

# B-005. 1-Phase 3-Wire Inverter Pout=20kW

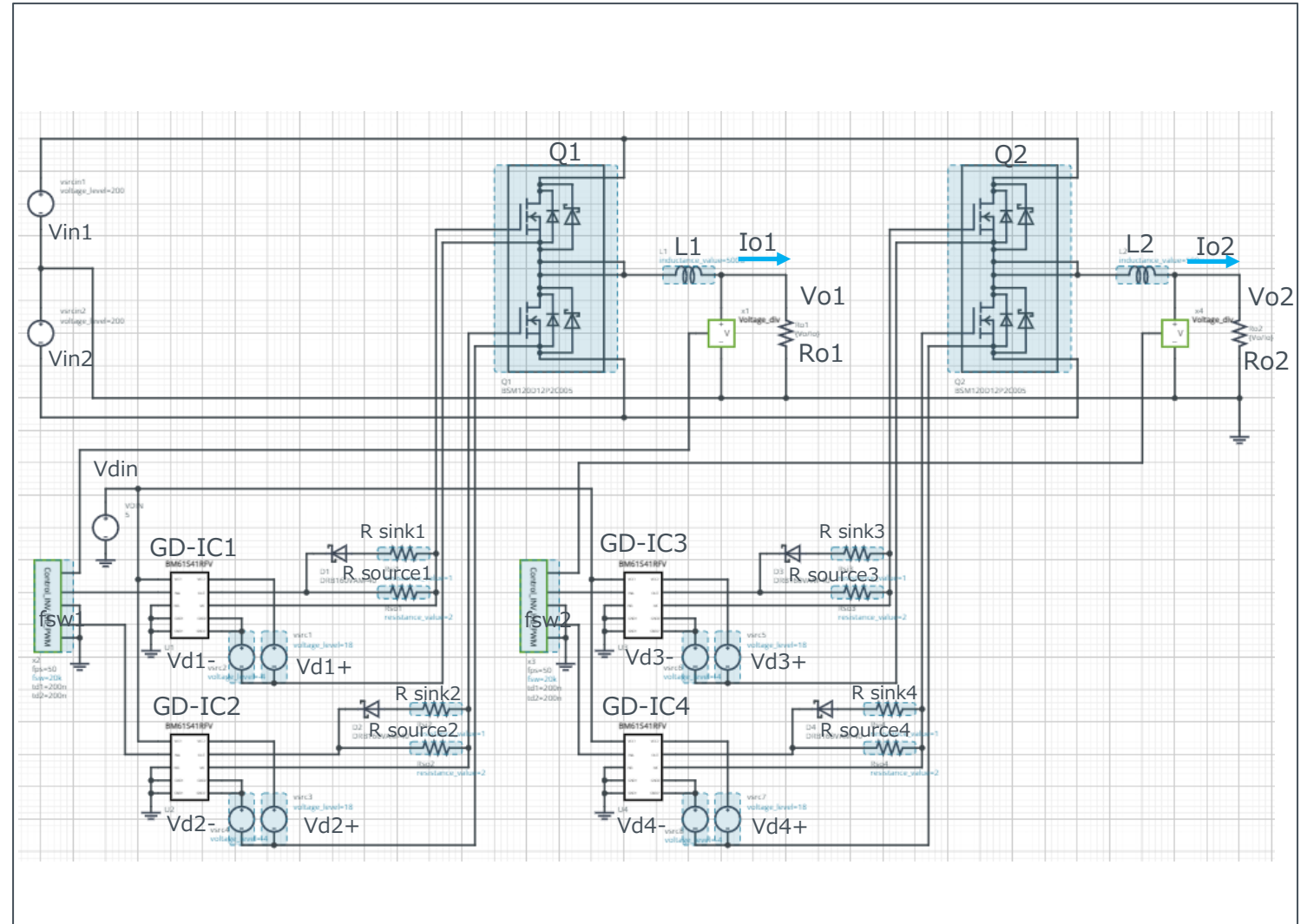
## Simulation Parameters

| Component name | Component            | Default | Simulation Setting Range |
|----------------|----------------------|---------|--------------------------|
| Vin1,2         | Input voltage        | 200Vdc  |                          |
| Vo1,2          | Output voltage       | 100Vac  |                          |
| Io1,2          | Output current       | 100Aac  |                          |
| fsw1,2         | Switching frequency  | 20kHz   | 10k – 300kHz             |
| Tj             | Temperature          | 100°C   |                          |
| Vd1-4+         | Gate Drive voltage H | 18V     | 10 – 20V                 |
| Vd1-4-         | Gate Drive voltage L | -4V     | -4 – 0V                  |
| Vdin           | Signal voltage level | 5V      |                          |

