*flow*3xPHASE SiC — Output Inverter Application — 1200 V/80 mΩ

General conditions

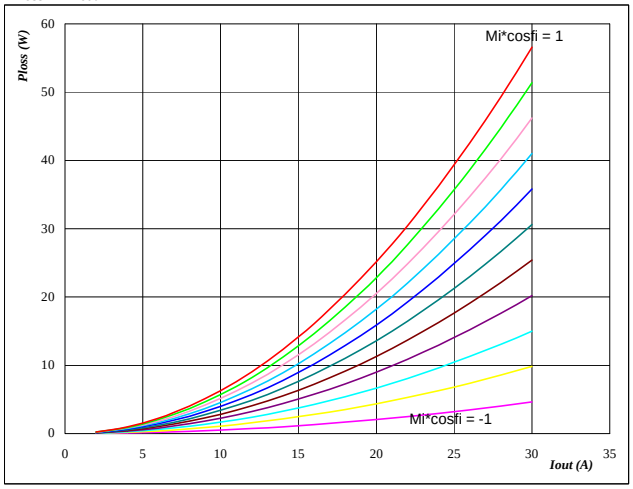
3phase SPWM		
V_{GEon}	=	20 V
V_{GEoff}	=	-5 V
R_{gon}	=	4 Ω
R_{goff}	=	4 Ω

