

General conditions

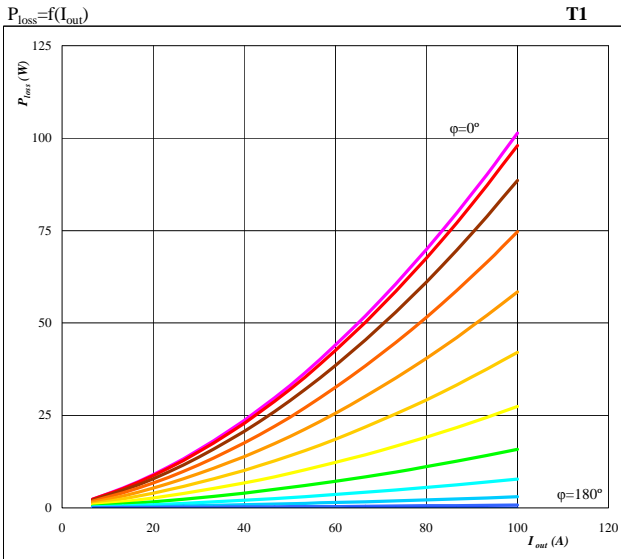
Vout= 230 VAC

half bridge IGBT	
V_{GEon}	= 15 V
V_{GEoff}	= -15 V
R_{gon}	= 8
R_{goff}	= 8

neutral point IGBT	
V_{GEon}	= 15 V
V_{GEoff}	= -15 V
R_{gon}	= 8
R_{goff}	= 8

Figure 1. half bridge IGBT

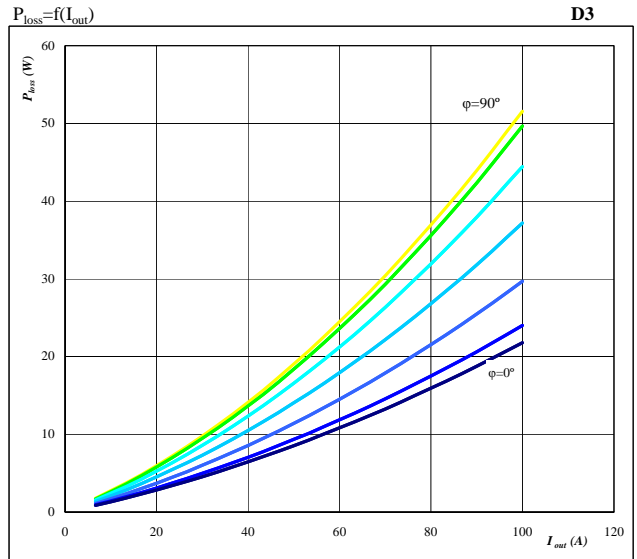
Typical average static loss as a function of output current I_{oRMS}



Conditions: $T_j = 150$ °C
parameter: ϕ from 0° to 180°
in 12 steps

Figure 2. neutral point FWD

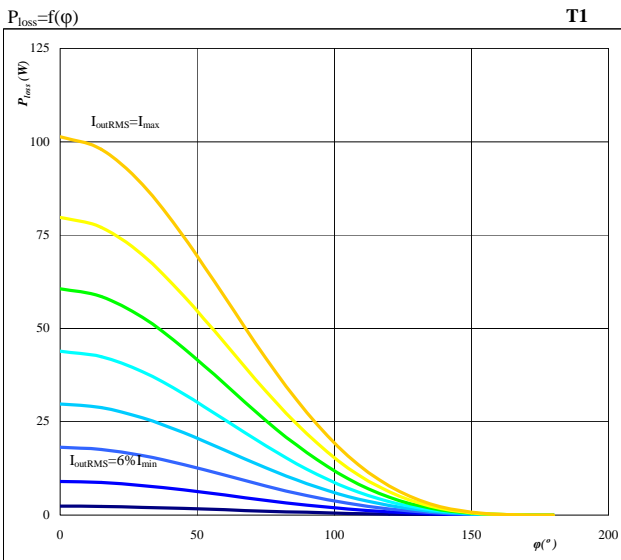
Typical average static loss as a function of output current I_{oRMS}



Conditions: $T_j = 150$ °C
parameter: ϕ from 0° to 180°
in 12 steps

Figure 3. half bridge IGBT

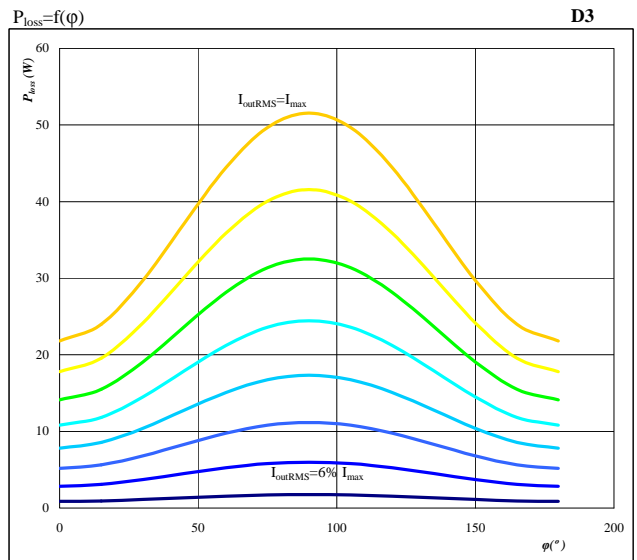
Typical average static loss as a function of phase displacement ϕ



Conditions: $T_j = 150$ °C
parameter: I_{oRMS} from 6,67 A to 100 A
in steps of 13 A

