# Vincotech

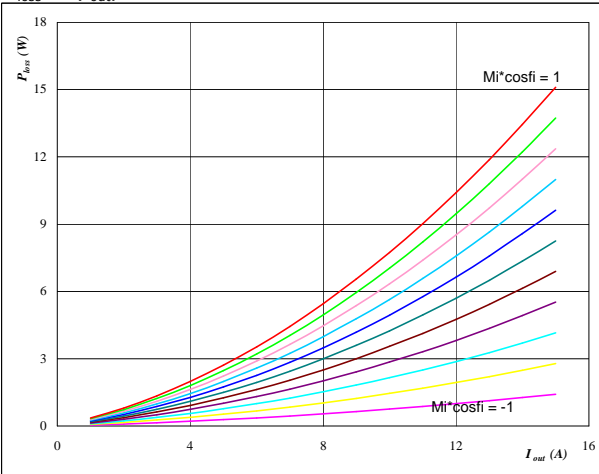| *flow* PIM 0 | Output Inverter Application | 600 V / 10 A |
|---|---|---|

### General conditions

| 3phase SPWM | | |
|---|---|---|
| $V_{GEon}$ | = | 15 V |
| $V_{GEoff}$ | = | 0 V |
| $R_{gon}$ | = | 32 Ω |
| $R_{goff}$ | = | 16 Ω |

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**Figure 1**  IGBT

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



**At**

$T_j$ = 125 °C

Mi*cosφ from -1 to 1 in steps of 0,2

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**Figure 2**  FWD

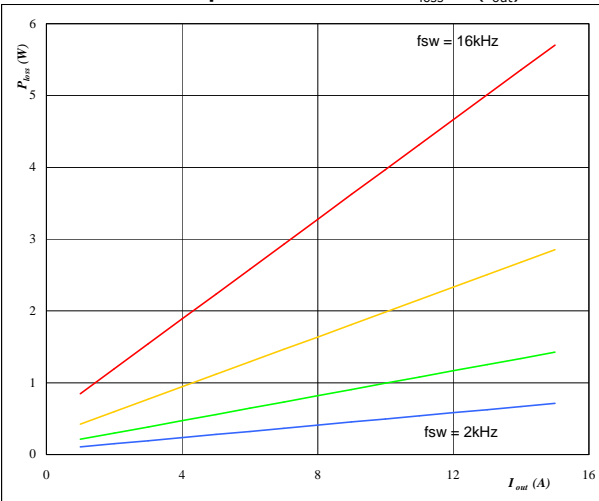**Typical average static loss as a function of output current**
$P_{loss} = f(I_{out})$



**At**
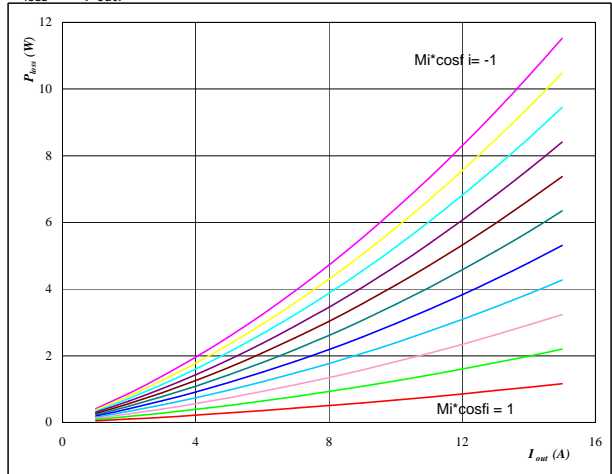
$T_j$ = 125 °C

Mi*cosφ from -1 to 1 in steps of 0,2

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**Figure 3**  IGBT

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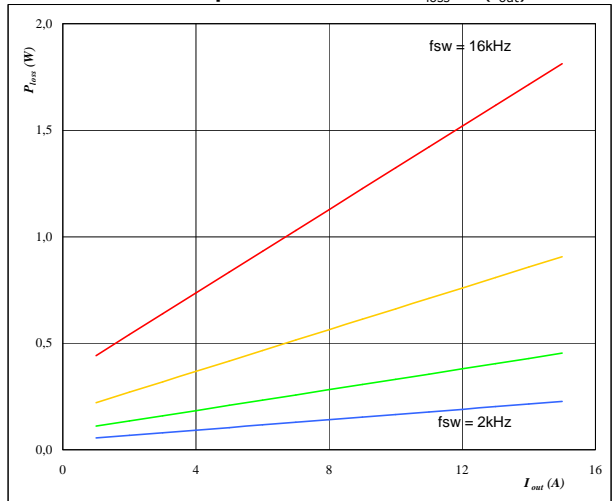


