

# A-010. Totem-Pole Bridgeless PFC $V_{in}=200V$ , $I_{in}=100A$ , Synchronous FETs on low frequency leg

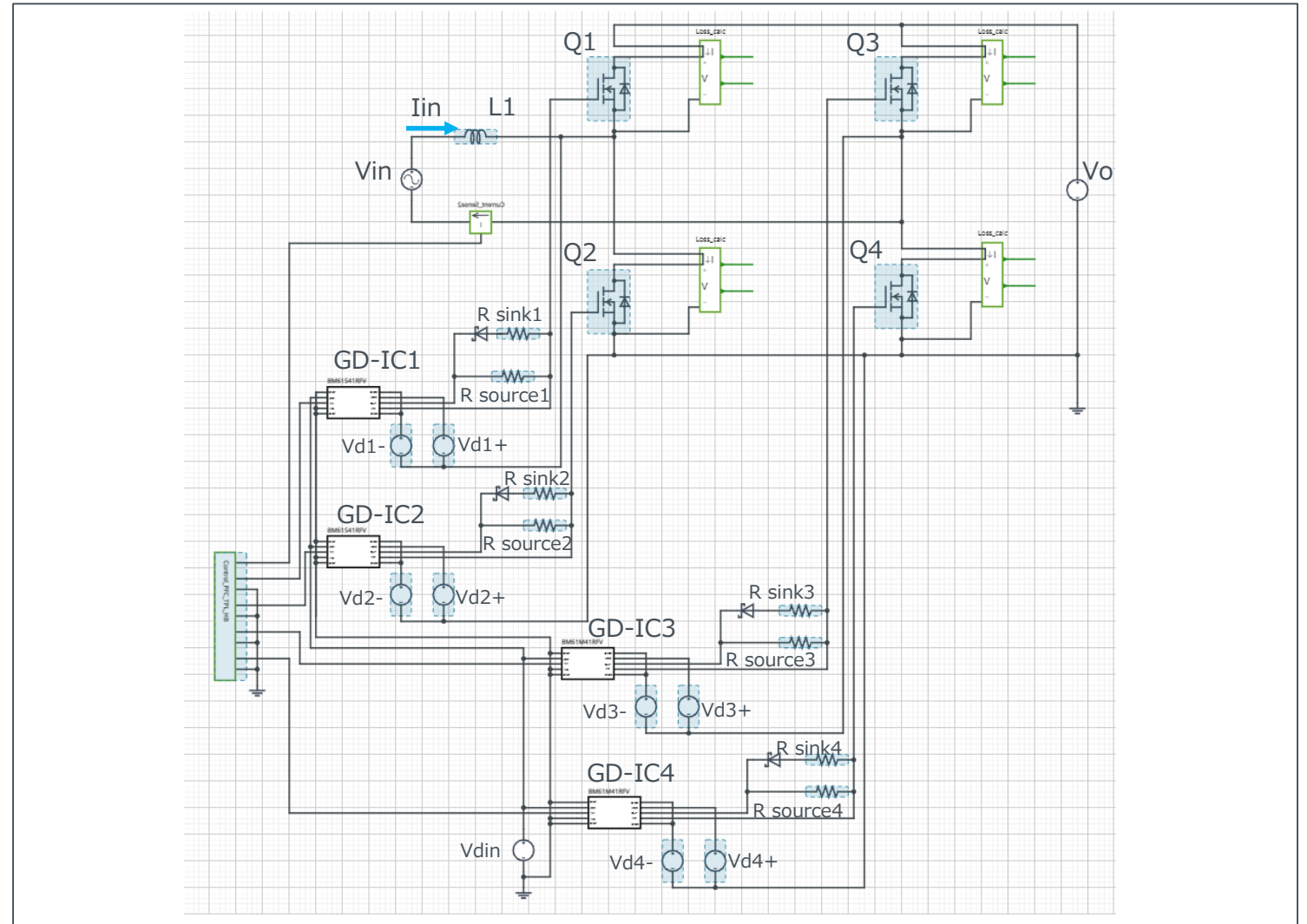
## Simulation Parameters

Component name	Component	Default	Simulation Setting Range
$V_{in}$	Input voltage	200Vac 50Hz	
$I_{in}$	Input current	100Aac	
$V_o$	Output voltage	400Vdc	300 – 500Vdc
fsw	Switching frequency	50kHz	10k – 300kHz
$T_j$	Temperature	100°C	
$V_{d1,2,3,4+}$	Gate Drive voltage H	18V	10 – 20V
$V_{d1,2,3,4-}$	Gate Drive voltage L	-4V	-4 – 0V
$V_{din}$	Signal voltage level	5V	

## Devices

Component name	Component	Default	Simulation Setting Range
Q1, Q2	SiC MOSFET	Selectable	
Q3, Q4	SJ-MOSFET	Selectable	
GD-IC1,2	Gate Driver	BM61S41RFV-C	
GD-IC3,4	Gate Driver	BM61M41RFV-C	
R sink1,2	Resistor for sink	1Ω	0.1 -
R sink3,4	Resistor for sink	1Ω	0.1 -
R source1,2	Resistor for source	2Ω	0.1 -
R source3,4	Resistor for source	2Ω	0.1 -
L1	Inductor	100μH	10μH - 2mH

