

General conditions

3phase SPWM

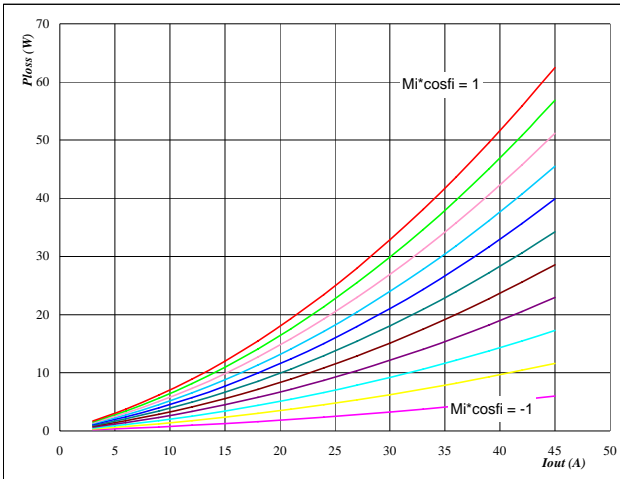
$V_{GEon} = 15\text{ V}$
 $V_{GEoff} = -15\text{ V}$
 $R_{gon} = 16\ \Omega$
 $R_{goff} = 16\ \Omega$

Figure 1

IGBT

Typical average static loss as a function of output current

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



At

$T_j = 125\ \text{°C}$

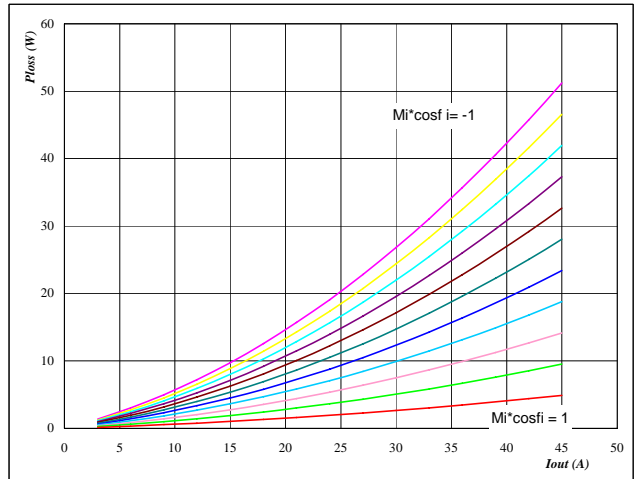
$M_i \cdot \cos\phi$ from -1 to 1 in steps of 0.2

Figure 2

FRED

Typical average static loss as a function of output current

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



At

$T_j = 125\ \text{°C}$

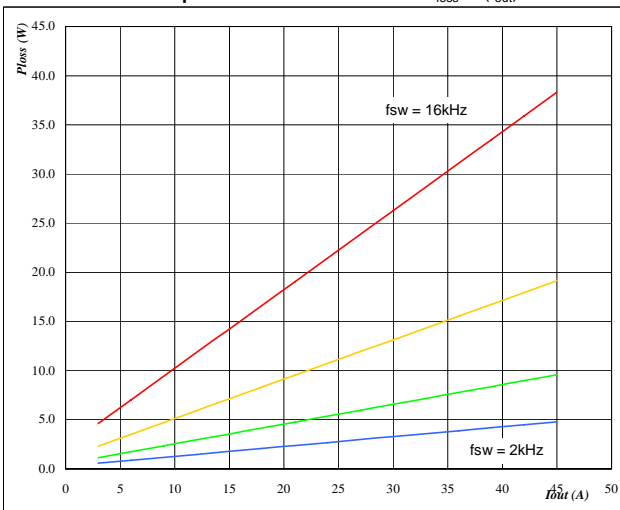
$M_i \cdot \cos\phi$ from -1 to 1 in steps of 0.2

Figure 3

IGBT

Typical average switching loss as a function of output current

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



At

$T_j = 125\ \text{°C}$

DC link = 600 V

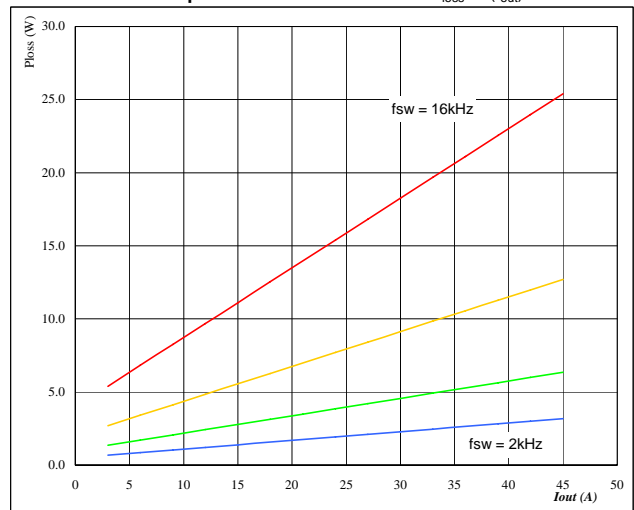
f_{sw} from 2 kHz to 16 kHz in steps of factor 2

