MiniSKiiP® 3 PIM — Output Inverter Application — 1200V/100A

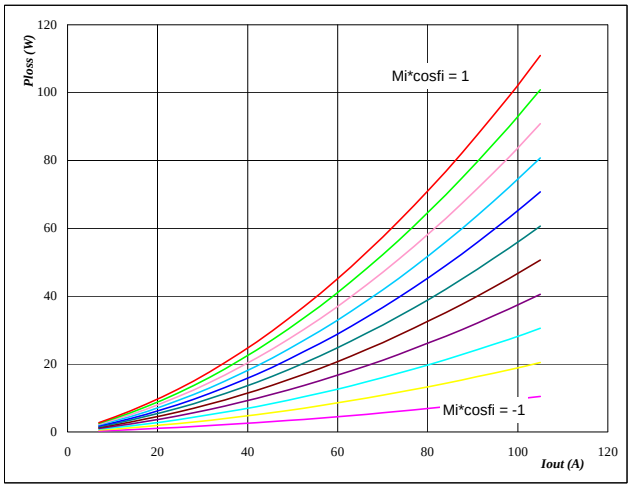
General conditions

3phase SPWM		
V_{GEon}	=	15 V
V_{GEoff}	=	-15 V
R_{gon}	=	4 Ω
R_{goff}	=	4 Ω

Figure 1 — IGBT

Typical average static loss as a function of output current

$P_{loss} = f(I_{out})$



At

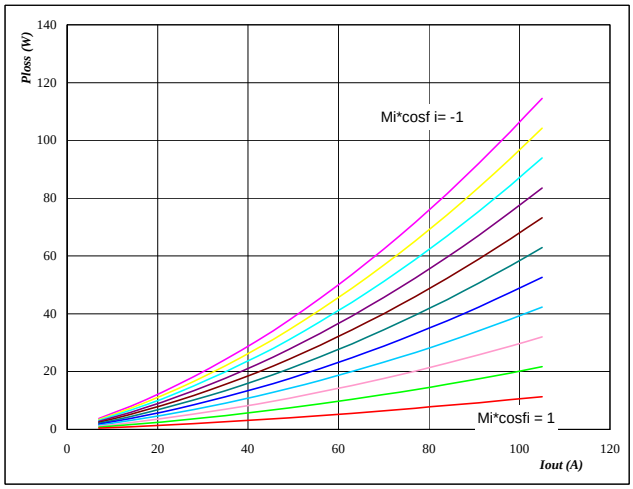
T_j = 151 °C

Mi*cosφ from -1 to 1 in steps of 0,2

Figure 2 — FRED

Typical average static loss as a function of output current

$P_{loss} = f(I_{out})$



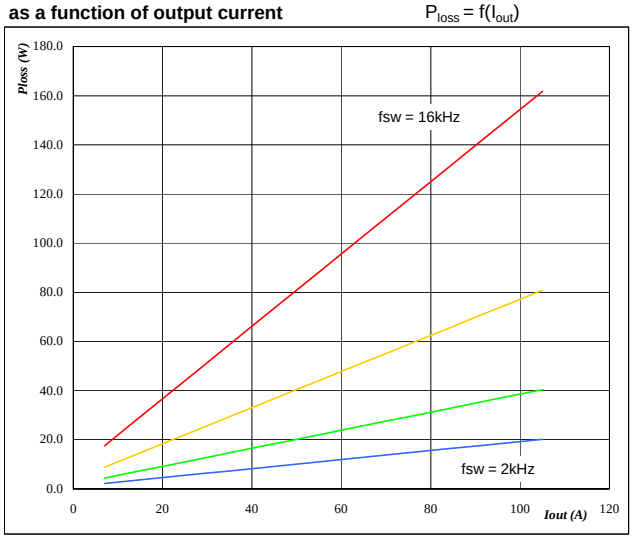
At

T_j = 151 °C

Mi*cosφ from -1 to 1 in steps of 0,2

Figure 3 — IGBT

Typical average switching loss as a function of output current $P_{loss} = f(I_{out})$