## Devices

| Component Name | Component           | Default      | Simulation Setting Range |
|----------------|---------------------|--------------|--------------------------|
| Q1, Q2         | MOSSBDx2            | Selectable   |                          |
| GD-IC1-4       | Gate Driver         | BM61S41RFV-C |                          |
| R sink1-4      | Resistor for sink   | 1Ω           | 0.1 -                    |
| R source1-4    | Resistor for source | 2Ω           | 0.1 -                    |
| L1, L2         | Inductor            | 500μH        | 10μH - 2mH               |
| Ro1, Ro2       | 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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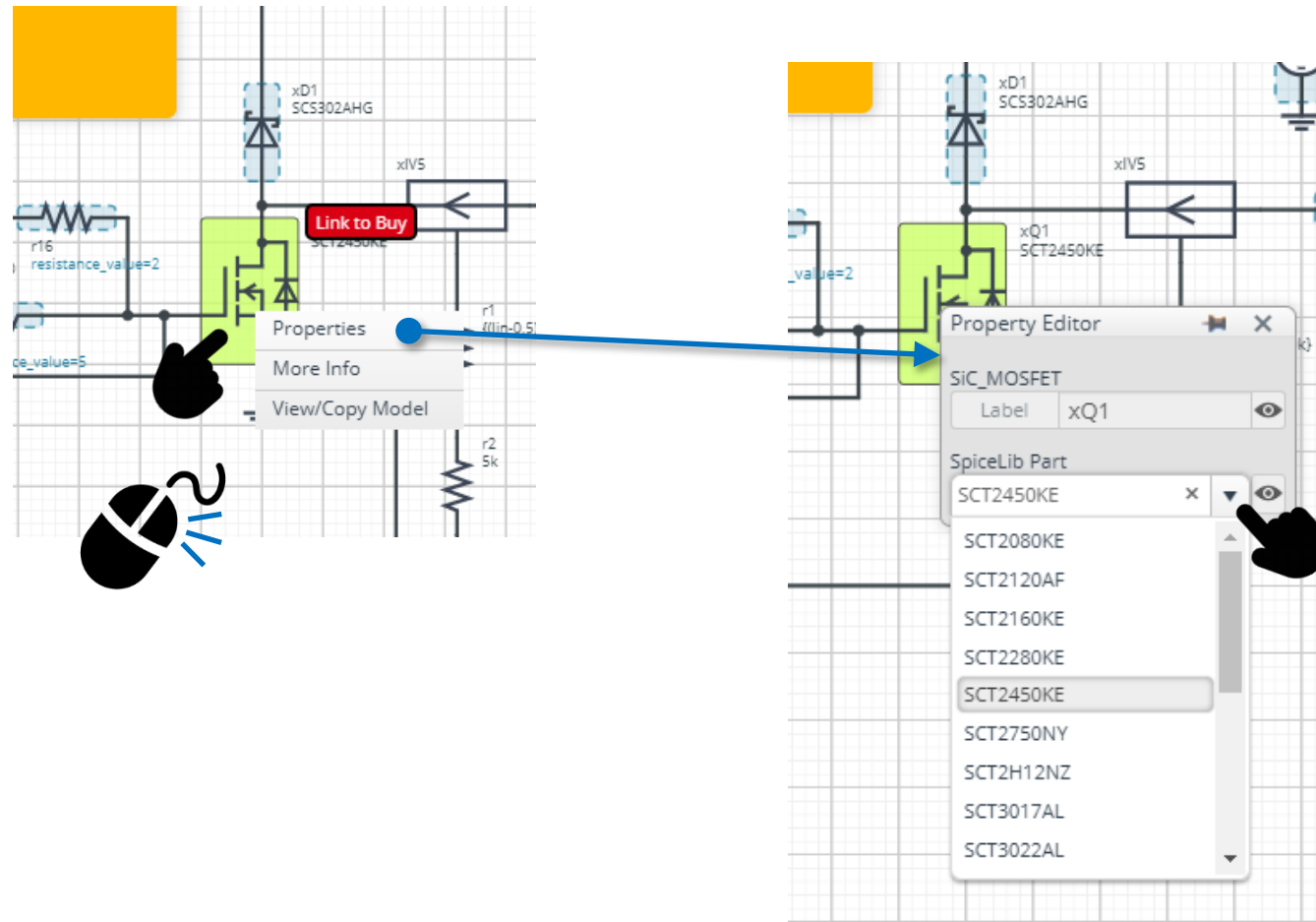
## Selectable Devices

| Component name | Component | Product No.         | feature     |
|----------------|-----------|---------------------|-------------|
| Q1,Q2          | MOSSBDx2  | BSM080D12P2C008     | 800V, 120A  |
|                |           | BSM120D12P2C005 (*) | 1200V, 120A |