Figure 4. neutral point FWD

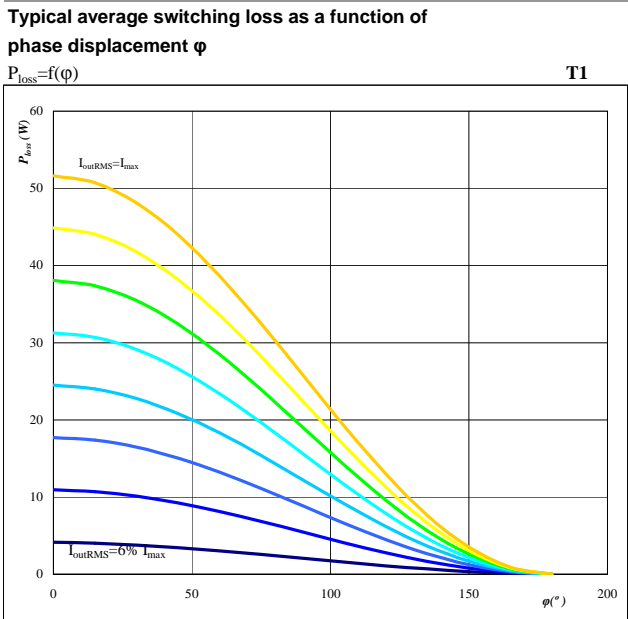
Typical average static loss as a function of phase displacement ϕ



Conditions: $T_j = 150$ °C
parameter: I_{oRMS} from 6,67 A to 100 A
in steps of 13 A

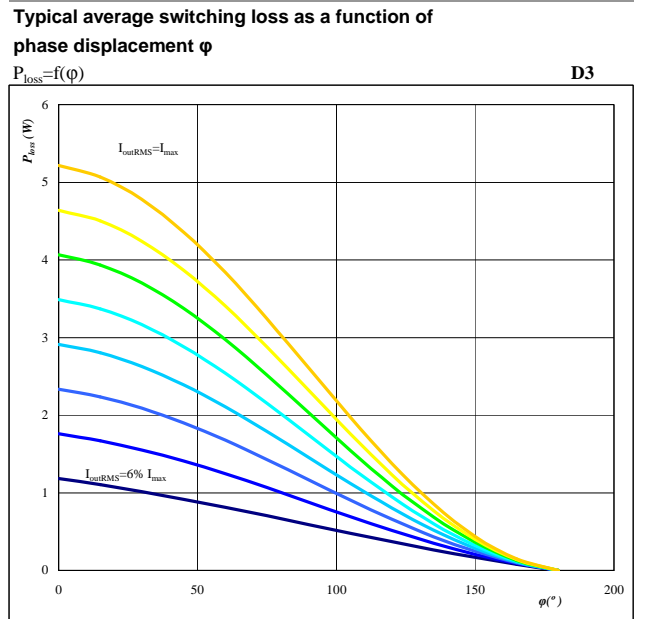
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Figure 5. half bridge IGBT



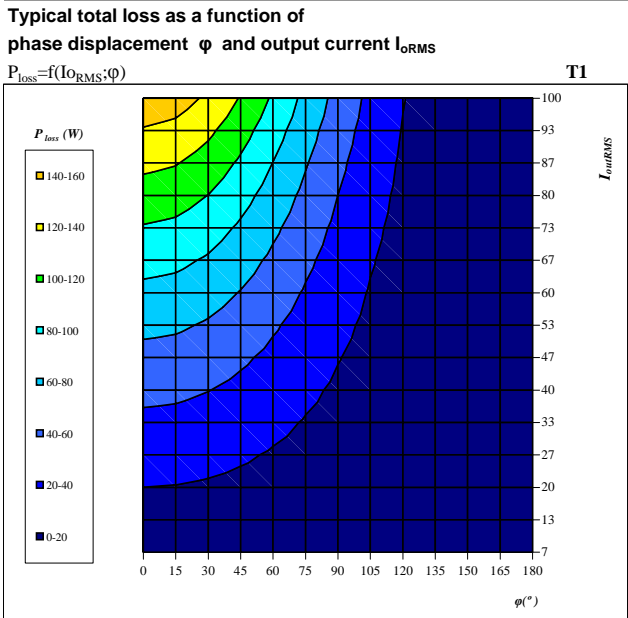
Conditions: $T_j = 150$ °C
 $f_{sw} = 16$ kHz
 DC link = 700 V
 parameter: I_{oRMS} from 6,67 A to 100 A
 in steps of 13 A

Figure 6. neutral point FWD



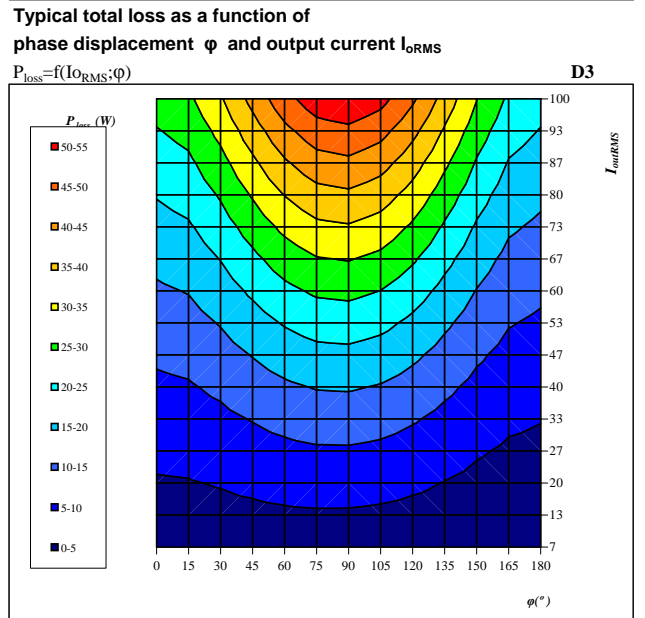
Conditions: $T_j = 150$ °C
 $f_{sw} = 16$ kHz
 DC link = 700 V
 parameter: I_{oRMS} from 6,67 A to 100 A
 in steps of 13 A

