

General conditions

Boost PFC
$V_{GEon} = 15 \text{ V}$
$V_{GEoff} = 0 \text{ V}$
$R_{gon} = 8 \Omega$
$R_{goff} = 8 \Omega$
$V_{in} = V_{inpk} \cdot \sin\omega t$

Figure 1

IGBT

Typical average static loss as a function of input current

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

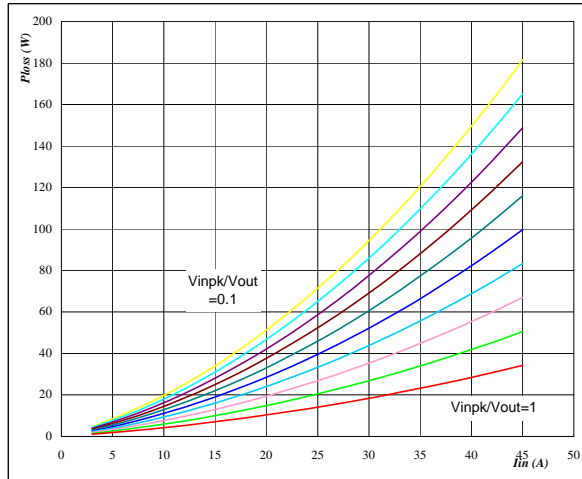

 $T_j = 125 \text{ } ^\circ\text{C}$
 V_{inpk} / V_{out} from 0.1 to 1 in steps of 0.1

Figure 2

FRED

Typical average static loss as a function of input current

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

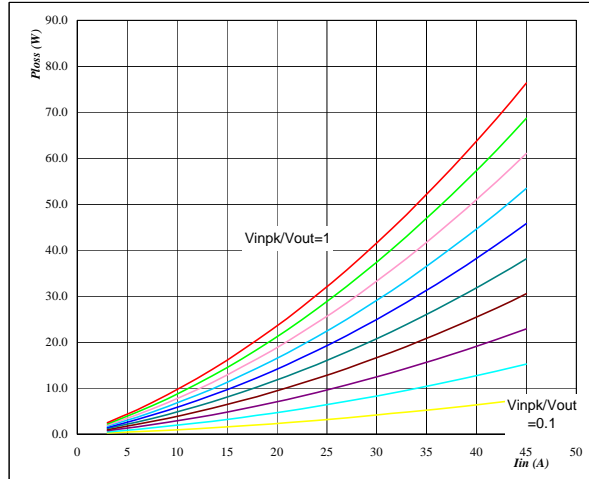
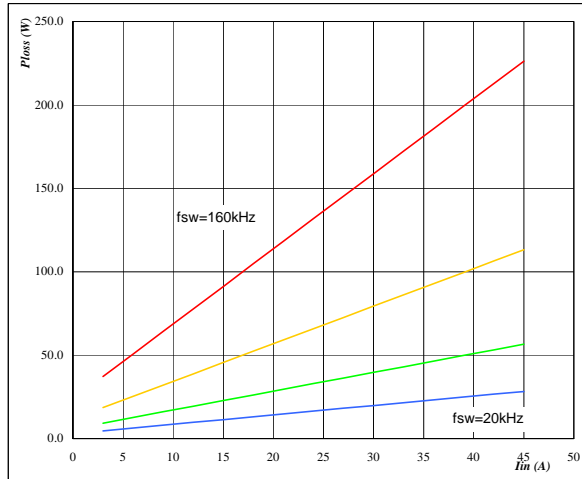

 $T_j = 125 \text{ } ^\circ\text{C}$
 V_{inpk} / V_{out} from 0.1 to 1 in steps of 0.1