\* Default device

# How to change the devices

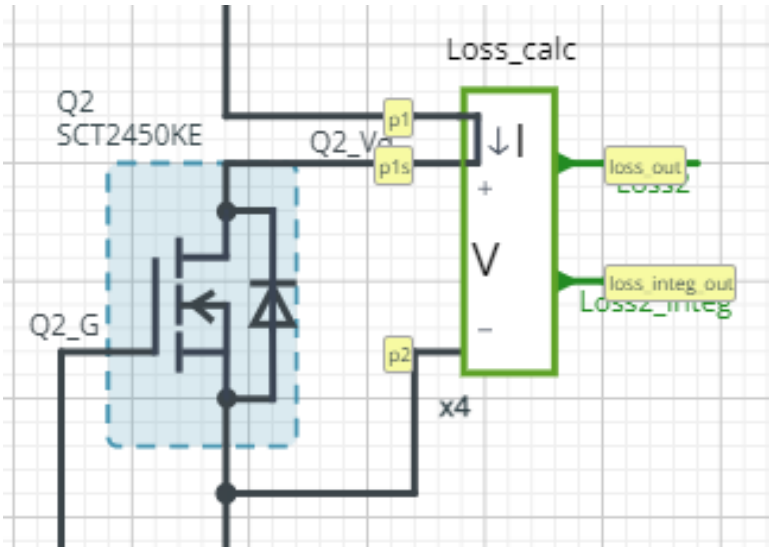
Right-click on the device → Select Properties → Pull down “SpiceLib Part” → Select the product



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

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## Loss calculation model 'Loss\_calc'



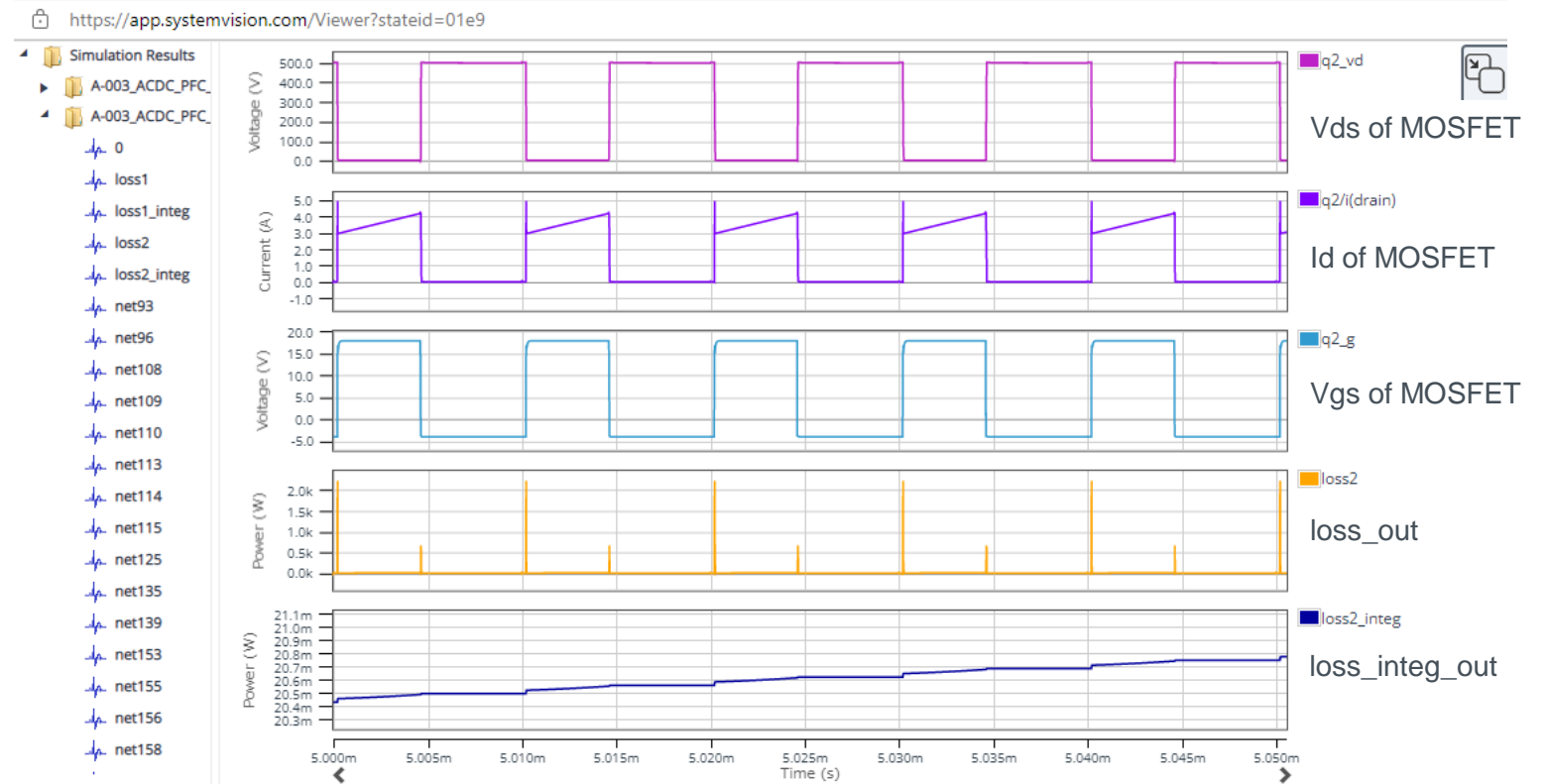
$$loss\_out(t) = I(t) \times V(t)$$

$$loss\_integ\_out = \int_0^t loss\_out(t)dt$$

I : Current through p1 to p1s

V : Voltage between p1s and p2

## Waveform example



## Notes

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