

General conditions
3phase SPWM

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

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

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

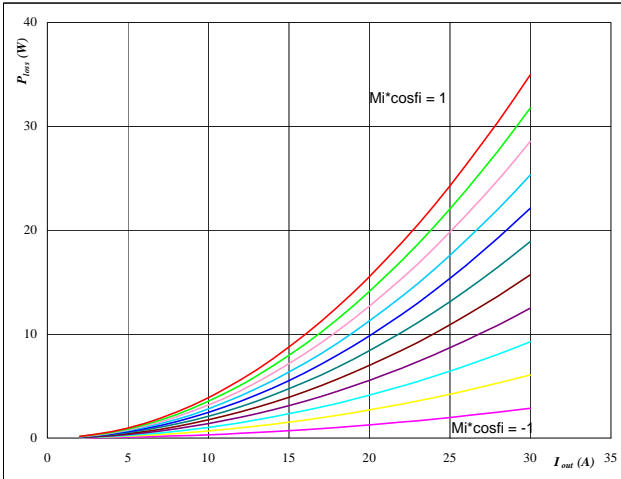
$$R_{goff} = 8 \ \Omega$$

Figure 1

IGBT

Typical average static loss as a function of output current

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


At

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

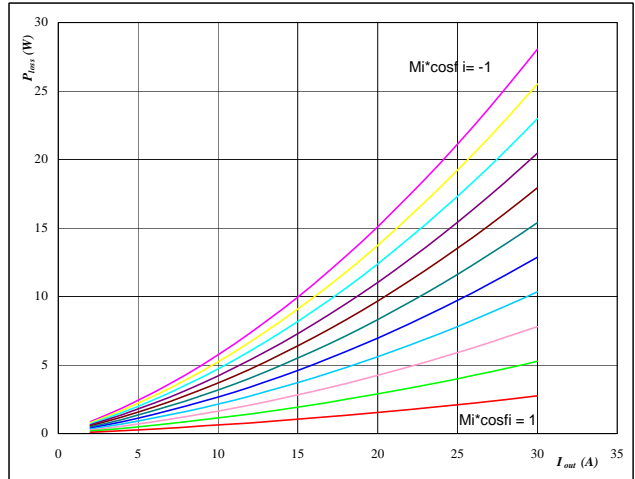
 $M_i \cdot \cos\phi$ from -1 to 1 in steps of 0,2

Figure 2

FWD

Typical average static loss as a function of output current

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


At

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

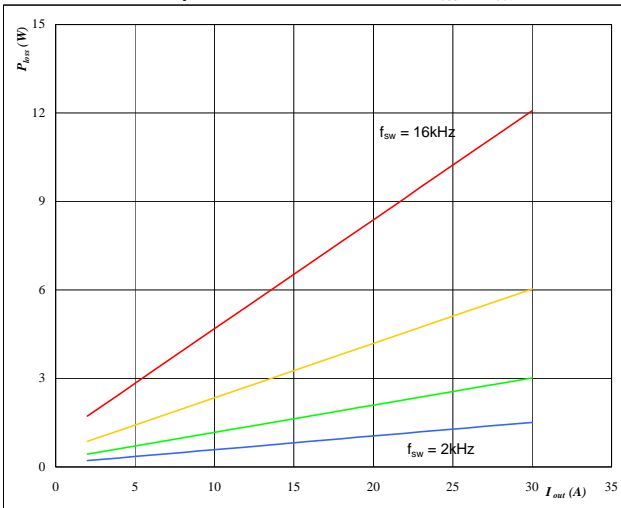
 $M_i \cdot \cos\phi$ from -1 to 1 in steps of 0,2

Figure 3

IGBT

Typical average switching loss as a function of output current

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


At

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

DC link = 320 V

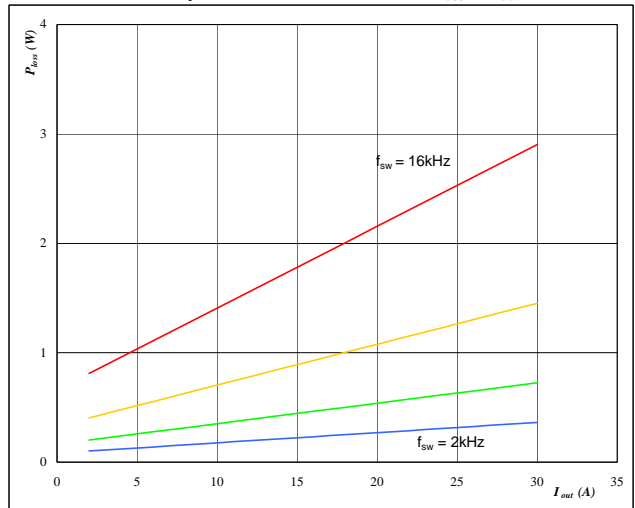
 f_{sw} from 2 kHz to 16 kHz in steps of factor 2

