flowSOL 1 BI	DC Boost Application	650V / 41mOhm

General conditions

BOOST		
V_{GEon}	=	10 V
V_{GEoff}	=	0 V
R_{gon}	=	2 Ω
R_{goff}	=	2 Ω

Figure 1.   **MOSFET**

Typical average static loss as a function of input current Ii$_{RMS}$

$P_{loss}=f(I_{in})$
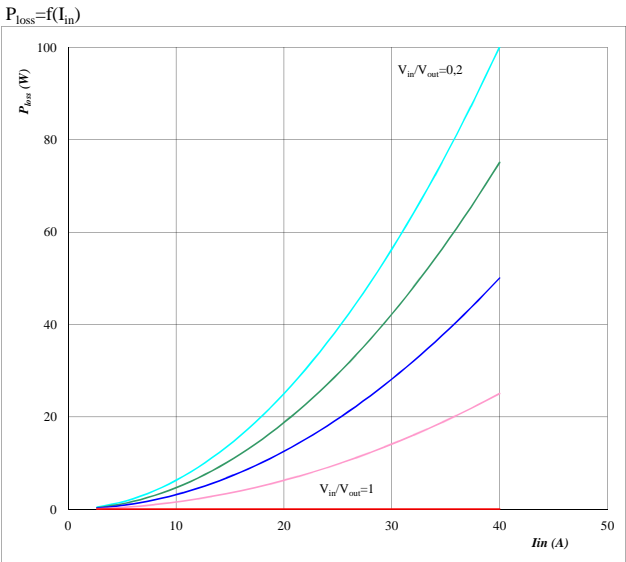
Conditions: T$_j$=   125   °C

Ratio of input DC voltage to output DC voltage

parameter: V_{in}/V_{out} from   0,2   to   1,0

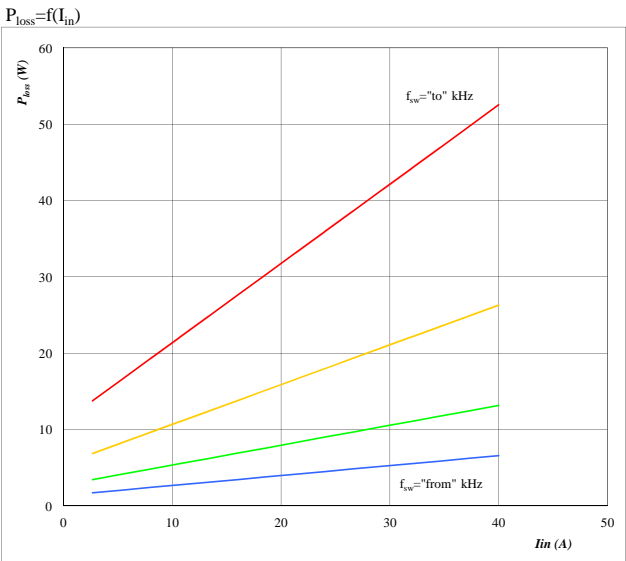   in   0,2   steps

Figure 2.   **FRED**

Typical average static loss as a function of input current Ii$_{RMS}$
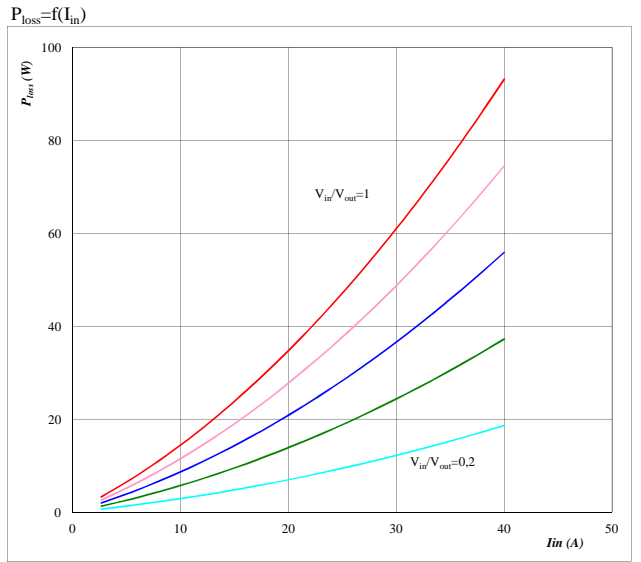
$P_{loss}=f(I_{in})$

