

General conditions
3phase SPWM

$V_{GEon} = 16 \text{ V}$

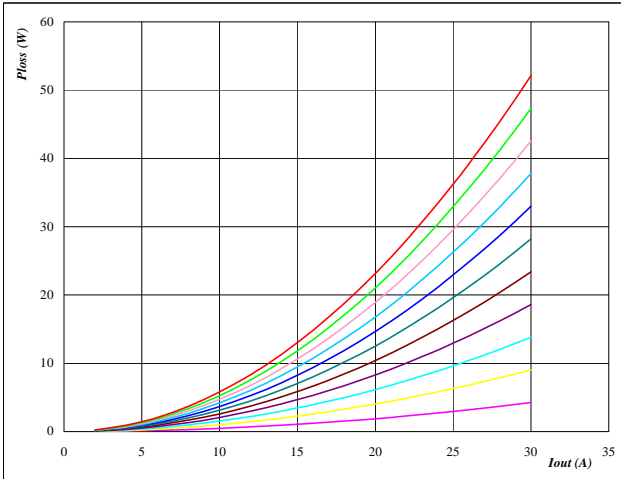
$V_{GEoff} = -8 \text{ V}$

$R_{gon} = 1 \text{ } \Omega$

$R_{goff} = 1 \text{ } \Omega$

Half Bridge Configuration
Figure 1
MOSFET
Typical average static loss as a function of output current

