



flow PIM 0 Output Inverter Application 600 V / 20 A

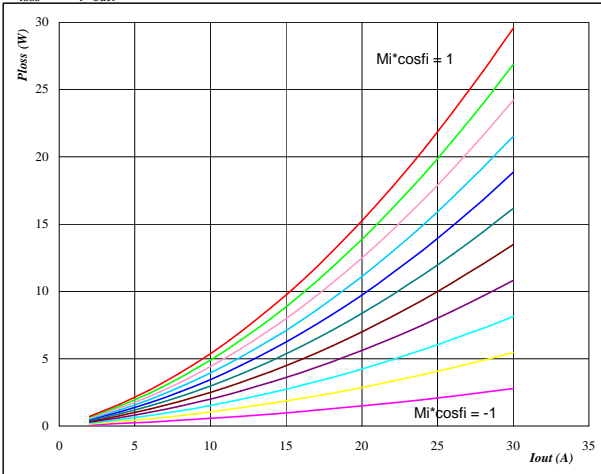
General conditions

<b>3phase SPWM</b>	
$V_{GEon}$	= 15 V
$V_{GEoff}$	= 0 V
$R_{gon}$	= 16 $\Omega$
$R_{goff}$	= 8 $\Omega$

Figure 1 IGBT

Typical average static loss as a function of output current

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

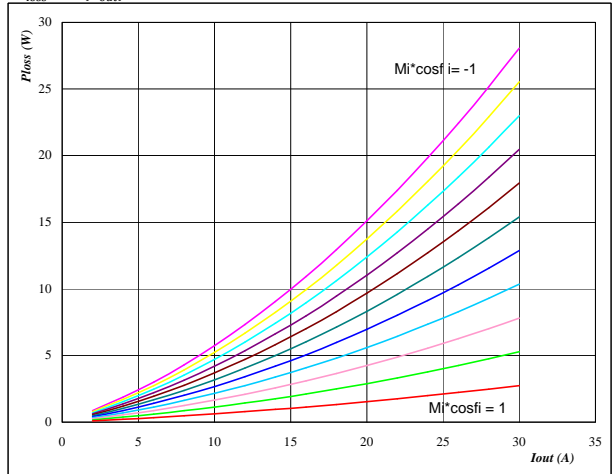


At  
 $T_j = 125 \text{ }^\circ\text{C}$   
 $M_i \cdot \cos\phi$  from -1 to 1 in steps of 0,2

Figure 2 FWD

Typical average static loss as a function of output current

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

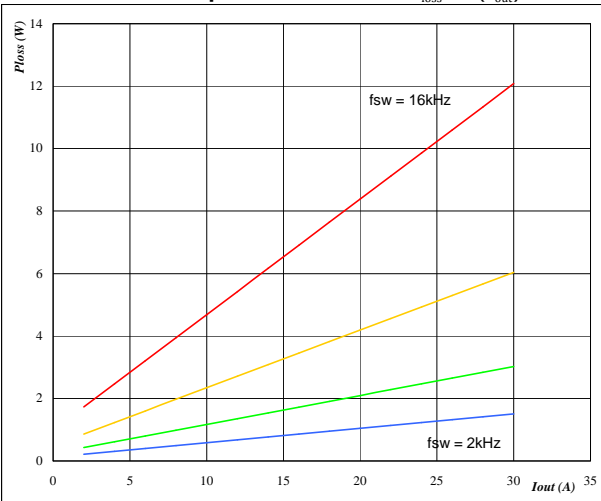


At  
 $T_j = 125 \text{ }^\circ\text{C}$   
 $M_i \cdot \cos\phi$  from -1 to 1 in steps of 0,2

Figure 3 IGBT

Typical average switching loss as a function of output current

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

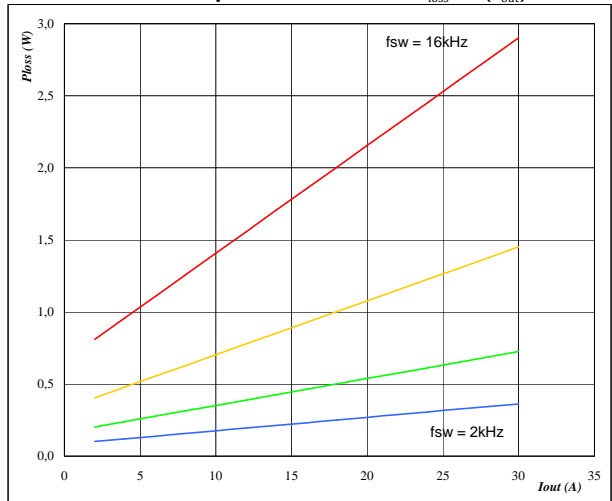


At  
 $T_j = 125 \text{ }^\circ\text{C}$   
DC-link = 320 V  
 $f_{sw}$  from 2 kHz to 16 kHz in steps of factor 2