**At**

$T_j$ = 125 °C

DC link = 320 V

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

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**Figure 4**  FWD

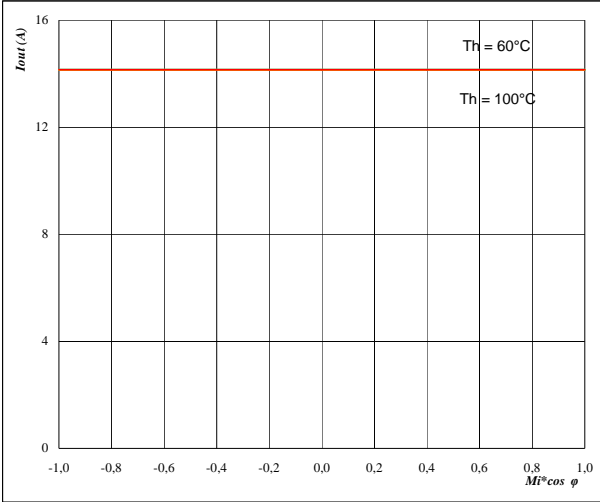**Typical average switching loss as a function of output current**  $P_{loss} = f(I_{out})$



**At**

$T_j$ = 125 °C

DC link = 320 V

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

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| **Figure 5** | Phase |
|---|---|

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



**At**
| | | |
|---|---|---|
| $T_j$ = | 125 | °C |
| DC link = | 320 | 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**     $I_{out} = f(f_{sw})$
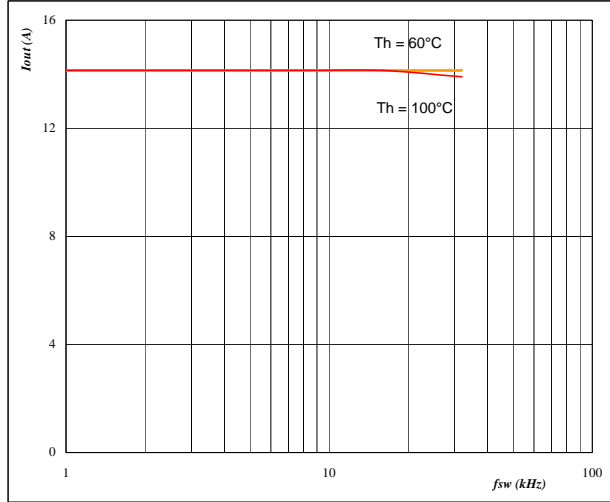


**At**
| | | |
|---|---|---|
| $T_j$ = | 125 | °C |
| DC link = | 320 | V |
| Mi*cos φ = | 0,8 | |
| $T_h$ from | 60 °C to 100 °C in steps of 5 °C | |

| **Figure 7** | Phase |
|---|---|

**Typical available 50Hz output current as a function of Mi*cos φ and switching frequency**     $I_{out} = f(f_{sw}, Mi*\cos \varphi)$
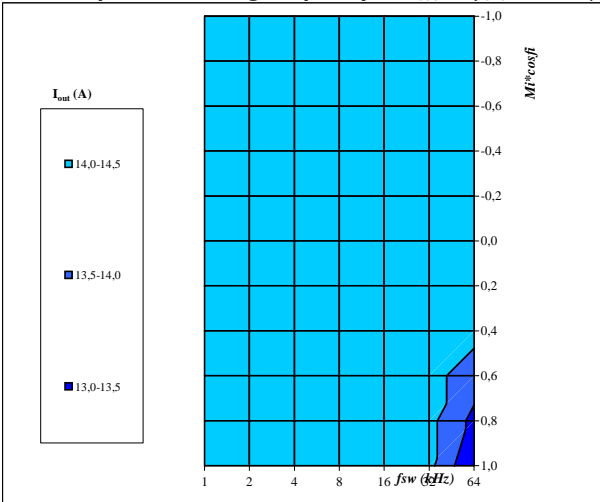


**At**
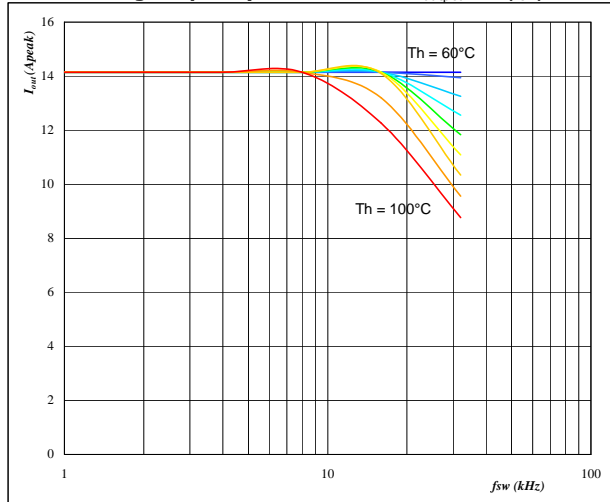| | | |
|---|---|---|
| $T_j$ = | 125 | °C |
| DC link = | 320 | V |
| $T_h$ = | 80 | °C |

| **Figure 8** | Phase |
|---|---|

**Typical available 0Hz output current as a function of switching frequency**     $I_{outpeak} = f(f_{sw})$



**At**
| | | |
|---|---|---|
| $T_j$ = | 125 | °C |
| DC link = | 320 | V |
| $T_h$ from | 60 °C to 100 °C in steps of 5 °C | |
| Mi = | 0 | |