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

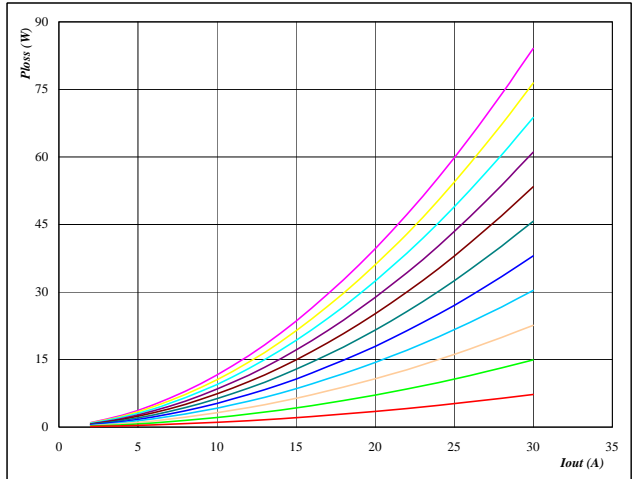

At

$T_j = 125 \text{ } ^\circ\text{C}$

 $M_i \cdot \cos\phi$ from -1 to 1 in steps of 0,2

Figure 2
FWD
Typical average static loss as a function of output current

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

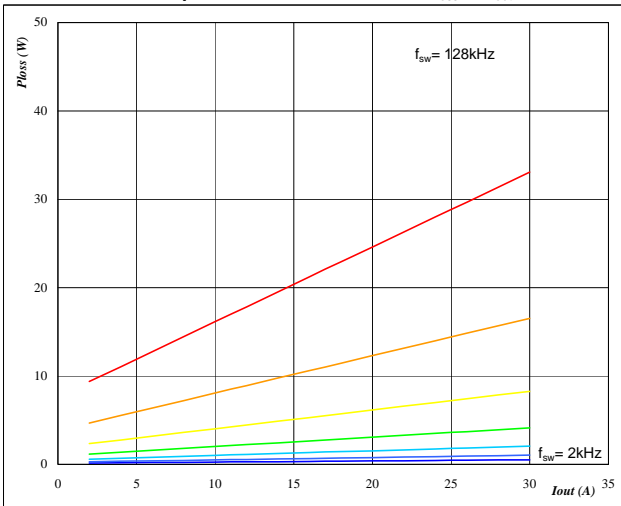

At

$T_j = 125 \text{ } ^\circ\text{C}$

 $M_i \cdot \cos\phi$ 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

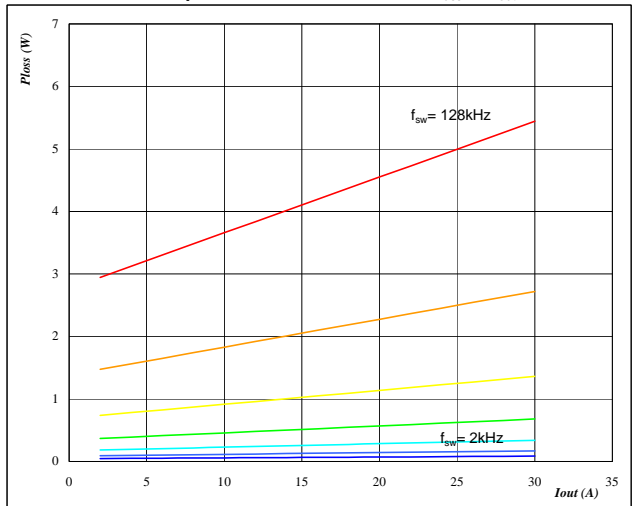
$T_j = 125 \text{ } ^\circ\text{C}$

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

$T_j = 125 \text{ } ^\circ\text{C}$

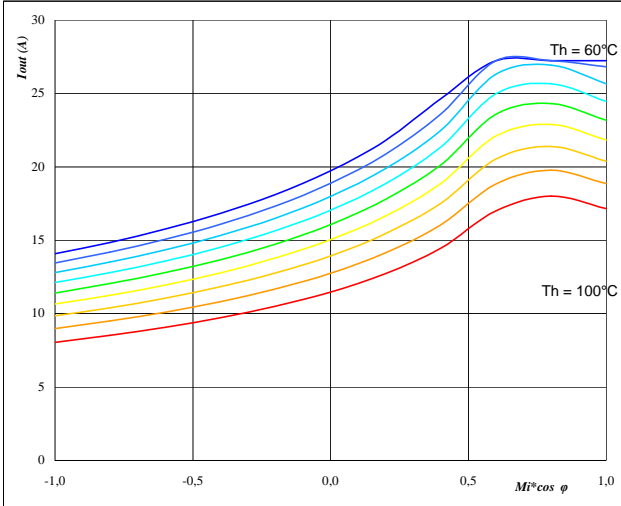
DC link = 700 V

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

Figure 5 Phase

Typical available 50Hz output current as a function $Mi \cdot \cos \phi$

$$I_{out} = f(Mi \cdot \cos \phi)$$

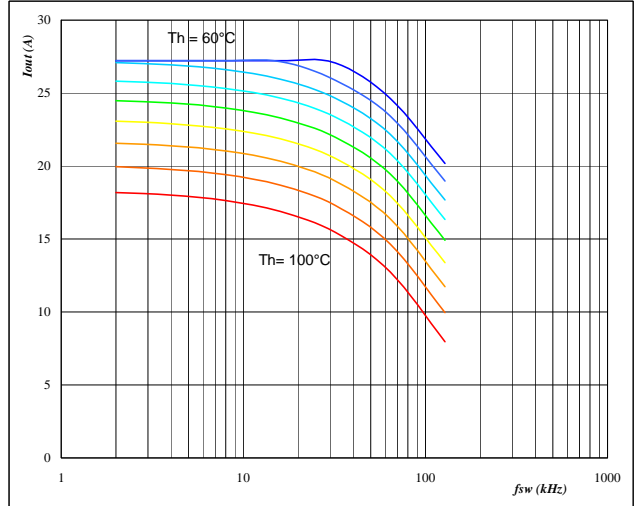


At
 $T_j = 125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $f_{sw} = 4 \text{ kHz}$
 T_h from 60 °C to 100 °C in steps of 5 °C

Figure 6 Phase

Typical available 50Hz output current as a function of switching frequency

$$I_{out} = f(f_{sw})$$

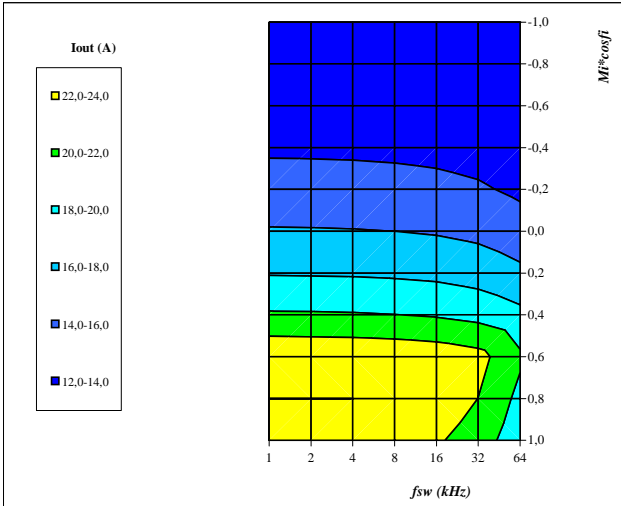


At
 $T_j = 125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $Mi \cdot \cos \phi = 0,8$
 T_h from 60 °C to 100 °C in steps of 5 °C