Figure 7. half bridge IGBT



Conditions: $T_j = 150$ °C
 DC link = 700 V
 $f_{sw} = 16$ kHz

Figure 8. neutral point FWD

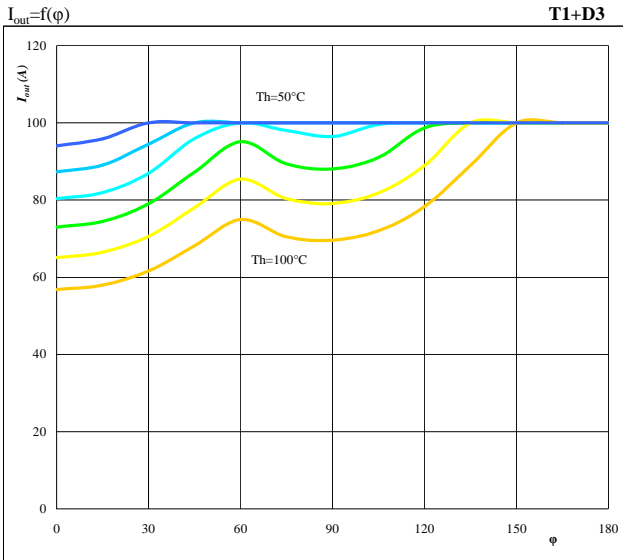


Conditions: $T_j = 150$ °C
 DC link = 700 V
 $f_{sw} = 16$ kHz

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Figure 9. for half bridge IGBT+ neutral point FWD

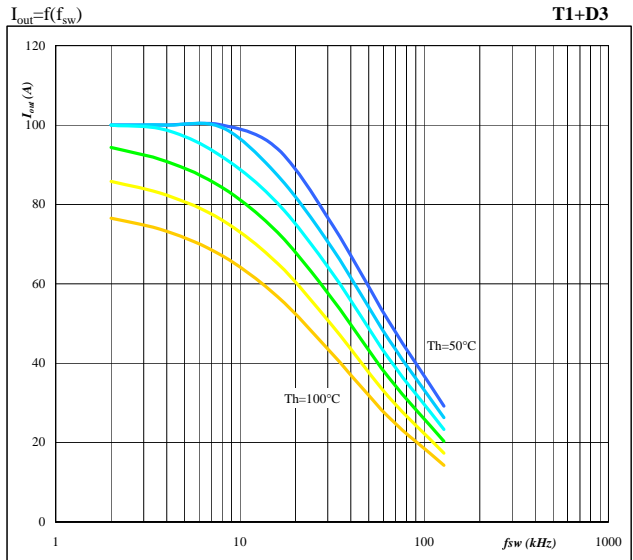
Typical available output current as a function of phase displacement φ



Conditions: $T_j = 150/125$ °C $f_{sw} = 16$ kHz
 DC link = 700 V
 parameter: Heatsink temp.
 T_h from 50 °C to 100 °C
 in 10 °C steps

Figure 10. for half bridge IGBT+ neutral point FWD

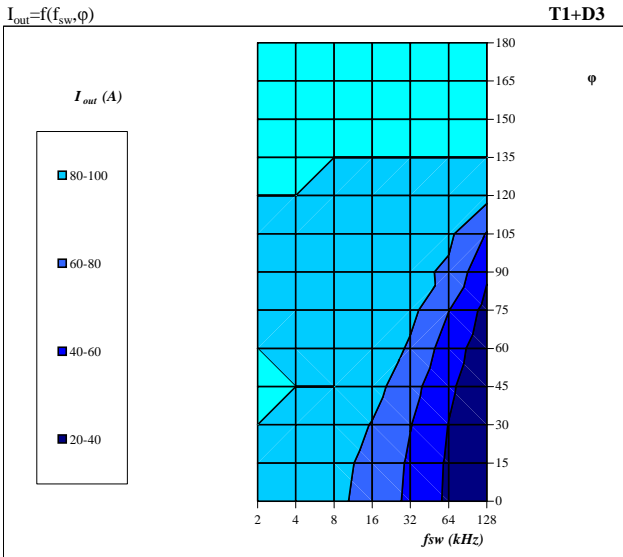
Typical available output current as a function of switching frequency f_{sw}



Conditions: $T_j = 150/125$ °C $\varphi = 0$ °
 DC link = 700 V
 parameter: Heatsink temp.
 T_h from 50 °C to 100 °C
 in 10 °C steps

Figure 11. for half bridge IGBT+ neutral point FWD

Typical available 50Hz output current as a function of f_{sw} and phase displacement φ



