

Output inverter application

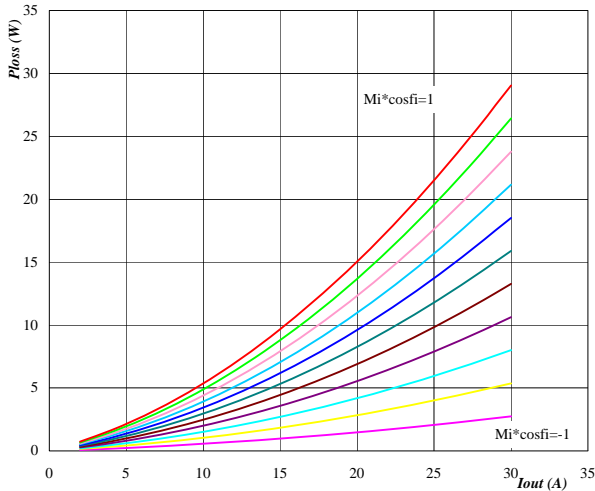
 General conditions 3 phase SPWM, $V_{geon} = 15\text{ V}$
 $V_{geoff} = 0\text{ V}$
 $R_{gon} = 16\ \Omega$ $R_{goff} = 8\ \Omega$
Figure 1. Typical average static loss as a function of output current
IGBT $P_{loss} = f(I_{out})$

 Conditions: $T_j = 125^\circ\text{C}$
 Modulation index * $\cos\phi$
 parameter $M_i \cdot \cos\phi$ from -1,00 to 1,00
 in 0,20 steps

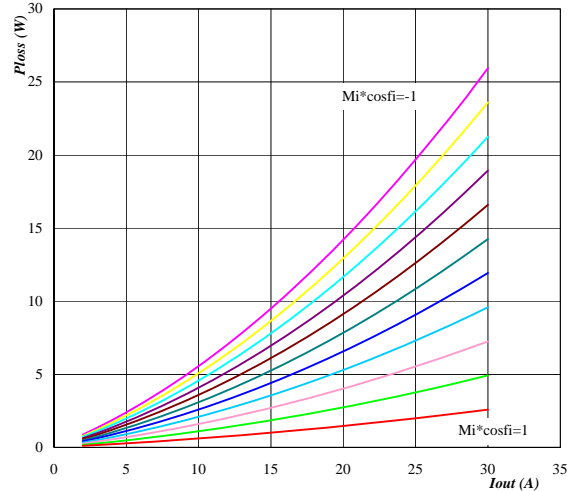
Figure 2. Typical average static loss as a function of output current
FRED $P_{loss} = f(I_{out})$

 Conditions: $T_j = 125^\circ\text{C}$
 Modulation index * $\cos\phi$
 parameter $M_i \cdot \cos\phi$ from -1,00 to 1,00
 in 0,20 steps

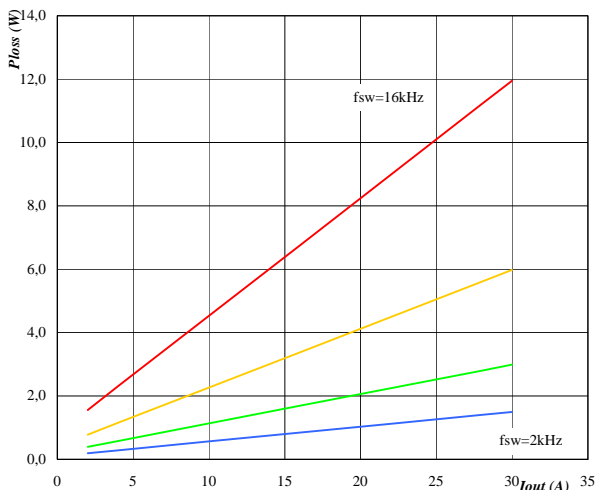
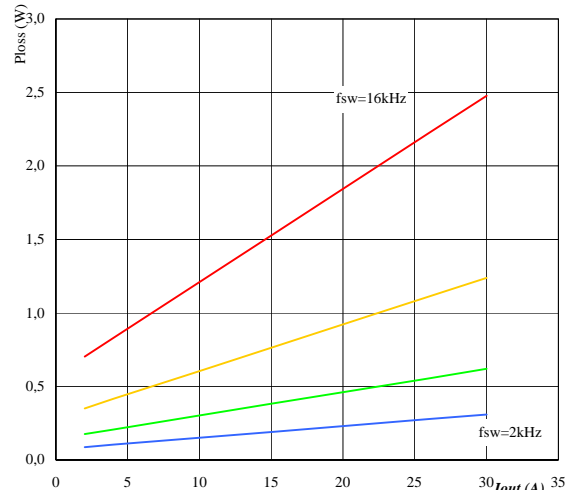
Figure 3. Typical average switching loss as a function of output current
IGBT $P_{loss} = f(I_{out})$

 Conditions: $T_j = 125^\circ\text{C}$
 DC link = 300 V
 Switching freq. f_{sw} from 2 kHz to 16 kHz
 parameter in * 2 steps