Figure 7 Phase

Typical available 50Hz output current as a function of $Mi \cdot \cos \phi$ and switching frequency

$$I_{out} = f(f_{sw}, Mi \cdot \cos \phi)$$

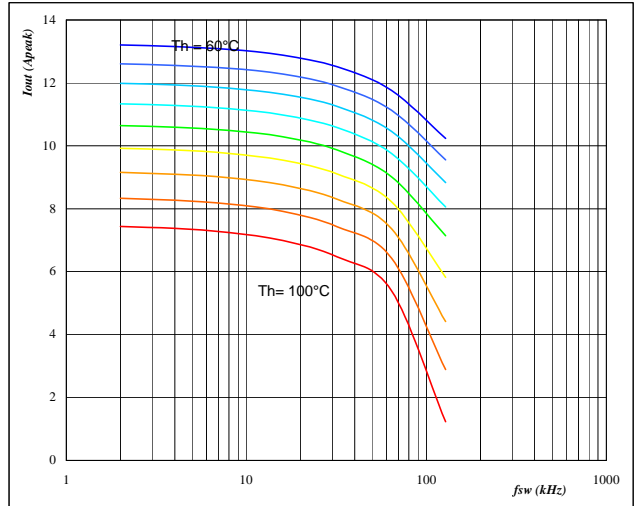


At
 $T_j = 125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $T_h = 80 \text{ } ^\circ\text{C}$

Figure 8 Phase

Typical available 0Hz output current as a function of switching frequency

$$I_{outpeak} = f(f_{sw})$$

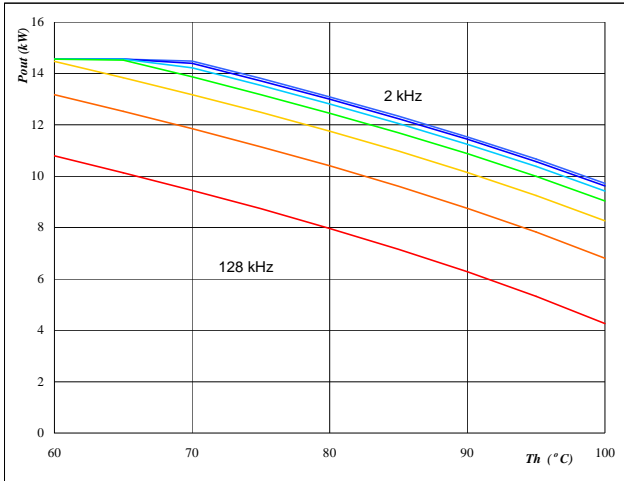


At
 $T_j = 125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 T_h from 60 °C to 100 °C in steps of 5 °C
 $Mi = 0$

flow3xPHASE-SiC Output Inverter Application 1200V / 80mW

Figure 9 Inverter

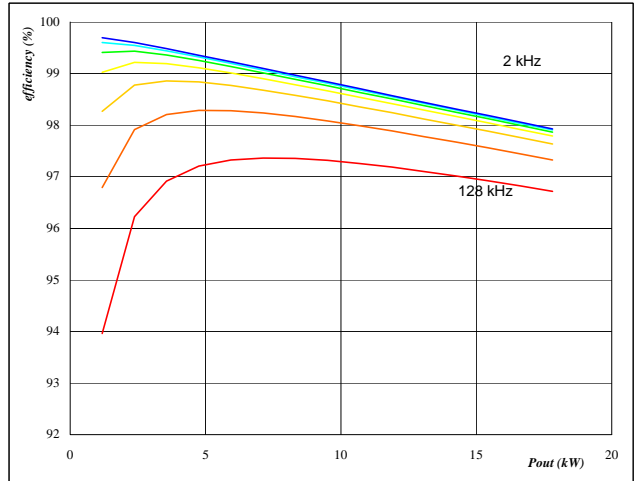
Typical available peak output power as a function of heatsink temperature $P_{out}=f(T_h)$