**flow PIM 0**     **Output Inverter Application**     **600 V / 10 A**

| **Figure 9** | Inverter |
|---|---|

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



**At**
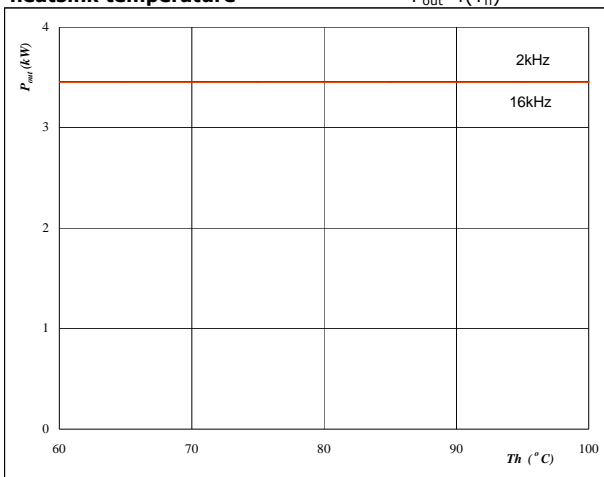
| | | |
|---|---|---|
| $T_j$ = | 125 | °C |
| DC link = | 320 | V |
| Mi = | 1 | |
| cos φ= | 0,80 | |
| $f_{sw}$ from | 2 kHz to 16 kHz in steps of factor 2 | |

| **Figure 10** | Inverter |
|---|---|

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



**At**
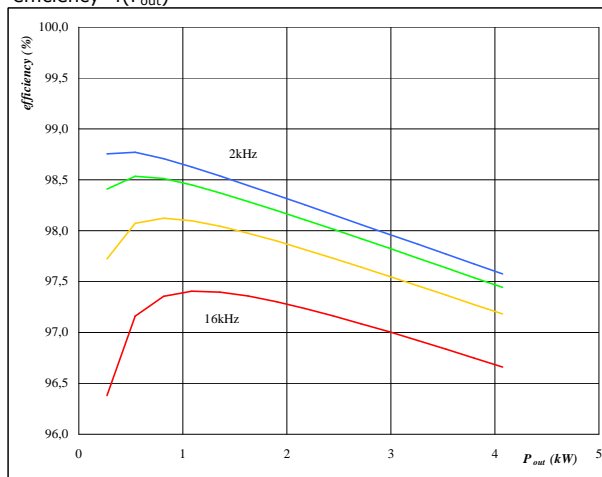
| | | |
|---|---|---|
| $T_j$ = | 125 | °C |
| DC link = | 320 | V |
| Mi = | 1 | |
| cos φ= | 0,80 | |
| $f_{sw}$ from | 2 kHz to 16 kHz in steps of factor 2 | |

| **Figure 11** | Inverter |
|---|---|

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



| Switching frequency (kHz) | 0,75 / 0,55 | 1,00 / 0,74 | 1,50 / 1,10 | 2,00 / 1,47 | 3,00 / 2,21 | 5,00 / 3,68 |
|---|---|---|---|---|---|---|
| 1 | 533 | 399 | 266 | 200 | 133 | 0 |
| 2 | 533 | 399 | 266 | 200 | 133 | 0 |
| 4 | 533 | 399 | 266 | 200 | 133 | 0 |
| 8 | 533 | 399 | 266 | 200 | 133 | 0 |
| 16 | 533 | 399 | 266 | 200 | 133 | 0 |

Motor nominal power (HP/kW)

**At**
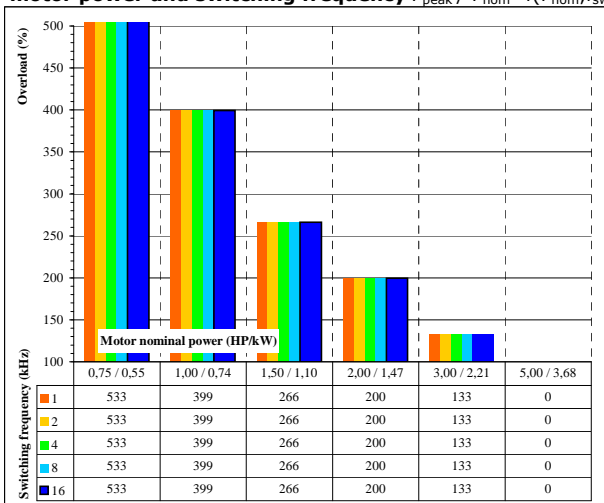
| | | |
|---|---|---|
| $T_j$ = | 125 | °C |
| DC link = | 320 | V |
| Mi = | 1 | |
| cos φ= | 0,8 | |
| $f_{sw}$ from | 1 kHz to 16kHz in steps of factor 2 | |
| $T_h$ = | 80 | °C |
| Motor eff = | 0,85 | |