Conditions: T$_j$=   125   °C

Ratio of input DC voltage to output DC voltage

parameter: V_{in}/V_{out} from   0,2   to   1,0

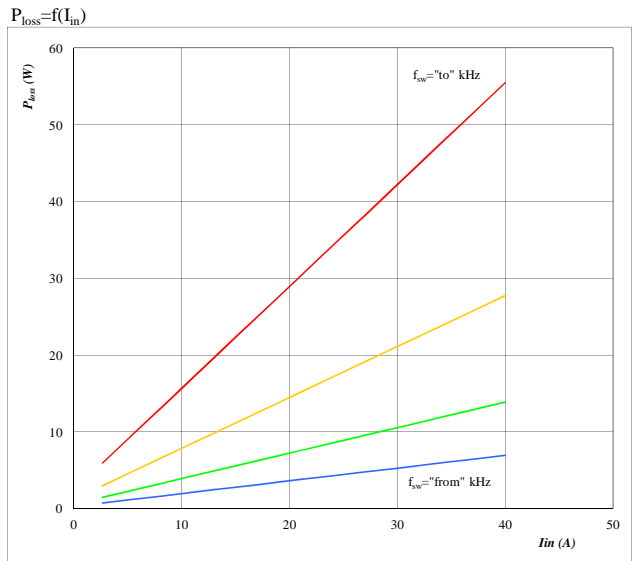   in   0,2   steps

Figure 3.   **MOSFET**

Typical average switching loss as a function of input current

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

Conditions: Tj=   125   °C

                      V_{out} =   350   V

Sw. freq.   fsw from   16   kHz to   128   kHz

                  in steps of factor 2

Figure 4.   **FRED**

**Typical average switching loss as a function of input current**

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

Conditions: Tj=   125   °C

                      V_{out} =   350   V

Sw. freq.   fsw from   16   kHz to   128   kHz

                  in steps of factor 2

flowSOL 1 BI	DC Boost Application	650V / 41mOhm

Figure 5. per PHASE

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

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

Figure 6. per PHASE

Typical available input current as a function of switching frequency
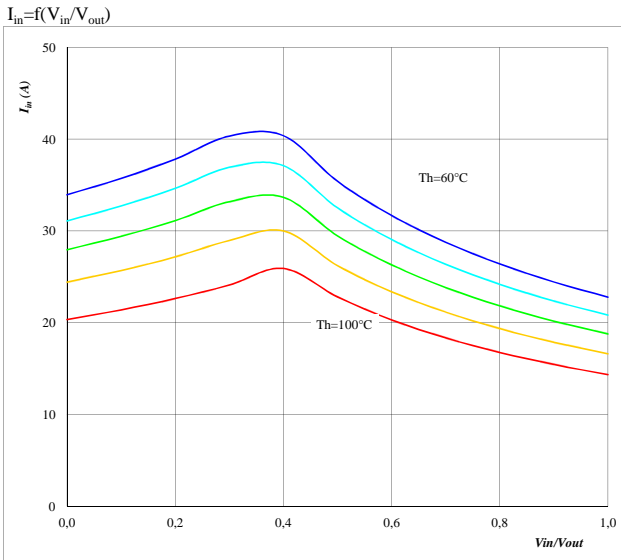
$I_{in}=f(f_{sw})$

Conditions: T_j= 125°C

DC link=	350	V		f_{sw}=	20	kHz
parameter:	Heatsink temp.					
	Th from	60	°C to	100	°C	
	in	10	°C	steps		
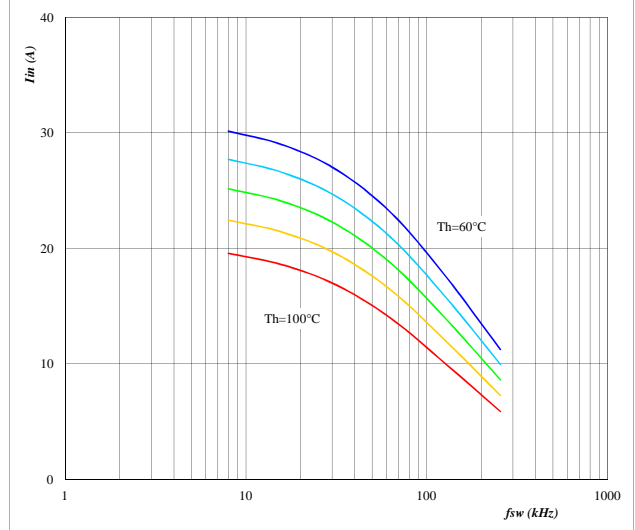
Conditions: T_j= 125°C

