

General conditions

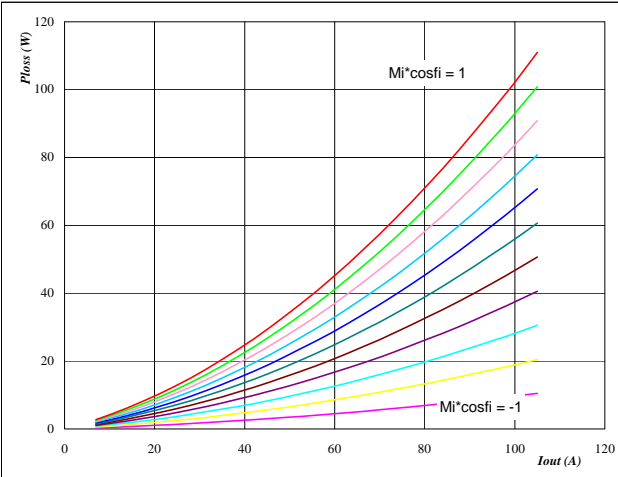
3phase SPWM

$V_{GEon} = 15\text{ V}$   
 $V_{GEoff} = -15\text{ V}$   
 $R_{gon} = 4\ \Omega$   
 $R_{goff} = 4\ \Omega$

Figure 1 IGBT

Typical average static loss as a function of output current

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

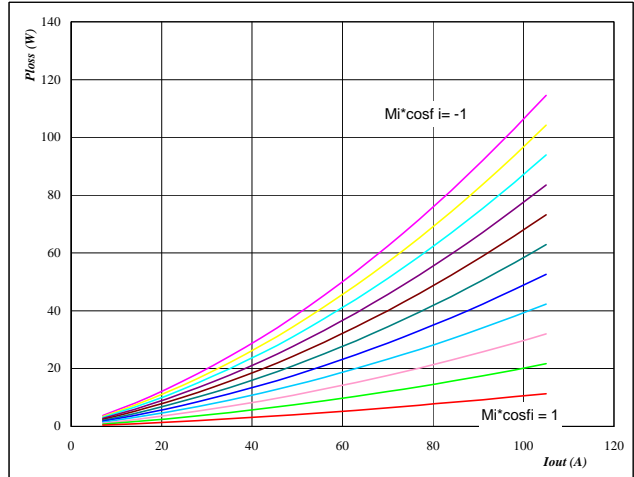


At  
 $T_j = 151\text{ }^\circ\text{C}$   
 $M_i \cdot \cos\phi$  from -1 to 1 in steps of 0,2

Figure 2 FRED

Typical average static loss as a function of output current

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

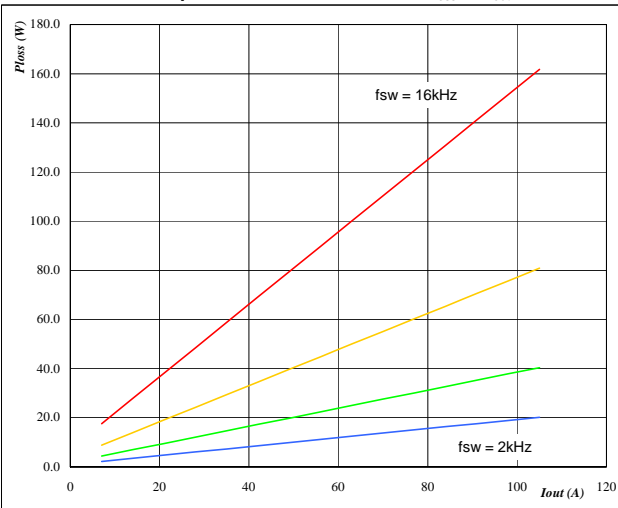


At  
 $T_j = 151\text{ }^\circ\text{C}$   
 $M_i \cdot \cos\phi$  from -1 to 1 in steps of 0,2

Figure 3 IGBT

Typical average switching loss as a function of output current

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

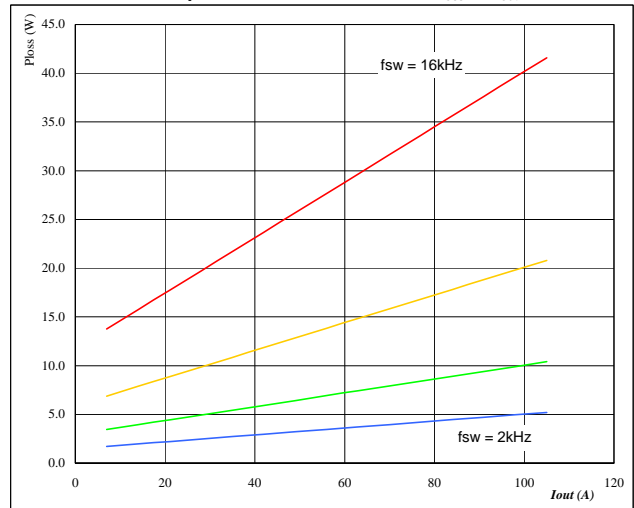


At  
 $T_j = 151\text{ }^\circ\text{C}$   
 DC link = 600 V  
 $f_{sw}$  from 2 kHz to 16 kHz in steps of factor 2