Figure 4

FWD

Typical average switching loss as a function of output current

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


At

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

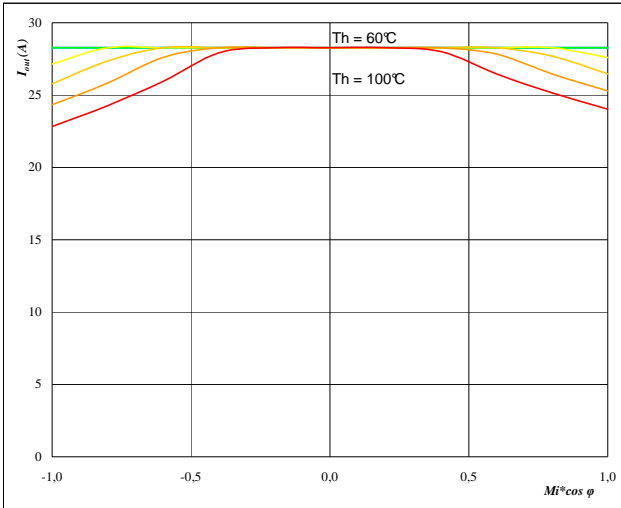
DC link = 320 V

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

Figure 5 Phase

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

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

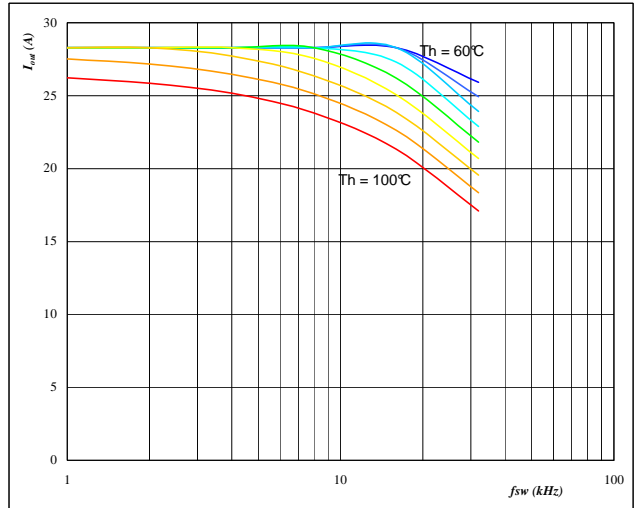


At
 $T_j = 125^\circ\text{C}$
 DC link = 320 V
 $f_{sw} = 4$ kHz
 T_h from 60 °C to 100 °C in steps of 5 °C

Figure 6 Phase

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

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

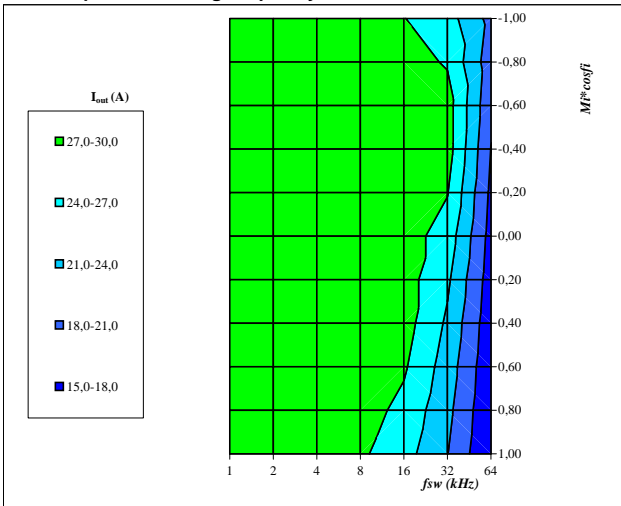


At
 $T_j = 125^\circ\text{C}$
 DC link = 320 V
 $Mi \cdot \cos \phi = 0,8$
 T_h from 60 °C to 100 °C in steps of 5 °C

