

B-012-DOT. 3-level NPC-I Inverter $P_{OUT}=10kW$ (Equipped with DOT-247 Package)



ROHM Solution Simulator Schematic Information

2026. Mar.
68UG095E Rev.001

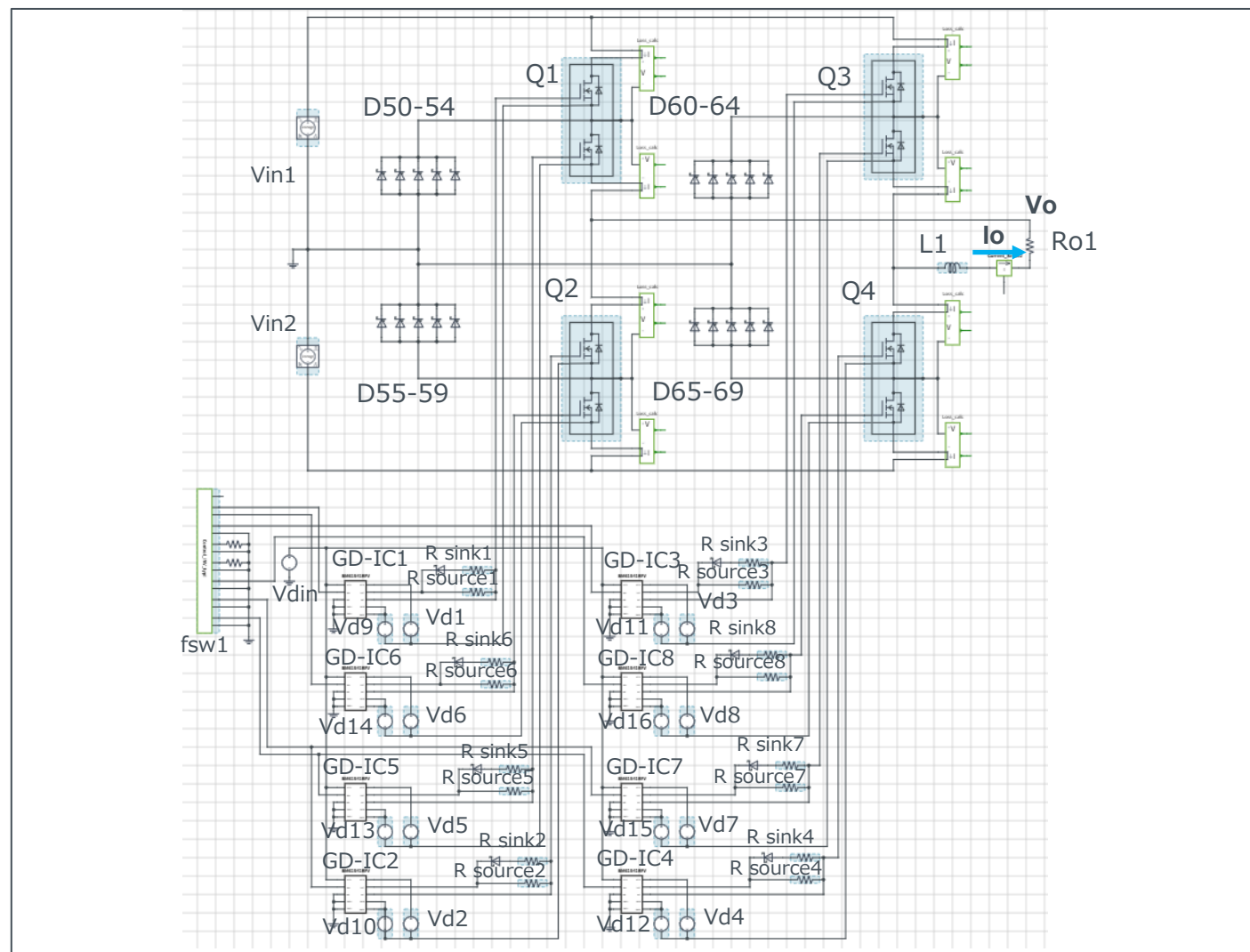
Simulation Parameters

Component name	Component	Default	Simulation Setting Range
Vin1,2	Input voltage	240Vdc	
Vo	Output voltage	200Vac	
Io	Output current	50Aac	
fsw1	Switching frequency	10kHz	10k – 300kHz
Tj	Temperature	100°C	
Vd1-8	Gate Drive voltage H	18V	
Vd9-16	Gate Drive voltage L	0V	
Vdin	Signal voltage level	5V	