DC link=	350	V		Vin	250	V
parameter:	Heatsink temp.					
	Th from	60	°C to	100	°C	
	in	10	°C	steps		

Figure 7. per PHASE

Typical available input current as a function of f_{sw} and V_{in}/V_{out}

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

I_{in} (A)

- 32,0-36,0
- 28,0-32,0
- 24,0-28,0
- 20,0-24,0
- 16,0-20,0
- 12,0-16,0
- 8,0-12,0
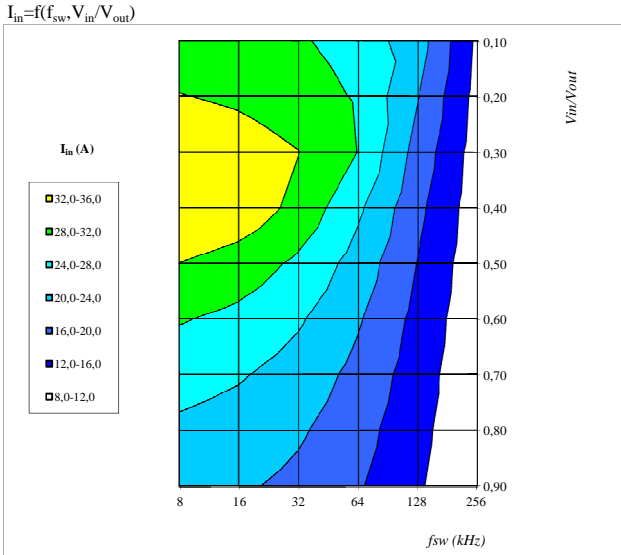
Figure 8. per PHASE

Typical available electric input power as a function of heatsink temperature

$P_{in}=f(T_h)$

Conditions: Tj= 125°C
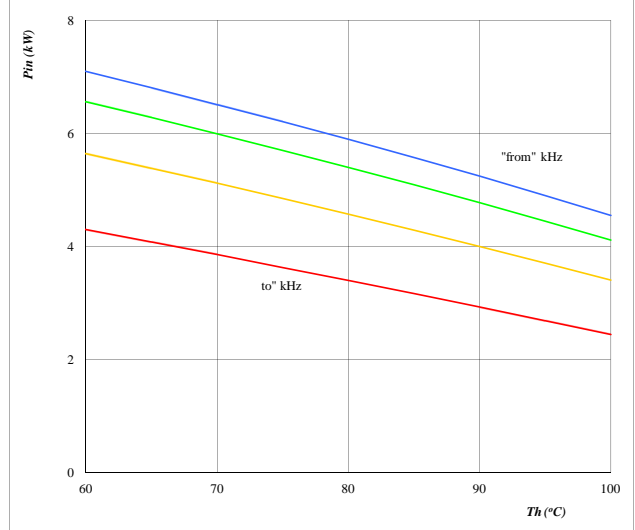
DC link=	350 V	
Th=	80 °C	

Conditions: Tj= 125°C

Vin	250 V	DC link=	350 V	
Sw. freq.	fsw from	16	kHz to	128 kHz

flowSOL 1 BI   **DC Boost Application**   **650V / 41mOhm**

Figure 9.   **per PHASE**

Typical efficiency as a function of input power

η=f(Pin)
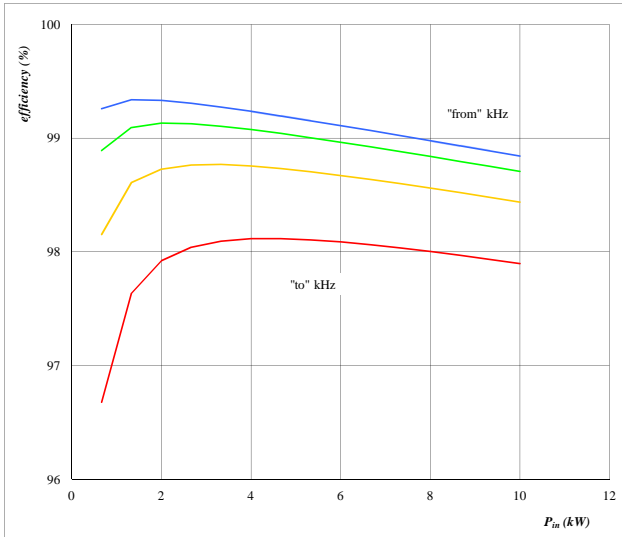
Conditions: Tj= 125°C

       Vin   250 V   DC link=   350 V

parameter:

Sw. freq.   fsw from   16   kHz to   128 kHz

| flowSOL 1 BI | Output Inverter Application | 650V / 41mOhm |

General conditions

H Bridge SPWM

V_{GEon}	=	10 V
V_{GEoff}	=	0 V
R_{gon}	=	2 Ω
R_{goff}	=	2 Ω

Figure 1 — MOSFET

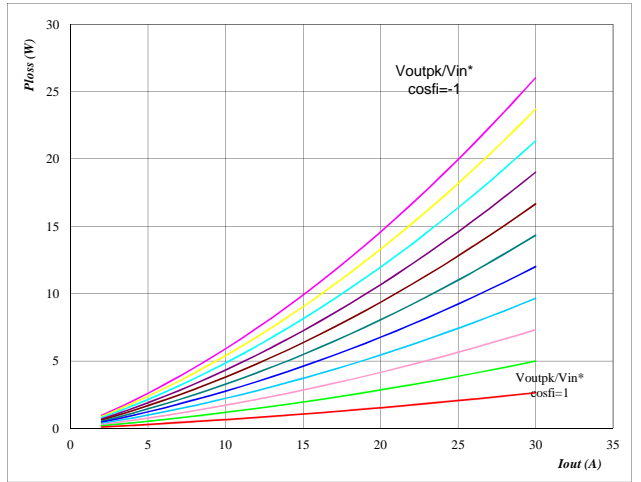**Typical average static loss as a function of output current**