Figure 3

IGBT

Typical average switching loss as a function of input current

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


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

DC link = 400 V

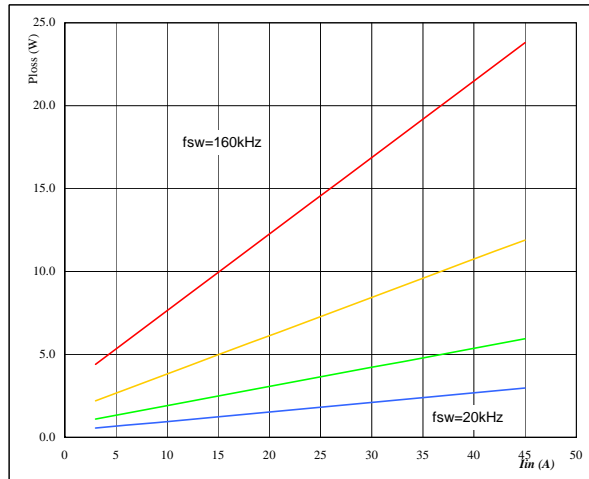
 f_{sw} from 20 kHz to 160 kHz in steps of factor 2

Figure 4

FRED

Typical average switching loss as a function of input current

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


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

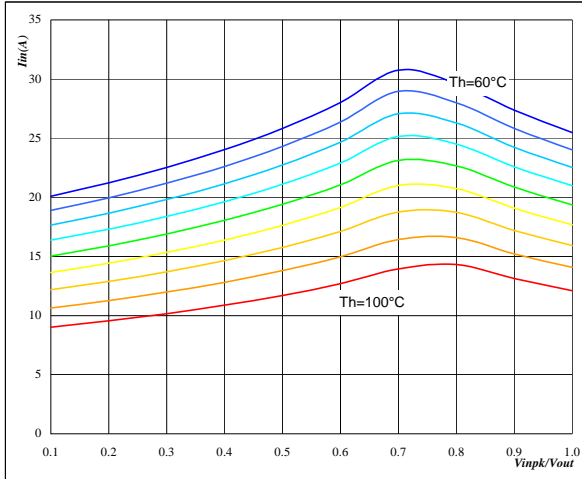
DC link = 400 V

 f_{sw} from 20 kHz to 160 kHz in steps of factor 2

Figure 5 PFC-per leg

Typical available input current
as a function of V_{inpk} / V_{out}

$$I_{in} = f(V_{inpk}/V_{out})$$

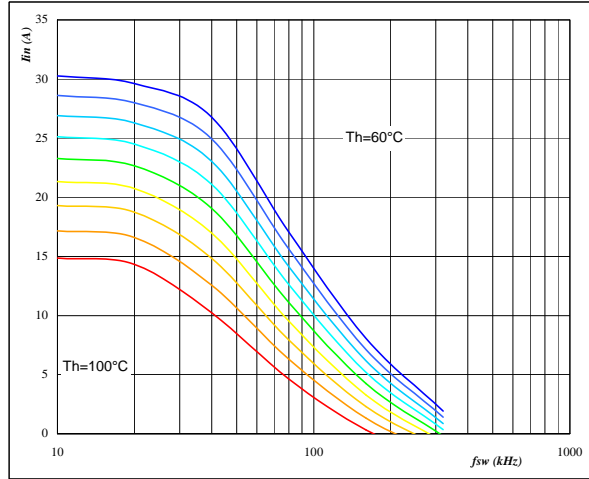


$T_j = T_{jmax} - 25 \text{ } ^\circ\text{C}$
DC link = 400 V
fsw = 20 kHz
Th from 60 °C to 100 °C in steps of 5 °C

Figure 6 PFC-per leg

Typical available input current
as a function of switching frequency

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

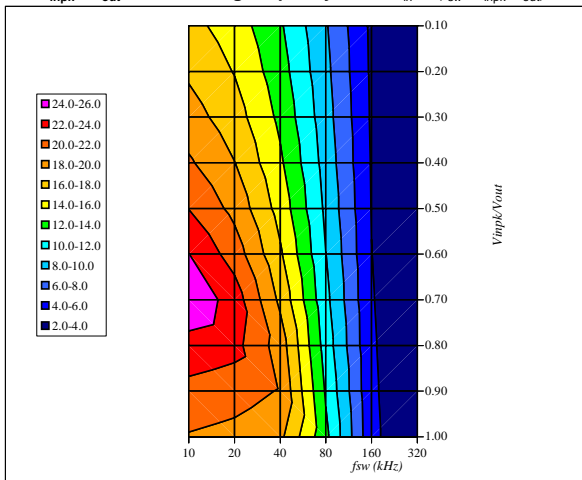


$T_j = T_{jmax} - 25 \text{ } ^\circ\text{C}$
DC link = 400 V
 $V_{inpk}/V_{out} = 0.8$
Th from 60 °C to 100 °C in steps of 5 °C