Devices

Component Name	Component	Default	Simulation Setting Range
Q1-4	SiC Power Module	Selectable	
D50-69	SiC SBD	Selectable	
GD-IC1-8	Gate Driver	BM61S41RFV-C	
R sink1-8	Resistor for sink	ESR18 5Ω	
R source1-8	Resistor for source	ESR18 5Ω	
L1	Inductor	500μH	10μH - 2mH
Ro1	Output Resistor	{Vo/Io}	

Simulation Circuit



Note: The Loss_calc component is a utility module to support power loss calculation and does not affect the simulation results of circuit operation or performance.

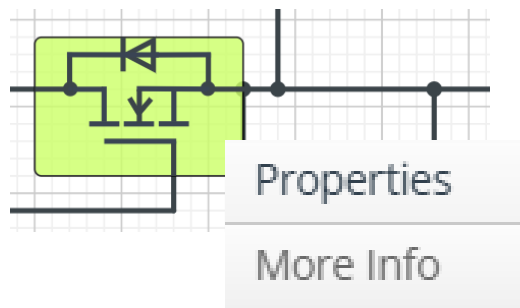
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Selectable Devices

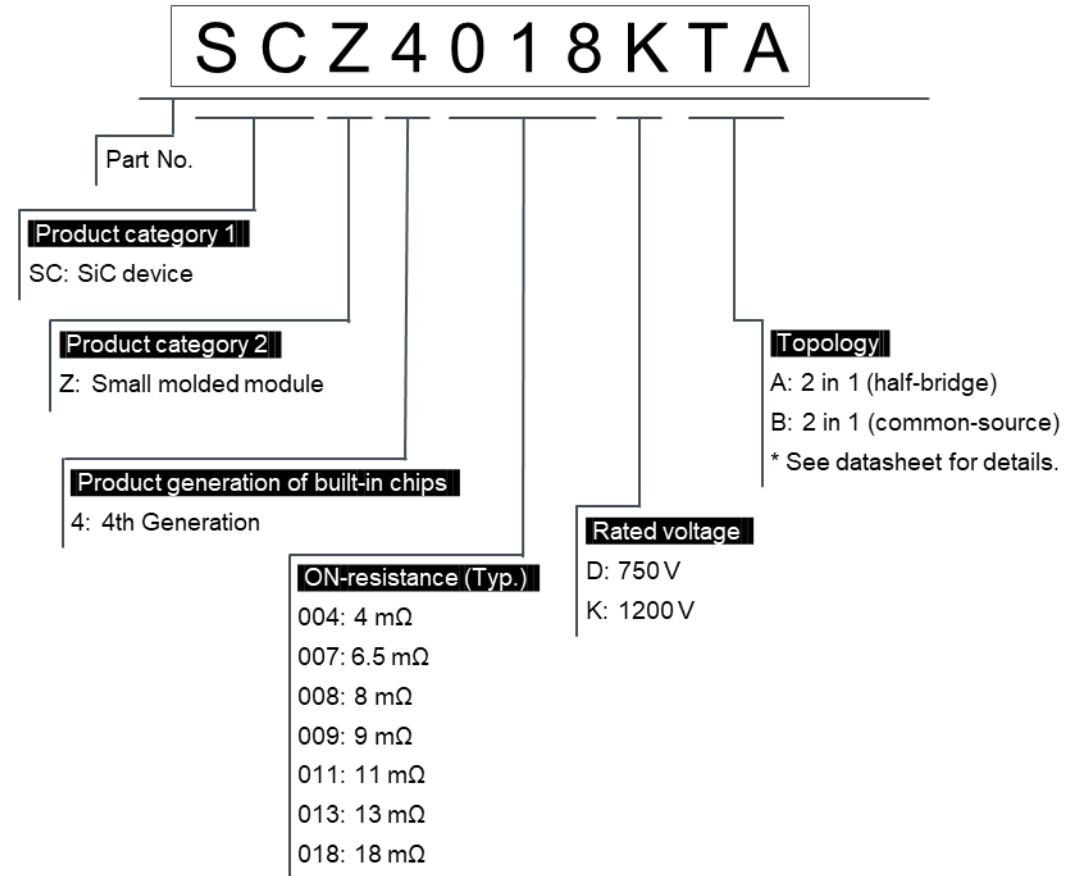
Component name	Component
Q1 - 4	SiC Power Module

For more information, go to “**More Info**” and click on “**Link to Datasheet**”.



