

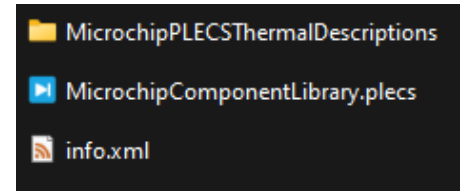
Installing the Microchip SiC library components and corresponding thermal descriptions (XML files) in PLECS Blockset or Standalone

1. The latest package can be downloaded from here – <https://www.microchip.com/en-us/software-library/sic-products-spice-files>

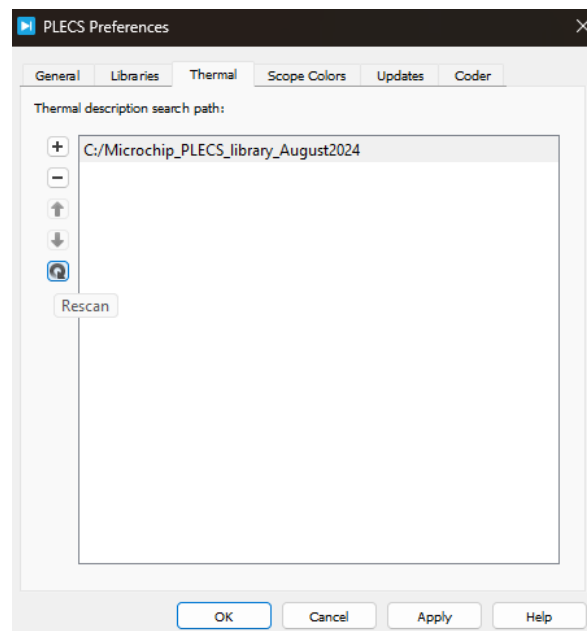
Silicon Carbide Products SPICE and PLECS Files

Title	Date	
SiC_Symbols_Mindj_SiMetrix	01 Feb 2021	Download
SiC MOSFET, SBD & Module PLECS Models	17 Jul 2024	Download

2. Download the zip file and extract the Microchip PLECS library directory. This directory should include:
 - a) *MicrochipPLECSThermalDescriptions/* folder
 - b) *MicrochipComponentLibrary.plecs* model file
 - c) *info.xml* file



3. Open PLECS and confirm you have version 4.6.9 or higher.
4. Navigate to the 'PLECS Preferences' window. Select the 'Thermal' tab. Use the "+" button within the 'Thermal' tab to add the Microchip PLECS library directory to the thermal description search path. Click 'Refresh' to update the path list. Save your changes and restart PLECS to ensure the updates take effect.



5. After successful installation, the "Microchip SiC Library" should appear in the PLECS Library Browser. To access the PLECS device models (thermal description files), go to 'Window -> Thermal Library Browser' from the PLECS model window menu bar. Then drag and drop components from the Microchip SiC library into your PLECS schematic as needed.

Library Browser

File Window Help

Search components

> System

> Assertions

> Control

> Electrical

> Thermal

> Magnetic

> Mechanical

> PLECS RT Box

> STM32 Target

> TI C2000 Target

Microchip SiC Library (August 2024)

Discrete Devices

Microchip SiC MOSFET

Microchip SiC Schottky Barrier Diode

Modules

Microchip SiC HB module

Microchip SiC HB module with Schottky Diodes

Microchip SiC FB module

Microchip SiC FB module with Schottky Diodes

Microchip SiC NPC module

Microchip SiC TP module with Schottky Diodes

Microchip SiC TP module

untitled *

File Edit View Simulation Format Coder Window Help

Library Browser Ctrl+L

Thermal Library Browser

Demo Models

Show Console

<untitled>

Microchip SiC MOSFET 1

Heat Sink

Files

Microchip

SiC MOSFETs

MSC015SMA070B

MSC015SMA070B4

MSC017SMA120B4

MSC025SMA120B

MSC025SMA120B4

MSC025SMA120J

MSC025SMA120S

MSC025SMA330B4

MSC035SMA070B

MSC035SMA070B4

MSC035SMA070S

MSC035SMA170B

MSC035SMA170B4

MSC035SMA170J

MSC035SMA170S

MSC040SMA120B

MSC040SMA120B4

MSC040SMA120J

MSC040SMA120S

MSC060SMA070B

MSC060SMA070SD

MSC080SMA120B

MSC080SMA120B4

MSC080SMA120J

MSC080SMA120S

MSC080SMA120SA

MSC080SMA120SD

MSC090SMA070B

MSC090SMA070SD

MSC180SMA120SD

MSC360SMA120SD

MSC750SMA170B4

SiC Modules

Full Bridge

Full Bridge with parallel Schottky ...

Phase Leg (HB)

Phase Leg (HB) with parallel Scho...

Three Level Inverter (NPC)

Triple Phase Leg

Triple Phase Leg with parallel Sch...

SiC SBDs

Manufacturer: Microchip

Part: MSC015SMA070B

Type: MicrochipSiC

Device Types Thermal Impedance Constants Variables Custom Tables Comment

Device Types

MOSFET* (MOSFET with Diode)

Turn-on Loss Turn-off Loss Cond. Loss (Gate On) Cond. Loss (Gate Off) Thermal Chain

Computation method: Lookup table and formula

☐ Invert voltage axis Energy scale: μJ

25°

	-10 A	0 A	30 A	50 A	70 A
-100 V	0 μJ	0 μJ	0 μJ	0 μJ	0 μJ
0 V	0 μJ	0 μJ	0 μJ	0 μJ	0 μJ
300 V	0 μJ	0 μJ	324 μJ	409 μJ	584 μJ
400 V	0 μJ	0 μJ	479 μJ	670 μJ	926 μJ
470 V	0 μJ	0 μJ	608 μJ	856 μJ	1178 μJ
560 V	0 μJ	0 μJ	794 μJ	1094 μJ	1555 μJ

$E_{on}(v,i,T,E,R_{on},V_f,bd,R_{on_bd},I_{ds_max},...) = 70, Id=50, Rg=4', T) * (1/lookup(E_{onvsT}(V_{ds}=470, Id=50, Rg=4'), 25))$

Save Revert Help