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

At
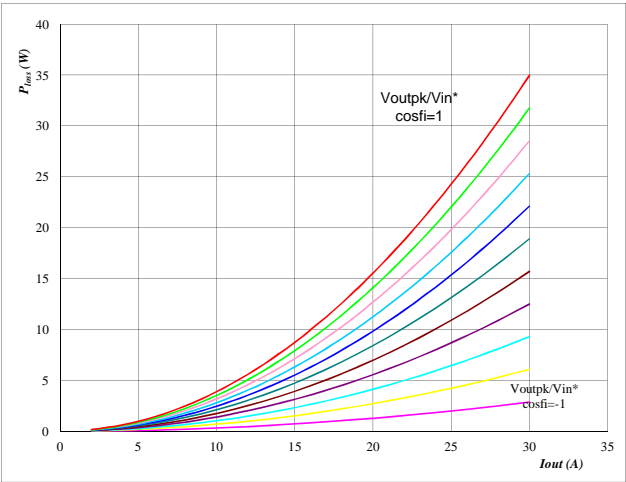
T_j = 125 ℃

Mi*cosfi from -1 to 1 in steps of 0,2

Figure 2 — FWD
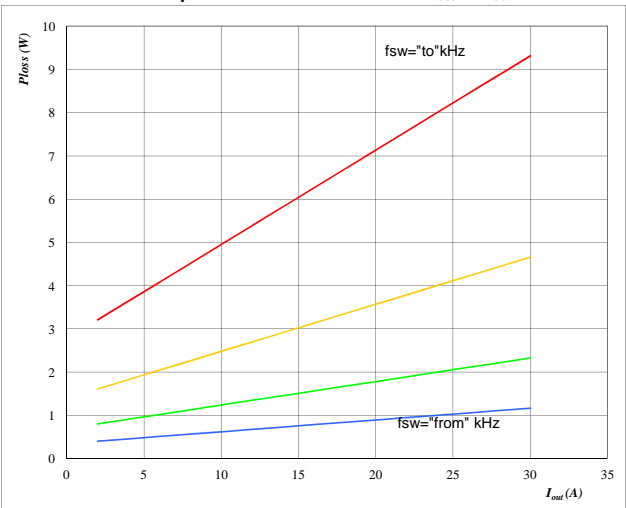
$P_{loss} = f(I_{out})$

At

T_j = 125 ℃

Mi*cosfi from -1 to 1 in steps of 0,2

Figure 3 — MOSFET

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

At

T_j = 125 ℃

DC link = 350 V

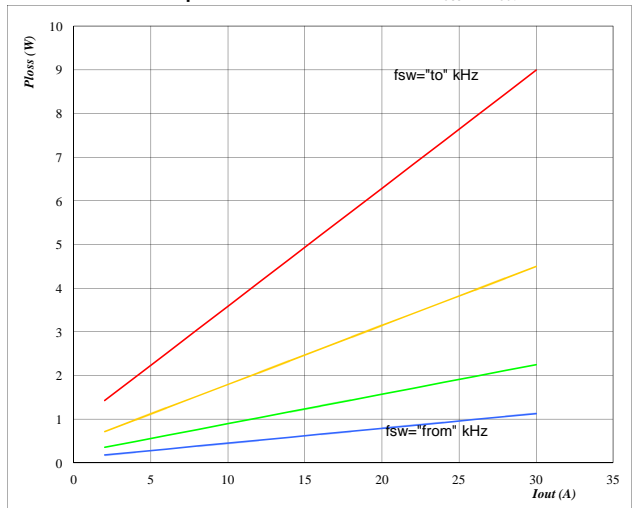fsw from 8 kHz to 64 kHz in steps of factor 2

Figure 4 — FWD

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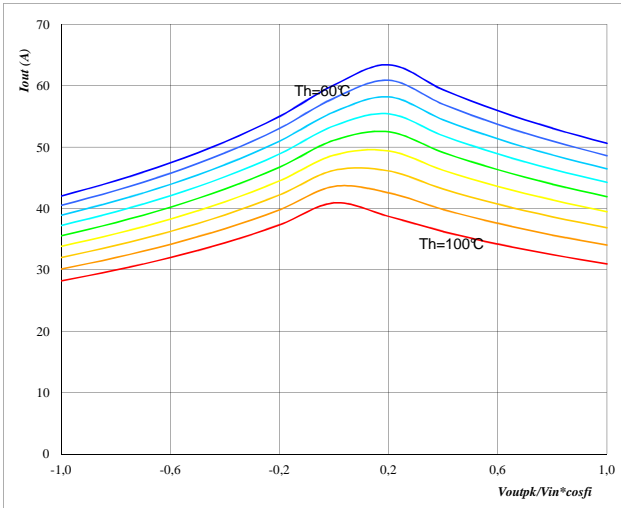

At

T_j = 125 ℃

DC link = 350 V

fsw from 8 kHz to 64 kHz in steps of factor 2

flowSOL 1 BI | **Output Inverter Application** | **650V / 41mOhm**

Figure 5	Phase

**Typical available 50Hz output current
as a function Mi*cosfi** $I_{out} = f(Mi*cosfi)$

At

T_j =	125	℃
DC link =	350	V
fsw =	16	kHz

Th from 60 ℃ to 100 ℃ in steps of 5 ℃

Figure 6	Phase

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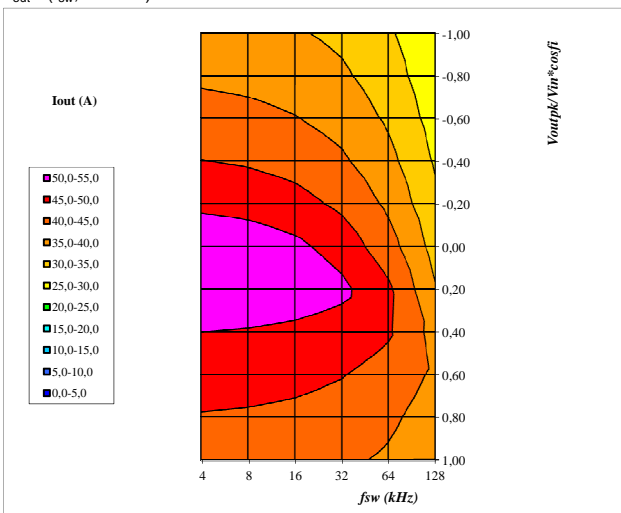as a function of switching frequency** $I_{out} = f(f_{sw})$