Figure 7 Phase

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

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

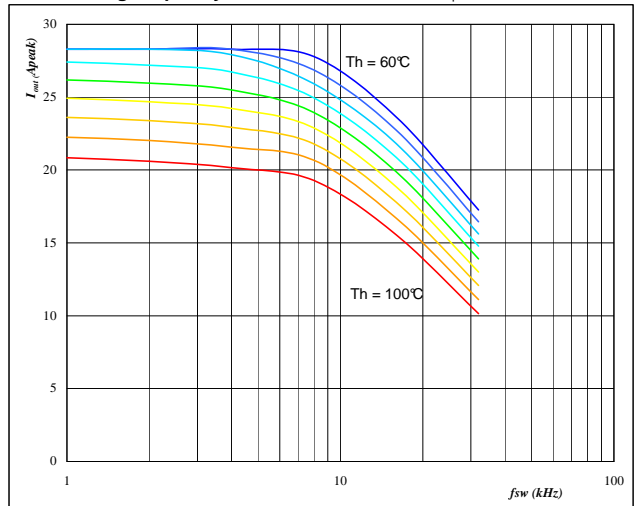


At
 $T_j = 125^\circ\text{C}$
 DC link = 320 V
 $T_h = 80^\circ\text{C}$

Figure 8 Phase

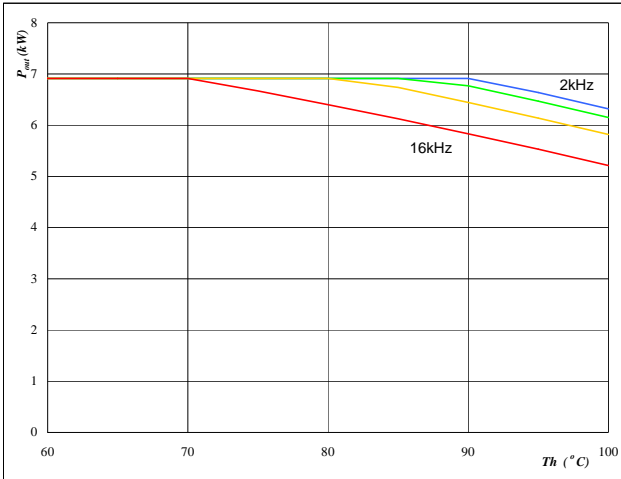
Typical available 0Hz output current as a function of switching frequency

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



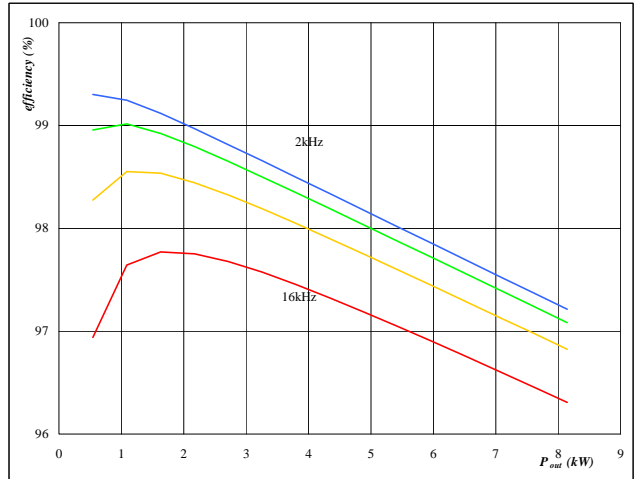
At
 $T_j = 125^\circ\text{C}$
 DC link = 320 V
 T_h from 60 °C to 100 °C in steps of 5 °C
 $Mi = 0$

Figure 9 Inverter

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


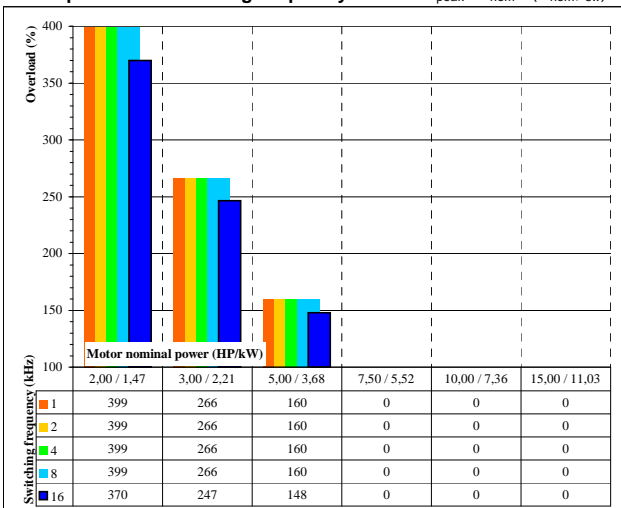
At
 $T_j = 125 \text{ } ^\circ\text{C}$
 DC link = 320 V
 $M_i = 1$
 $\cos \varphi = 0,80$
 f_{sw} from 2 kHz to 16 kHz in steps of factor 2

Figure 10 Inverter

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


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