Conditions: $T_j = 150/125$ °C
 DC link = 700 V
 $T_h = 80$ °C

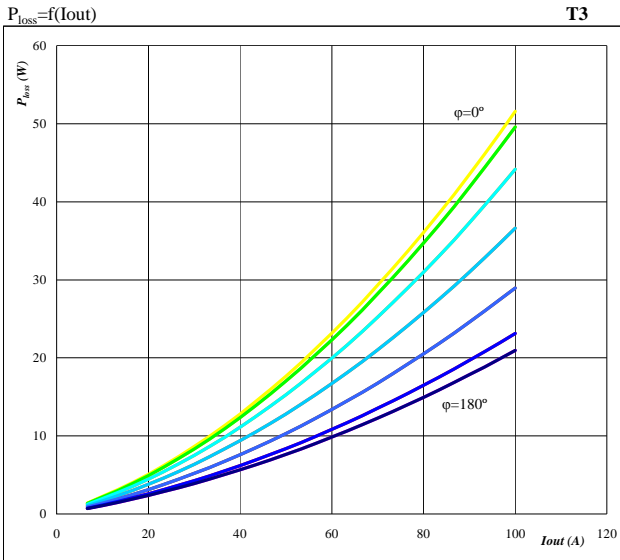
Figure 12. neutral point IGBT
Typical average static loss as a function of output current

 Conditions: $T_j = 150$ °C
 parameter: φ from 0° to 180°
 in 12 steps

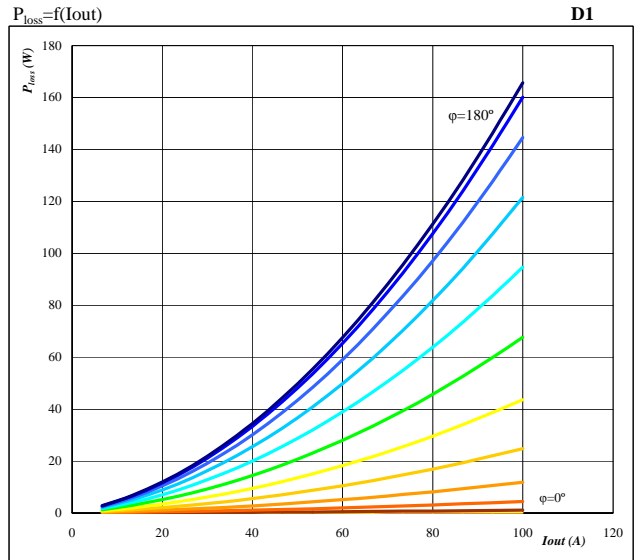
Figure 13. half bridge FWD
Typical average static loss as a function of output current

 Conditions: $T_j = 150$ °C
 parameter: φ from 0° to 180°
 in 12 steps

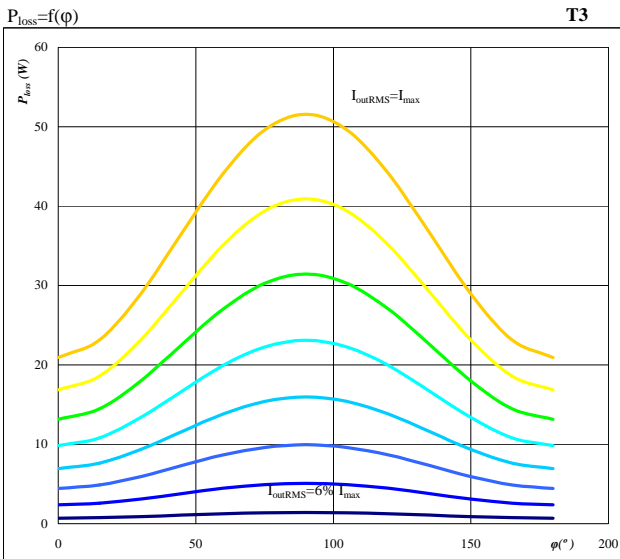
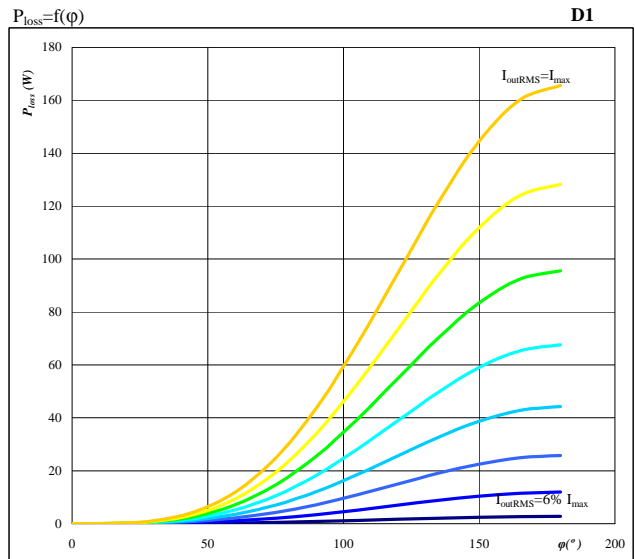
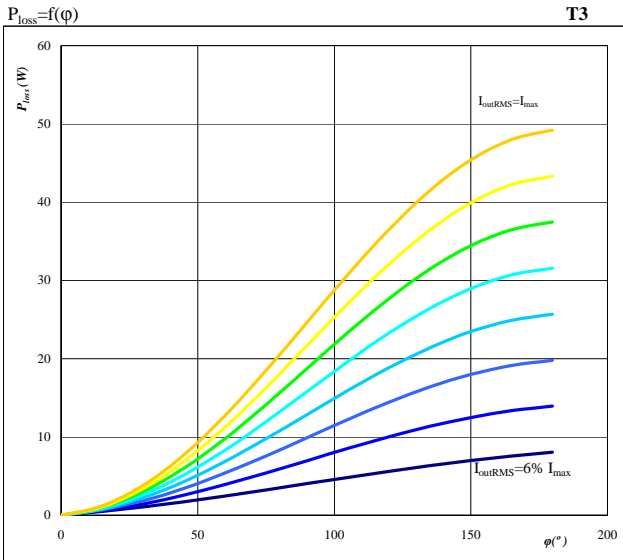
Figure 14. neutral point IGBT
Typical average static loss as a function of phase displacement