Figure 4 FWD

Typical average switching loss as a function of output current

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



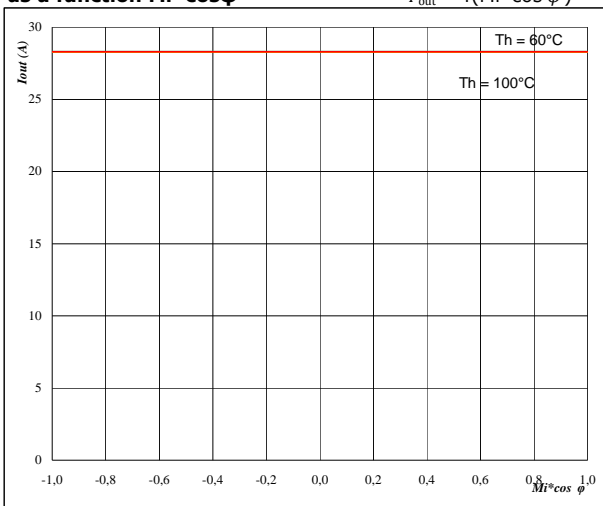
At  
 $T_j = 125 \text{ }^\circ\text{C}$   
DC-link = 320 V  
 $f_{sw}$  from 2 kHz to 16 kHz in steps of factor 2



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**Figure 5** Phase

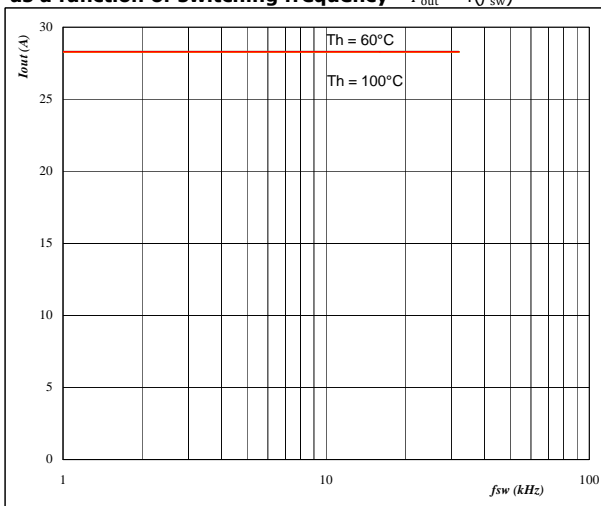
Typical available 50Hz output current as a function  $M_i \cdot \cos \varphi$   $I_{out} = f(M_i \cdot \cos \varphi)$



**At**  
 $T_j = 125$  °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

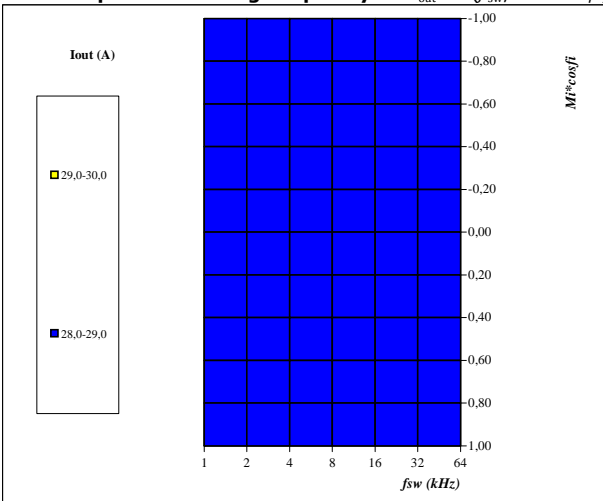
Typical available 50Hz output current as a function of switching frequency  $I_{out} = f(f_{sw})$



**At**  
 $T_j = 125$  °C  
 DC-link = 320 V  
 $M_i \cdot \cos \varphi = 0,8$   
 $T_h$  from 60 °C to 100 °C in steps of 5 °C