At
 $T_j = 125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $M_i = 1$
 $\cos \varphi = 0,80$
 f_{sw} from 2 kHz to 128 kHz in steps of factor 2

Figure 10 Inverter

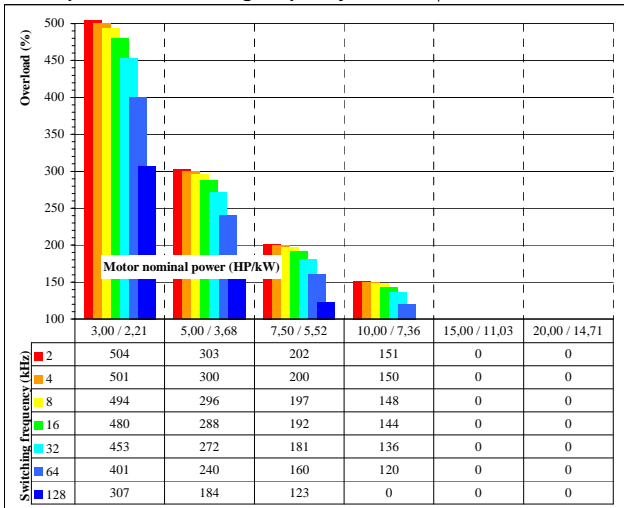
Typical efficiency as a function of output power $\text{efficiency}=f(P_{out})$



At
 $T_j = 125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $M_i = 1$
 $\cos \varphi = 0,80$
 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 $P_{peak} / P_{nom}=f(P_{nom}, f_{sw})$



At
 $T_j = 125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $M_i = 1$
 $\cos \varphi = 0,8$
 f_{sw} from 2 kHz to 128kHz in steps of factor 2
 $T_h = 80 \text{ } ^\circ\text{C}$
 Motor eff = 0,85

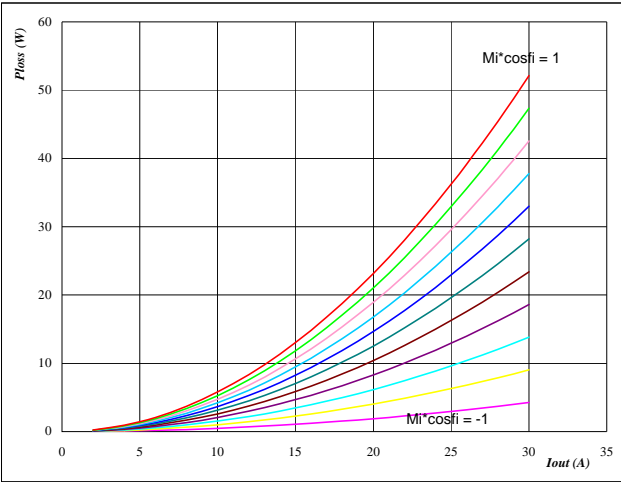
flow3xPHASE-SiC Output Inverter Application 1200V/80mΩ

General conditions
3phase SPWM
 $V_{GEon} = 16\text{ V}$
 $V_{GEoff} = -8\text{ V}$
 $R_{gon} = 1\ \Omega$
 $R_{goff} = 1\ \Omega$

Split Configuration

Figure 1 MOSFET

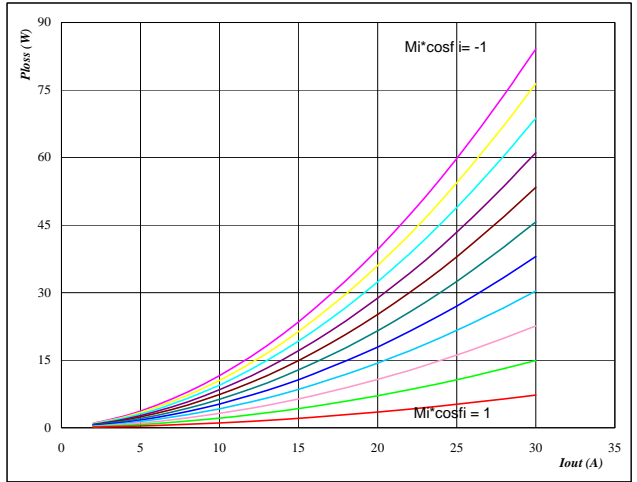
Typical average static loss as a function of output current
 $P_{loss} = f(I_{out})$