Figure 7 PFC-per leg

Typical available input current as a function
of V_{inpk} / V_{out} and switching frequency

$$I_{in} = f(f_{sw}, V_{inpk}/V_{out})$$

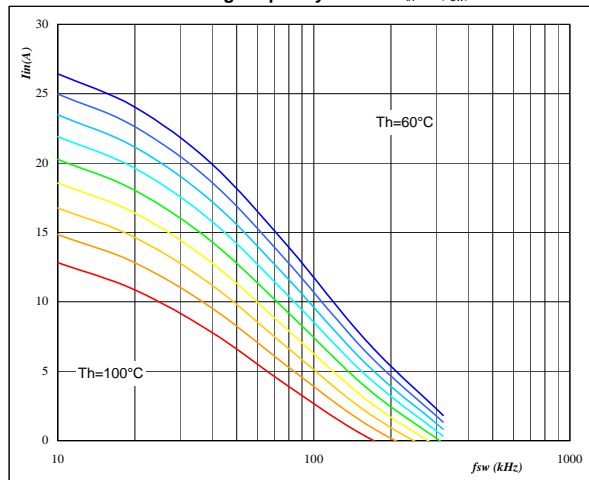


$T_j = T_{jmax} - 25 \text{ } ^\circ\text{C}$
DC link = 400 V
 $T_h = 80 \text{ } ^\circ\text{C}$

Figure 8 PFC-per leg

Typical available input current
as a function of switching frequency

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



$T_j = T_{jmax} - 25 \text{ } ^\circ\text{C}$
DC link = 400 V
 $V_{inpk}/V_{out} = 0.4$
Th from 60 °C to 100 °C in steps of 5 °C

Figure 9 PFC-per leg

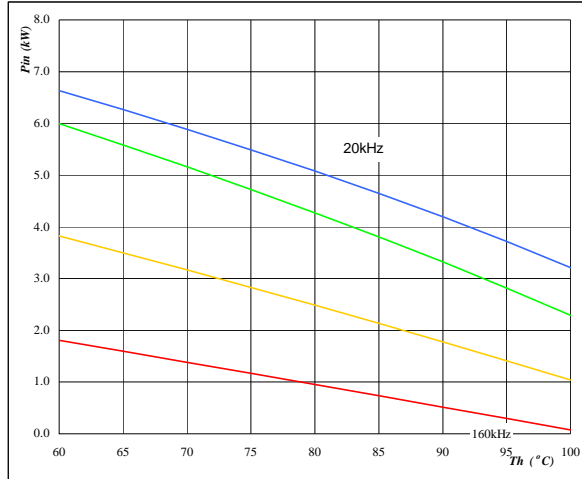
Typical available electric input power as a function of heatsink temperature
 $P_{in} = f(T_h)$

 $T_j = T_{jmax} - 25 \text{ } ^\circ\text{C}$
 DC link = 400 V
 $V_{inpk}/V_{out} = 0.8$ kHz
 fsw from 20 kHz to 160 kHz in steps of factor 2

Figure 10 PFC-per leg

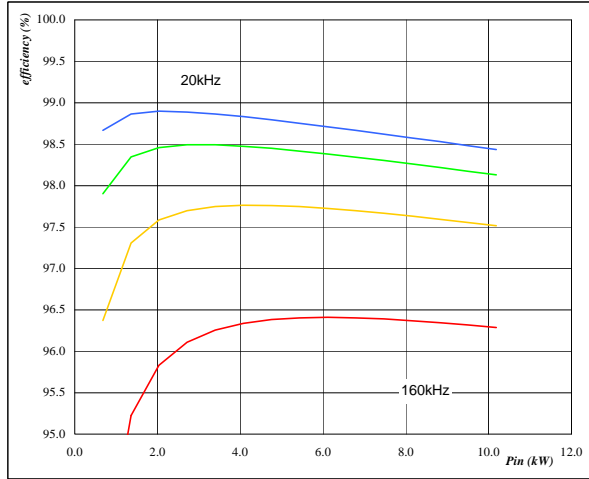
Typical efficiency as a function of input power
 efficiency = $f(P_{in})$

