

General conditions
3phase SPWM

$$V_{GEon} = 15 \text{ V}$$

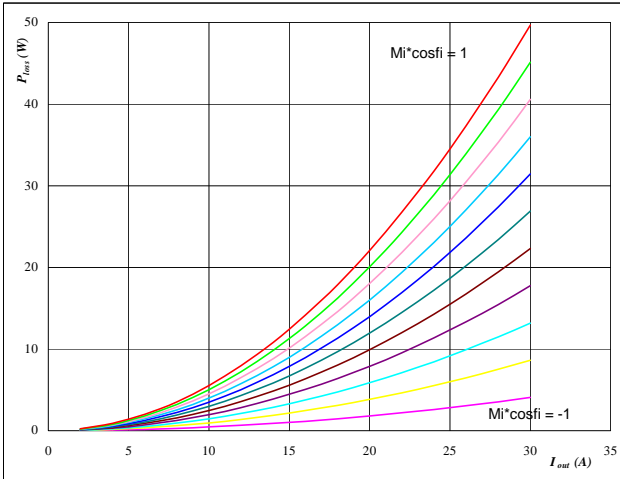
$$V_{GEoff} = 0 \text{ V}$$

$$R_{gon} = 16 \ \Omega$$

$$R_{goff} = 8 \ \Omega$$

Figure 1
IGBT
Typical average static loss as a function of output current

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

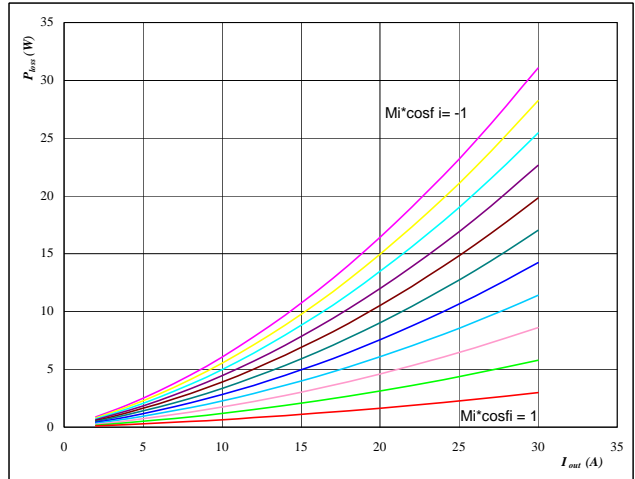

At

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

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

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

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

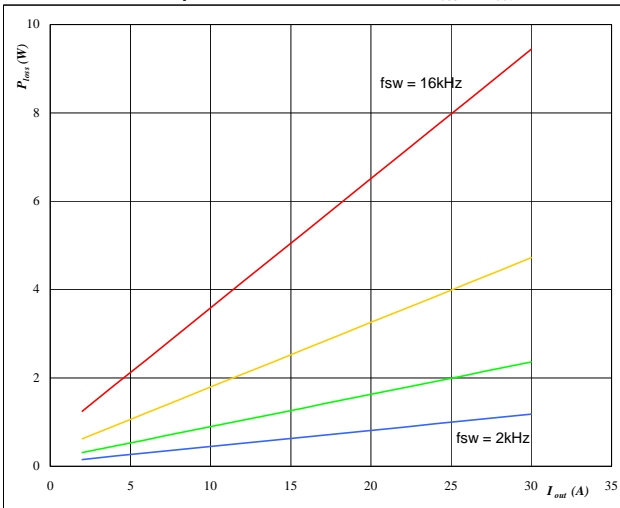

At

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

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

Figure 3
IGBT
Typical average switching loss as a function of output current

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


At

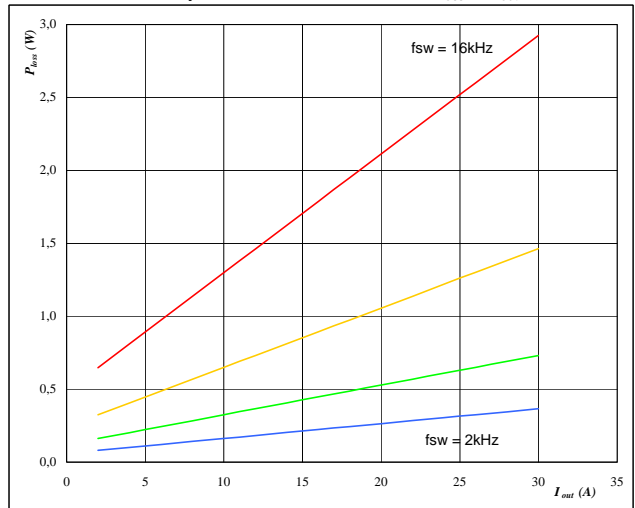
$$T_j = 125 \text{ }^\circ\text{C}$$

$$\text{DC link} = 320 \text{ V}$$

 f_{sw} from 2 kHz to 16 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

