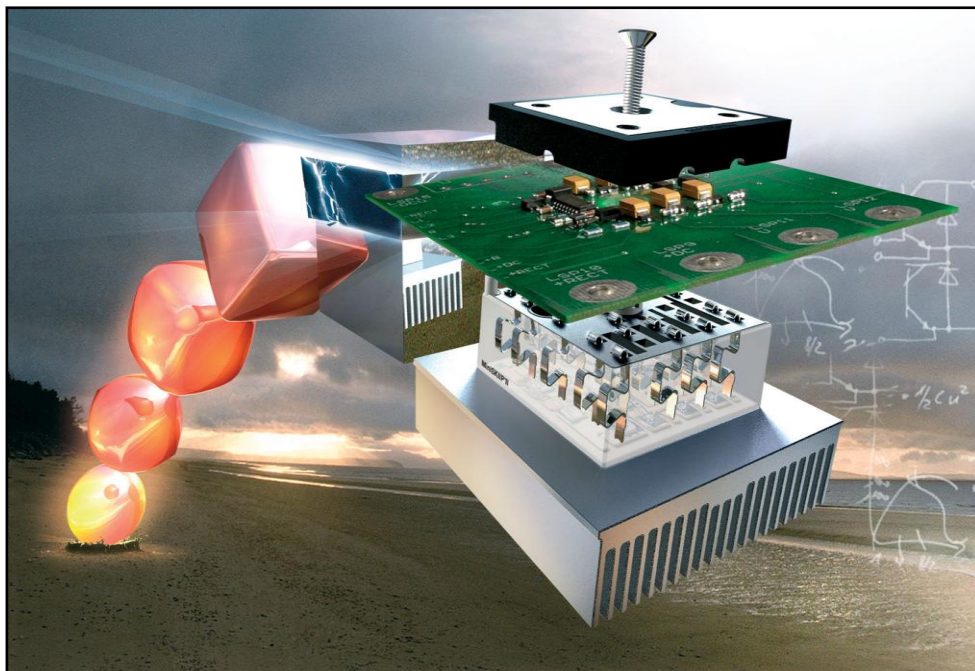


# Technical Information MiniSKiiP<sup>®</sup> II Generation



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## 1 Selection guide

For drive applications, the following tables and diagrams can be used as a first indication (Fig. 3.1 – Fig 3.8). In any case, a verification of the selection with an accurate calculation is mandatory. For an easy calculation, SEMIKRON offers a calculation tool called “SEMISEL”. SEMISEL is a flexible calculation tool based on MathCad. Parameters can be adapted to a broad range of applications. SEMISEL can be found on the SEMIKRON homepage under <http://semisel.semikron.com/>.

### 1.1 Selection for 600 V fast switching applications

The following table (Fig. 1.1 Standard motor shaft powers and maximum switching frequencies) shows the correlation between standard motor power (shaft power) and standard MiniSKiiP® under typical conditions. For the calculation parameters, please refer to Fig. 1.2.

P [kW]	f <sub>sw</sub> (max) [kHz]		
	< 8	8 - 12	> 12
SKiiP 11NAB065V1	25	4	
SKiiP 12NAB065V1		20	4
SKiiP 13NAB065V1		25	12
SKiiP 14NAB065V1			17
SKiiP 25NAB065V1			4
SKiiP 26NAB065V1			25
SKiiP 37NAB065V1			8
SKiiP 38NAB065V1			20
SKiiP 39AC065V1			15
			25
			8
			17
			6