Model Links:
[Link To Product](#)
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SiC Power Module part number information



Product Lineup: [SiC Power Module](#)

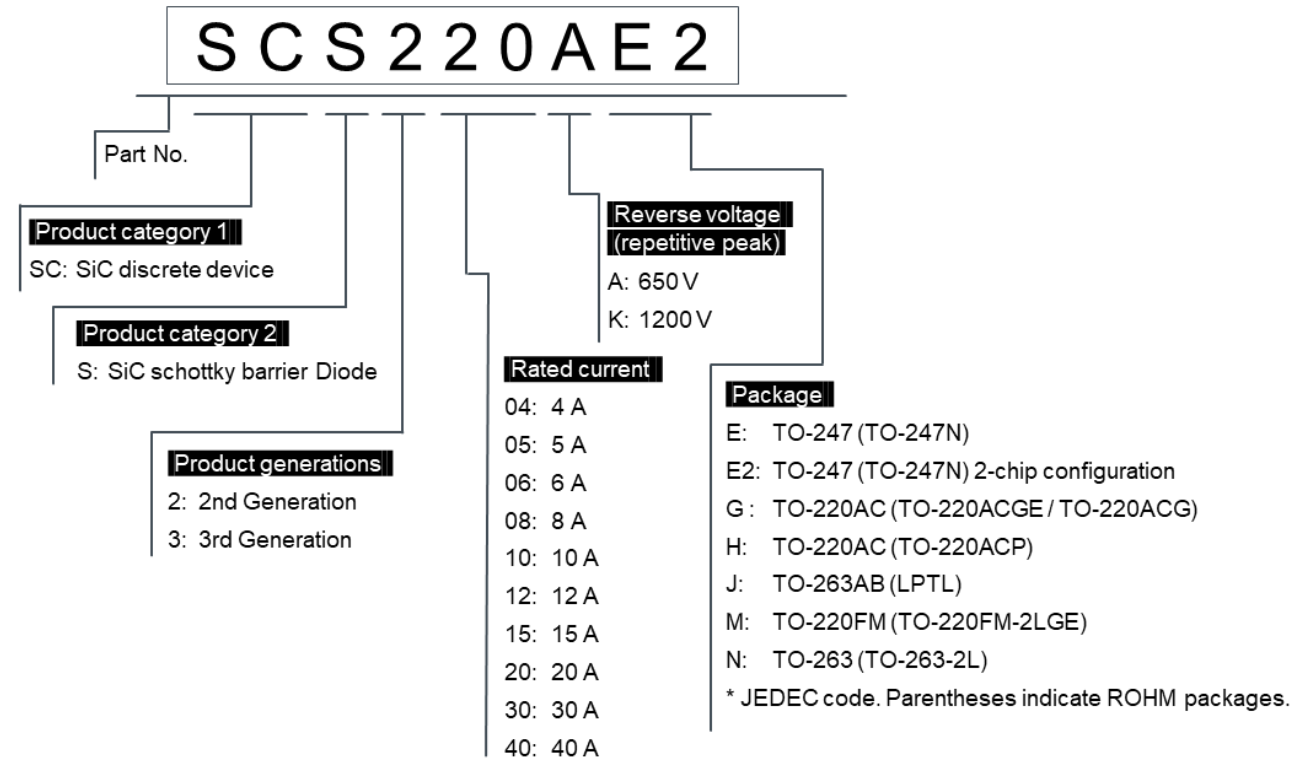
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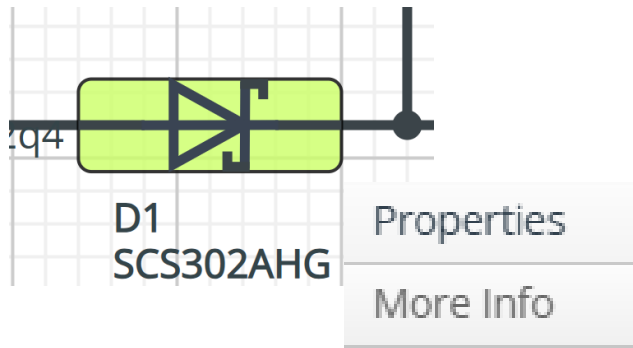
Selectable Devices