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

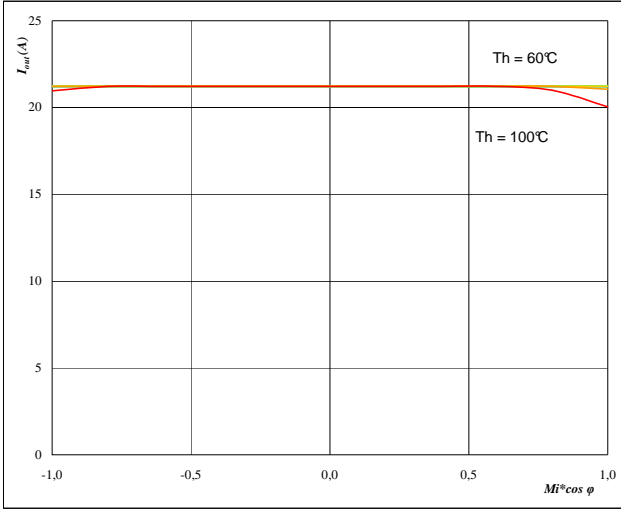
$$\text{DC link} = 320 \text{ V}$$

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

Figure 5 Phase

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

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

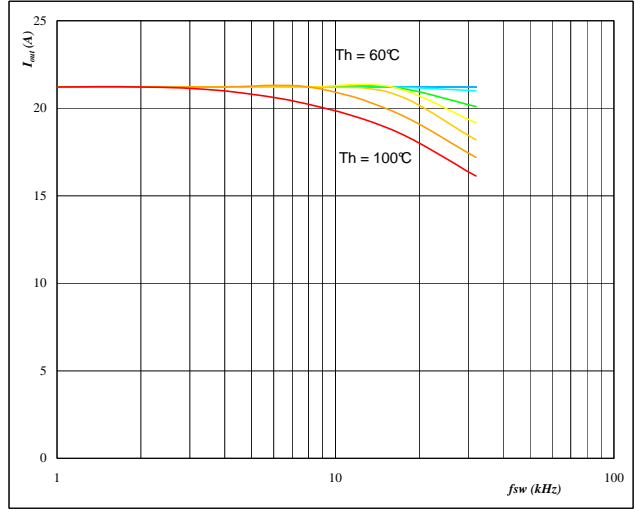


At
 $T_j = 125 \text{ }^\circ\text{C}$
 DC link = 320 V
 $f_{sw} = 4 \text{ kHz}$
 T_h from 60 °C to 100 °C in steps of 5 °C

Figure 6 Phase

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

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

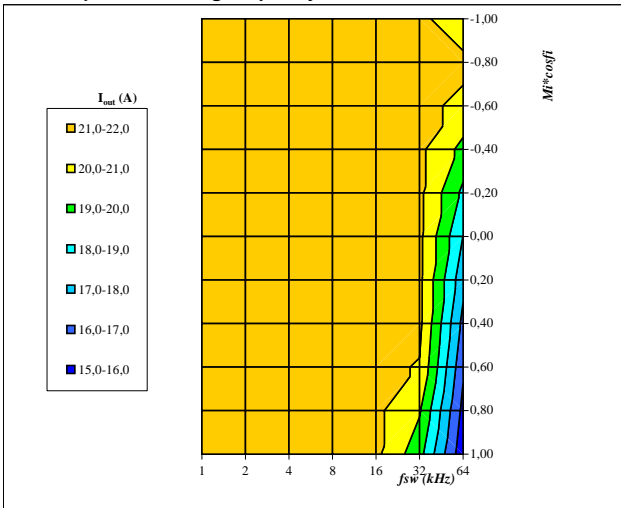


At
 $T_j = 125 \text{ }^\circ\text{C}$
 DC link = 320 V
 $Mi \cdot \cos \phi = 0,8$
 T_h from 60 °C to 100 °C in steps of 5 °C

Figure 7 Phase

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

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

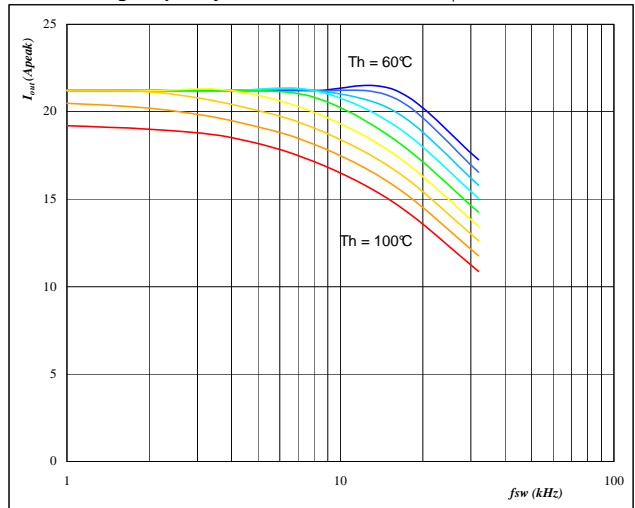


At
 $T_j = 125 \text{ }^\circ\text{C}$
 DC link = 320 V
 $T_h = 80 \text{ }^\circ\text{C}$