Fig. 1.1 Standard motor shaft powers and maximum switching frequencies

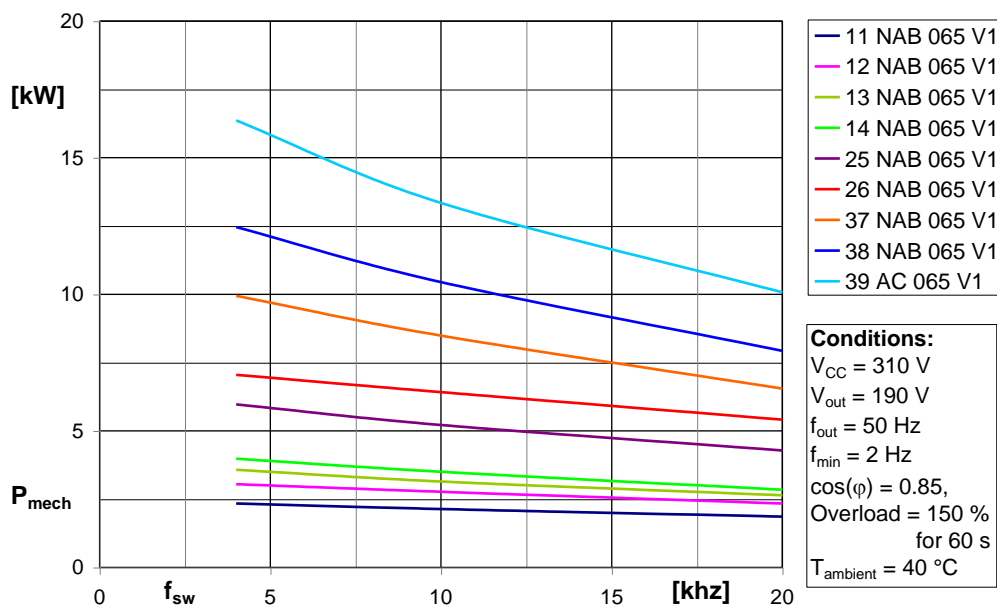


Fig. 1.2 Dependence of max. mechanical power vs. switching frequencies of the inverter for different MiniSKiiP® modules operated with a maximum junction temperature of T<sub>j</sub> = 125°C

## 1.2 Selection for 600 V applications (Trench IGBT)

The following table (Fig. 3.3) shows the correlation between standard motor power (shaft power) and standard MiniSKiiP<sup>®</sup> under typical conditions. For the calculation parameters, please refer to Fig. 3.3).

$f_{sw}(\text{max})$  [kHz]

< 8	8 - 12	> 12
-----	--------	------

P [kW]	1.5	2.2	3	4	5.5	7.5	11	15
SKiiP 11NAB066V1	20+	10						
SKiiP 12NAB066V1		20+	7					
SKiiP 13NAB066V1			14					
SKiiP 14NAB066V1			17	5.5				
SKiiP 25NAB066V1				20+	10			
SKiiP 26NAB066V1					19	7		
SKiiP 27AC066V1						17	5	
SKiiP 28AC066V1						20	9	

Fig. 1.3 Standard motor shaft powers and maximum switching frequencies

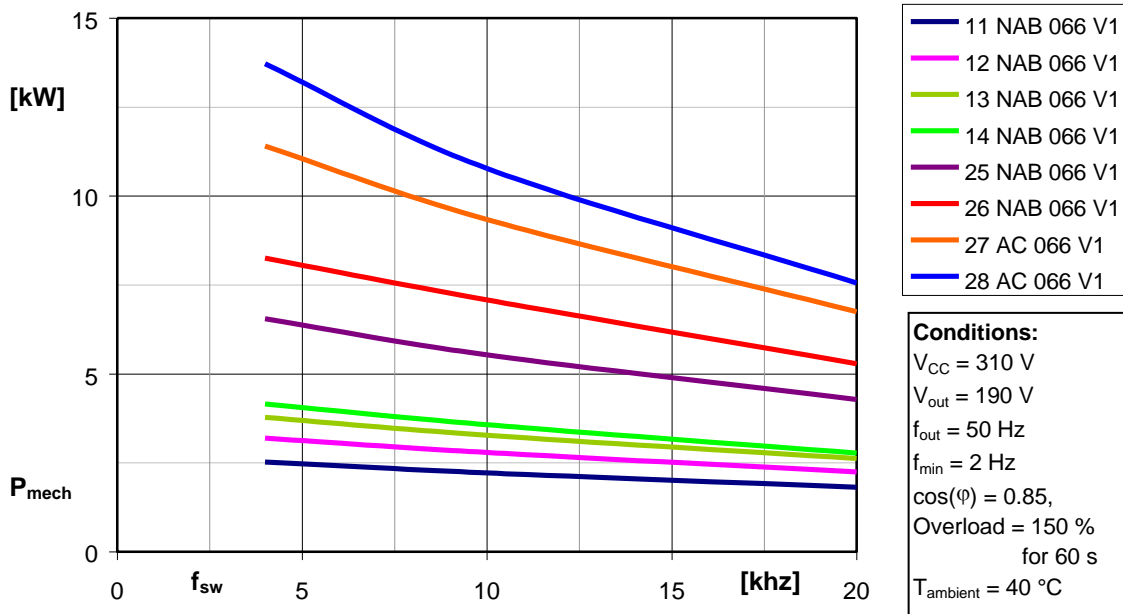


Fig. 1.4 Dependence of max. mechanical power vs. switching frequencies of the inverter for different MiniSKiiP<sup>®</sup> modules operated with a maximum junction temperature of  $T_j = 150^\circ\text{C}$

## 1.3 Selection for 1200 V applications

The following table (Fig. 1.5) shows for which standard motor power (shaft power) which standard MiniSKiiP<sup>®</sup> works proper under typical conditions and switching frequencies. For the calculation parameters, please refer to Fig. 1.6 .

