

General conditions

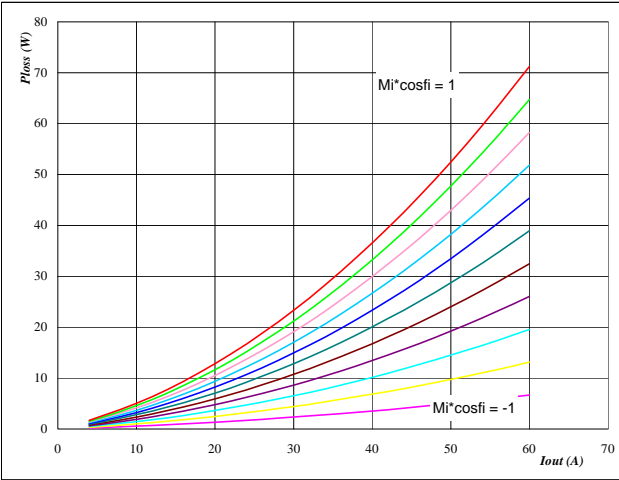
3phase SPWM

$V_{GEon} = 15\text{ V}$   
 $V_{GEoff} = -15\text{ V}$   
 $R_{gon} = 8\ \Omega$   
 $R_{goff} = 8\ \Omega$

Figure 1 IGBT

Typical average static loss as a function of output current

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

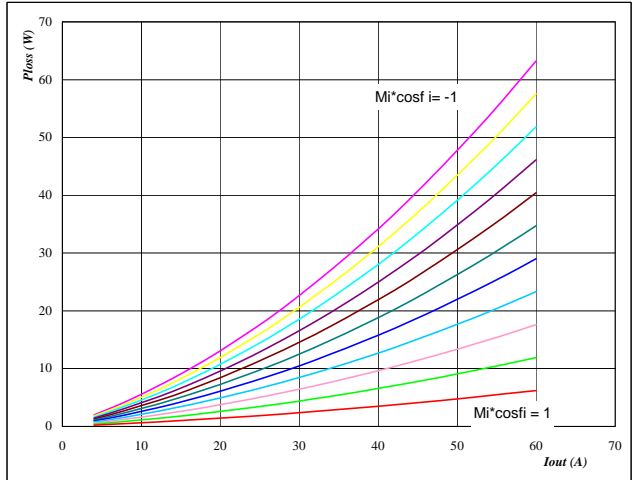


At  $T_j = 150\text{ }^\circ\text{C}$   
 $M_i \cdot \cos\phi$  from -1 to 1 in steps of 0,2

Figure 2 FRED

Typical average static loss as a function of output current

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

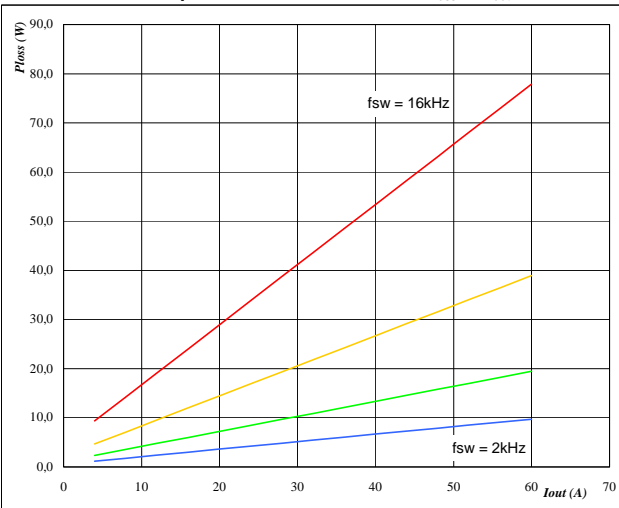


At  $T_j = 150\text{ }^\circ\text{C}$   
 $M_i \cdot \cos\phi$  from -1 to 1 in steps of 0,2

Figure 3 IGBT

Typical average switching loss as a function of output current

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

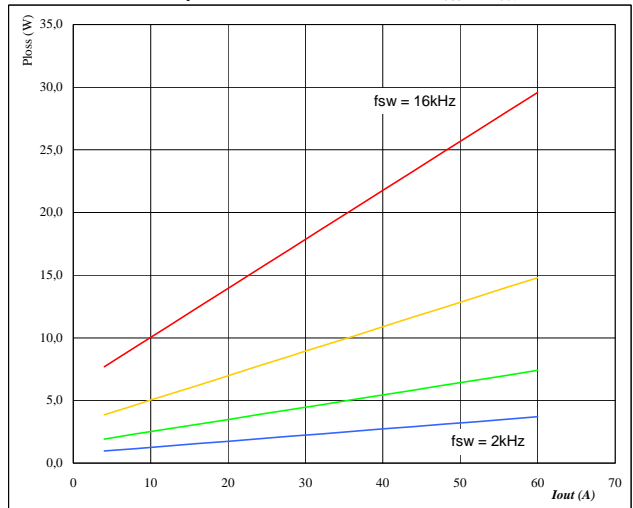


At  $T_j = 150\text{ }^\circ\text{C}$   
 DC link = 600 V  
 $f_{sw}$  from 2 kHz to 16 kHz in steps of factor 2