Figure 4 FRED

Typical average switching loss as a function of output current

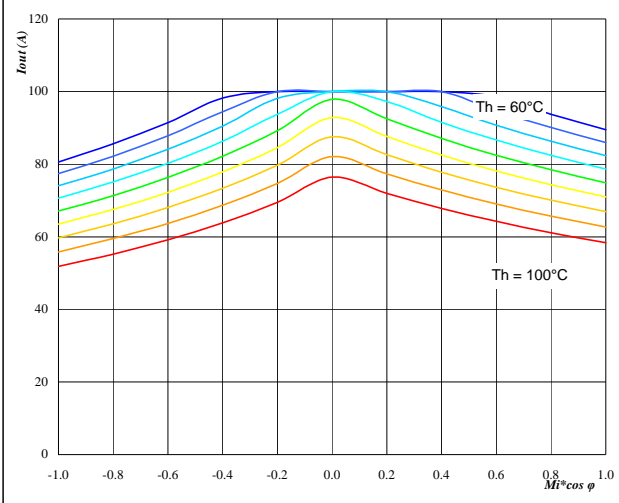
$P_{loss} = f(I_{out})$



At  
 $T_j = 151\text{ }^\circ\text{C}$   
 DC link = 600 V  
 $f_{sw}$  from 2 kHz to 16 kHz in steps of factor 2

Figure 5 Phase

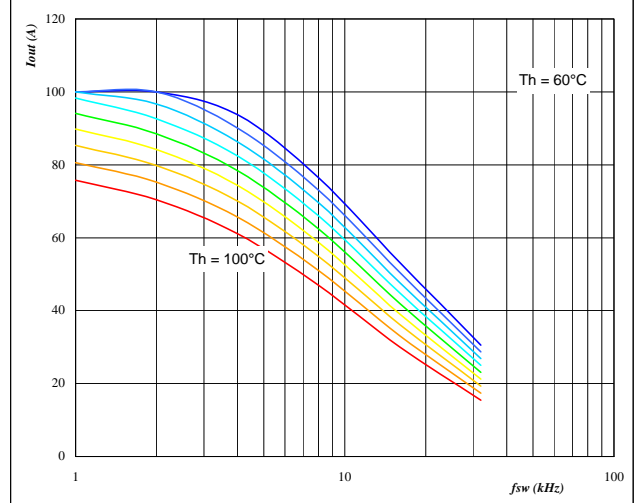
Typical available 50Hz output current as a function  $Mi \cdot \cos \phi$   $I_{out} = f(Mi \cdot \cos \phi)$



At  
 $T_j = 151$  °C  
 DC link = 600 V  
 $f_{sw} = 4$  kHz  
 $T_h$  from 60 °C to 100 °C in steps of 5 °C

Figure 6 Phase

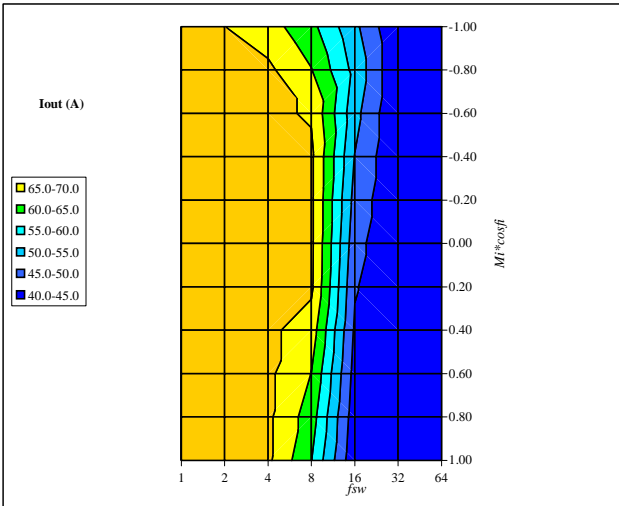
Typical available 50Hz output current as a function of switching frequency  $I_{out} = f(f_{sw})$



At  
 $T_j = 151$  °C  
 DC link = 600 V  
 $Mi \cdot \cos \phi = 0.8$   
 $T_h$  from 60 °C to 100 °C in steps of 5 °C