Figure 4

FRED

Typical average switching loss as a function of output current

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



At

$T_j = 125\ \text{°C}$

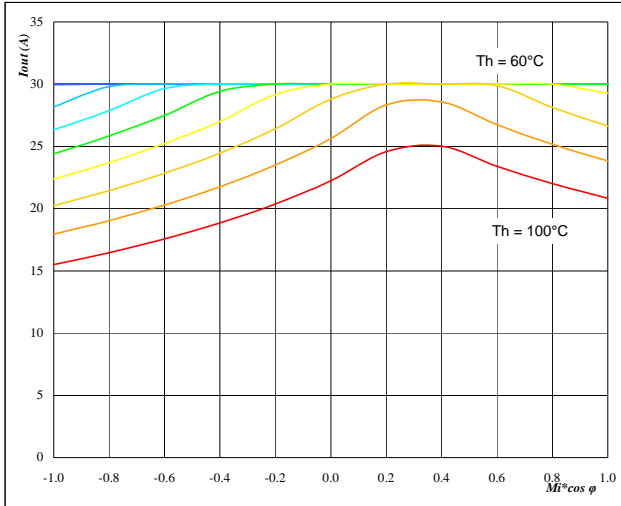
DC link = 600 V

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

Figure 5 Phase

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

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

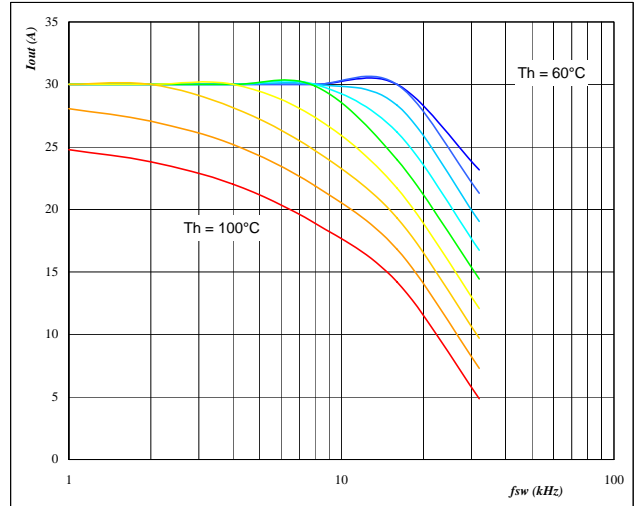


At
 $T_j = 125^\circ C$
 DC link = 600 V
 $f_{sw} = 4$ kHz
 T_h from 60 °C to 100 °C in steps of 5 °C

Figure 6 Phase

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

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

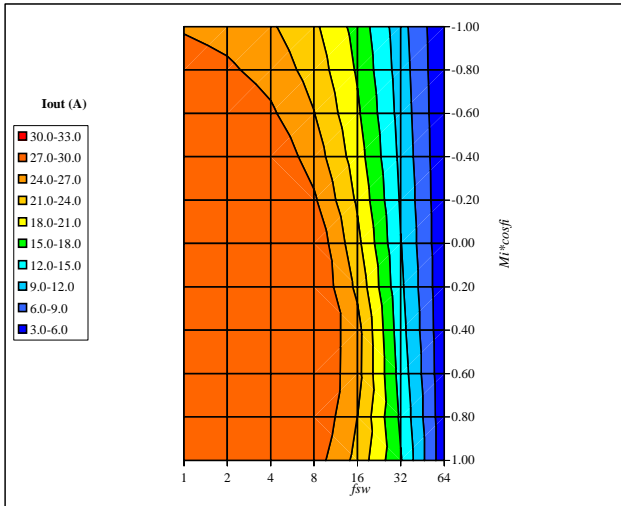


At
 $T_j = 125^\circ C$
 DC link = 600 V
 $Mi \cdot \cos \phi = 0.8$
 T_h from 60 °C to 100 °C in steps of 5 °C