 Conditions: $T_j = 150$ °C
 parameter: I_{oRMS} from 7 A to 100 A
 in steps of 13 A

Figure 15. half bridge FWD
Typical average static loss as a function of phase displacement

 Conditions: $T_j = 125$ °C
 parameter: I_{oRMS} from 7 A to 100 A
 in steps of 13 A

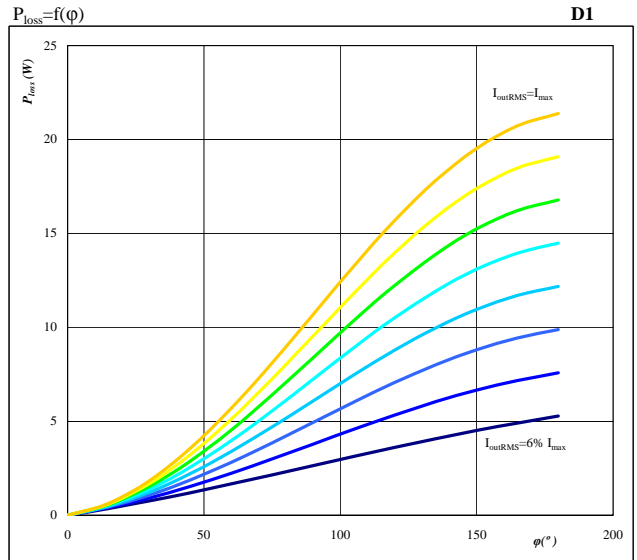
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Figure 16. neutral point IGBT
 Typical average switching loss as a function of phase displacement



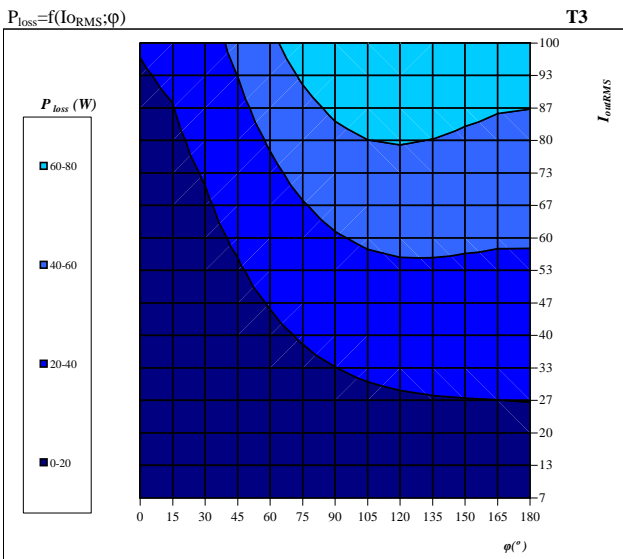
Conditions: $T_j = 150$ °C $f_{sw} = 16$ kHz
 DC link = 700 V
 parameter: I_{oRMS} from 7 A to 100 A
 in steps of 13 A A

Figure 17. half bridge FWD
 Typical average switching loss as a function of phase displacement



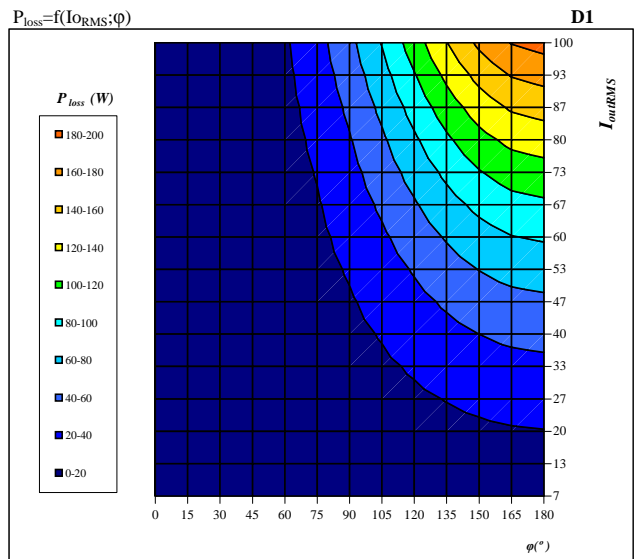
Conditions: $T_j = 125$ °C $f_{sw} = 16$ kHz
 DC link = 700 V
 parameter: I_{oRMS} from 7 A to 100 A
 in steps of 13 A A

Figure 18. neutral point IGBT
 Typical total loss as a function of phase displacement and I_{outRMS}



Conditions: $T_j = 150$ °C
 DC link = 700 V
 $f_{sw} = 16$ kHz

Figure 19. half bridge FWD
 Typical total loss as a function of phase displacement and I_{outRMS}

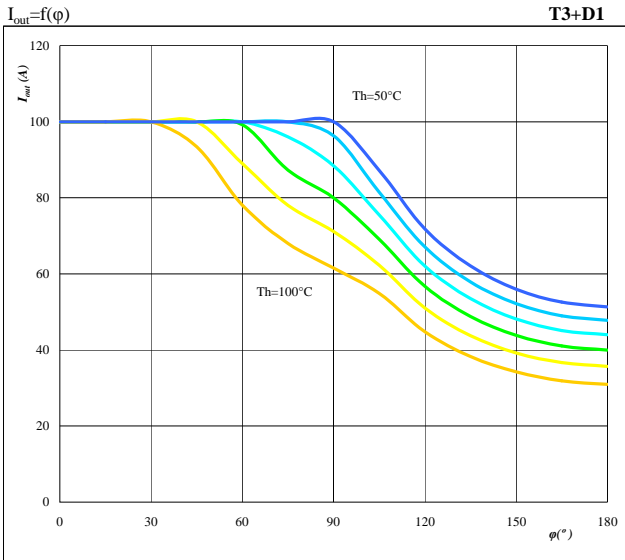


Conditions: $T_j = 125$ °C
 DC link = 700 V
 $f_{sw} = 16$ kHz

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Figure 20. for neutral point IGBT+ half bridge FWD

