**Boost PFC Application**

**General conditions**

<table>
<thead>
<tr>
<th>Boost PFC</th>
<th>600 V / 99 mΩ</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{in}$</td>
<td>10 V</td>
</tr>
<tr>
<td>$V_{out}$</td>
<td>0 V</td>
</tr>
<tr>
<td>$R_{on}$</td>
<td>2 Ω</td>
</tr>
<tr>
<td>$R_{off}$</td>
<td>2 Ω</td>
</tr>
<tr>
<td>$V_{in}$</td>
<td>$V_{in}$*sinωt</td>
</tr>
</tbody>
</table>

**figure 1**

Typical average static loss as a function of input current

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

- $T_j = 125 \ ^\circ C$
- $V_{inpk} / V_{out}$ from 0,1 to 1 in steps of 0,1

**figure 2**

Typical average static loss as a function of input current

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

- $T_j = 125 \ ^\circ C$
- $V_{inpk} / V_{out}$ from 0,1 to 1 in steps of 0,1

**figure 3**

Typical average switching loss as a function of input current

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

- $T_j = 125 \ ^\circ C$
- DC link = 400 V
- $f_{sw}$ from 20 kHz to 160 kHz in steps of factor 2

**figure 4**

Typical average switching loss as a function of input current

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

- $T_j = 125 \ ^\circ C$
- DC link = 400 V
- $f_{sw}$ from 20 kHz to 160 kHz in steps of factor 2
Boost PFC Application

**figure 5**

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

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

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

DC link = 400 V

$f_{sw} = 20$ kHz

Ts from 60 °C to 100 °C in steps of 5 °C

**figure 6**

Typical available input current as a function of switching frequency

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

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

DC link = 400 V

$V_{inpk}/V_{out} = 0,8$

Ts from 60 °C to 100 °C in steps of 5 °C

**figure 7**

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

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

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

DC link = 400 V

$V_{inpk}/V_{out} = 0,4$

Ts from 60 °C to 100 °C in steps of 5 °C

**figure 8**

Typical available input current as a function of switching frequency

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

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

DC link = 400 V

$V_{inpk}/V_{out} = 0,4$

Ts from 60 °C to 100 °C in steps of 5 °C
flow PFC 0

Boost PFC Application 600 V / 99 mΩ

**figure 9**
Typical available electric input power as a function of heatsink temperature

\[ P_{in} = f(T_s) \]

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

**figure 10**
Typical efficiency as a function of input power

\[ \text{efficiency} = f(P_{in}) \]

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

**figure 11**
Typical available electric input power as a function of heatsink temperature

\[ P_{in} = f(T_s) \]

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

**figure 12**
Typical efficiency as a function of input power

\[ \text{efficiency} = f(P_{in}) \]

\[ T_j = T_{jmax} - 25 \, ^\circ C \]
DC link = 400 V
\[ V_{out}/V_{in} = 0.4 \]
fsw from 20 kHz to 160 kHz in steps of factor 2
**Boost PFC Application**

Typical average static loss as a function of input current

\[ P_{\text{loss}} = f(I_{\text{in}}) \]

![Graph](image)

\( T_j = 125 \ ^\circ C \)

Typical efficiency as a function of input power

\[ \text{efficiency} = f(P_{\text{in}}) \]

![Graph](image)

\( T_j = 125 \ ^\circ C \)

DC link = 400 \ V

\( V_{\text{inpk}} / V_{\text{out}} = 0,8 \)

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

Typical efficiency as a function of input power

\[ \text{efficiency} = f(P_{\text{in}}) \]

![Graph](image)

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

DC link = 400 \ V

\( V_{\text{inpk}} / V_{\text{out}} = 0,4 \)

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

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