At
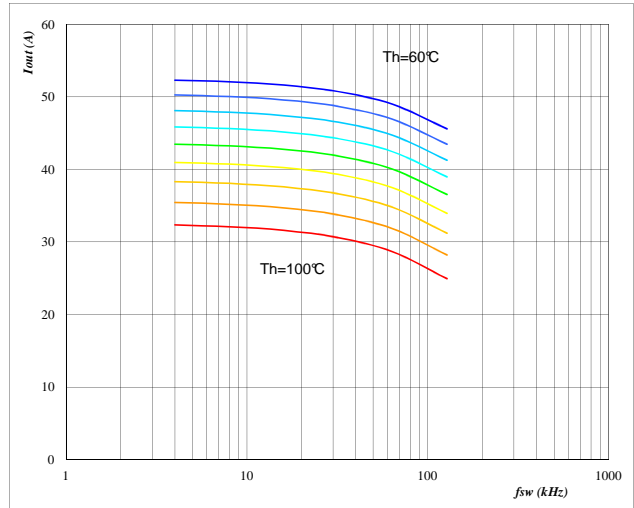
T_j =	125	℃
DC link =	350	V
Mi*cosfi =	1	

Th from 60 ℃ to 100 ℃ in steps of 5 ℃

Figure 7	Phase

**Typical available 50Hz output current
as a function of V_{outpk}/V_{in}*cosfi and switching frequency**
$I_{out}=f(f_{sw},Mi*cosfi)$

At

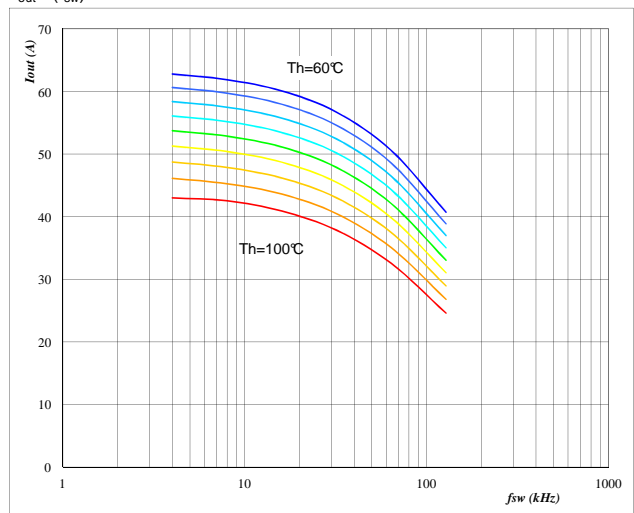|		
T_j =	125	℃
DC link =	350	V
T_h =	80	℃

Figure 8	Phase

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

At

T_j =	125	℃
DC link =	350	V
Mi*cosfi =	0	

Th from 60 ℃ to 100 ℃ in steps of 5 ℃

flowSOL 1 BI   **Output Inverter Application**   **650V / 41mOhm**

Figure 9   Inverter

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

At
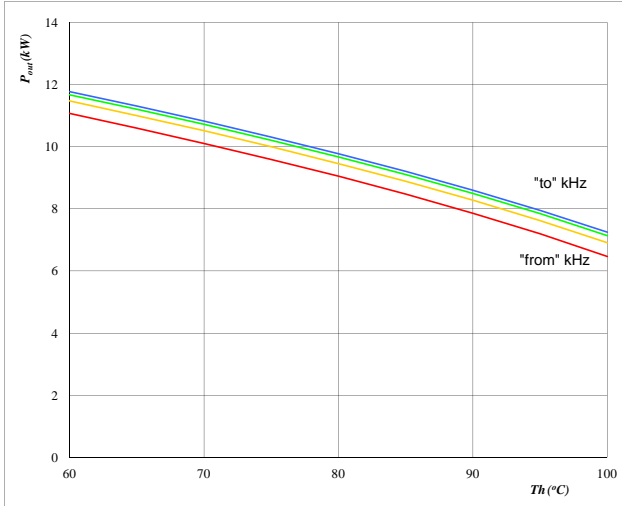
T_j =	125	°C
DC link =	350	V
Mi =	1	
cosfi =	1	

fsw from 8 kHz to 64 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	°C
DC link =	350	V
Mi =	1	
cosfi =	1	

fsw from 8 kHz to 64 kHz in steps of factor 2