$f_{sw(max)}$ [kHz]	< 8	8 - 12	> 12							
P [kW]	2.2	3	4	5.5	7.5	11	15	18.5	22	30
SKiiP 11AC126V1	19	12	7							
SKiiP 12AC126V1		16	9	6						
SKiiP 13AC126V1		16	10	7						
SKiiP 24AC126V1			19	13	7					
SKiiP 25AC126V1				16	10	6				
SKiiP 26AC126V1				17	11	7	4			
SKiiP 37AC126V1					17	11	7	5		
SKiiP 38AC126V1					18	12	8	6	5	
SKiiP 39AC126V1					19	13	9	7	6	

Fig. 1.5 Standard motor shaft powers and maximum switching frequencies

The dependence of maximum mechanical power versus switching frequencies of the inverter for different MiniSKiiP<sup>®</sup> modules is given in Fig. 1.6 .

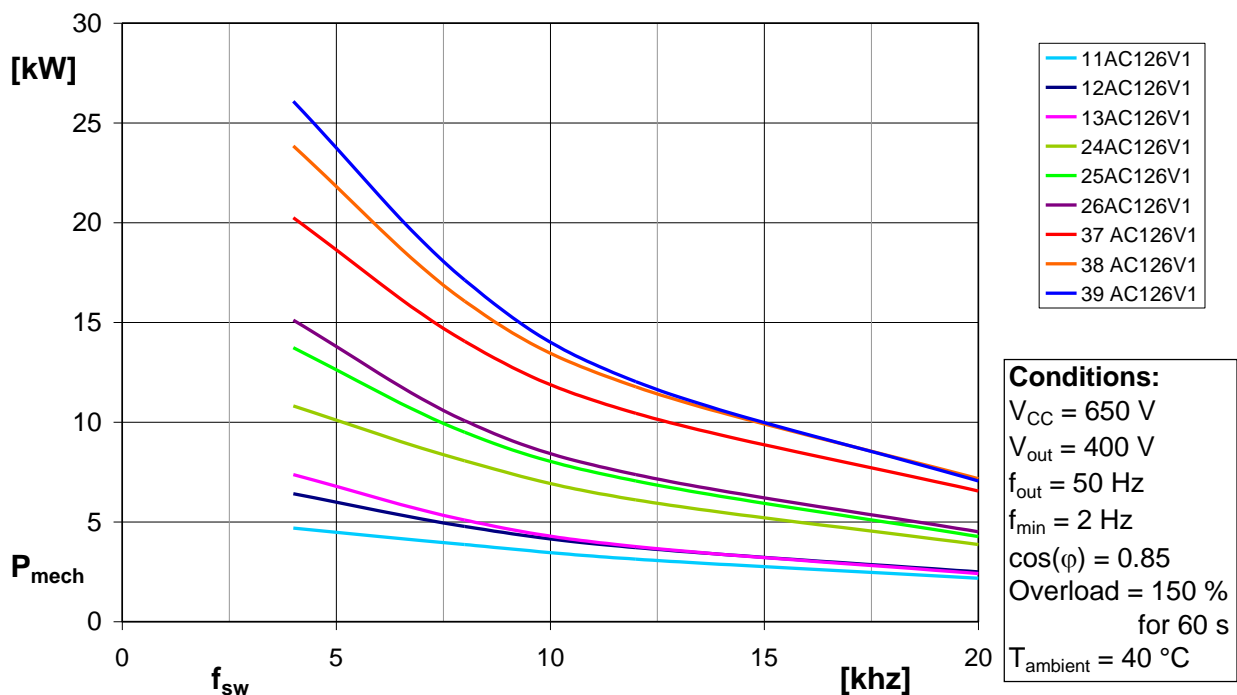


Fig. 1.6 Dependence of max. mechanical power vs. switching frequencies of the inverter for different MiniSKiiP<sup>®</sup> modules operated with a maximum junction temperature of  $T_j = 125^\circ\text{C}$

## 1.4 Selection for 1200V applications (Trench 4 IGBT)

The following table (Fig. 1.7) shows for which standard motor power (shaft power) which standard MiniSKiiP<sup>®</sup> works proper under typical conditions and switching frequencies. For the calculation parameters, please refer to (Fig. 1.8).