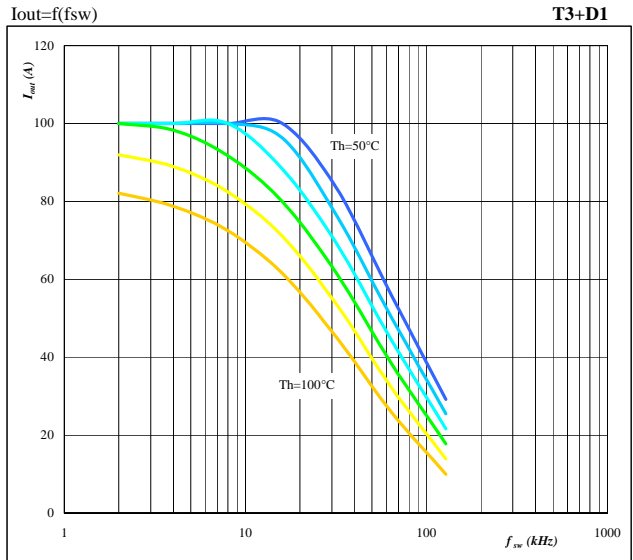
Typical available output current as a function of phase displacement



Conditions: $T_j = 150/125 \text{ } ^\circ\text{C}$ $f_{sw} = 16 \text{ kHz}$
 DC link = 700 V
 parameter: Heatsink temp.
 T_h from 50 $^\circ\text{C}$ to 100 $^\circ\text{C}$
 in 10 $^\circ\text{C}$ steps

Figure 21. for neutral point IGBT+ half bridge FWD

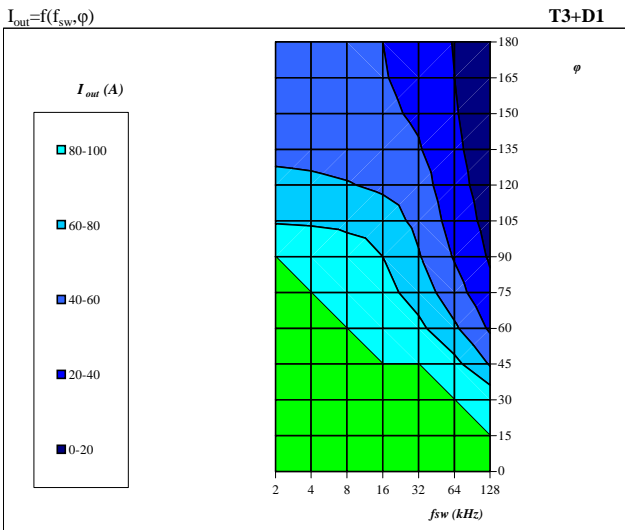
Typical available output current as a function of switching frequency



Conditions: $T_j = 150/125 \text{ } ^\circ\text{C}$ $\phi = 90^\circ$
 DC link = 700 V
 parameter: Heatsink temp.
 T_h from 50 $^\circ\text{C}$ to 100 $^\circ\text{C}$
 in 10 $^\circ\text{C}$ steps

Figure 22. for neutral point IGBT+ half bridge FWD

Typical available 50Hz output current as a function of fsw and phase displacement



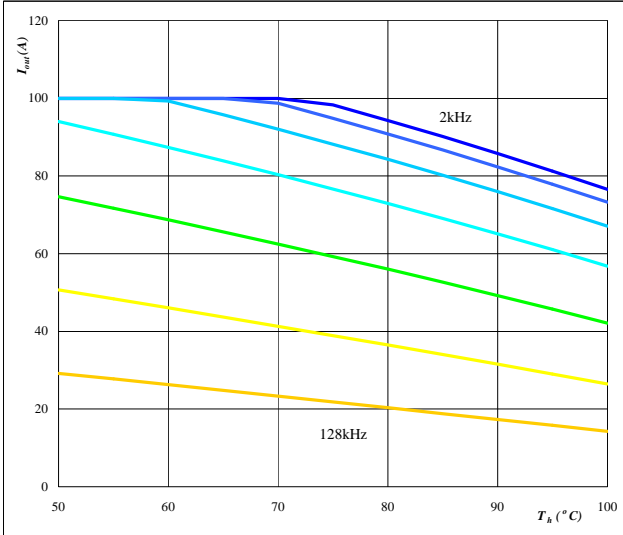
Conditions: $T_j = 150/125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $T_h = 80 \text{ } ^\circ\text{C}$