Splitted Configuration

Figure 1 MOSFET

Typical average static loss as a function of output current

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



At

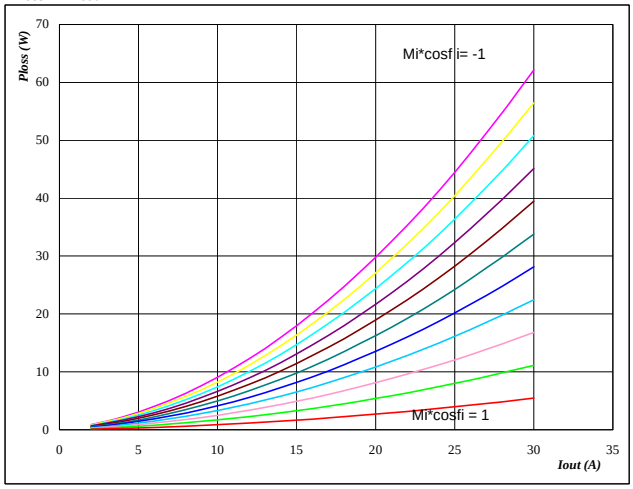
T_j = 126 ℃

Mi*cosφ from -1 to 1 in steps of 0,2

Figure 2 FWD

Typical average static loss as a function of output current

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



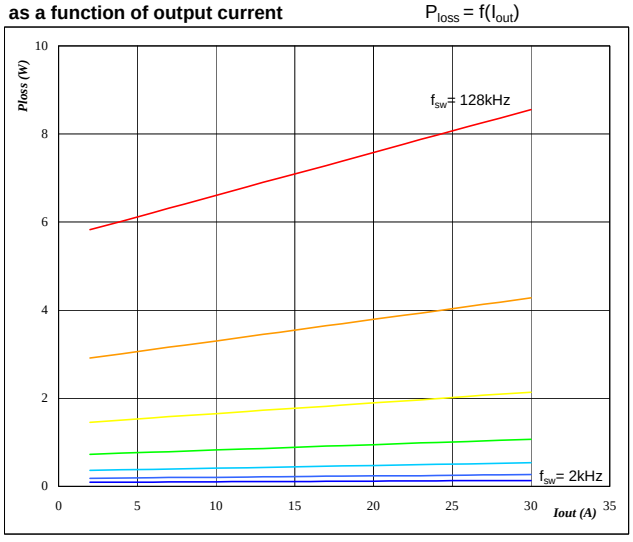
At

T_j = 126 ℃

Mi*cosφ from -1 to 1 in steps of 0,2

Figure 3 MOSFET

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



At

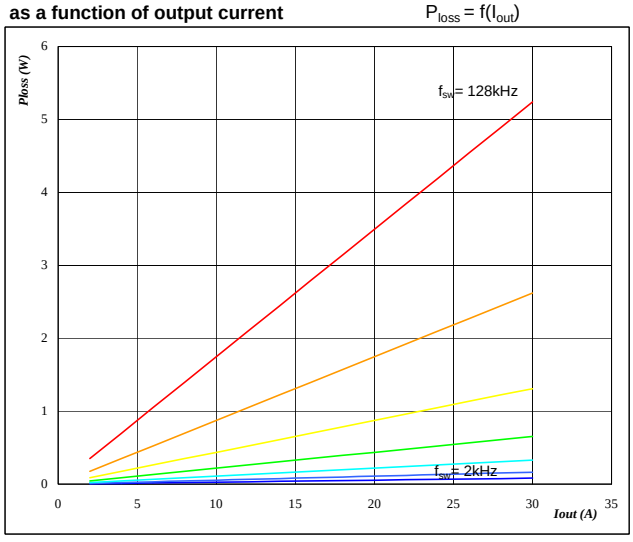
T_j = 126 ℃

DC link = 700 V

f_{sw} from 2 kHz to 128 kHz in steps of factor 2

Figure 4 FWD

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



At

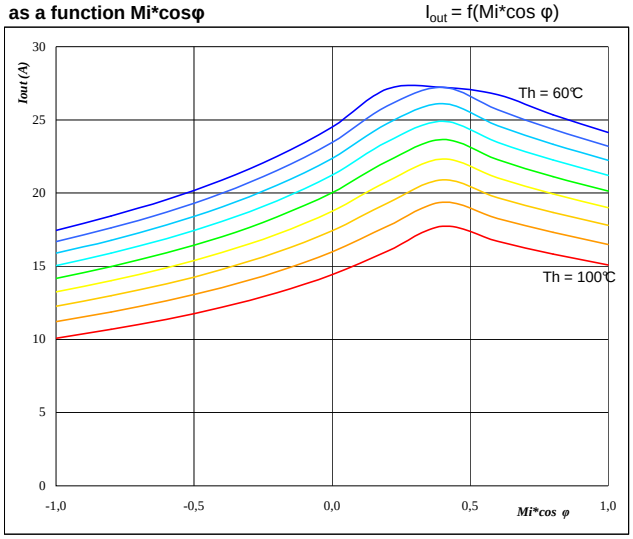
T_j = 126 ℃

DC link = 700 V

f_{sw} from 2 kHz to 128 kHz in steps of factor 2

Figure 5 Phase

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

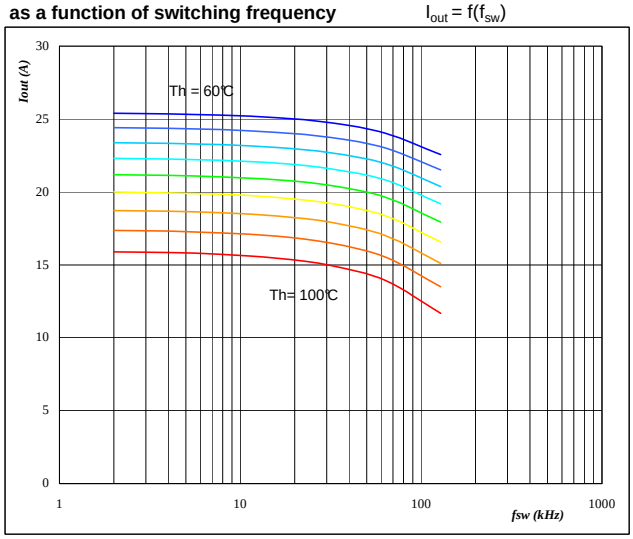


At

T_j =	126	℃
DC link =	700	V
f_{sw} =	4	kHz
T_h from	60 ℃ to 100 ℃ in steps of 5 ℃	

Figure 6 Phase

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

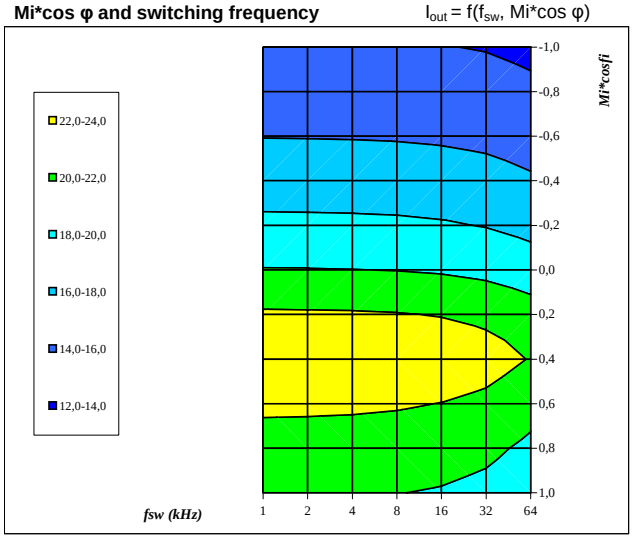


At

T_j =	126	℃
DC link =	700	V
Mi*cos φ =	0,8	
T_h from	60 ℃ to 100 ℃ in steps of 5 ℃	