$f_{sw(max)}$  [kHz]

< 8	8 - 12	> 12
-----	--------	------

P [kW]	2.2	3	4	5.5	7.5	11	15	18.5	22	30
SKiiP 11AC12T4V1	20+	18	9							
SKiiP 12AC12T4V1		20+	17	9						
SKiiP 13AC12T4V1			18	11	6					
SKiiP 24AC12T4V1				20+	16	7				
SKiiP 25AC12T4V1					17	9	4			
SKiiP 26AC12T4V1					18	10	6			
SKiiP 37AC12T4V1						14	8	5		
SKiiP 38AC12T4V1						17	11	7	6	
SKiiP 39AC12T4V1							13	10	8	4

Fig. 1.7 Standard motor shaft powers and maximum switching frequencies

The dependence of maximum mechanical power versus switching frequencies of the inverter for different MiniSKiiP<sup>®</sup> modules is given in Fig. 1.8.

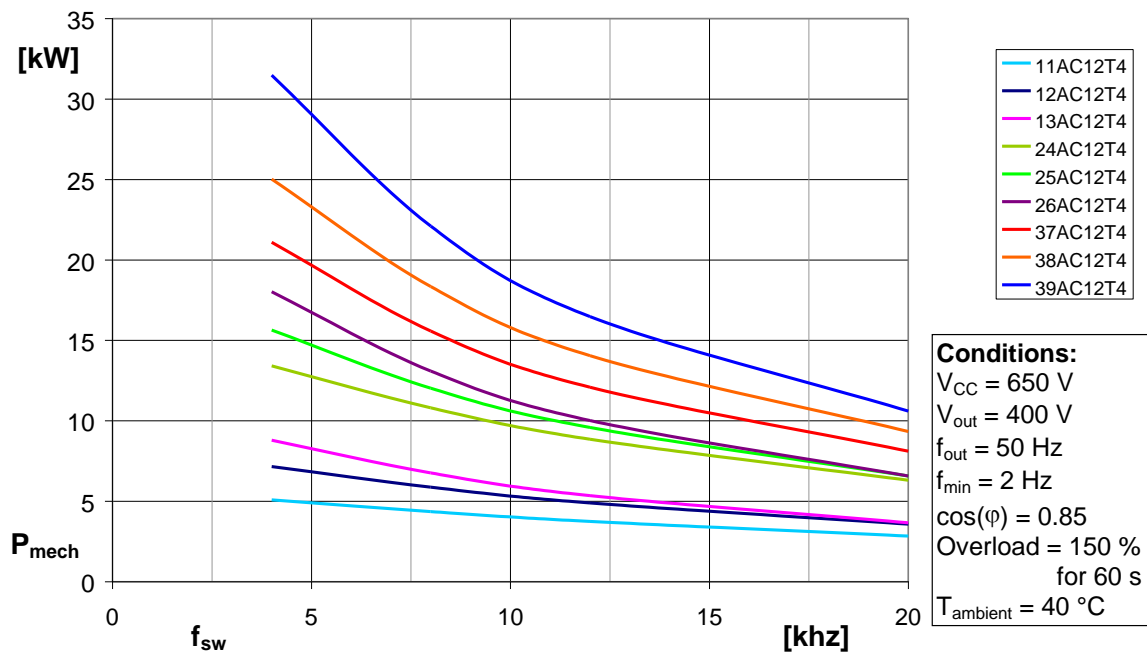


Fig. 1.8 Dependence of max. mechanical power vs. switching frequencies of the inverter for different MiniSKiiP<sup>®</sup> modules operated with a maximum junction temperature of  $T_j = 150^\circ\text{C}$

## 1.5 Selection for 3-level applications (650V Trench IGBT)

The following table (Fig. 1.7) shows the output power rating of 3-level inverters. The output power rating is based on a switching frequency of 3 kHz.

Type designation	I <sub>c,nom</sub> in A	Blocking voltage	P <sub>out,max</sub> in kVA	Housing
SKiiP 26MLI06R6V1	75	650 V	31	MiniSKiiP <sup>®</sup> 2
SKiiP 27MLI06R6V1	100	650 V	41	MiniSKiiP <sup>®</sup> 2
SKiiP 28MLI06R6V2	150	650 V	62	MiniSKiiP <sup>®</sup> 2
SKiiP 39MLI06R6V1	200	650 V	83	MiniSKiiP <sup>®</sup> 3

Fig. 1.7 The output power rating based on a switching frequency of 3 kHz.

## 2 Disclaimer

The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.