At
 $T_j = 125\text{ }^\circ\text{C}$
 $M_i \cdot \cos\phi$ from -1 to 1 in steps of 0,2

Figure 2 FWD

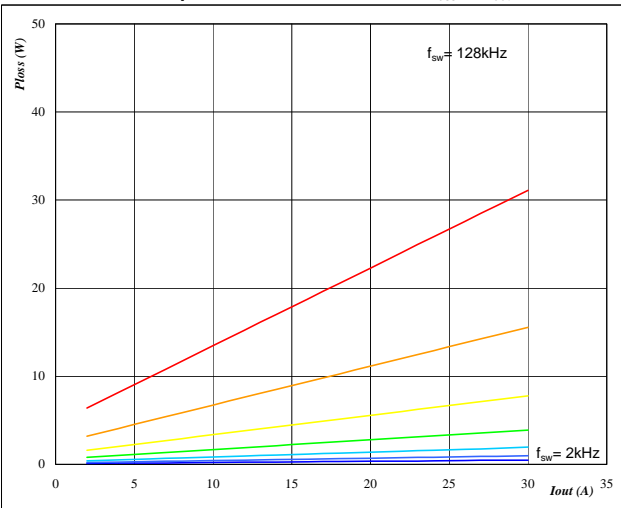
Typical average static loss as a function of output current
 $P_{loss} = f(I_{out})$



At
 $T_j = 125\text{ }^\circ\text{C}$
 $M_i \cdot \cos\phi$ from -1 to 1 in steps of 0,2

Figure 3 MOSFET

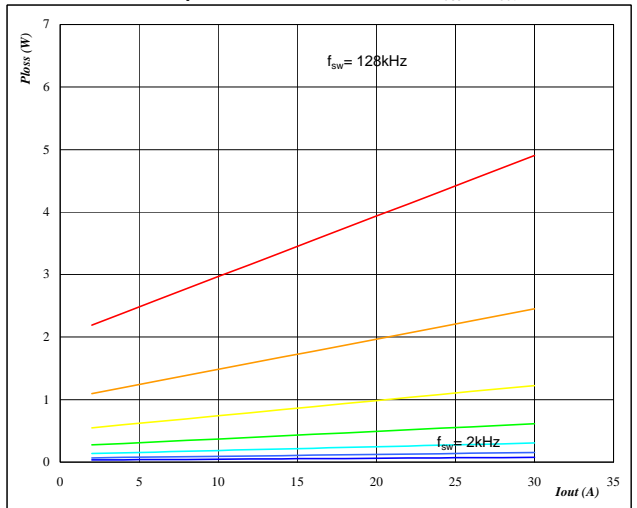
Typical average switching loss as a function of output current
 $P_{loss} = f(I_{out})$



At
 $T_j = 125\text{ }^\circ\text{C}$
 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
 $P_{loss} = f(I_{out})$

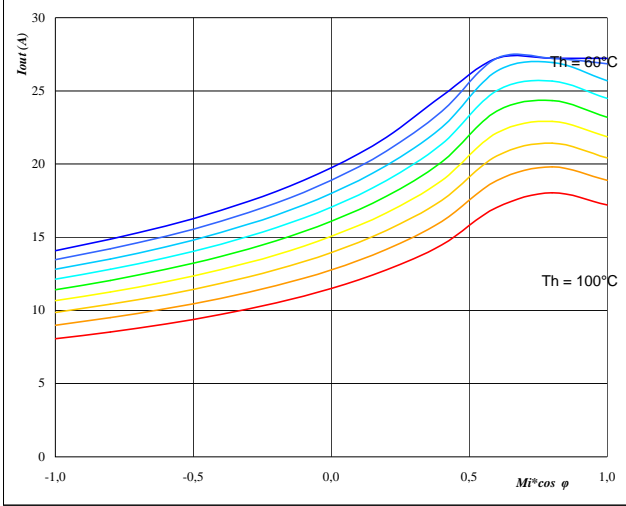


At
 $T_j = 125\text{ }^\circ\text{C}$
 DC link = 700 V
 f_{sw} from 2 kHz to 128 kHz in steps of factor 2