 $T_j = T_{jmax} - 25 \text{ } ^\circ\text{C}$
 DC link = 400 V
 $V_{inpk}/V_{out} = 0.8$ kHz
 fsw from 20 kHz to 160 kHz in steps of factor 2

Figure 11 PFC-per leg

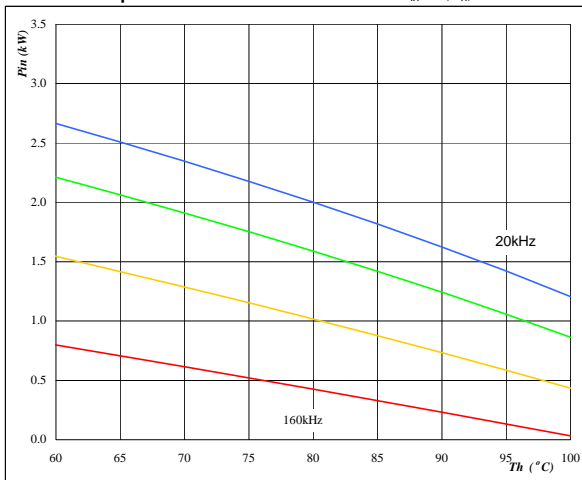
Typical available electric input power as a function of heatsink temperature
 $P_{in} = f(T_h)$

 $T_j = T_{jmax} - 25 \text{ } ^\circ\text{C}$
 DC link = 400 V
 $V_{inpk}/V_{out} = 0.4$
 fsw from 20 kHz to 160 kHz in steps of factor 2

Figure 12 PFC-per leg

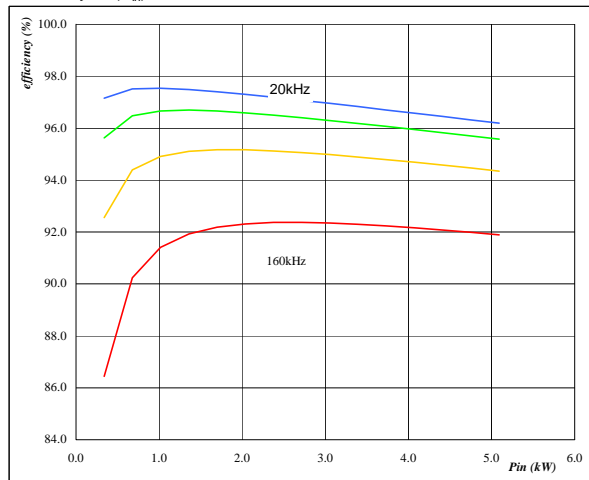
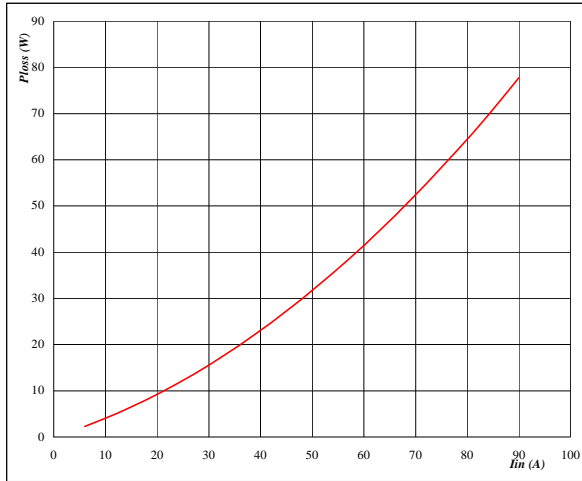
Typical efficiency as a function of input power
 efficiency = $f(P_{in})$