Figure 7 Phase

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

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

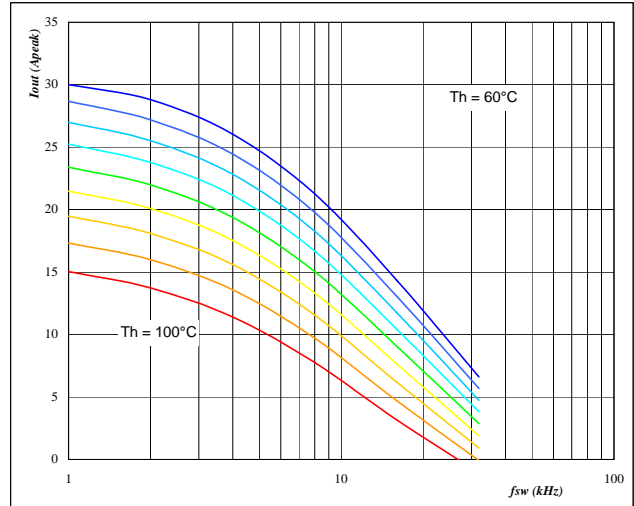


At
 $T_j = 125^\circ C$
 DC link = 600 V
 $T_h = 80^\circ C$

Figure 8 Phase

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

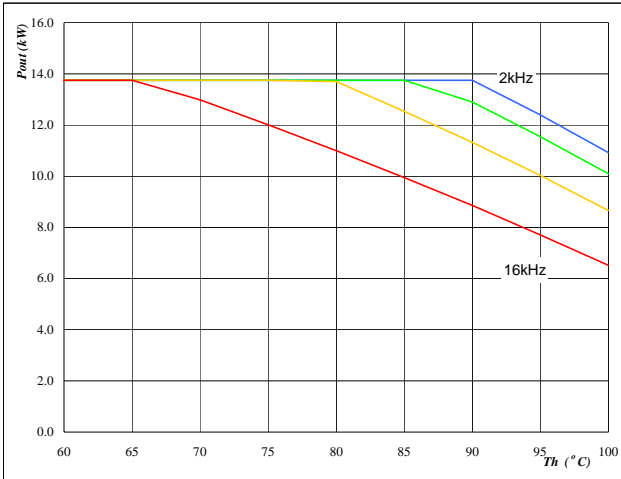
$$I_{outpeak} = f(f_{sw})$$



At
 $T_j = 125^\circ C$
 DC link = 600 V
 T_h from 60 °C to 100 °C in steps of 5 °C
 $Mi = 0$

Figure 9 Inverter

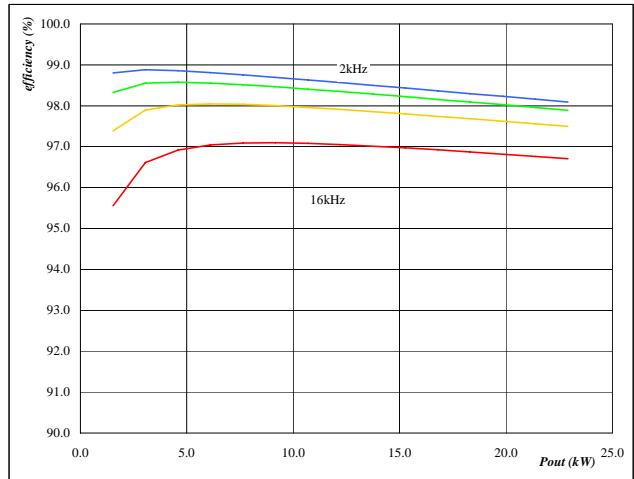
Typical available peak output power as a function of heatsink temperature
 $P_{out}=f(T_h)$



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

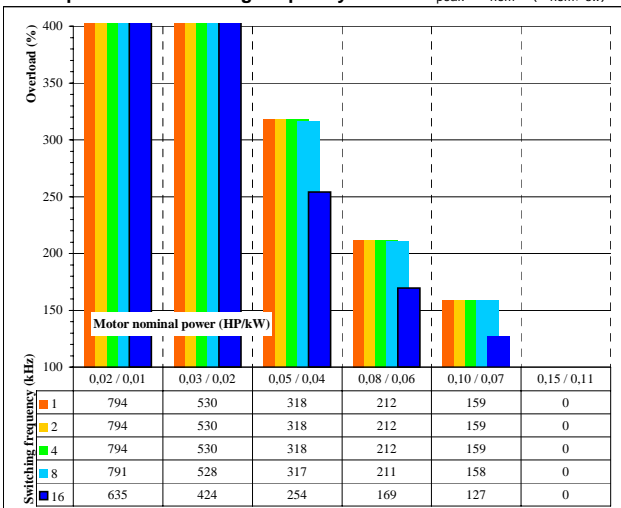
Typical efficiency as a function of output power
efficiency=f(P_{out})



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

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