flow3xPHASE-SiC Output Inverter Application 1200V / 80mW

Figure 5 Phase

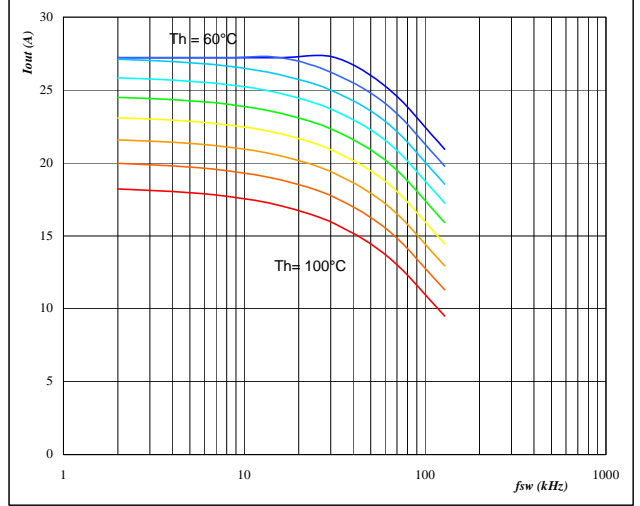
Typical available 50Hz output current as a function $Mi \cdot \cos \phi$



At
 $T_j = 125$ °C
 DC link = 700 V
 $f_{sw} = 4$ kHz
 T_h from 60 °C to 100 °C in steps of 5 °C

Figure 6 Phase

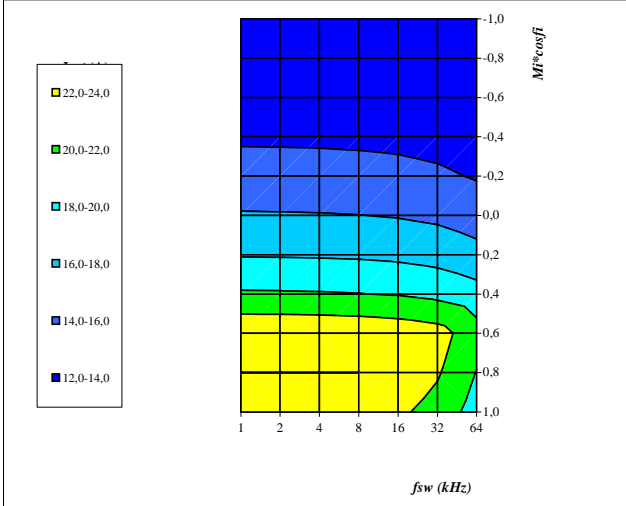
Typical available 50Hz output current as a function of switching frequency



At
 $T_j = 125$ °C
 DC link = 700 V
 $Mi \cdot \cos \phi = 0,8$
 T_h from 60 °C to 100 °C in steps of 5 °C

Figure 7 Phase

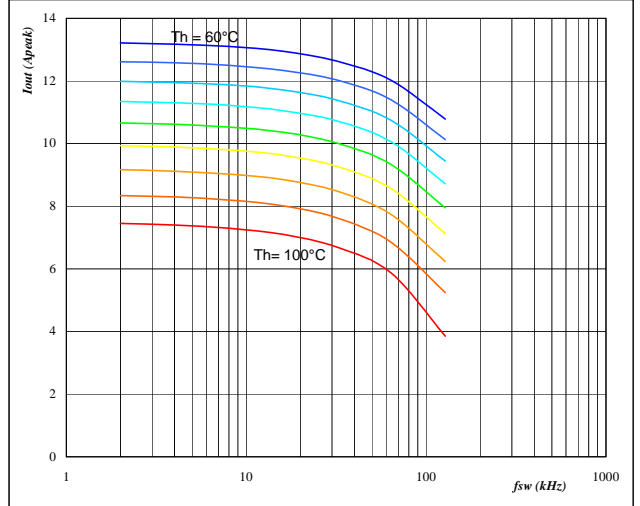
Typical available 50Hz output current as a function of $Mi \cdot \cos \phi$ and switching frequency