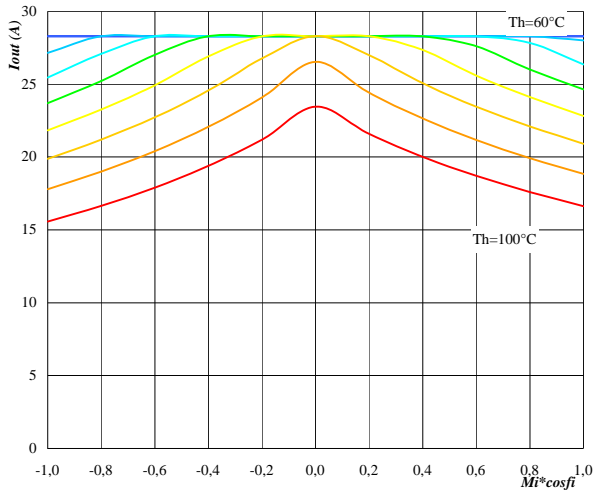
Figure 4. Typical average switching loss as a function of output current
FRED $P_{loss} = f(I_{out})$

 Conditions: $T_j = 125^\circ\text{C}$
 DC link = 300 V
 Switching freq. f_{sw} from 2 kHz to 16 kHz
 parameter in * 2 steps

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General conditions 3 phase SPWM, $V_{geon} = 15\text{ V}$
 $V_{geoff} = 0\text{ V}$

Figure 5. Typical available 50Hz output current as a function of $Mi \cdot \cos\phi_i$

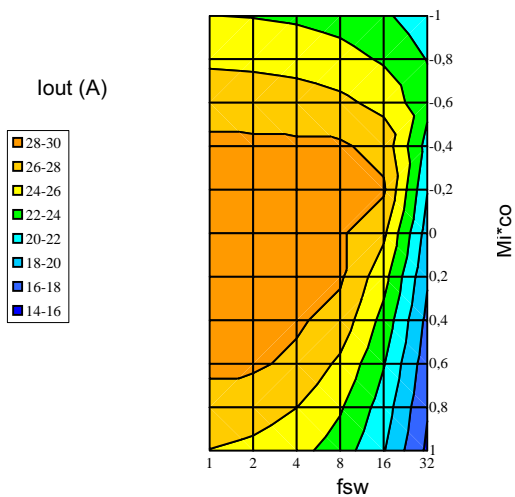
Phase $I_{out} = f(Mi \cdot \cos\phi_i)$



Conditions: $T_j = 125^\circ\text{C}$
 DC link = 300 V
 $f_{sw} = 4\text{ kHz}$
 Heatsink temp. T_h from 60 °C to 100 °C
 parameter in 5 °C steps

Figure 7. Typical available 50Hz output current as a function of $Mi \cdot \cos\phi_i$ and f_{sw}

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

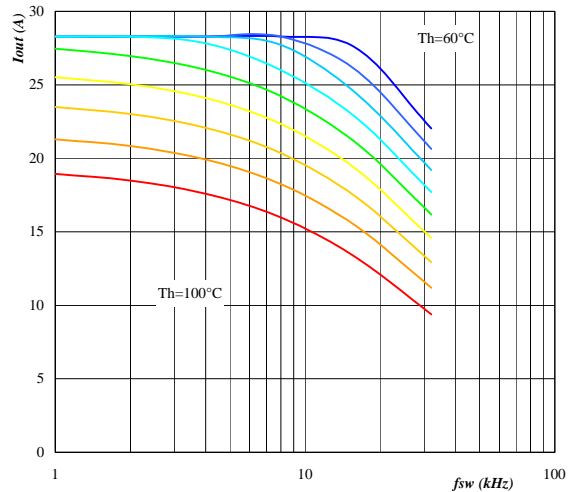


Conditions: $T_j = 125^\circ\text{C}$
 DC link = 300 V
 $T_h = 80^\circ\text{C}$

$R_{gon} = 16\ \Omega$ $R_{goff} = 8\ \Omega$

Figure 6. Typical available 50Hz output current as a function of switching frequency

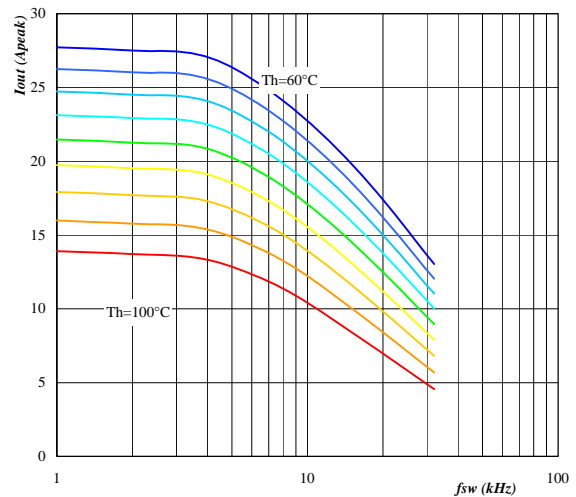
Phase $I_{out} = f(f_{sw})$



Conditions: $T_j = 125^\circ\text{C}$
 DC link = 300 V
 $Mi \cdot \cos\phi_i = 0,8$
 Heatsink temp. T_h from 60 °C to 100 °C
 parameter in 5 °C steps