Figure 4 FRED

Typical average switching loss as a function of output current

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

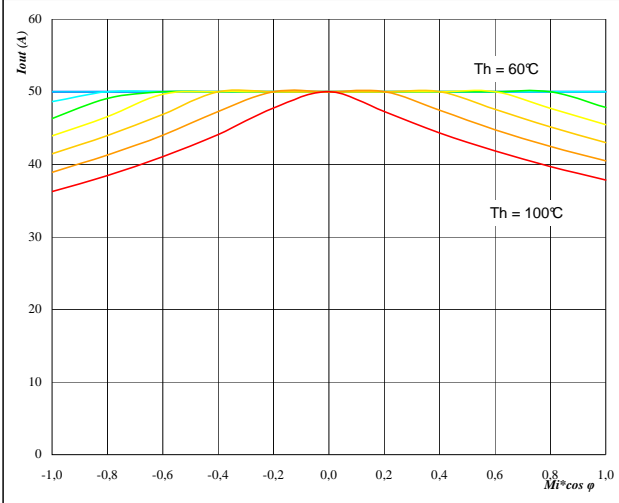


At  $T_j = 150\text{ }^\circ\text{C}$   
 DC link = 600 V  
 $f_{sw}$  from 2 kHz to 16 kHz in steps of factor 2

Figure 5 Phase

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

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

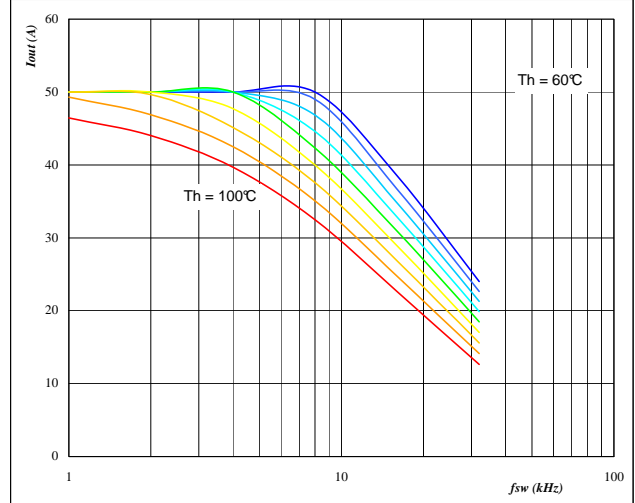


At  
 $T_j = 150 \text{ } ^\circ\text{C}$   
 DC link = 600 V  
 $f_{sw} = 4 \text{ kHz}$   
 $T_h$  from 60 °C to 100 °C in steps of 5 °C

Figure 6 Phase

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

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

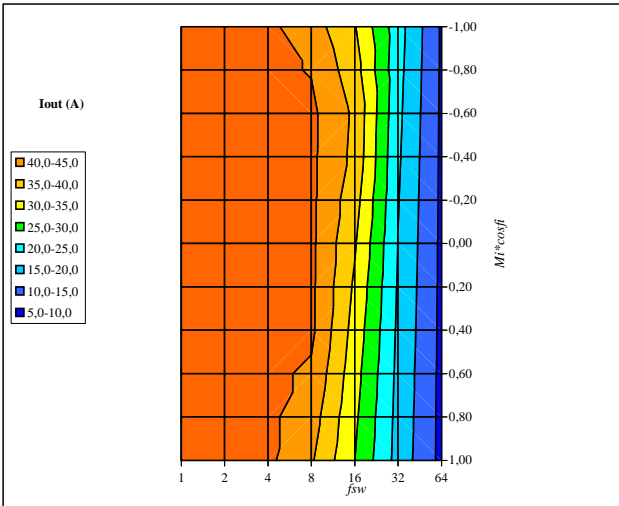


At  
 $T_j = 150 \text{ } ^\circ\text{C}$   
 DC link = 600 V  
 $Mi \cdot \cos \varphi = 0,8$   
 $T_h$  from 60 °C to 100 °C in steps of 5 °C

Figure 7 Phase

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

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

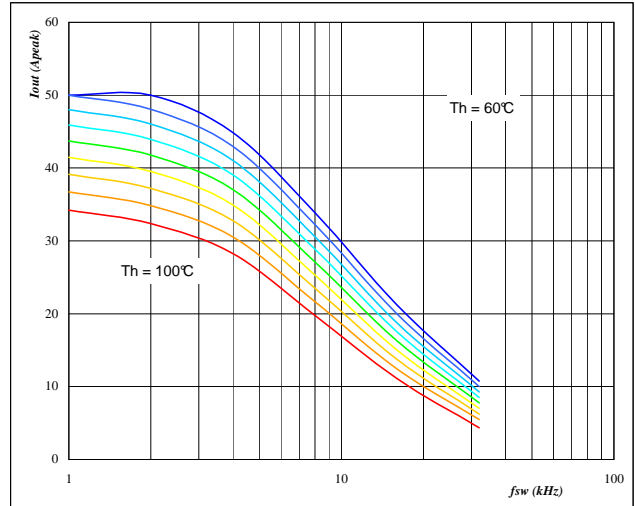


At  
 $T_j = 150 \text{ } ^\circ\text{C}$   
 DC link = 600 V  
 $T_h = 80 \text{ } ^\circ\text{C}$