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Figure 23. per PHASE

Typical available output current as a function of heat sink temperature

$I_{out}=f(T_h)$

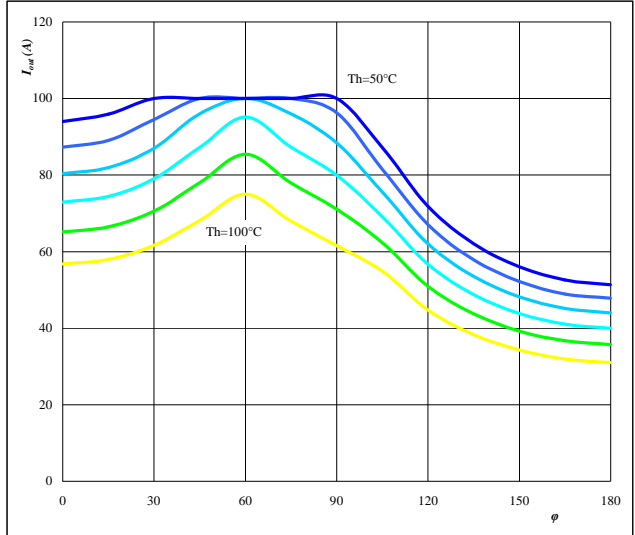


Conditions: $T_j = 150/125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $\phi = 0^\circ$
 parameter: Switching freq.
 fsw from 2 kHz to 128 kHz
 in steps of factor 2

Figure 24. per PHASE

Typical available output current as a function of phase displacement

$I_{out}=f(\phi)$

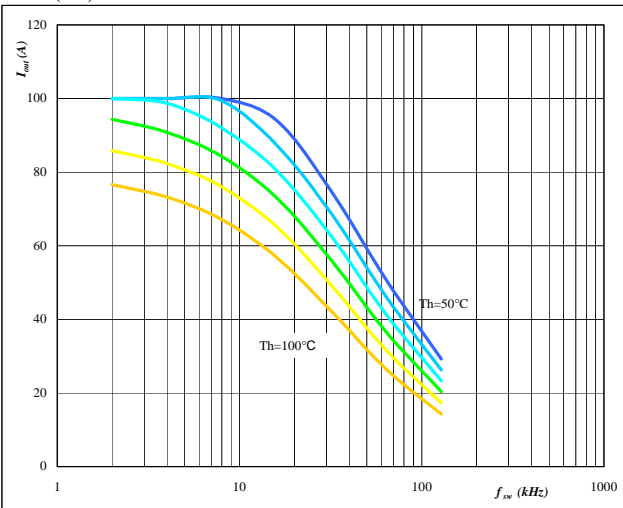


Conditions: $T_j = 150/125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $f_{sw} = 16 \text{ kHz}$
 parameter: Heatsink temp.
 Th from 50 °C to 100 °C
 in 10 °C steps

Figure 25. per PHASE

Typical available output current as a function of switching frequency

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

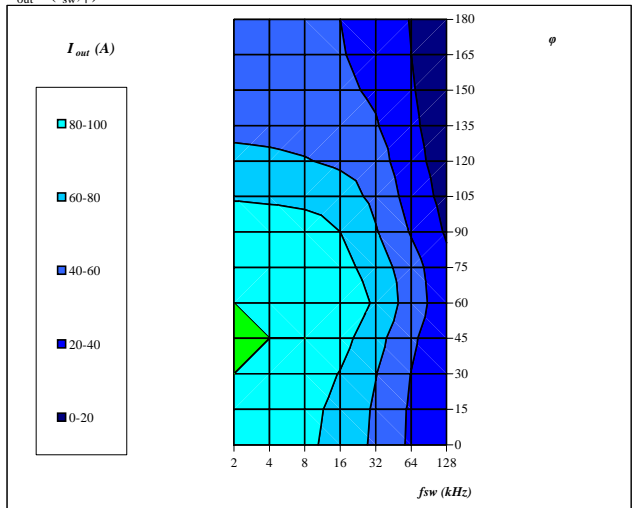


Conditions: $T_j = 150/125 \text{ } ^\circ\text{C}$ $\phi = 0^\circ$
 DC link = 700 V
 parameter: Heatsink temp.
 Th from 50 °C to 100 °C
 in 10 °C steps

Figure 26. per PHASE

Typical available 50Hz output current as a function of fsw and phase displacement

$I_{out}=f(f_{sw},\phi)$



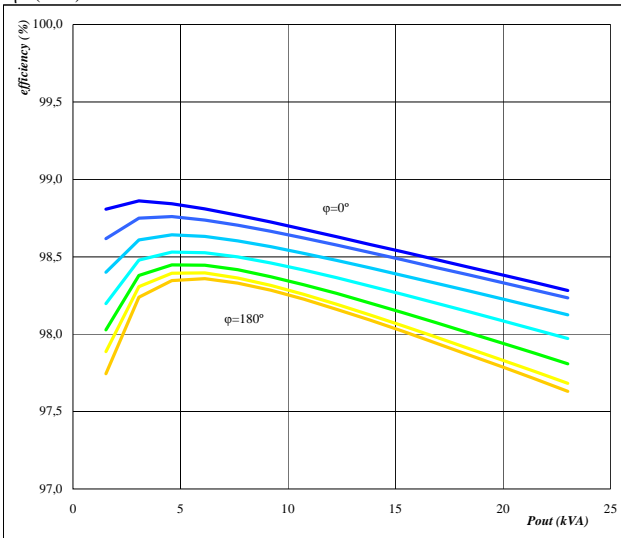
Conditions: $T_j = 150/125 \text{ } ^\circ\text{C}$
 DC link = 700 V
 $T_h = 80 \text{ } ^\circ\text{C}$