Figure 8. Typical available 0Hz output current as a function of switching frequency

Phase $I_{out\text{peak}} = f(f_{sw})$



Conditions: $T_j = 125^\circ\text{C}$
 DC link = 300 V
 Heatsink temp. T_h from 60 °C to 100 °C
 parameter in 5 °C steps

Output inverter application

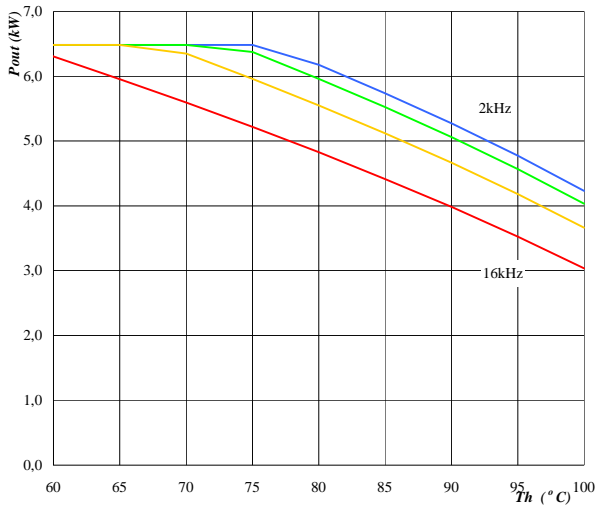
 General conditions 3 phase SPWM, $V_{geon} = 15 \text{ V}$
 $V_{geoff} = 0 \text{ V}$
 $R_{gon} = 16 \ \Omega$ $R_{goff} = 8 \ \Omega$
Figure 9. Typical available electric peak output power as a function of heatsink temperature
Inverter $P_{out} = f(T_h)$

 Conditions: $T_j = 125^\circ\text{C}$
 DC link = 300 V
 Modulation index $M_i = 1$
 $\cos\phi_i = 0,80$
 Switching freq. parameter fsw from in 2 kHz to 16 kHz * 2 steps

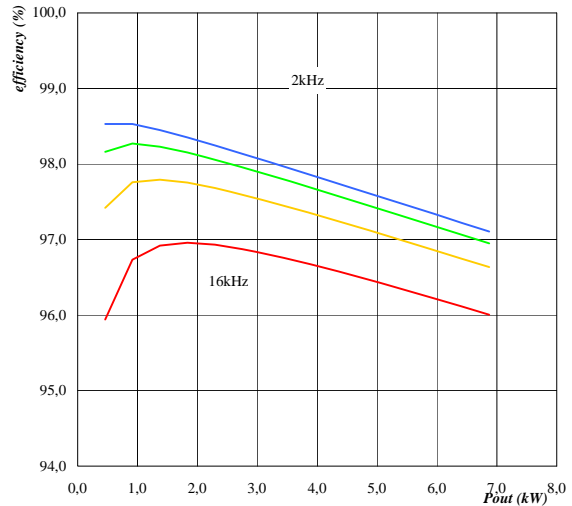
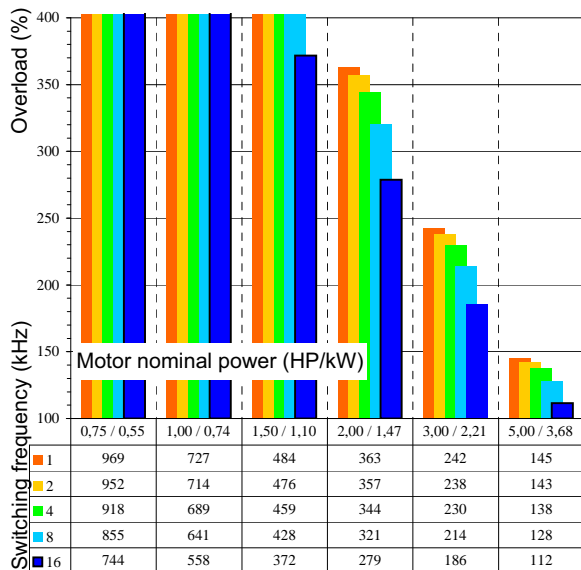
Figure 10. Typical efficiency as a function of output power
Inverter $\text{efficiency} = f(P_{out})$

 Conditions: $T_j = 125^\circ\text{C}$
 DC link = 300 V
 Modulation index $M_i = 1$
 $\cos\phi_i = 0,80$
 Switching freq. parameter fsw from in 2 kHz to 16 kHz * 2 steps

Figure 11. Typical available overload factor as a function of motor power and switching frequency
Inverter $P_{peak}/P_{nom} = f(P_{nom}, f_{sw})$

 Conditions: $T_j = 125^\circ\text{C}$
 DC link = 300 V
 Modulation index $M_i = 1$
 $\cos\phi_i = 0,8$
 Switching freq. parameter fsw from in 1 kHz to 16 kHz * 2 steps
 Heatsink temperature = 80 °C
 Motor efficiency = 0,85