Component name	Component
D50-69	SiC Schottky Barrier Diode

SiC Schottky Barrier Diode part number information



For more information, go to “**More Info**” and click on “**Link to Datasheet**”.



Model Links:

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➡ Product Lineup: [SiC Schottky Barrier Diodes](#)

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Selectable Devices

Component name	Component	Product No.	feature
GD-IC1-8	Gate Driver	BM61S41RFV-C	for SiC MOSFET Isolation Voltage : 3750 Vrms I/O Delay Time (max) : 65ns Miller Clamp : Built-in UVLO : 14.5V

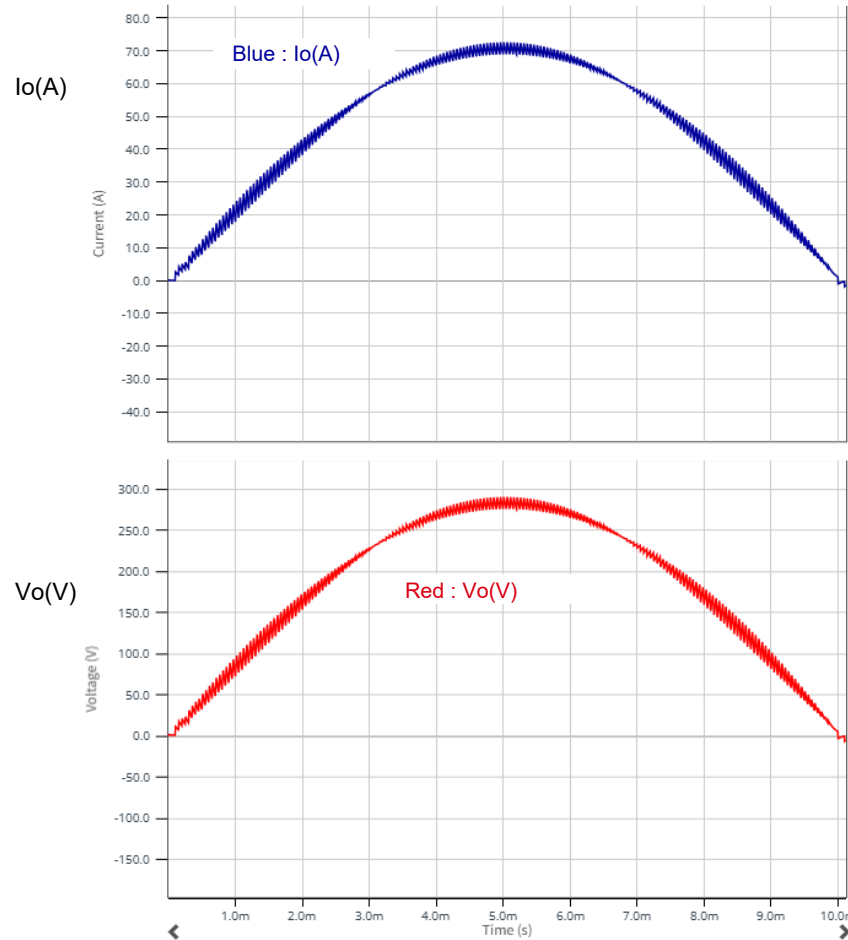
Simulation Waveform1



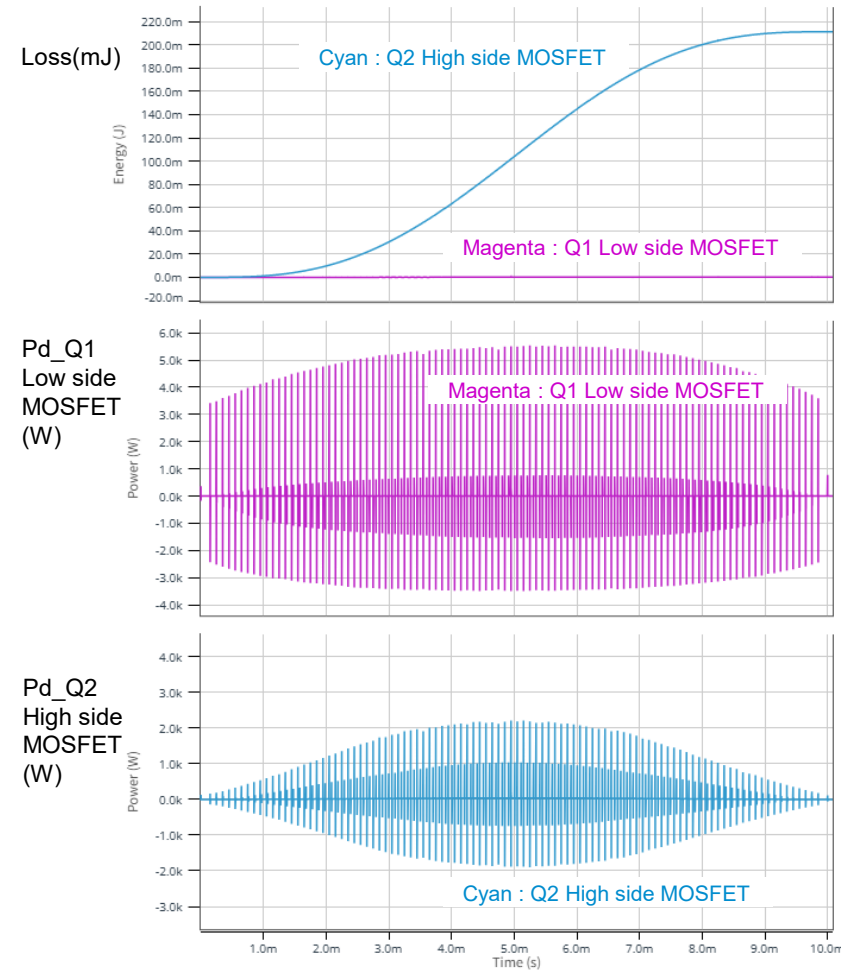
Q1-4 : SiC Power Module
SCZ4004DTA

I_o, V_o (0~10.0ms)

$V_{in}=240V_{dc}+240V_{dc}$ $V_o=200V_{ac}$
 $I_o=50A_{ac}$ $f_{sw}=10kHz$ $T_j=100^{\circ}C$