## 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.

# A-010. Totem-Pole Bridgeless PFC (Synchronous FETs)



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## Selectable Devices

Component name	Component	Product No.	feature
Q1, Q2	SiC MOSFET	SCT2080KE	1200V, 80mΩ, 40A
		SCT2120AF	650V, 120mΩ, 29A
		SCT2160KE	1200V, 160mΩ, 22A
		SCT2280KE	1200V, 280mΩ, 14A
		SCT2450KE	1200V, 450mΩ, 10A
		SCT2750NY	1700V, 750mΩ, 6A
		SCT2H12NZ	1700V, 1150mΩ, 3.7A
		SCT3017AL (*)	650V, 17mΩ, 118A
		SCT3022AL	650V, 22mΩ, 93A
		SCT3022KL	1200V, 22mΩ, 95A
		SCT3030AL	650V, 30mΩ, 70A
		SCT3030KL	1200V, 30mΩ, 72A
		SCT3040KL	1200V, 40mΩ, 55A
		SCT3060AL	650V, 60mΩ, 39A
		SCT3080AL	650V, 80mΩ, 30A
		SCT3080KL	1200V, 80mΩ, 31A
		SCT3105KL	1200V, 105mΩ, 24A
		SCT3120AL	650V, 120mΩ, 21A
		SCT3160KL	1200V, 160mΩ, 17A

\* Default device

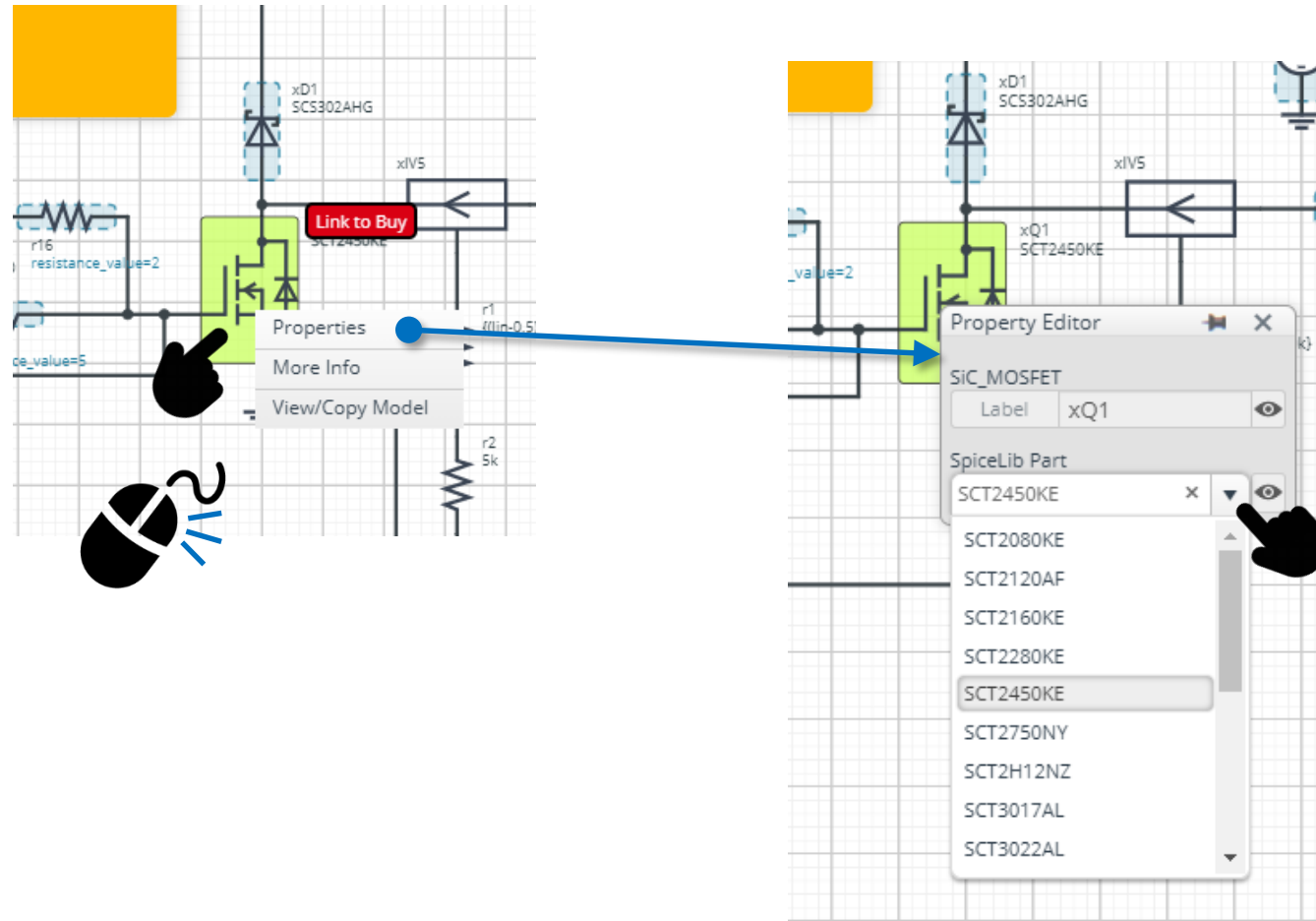
## Selectable Devices

Component name	Component	Product No.	feature
Q3, Q4	SJ-MOSFET	R6004JNX	600V, 4A
		R6006JNX	600V, 6A
		R6009JNX	600V, 9A
		R6018JNX	600V, 18A
		R6020JNX	600V, 20A
		R6025JNX	600V, 25A
		R6030JNZ4	600V, 30A
		R6050JNZ4 (*)	600V, 50A

\* Default device

# How to change the devices

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



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