At

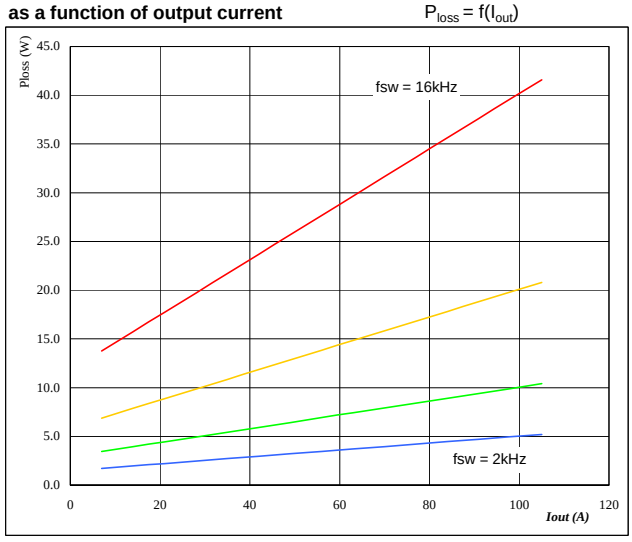
T_j = 151 °C

DC link = 600 V

f_{sw} from 2 kHz to 16 kHz in steps of factor 2

Figure 4 — FRED

Typical average switching loss as a function of output current $P_{loss} = f(I_{out})$



At

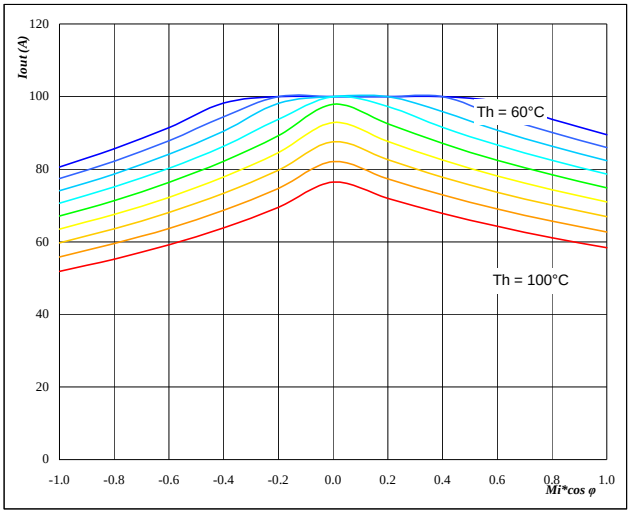
T_j = 151 °C

DC link = 600 V

f_{sw} from 2 kHz to 16 kHz in steps of factor 2

Figure 5 Phase

Typical available 50Hz output current as a function Mi*cosφ $I_{out} = f(Mi*\cos\varphi)$

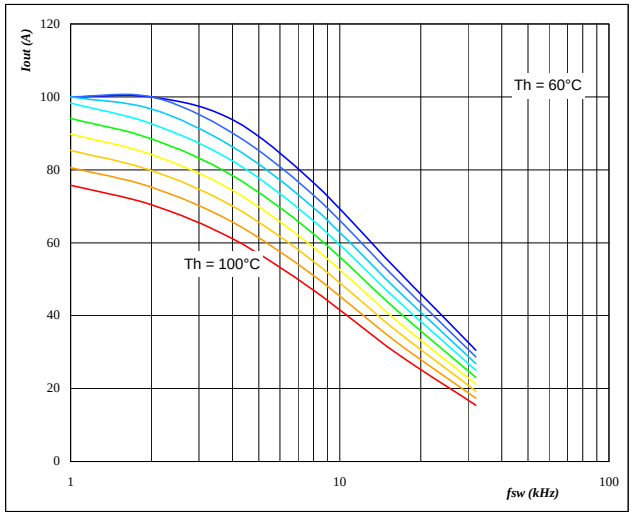


At

T_j =	151	°C
DC link =	600	V
f_{sw} =	4	kHz
T_h from	60 °C to 100 °C in steps of 5 °C	