Figure 7 Phase

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

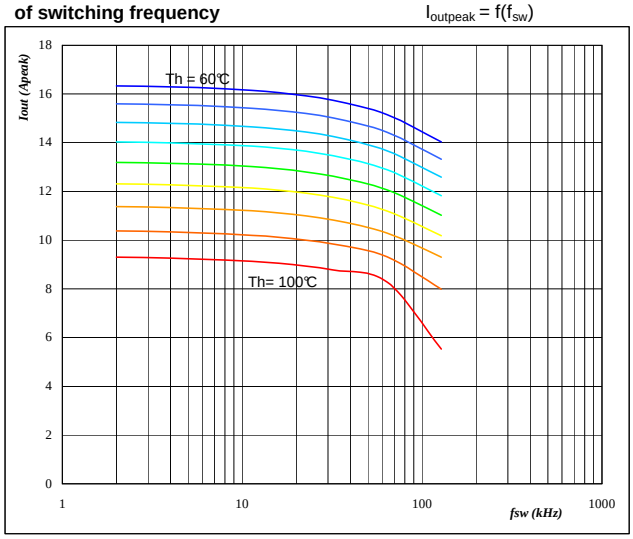


At

T_j =	126	℃
DC link =	700	V
T_h =	80	℃

Figure 8 Phase

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

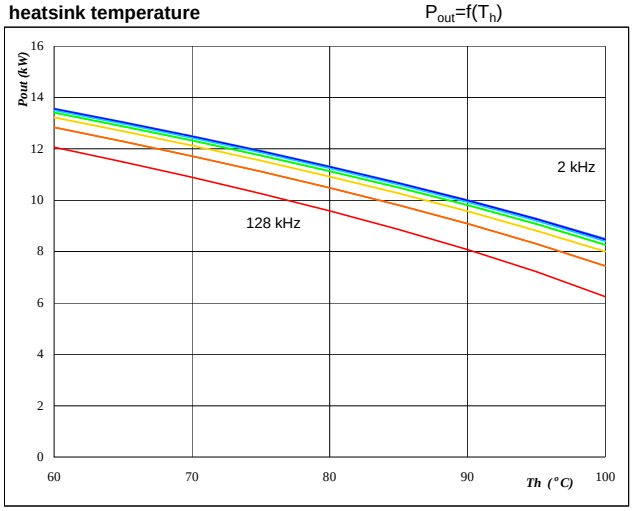


At

T_j =	126	℃
DC link =	700	V
T_h from	60 ℃ to 100 ℃ in steps of 5 ℃	
Mi =	0	

Figure 9 Inverter

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

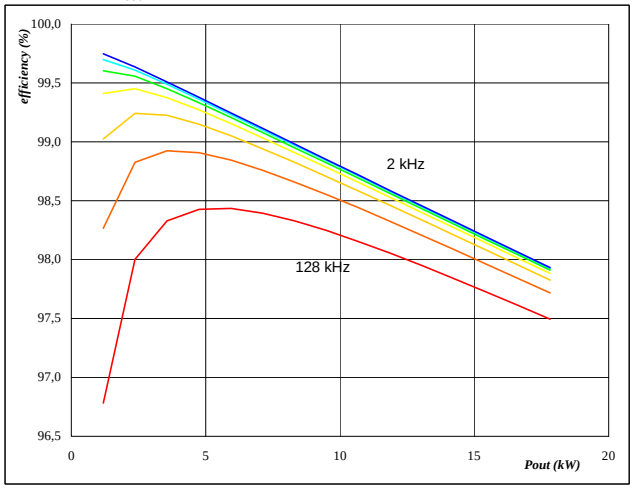


At

T_j =	126	℃
DC link =	700	V
Mi =	1	
cos φ=	0,80	
f_{sw} from	2 kHz to 128 kHz in steps of factor 2	

Figure 10 Inverter

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

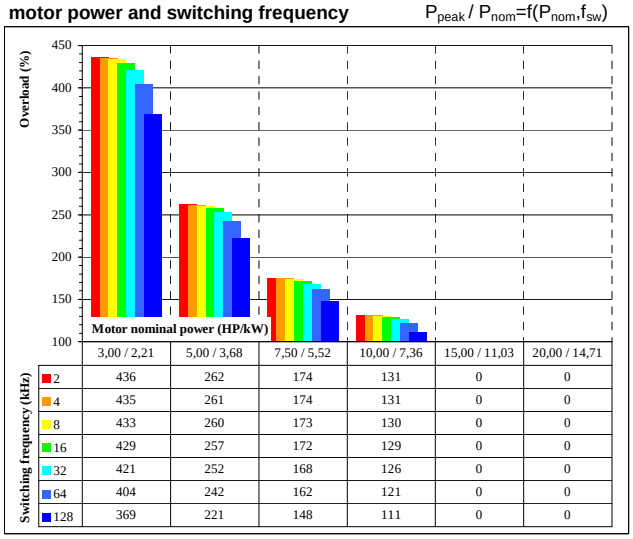


At

T_j =	126	℃
DC link =	700	V
Mi =	1	
cos φ=	0,80	
f_{sw} from	2 kHz to 128 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)	3,00 / 2,21	5,00 / 3,68	7,50 / 5,52	10,00 / 7,36	15,00 / 11,03	20,00 / 14,71
2	436	262	174	131	0	0
4	435	261	174	131	0	0
8	433	260	173	130	0	0
16	429	257	172	129	0	0
32	421	252	168	126	0	0
64	404	242	162	121	0	0
128	369	221	148	111	0	0

At

T_j =	126	℃
DC link =	700	V
Mi =	1	
cos φ=	0,8	
f_{sw} from	2 kHz to 128kHz in steps of factor 2	
T_h =	80	℃
Motor eff =	0,85	