**Figure 7** Phase

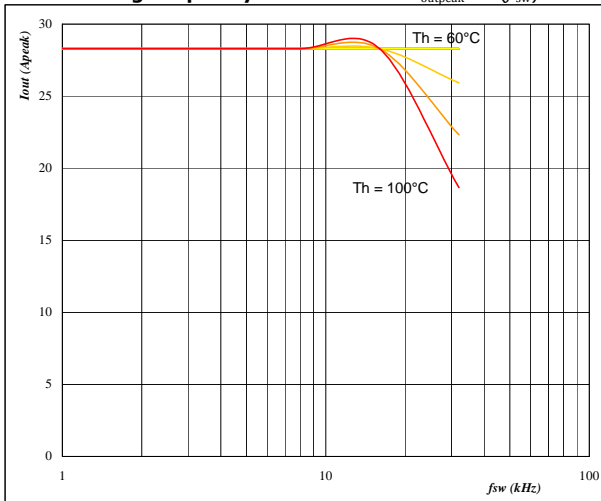
Typical available 50Hz output current as a function of  $M_i \cdot \cos \varphi$  and switching frequency  $I_{out} = f(f_{sw}, M_i \cdot \cos \varphi)$



**At**  
 $T_j = 125$  °C  
 DC-link = 320 V  
 $T_h = 80$  °C

**Figure 8** Phase

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



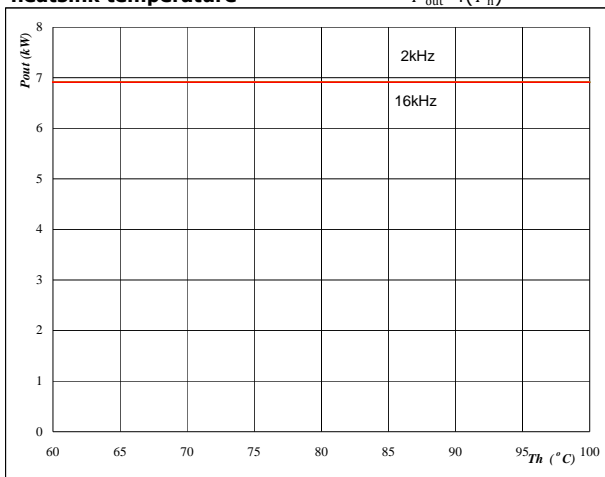
**At**  
 $T_j = 125$  °C  
 DC-link = 320 V  
 $T_h$  from 60 °C to 100 °C in steps of 5 °C  
 $M_i = 0$



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**Figure 9** Inverter

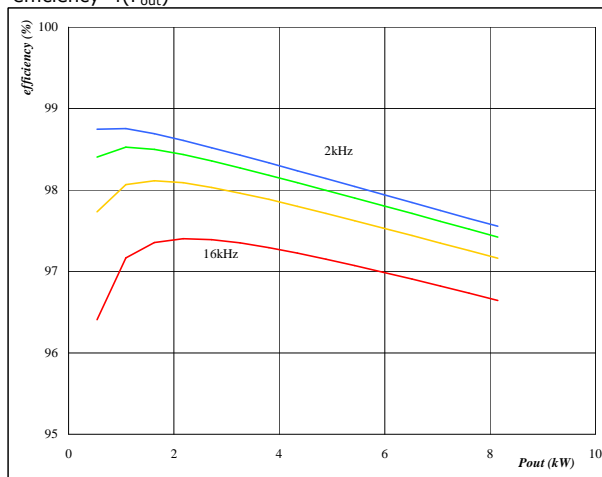
Typical available peak output power as a function of heatsink temperature  $P_{out}=f(T_h)$



**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

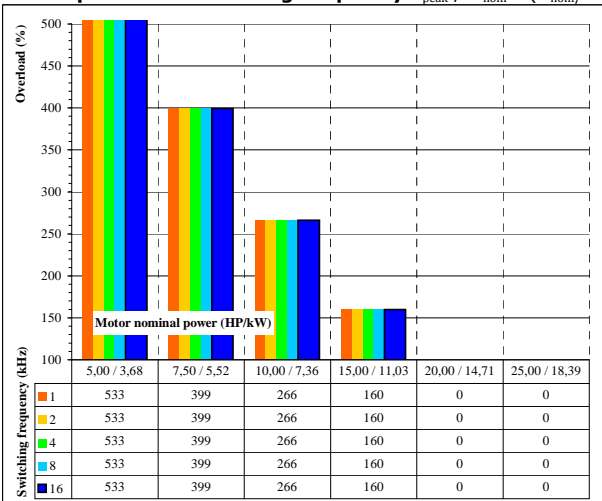
Typical efficiency as a function of output power  $\text{efficiency}=f(P_{out})$



**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