Figure 6 Phase

Typical available 50Hz output current as a function of switching frequency $I_{out} = f(f_{sw})$

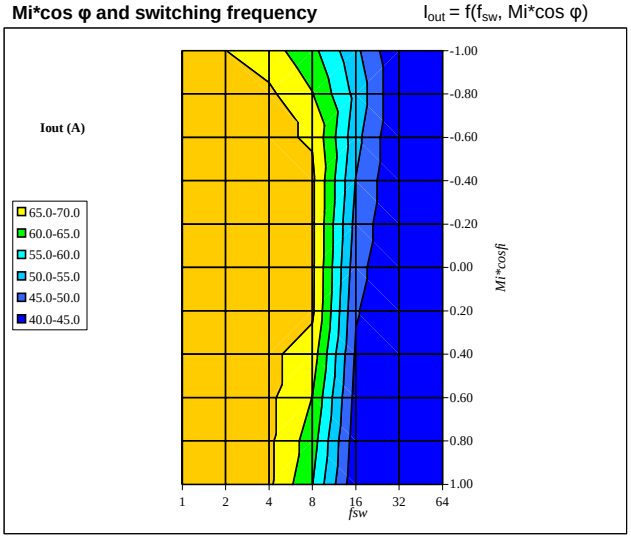


At

T_j =	151	°C
DC link =	600	V
Mi*cos φ =	0.8	
T_h from	60 °C to 100 °C in steps of 5 °C	

Figure 7 Phase

Typical available 50Hz output current as a function of Mi*cos φ and switching frequency $I_{out} = f(f_{sw}, Mi*\cos\varphi)$

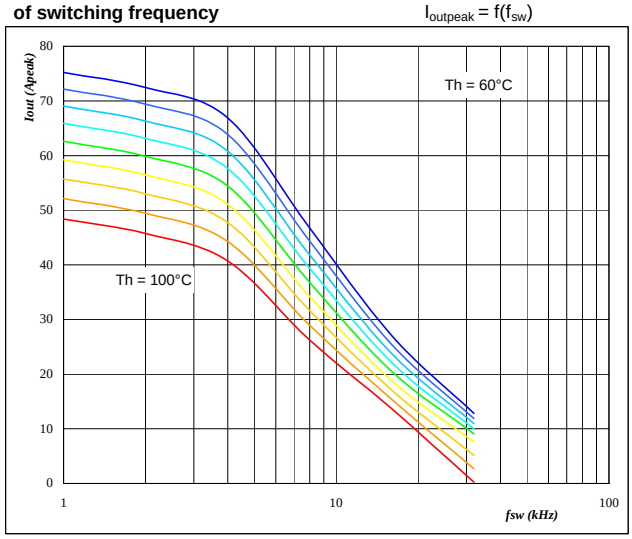


At

T_j =	151	°C
DC link =	600	V
T_h =	80	°C

Figure 8 Phase

Typical available 0Hz output current as a function of switching frequency $I_{outpeak} = f(f_{sw})$

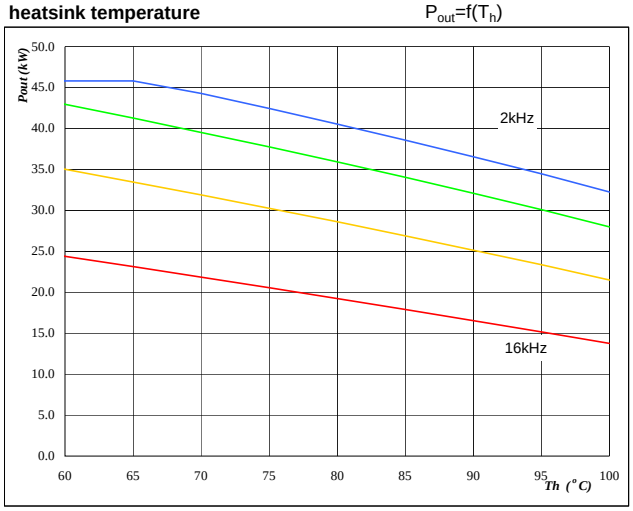


At

T_j =	151	°C
DC link =	600	V
T_h from	60 °C to 100 °C in steps of 5 °C	
Mi =	0	

Figure 9 Inverter

Typical available peak output power as a function of heatsink temperature $P_{out}=f(T_h)$