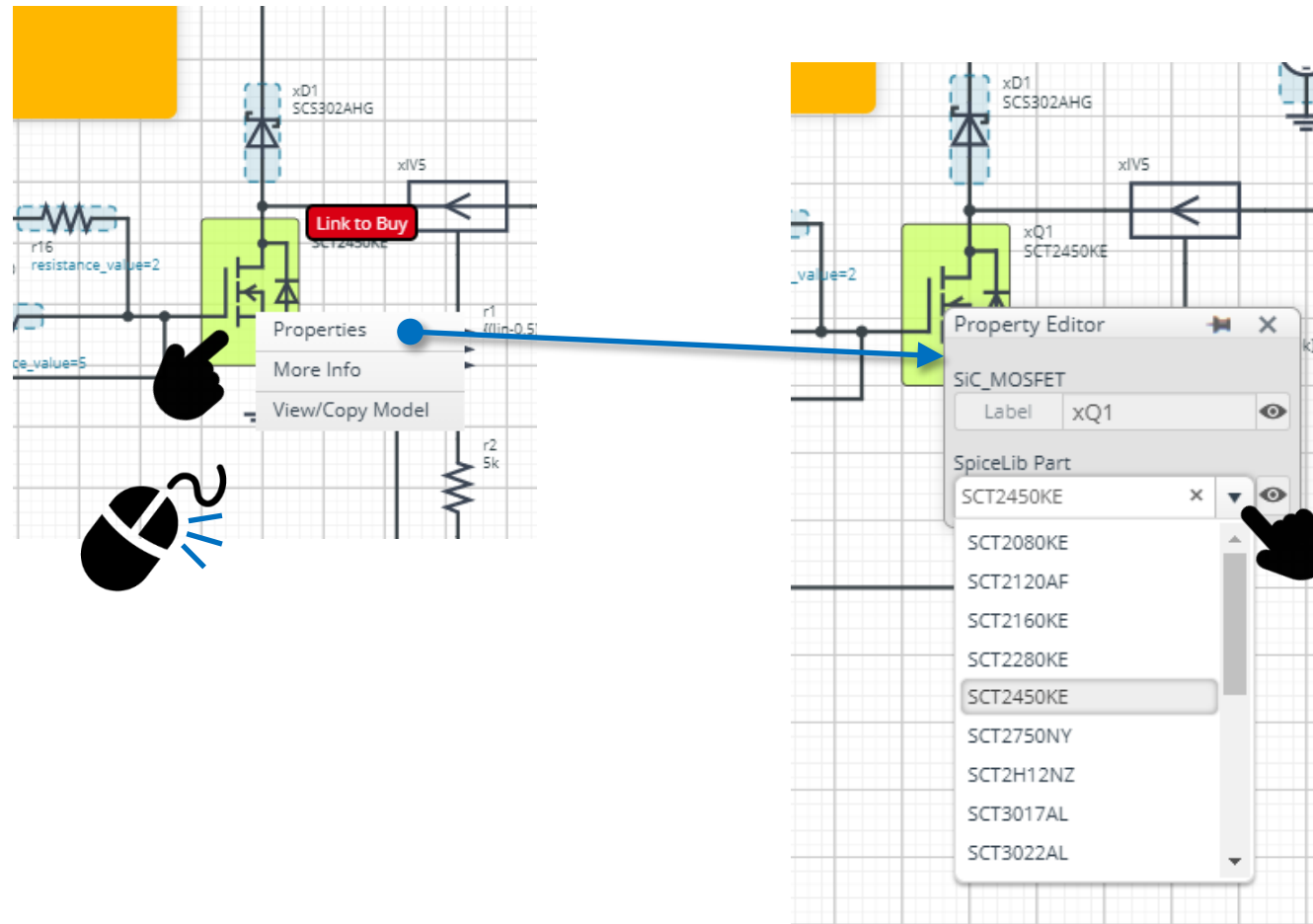


Loss, Pd (Q1,Q2)



How to change the devices

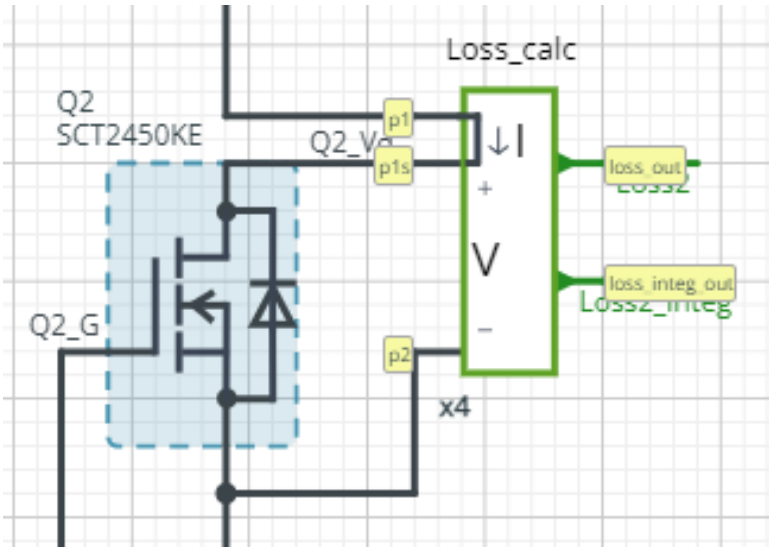
Right-click on the device → Select Properties → Pull down “SpiceLib Part” → Select the product



Loss Calculation Model outputs the instantaneous value of power loss and its integration.