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 = 320 V
 T_h from 60 °C to 100 °C in steps of 5 °C
 $Mi = 0$

Figure 9 Inverter

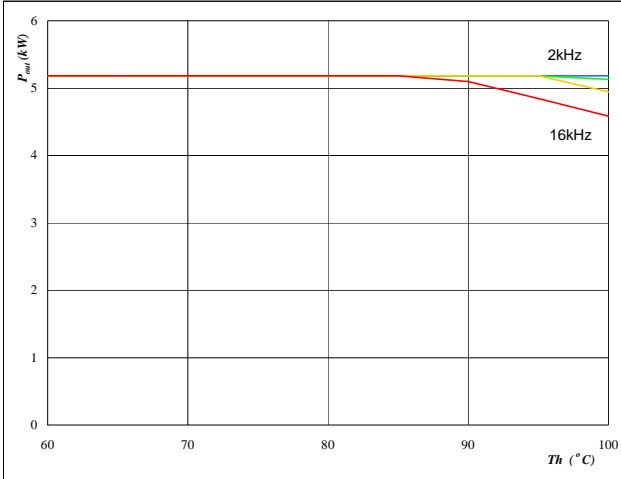
Typical available peak output power as a function of heatsink temperature
 $P_{out}=f(T_h)$

At
 $T_j = 125$ °C
 DC link = 320 V
 $M_i = 1$
 $\cos \varphi = 0,80$
 f_{sw} from 2 kHz to 16 kHz in steps of factor 2

Figure 10 Inverter

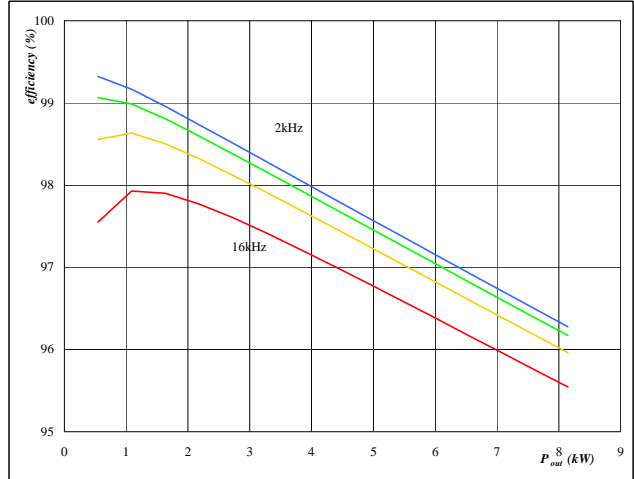
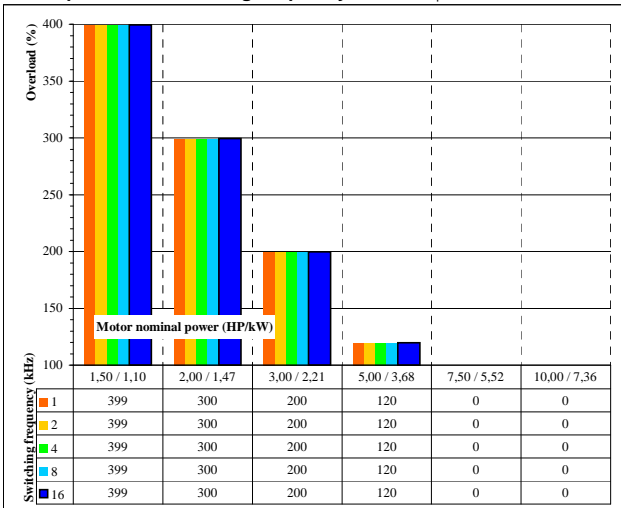
Typical efficiency as a function of output power
 $\text{efficiency}=f(P_{out})$

At
 $T_j = 125$ °C
 DC link = 320 V
 $M_i = 1$
 $\cos \varphi = 0,80$
 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
 $P_{peak} / P_{nom}=f(P_{nom}, f_{sw})$

At
 $T_j = 125$ °C
 DC link = 320 V
 $M_i = 1$
 $\cos \varphi = 0,8$
 f_{sw} from 1 kHz to 16kHz in steps of factor 2
 $T_h = 80$ °C
 Motor eff = 0,85