At
 $T_j = 125$ °C
 DC link = 700 V
 $T_h = 80$ °C

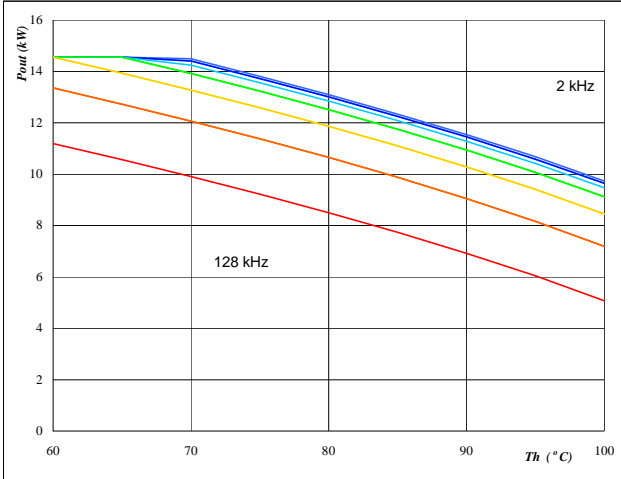
Figure 8 Phase

Typical available 0Hz output current as a function of switching frequency



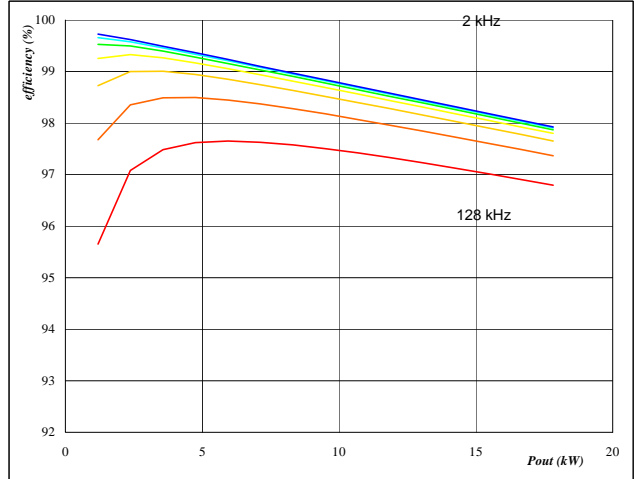
At
 $T_j = 125$ °C
 DC link = 700 V
 T_h from 60 °C to 100 °C in steps of 5 °C
 $Mi = 0$

Figure 9 Inverter

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


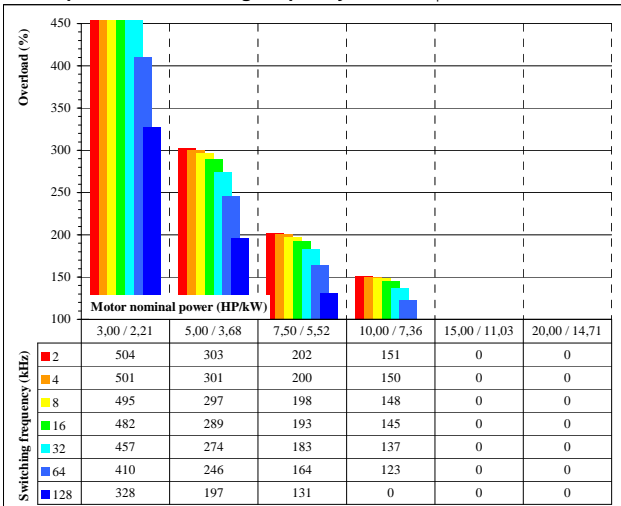
At
 $T_j = 125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $M_i = 1$
 $\cos \varphi = 0,80$
 f_{sw} from 2 kHz to 128 kHz in steps of factor 2

Figure 10 Inverter

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


At
 $T_j = 125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $M_i = 1$
 $\cos \varphi = 0,80$
 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
 $P_{peak} / P_{nom}=f(P_{nom}, f_{sw})$


At
 $T_j = 125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $M_i = 1$
 $\cos \varphi = 0,8$
 f_{sw} from 2 kHz to 128kHz in steps of factor 2
 $T_h = 80 \text{ } ^\circ\text{C}$
 Motor eff = 0,85