Figure 8 Phase

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

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

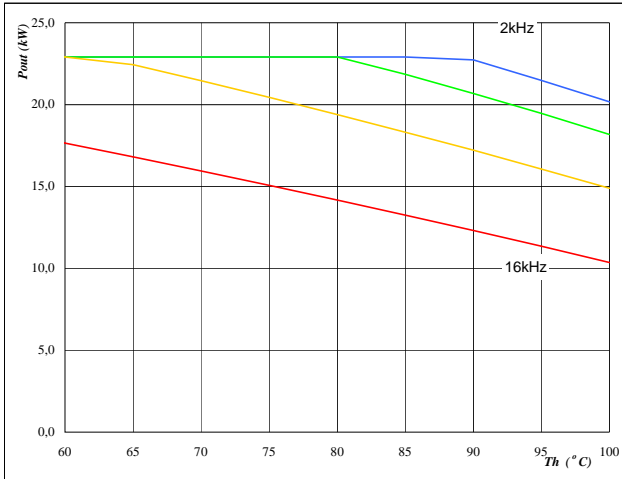


At  
 $T_j = 150 \text{ } ^\circ\text{C}$   
 DC link = 600 V  
 $T_h$  from 60 °C to 100 °C in steps of 5 °C  
 $Mi = 0$

Figure 9 Inverter

Typical available peak output power as a function of heatsink temperature

$$P_{out} = f(T_h)$$

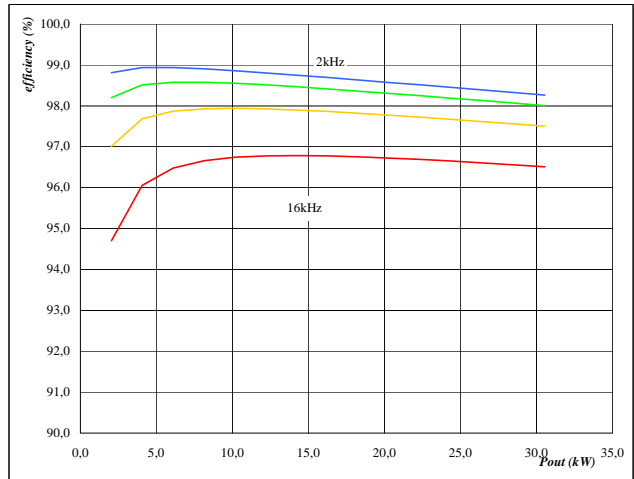


At  
 $T_j = 150 \text{ } ^\circ\text{C}$   
 DC link = 600 V  
 $M_i = 1$   
 $\cos \varphi = 0,80$   
 $f_{sw}$  from 2 kHz to 16 kHz in steps of factor 2

Figure 10 Inverter

Typical efficiency as a function of output power

$$\text{efficiency} = f(P_{out})$$

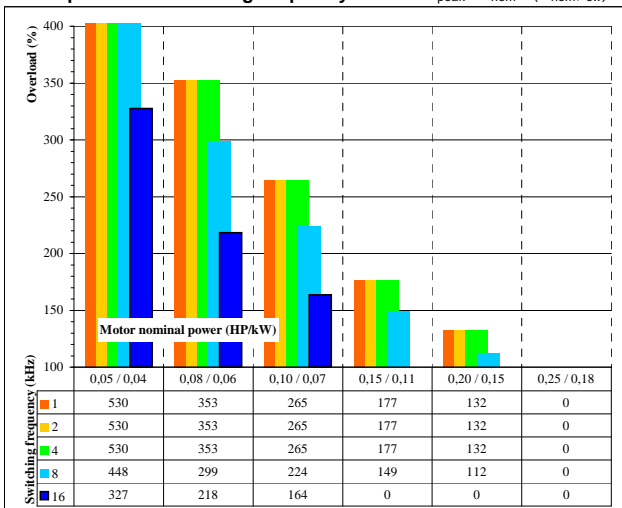


At  
 $T_j = 150 \text{ } ^\circ\text{C}$   
 DC link = 600 V  
 $M_i = 1$   
 $\cos \varphi = 0,80$   
 $f_{sw}$  from 2 kHz to 16 kHz in steps of factor 2

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  
 $T_j = 150 \text{ } ^\circ\text{C}$   
 DC link = 600 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