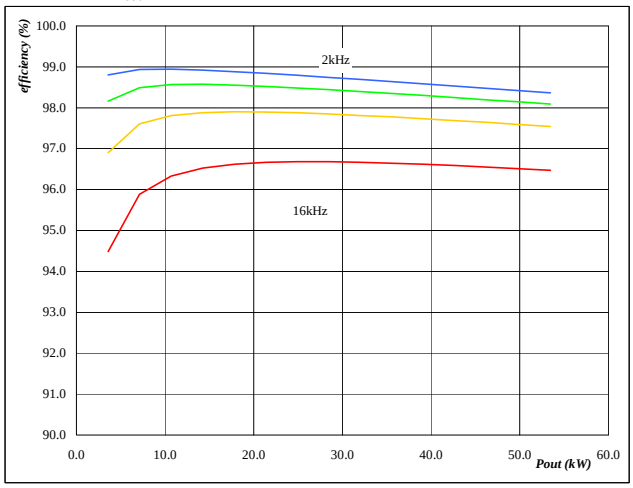


At

T_j =	151	°C
DC link =	600	V
Mi =	1	
cos φ=	0.80	
f_{sw} from	2 kHz to 16 kHz in steps of factor 2	

Figure 10 Inverter

Typical efficiency as a function of output power efficiency=f(P_{out})

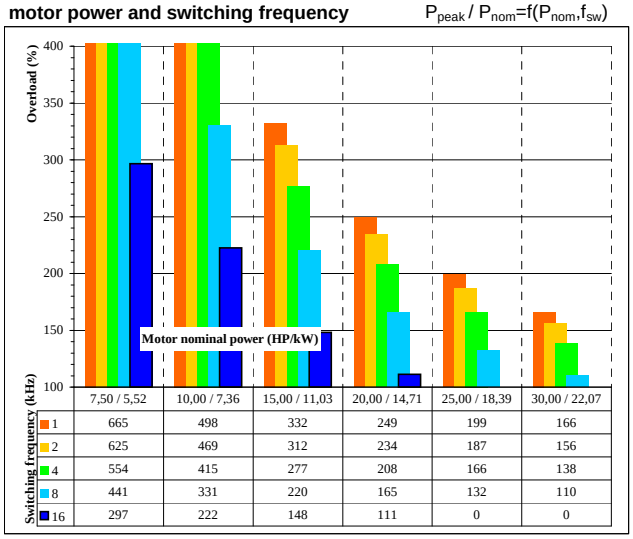


At

T_j =	151	°C
DC link =	600	V
Mi =	1	
cos φ=	0.80	
f_{sw} from	2 kHz to 16 kHz in steps of factor 2	

Figure 11 Inverter

Typical available overload factor as a function of motor power and switching frequency $P_{peak} / P_{nom}=f(P_{nom},f_{sw})$



Switching frequency (kHz)	7,50 / 5,52	10,00 / 7,36	15,00 / 11,03	20,00 / 14,71	25,00 / 18,39	30,00 / 22,07
1	665	498	332	249	199	166
2	625	469	312	234	187	156
4	554	415	277	208	166	138
8	441	331	220	165	132	110
16	297	222	148	111	0	0

At

T_j =	151	°C
DC link =	600	V
Mi =	1	
cos φ=	0.8	
f_{sw} from	1 kHz to 16kHz in steps of factor 2	
T_h =	80	°C
Motor eff =	0.85	