Figure 7 Phase

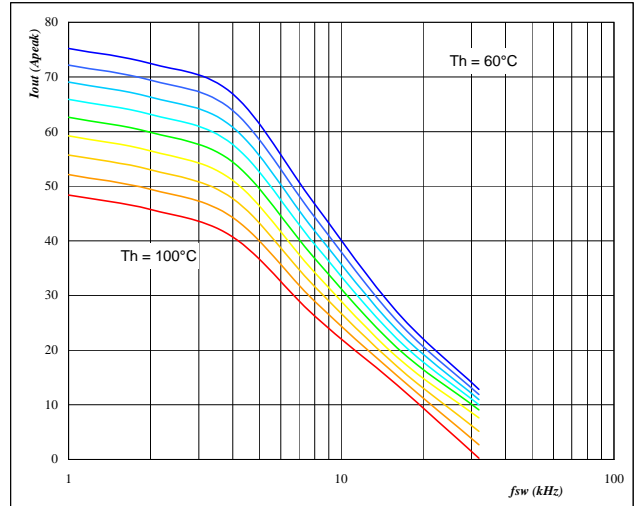
Typical available 50Hz output current as a function of  $Mi \cdot \cos \phi$  and switching frequency  $I_{out} = f(f_{sw}, Mi \cdot \cos \phi)$



At  
 $T_j = 151$  °C  
 DC link = 600 V  
 $T_h = 80$  °C

Figure 8 Phase

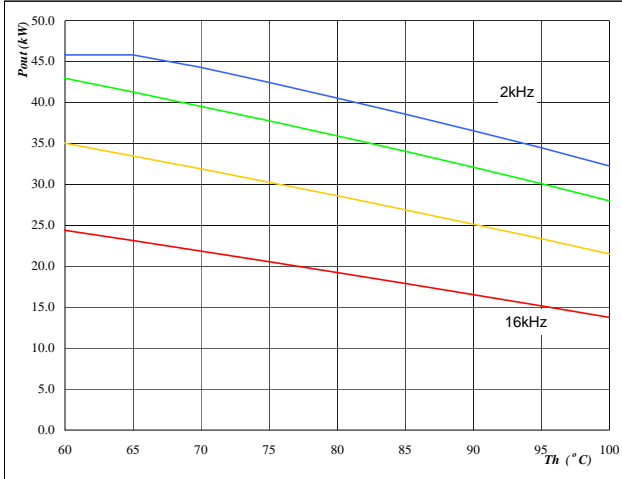
Typical available 0Hz output current as a function of switching frequency  $I_{outpeak} = f(f_{sw})$



At  
 $T_j = 151$  °C  
 DC link = 600 V  
 $T_h$  from 60 °C to 100 °C in steps of 5 °C  
 $Mi = 0$

Figure 9 Inverter

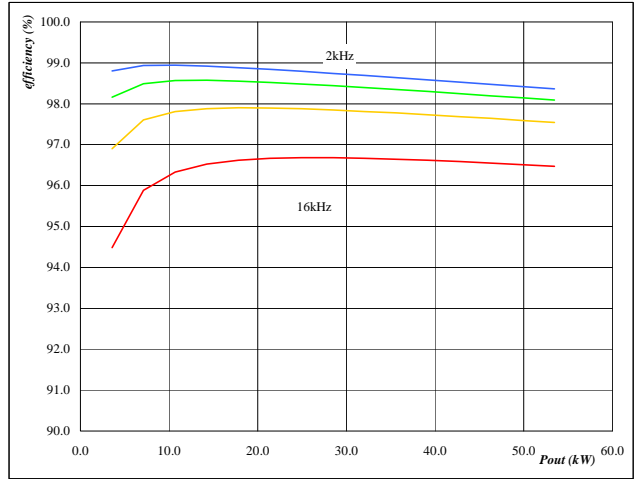
Typical available peak output power as a function of heatsink temperature  
 $P_{out}=f(T_h)$



**At**  
 $T_j = 151$  °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

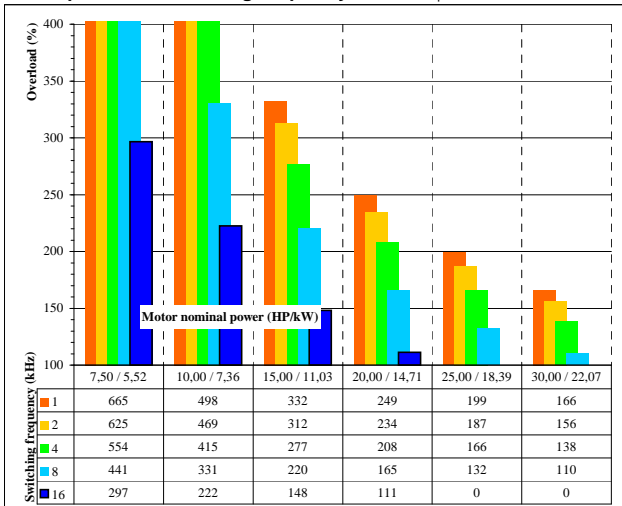
Typical efficiency as a function of output power  
efficiency=f( $P_{out}$ )



**At**  
 $T_j = 151$  °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**  
 $T_j = 151$  °C  
 DC link = 600 V  
 $M_i = 1$   
 $\cos \varphi = 0.8$   
 $f_{sw}$  from 1 kHz to 16kHz in steps of factor 2  
 $T_h = 80$  °C  
 Motor eff = 0.85