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Figure 27. per PHASE

Typical efficiency as a function of output power

$\eta=f(P_{out})$

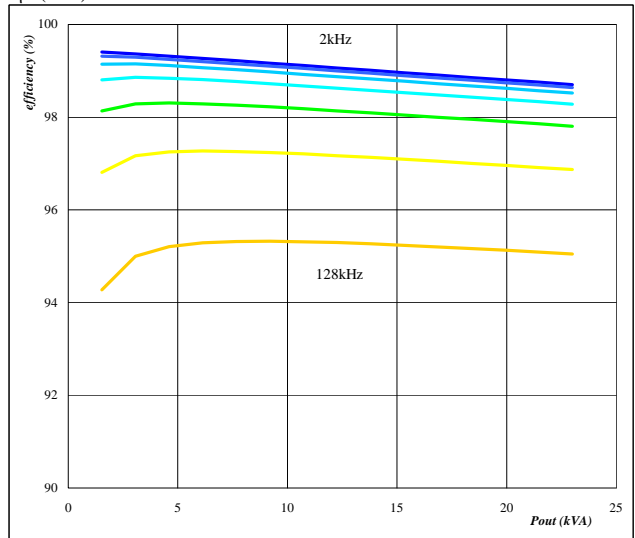


Conditions: $T_j = 150/125 \text{ }^\circ\text{C}$
 $f_{sw} = 16 \text{ kHz}$
 DC link = 700 V
 parameter: phase displacement φ from 0° to 180° in steps of 30°

Figure 28. per PHASE

Typical efficiency as a function of output power

$\eta=f(P_{out})$

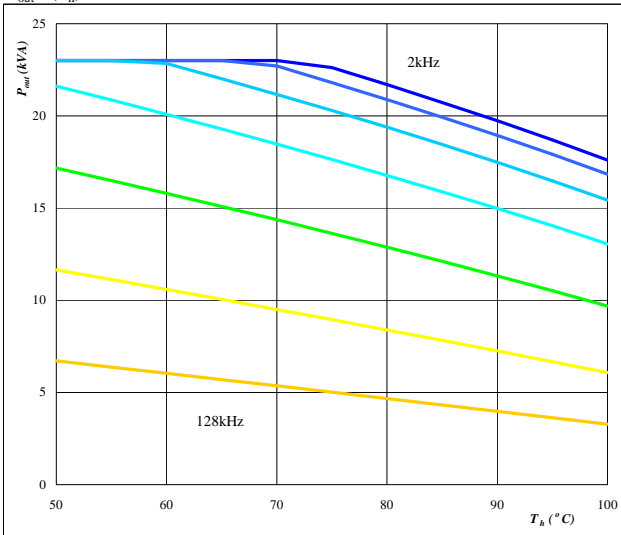


Conditions: $T_j = 150/125 \text{ }^\circ\text{C}$ $\varphi = 0^\circ$
 DC link = 700 V
 parameter: Switching freq. fsw from 2 kHz to 128 kHz in steps of factor 2

Figure 29. per PHASE

Typical available output power as a function of heat sink temperature

$P_{out}=f(T_h)$

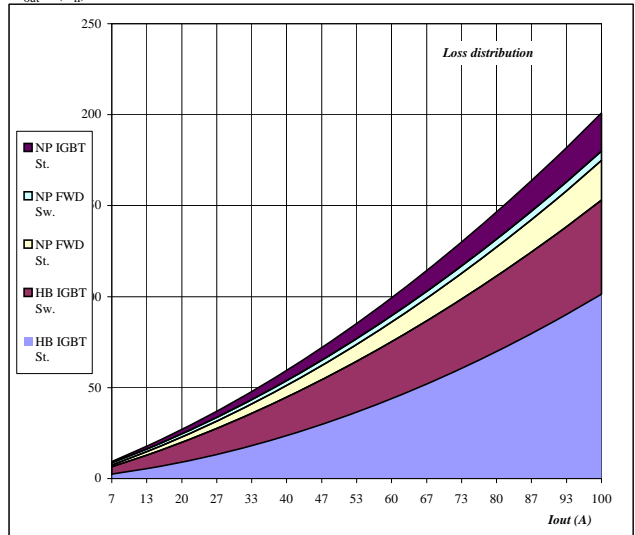


Conditions: $T_j = 150/125 \text{ }^\circ\text{C}$
 DC link = 700 V
 $\varphi = 0^\circ$
 parameter: Switching freq. fsw from 2 kHz to 128 kHz in steps of factor 2

Figure 30. per PHASE

Typical loss distribution as a function of output current

$P_{out}=f(T_h)$



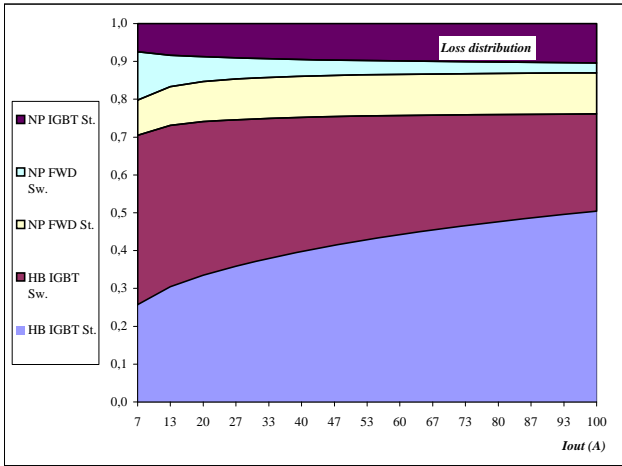
Conditions: $T_j = 150/125 \text{ }^\circ\text{C}$
 $f_{sw} = 16 \text{ kHz}$
 DC link = 700 V
 $\varphi = 0^\circ$

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Figure 31. per PHASE

Typical relativ loss distribution as a function of output current

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



Conditions:

T_j =	150/125	°C
f_{sw} =	16	kHz
DC link=	700	V
ϕ =	0°	