 $T_j = T_{jmax} - 25 \text{ } ^\circ\text{C}$
 DC link = 400 V
 $V_{inpk}/V_{out} = 0.4$
 fsw from 20 kHz to 160 kHz in steps of factor 2

Figure 13

Rectifier

Typical average static loss as a function of input current

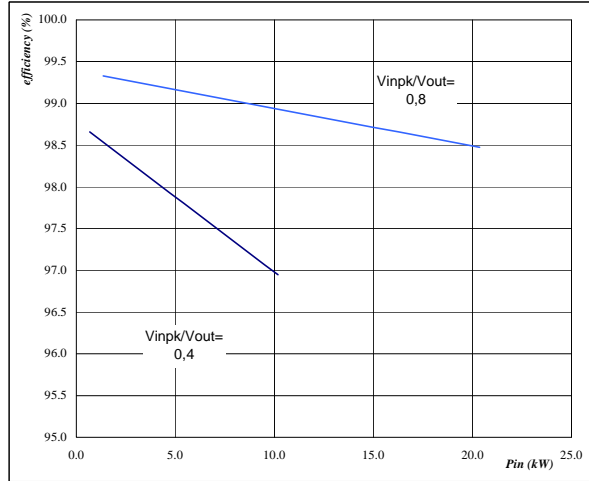
$$P_{loss} = f(I_{in})$$


 $T_j = 125 \text{ } ^\circ\text{C}$
Figure 14

Rectifier Bridge

Typical efficiency as a function of input power

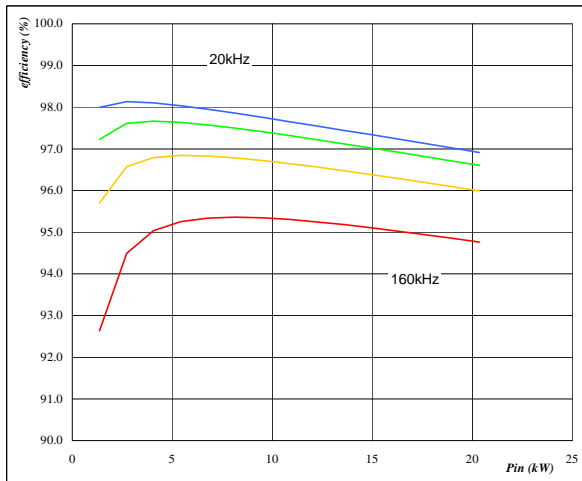
$$\text{efficiency} = f(P_{in})$$


 $T_j = 125 \text{ } ^\circ\text{C}$
Figure 15

Overall

Typical efficiency as a function of input power

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


 $T_j = T_{jmax} - 25 \text{ } ^\circ\text{C}$

 DC link = 400 V
 $V_{inpk}/V_{out} = 0.8 \text{ kHz}$

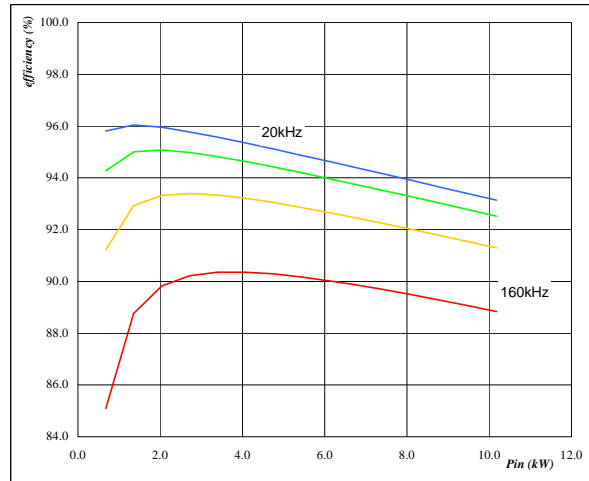
fsw from 20 kHz to 160 kHz in steps of factor 2

Figure 16

Overall

Typical efficiency as a function of input power

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


 $T_j = T_{jmax} - 25 \text{ } ^\circ\text{C}$

 DC link = 400 V
 $V_{inpk}/V_{out} = 0.4 \text{ kHz}$

fsw from 20 kHz to 160 kHz in steps of factor 2