.1 A simulation wave form is displayed on the other window "WebScorp".

How to use the function button

-  [Print waveforms] : The waveforms is printed.
-  [Reset Zoom] : The move and the zoom graph return to the condition of the default.
-  [Go forward on zoom level]
-  [Go back one zoom level]
-  [Range selection zoom]
-  [Zoom out]
-  [Zoom-in]
-  [Drag]
-  Hide all waveforms
-  Show all waveforms
-  The chosen waveform moves down one by one.
-  The chosen waveform moves up one by one.



### 5.2 The marker T1 and T2 on the horizontal axis are in the graph upper part.

With sliding the marker, the time between 2 points can be measured.

Also, it is possible to change when clicking the unit of the horizontal axis.

### 5.3 Efficiency

There are two types of efficiency graph according to the products

- Measurement result in near condition as the setting condition
- Simulated results in the setting condition

The precision of efficiency data can be improved with setting the following parameters of external components.

#### FET

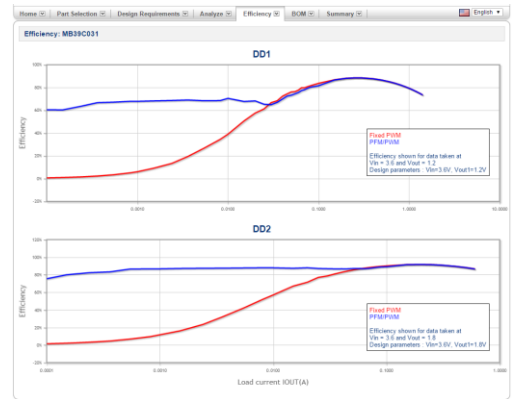
$Q_g$ : Total gate charge of FET  
 $V_f$ : S to D diode forward voltage of Synchronous FET

#### Coil

$P_{core\_Coil\_PWM}$ : Coil core loss

#### Capacitor

ESR: ESR of capacitor



Ref	Qty	Part Number	Manufacturer	Description	ChipStop
U1	1	MB39C031	Spansion	Programmable 2m Bus DC-DC - 1n LDO - 1000000	Yes - \$4.2
C1	1	0603C100K10TA	AVX	Cap Ceramic 10uF 5V X7R 10% SMD 0805 120C Embossed TR	Yes - \$0.056
C2	1	0603C470K10TA	AVX	Cap Ceramic 4.7uF 5V X7R 10% SMD 0805 120C Embossed TR	Yes - \$0.056
C3	1	0603C470K10TA	AVX	Cap Ceramic 4.7uF 5V X7R 10% SMD 0805 120C Embossed TR	Yes - \$0.056
C4	1	0603C100K10TA	AVX	Cap Ceramic 10uF 5V X7R 10% SMD 0805 120C Embossed TR	Yes - \$1.99
C5	1	0603C470K10TA	AVX	Cap Ceramic 4.7uF 5V X7R 10% SMD 0805 120C Embossed TR	Yes - \$0.056
C6	1	0603C470K10TA	AVX	Cap Ceramic 4.7uF 5V X7R 10% SMD 0805 120C Embossed TR	Yes - \$0.056
C7	1	0603C470K10TA	AVX	Cap Ceramic 4.7uF 5V X7R 10% SMD 0805 120C Embossed TR	Yes - \$0.056
C8	1	0603C100K10TA	AVX	Cap Ceramic 10uF 5V X7R 10% SMD 0805 120C Paper TR	Yes - \$1.99
C9	1	0603C470K10TA	AVX	Cap Ceramic 4.7uF 5V X7R 10% SMD 0805 120C Embossed TR	Yes - \$0.056
L1	1	ADP1805S-1000AT	Fairchild	INDUCTOR POWER 1.5uH 20% SMD	No - Call
L2	1	ISC1812SRHSH	Vishay	Inductor Chip Shielded/Marked Wirewound 1.5uH 10% Ferrite Core/2000 Turns/Power Res 4304K 400mA DCR 1812 TR	No - Call
R1	1	CRCW0402100K050EF	Vishay	Res Thick Film 0402 100K Ohms 1% 0.630W 1/16" (0.635) Max H SMD Paper TR	Yes - \$0.02542
R2	1	CRCW0402100K050EF	Vishay	Res Thick Film 0402 100K Ohms 1% 0.630W 1/16" (0.635) Max H SMD Paper TR	Yes - \$0.02542

### 6. Confirm bill of materials

The parts on the schematic are listed and also downloaded with Excel format.

The components in stock or price can be confirmed by selecting the distributors.

(Please contact to the distributors to purchase those components.)

### 7. Summary and PDF download

All information of the simulation is displayed. It can be downloaded in the PDF file.