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Loss calculation model 'Loss_calc'



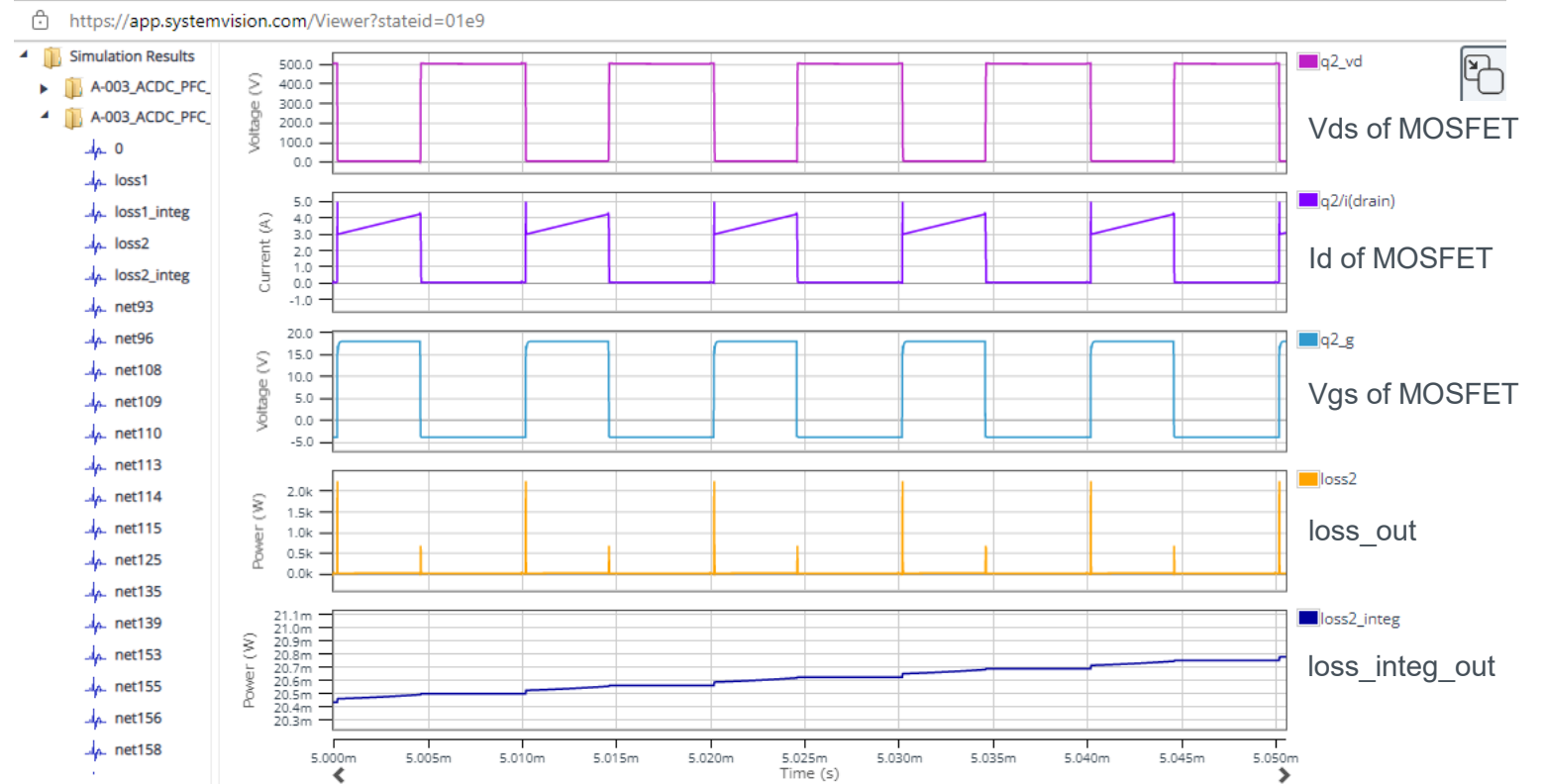
$$loss_out(t) = I(t) \times V(t)$$

$$loss_integ_out = \int_0^t loss_out(t) dt$$

I : Current through p1 to p1s

V : Voltage between p1s and p2

Waveform example



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