Cycle mode calculation manual of large capacity data
(Fuji IGBT Simulator for Automotive)
Cycle Mode Calculation
Cycle mode input screen

1. Click the "Cycle Mode" tab.
2. You can change the coolant temperature here.
3. Enter gate resistance values for your calculation.
4. Select the boundary conditions.
5. You need to change the sampling number according to the number of cycle data.
6. Enter the operation pattern.
7. Click the “Calculate” Button to start the computation.

Fig.1 Cycle mode input screen
When calculating the loss, it is necessary to select a value in the sampling number selection box that is equal to or larger than the number of data of the operation pattern entered in the ⑥ field. However, if the number of data becomes too large, calculation time may be long depending on PC capability. Also, data of 8192 or more cannot be input.

The loss calculation procedure in such a case is shown below.

1) Divide operation pattern into appropriate data size
2) Enter the divided data in the ⑥ field respectively
3) Calculate
4) Save the output data
5) Combine the output data created separately
1) Divide operation pattern into appropriate data size

In the case of the operation pattern (output current $I_o$ [Arms]) as shown in Fig. 2, considering finally combining the output data, it is desirable to divide the data at the point where the output current is zero or where the output current is stable.

Fig. 2 Example of operation pattern
1) Divide the operation pattern into appropriate data sizes

Also, when it is necessary to divide at the point where the output current fluctuates as shown in Fig. 3, divide it so that data A and data B overlap each other as shown in Fig. 4.
2) Enter the divided data in the ⑥ field respectively

In the case of operation data entered in Excel etc., it is possible to copy and paste the operation data at once by creating the number of lines equal to or more than the number of operation data in the ⑥ field.

Copy for Excel sheet

Fig.5 Data input
Please set other necessary conditions and start calculation.

Fig.6 Calculation
4) Save the output data

Please save the output data after calculation is completed.

Fig. 7 Output screen
5) Combine the output data created separately

Please combine the divided output data at the point where the junction temperature is almost the same.

Combine the divided output data at the point where $T_{vj}$ matches.

Fig.8 Combination point of data
5) Combine the output data created separately

Fig. 9 Combined data
Further Information

If you have any questions about this software, please contact your local Fuji Office or the Fuji Electric Co., Ltd. For details about our products please also check below link.

www.fujielectric.com/products/semiconductor/