

flow PIM® 1, 600V

Maximum Ratings / Höchstzulässige Werte				
Parameter	Condition	Symbol	Datasheet values	Unit
			max.	

Input Rectifier Bridge
Gleichrichter

Repetitive peak reverse voltage Periodische Rückw. Spitzensperrspannung		V_{RRM}	1600	V
Forward current per diode Dauergrenzstrom	DC current $T_h=80^\circ\text{C}$	I_{FAV}	29	A
Surge forward current Stoßstrom Grenzwert	$t_p=10\text{ms}$ $T_j=25^\circ\text{C}$	I_{FSM}	200	A
I ² t-value Grenzlastintegral	$t_p=10\text{ms}$ $T_j=25^\circ\text{C}$	I ² t	200	A ² s
Power dissipation per Diode Verlustleistung pro Diode	$T_j=150^\circ\text{C}$ $T_h=80^\circ\text{C}$	P_{tot}	35	W

Transistor Inverter
Transistor Wechselrichter

Collector-emitter break down voltage Kollektor-Emitter-Sperrspannung		V_{CE}	600	V
DC collector current Kollektor-Dauergleichstrom	$T_j=150^\circ\text{C}$ $T_h=80^\circ\text{C}$	I_C	7,8	A
Repetitive peak collector current Periodischer Kollektorspitzenstrom	$t_p=1\text{ms}$ $T_h=80^\circ\text{C}$	I_{cpuls}	15,6	A
Power dissipation per IGBT Verlustleistung pro IGBT	$T_j=150^\circ\text{C}$ $T_h=80^\circ\text{C}$	P_{tot}	26	W
Gate-emitter peak voltage Gate-Emitter-Spitzenspannung		V_{GE}	±20	V
SC withstand time Kurzschlußverhalten	$T_j \leq 150^\circ\text{C}$ $V_{GE}=15\text{V}$ $V_{CE}=600/1200\text{V}$	t_{SC}	10	us

Diode Inverter
Diode Wechselrichter

DC forward current Dauergleichstrom	$T_j=150^\circ\text{C}$ $T_h=80^\circ\text{C}$	I_F	8	A
Repetitive peak forward current Periodischer Spitzenstrom	$t_p=1\text{ms}$ $T_h=80^\circ\text{C}$	I_{FRM}	24	A
Power dissipation per Diode Verlustleistung pro Diode	$T_j=150^\circ\text{C}$ $T_h=80^\circ\text{C}$	P_{tot}	21	W

Transistor BRC
Transistor BRC

Collector-emitter break down voltage Kollektor-Emitter-Sperrspannung		V_{CE}	600	V
DC collector current Kollektor-Dauergleichstrom	$T_j=150^\circ\text{C}$ $T_h=80^\circ\text{C}$	I_C	7,8	A
Repetitive peak collector current Periodischer Kollektorspitzenstrom	$t_p=1\text{ms}$ $T_h=80^\circ\text{C}$	I_{cpuls}	15,6	A
Power dissipation per IGBT Verlustleistung pro IGBT	$T_j=150^\circ\text{C}$ $T_h=80^\circ\text{C}$	P_{tot}	26	W
Gate-emitter peak voltage Gate-Emitter-Spitzenspannung		V_{GE}	±20	V
SC withstand time Kurzschlußverhalten	$T_j \leq 150^\circ\text{C}$ $V_{GE}=15\text{V}$ $V_{CE}=600/1200\text{V}$	t_{SC}	10	us

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Maximum Ratings / Höchstzulässige Werte				
Parameter	Condition	Symbol	Datasheet values	Unit
			max.	

Diode BRC

Diode BRC

DC forward current Dauergleichstrom	$T_j=150^{\circ}\text{C}$ $T_h=80^{\circ}\text{C}$	I_F	8	A
Repetitive peak forward current Periodischer Spitzenstrom	$t_p=1\text{ms}$ $T_h=80^{\circ}\text{C}$	I_{FRM}	24	A
Power dissipation per Diode Verlustleistung pro Diode	$T_j=150^{\circ}\text{C}$ $T_h=80^{\circ}\text{C}$	P_{tot}	21	W

Thermal properties

Thermische Eigenschaften

max. Chip temperature max. Chiptemperatur		T_{jmax}	150	°C
Storage temperature Lagertemperatur		T_{stg}	-40...+125	°C
Operation temperature Betriebstemperatur		T_{op}	-40...+125	°C

Insulation properties

Modulisolation

Insulation voltage Isolationsspannung	$t=1\text{min}$	V_{is}	4000	Vdc
Creepage distance Kriechstrecke			min 12,7	mm
Clearance Luftstrecke			min 12,7	mm

flow PIM® 1, 600V

Characteristic values

Description	Symbol	Conditions					Datasheet values			Unit
		T(°C)	Other conditions (Rgon-Rgoff)	V _{GE} (V) V _{GS} (V)	V _{CE} (V) V _{DS} (V)	I _C (A) I _F (A) I _d (A)	Min	Typ	Max	

Input Rectifier Bridge

Gleichrichter

Forward voltage Durchlaßspannung	V _F	T _J =25°C				30	0,8	1,24	1,4	V
Threshold voltage (for power loss calc. only) Schleusenspannung	V _{to}	T _J =25°C				30		0,92		V
Slope resistance (for power loss calc. only) Ersatzwiderstand	r _t	T _J =25°C				30		10		mOhm
Reverse current Sperrstrom	I _r	T _J =25°C							0,01	mA
Thermal resistance chip to heatsink per chip Wärmewiderstand Chip-Kühlkörper pro Chip	R _{th,JH}		Thermal grease thickness≤50um Wärmeleitpaste Dicke≤50um λ = 0,61 W/mK							K/W

Transistor Inverter, inductive load

Transistor Wechselrichter

Gate emitter threshold voltage Gate-Schwellenspannung	V _{GE(th)}	T _J =25°C T _J =125°C	V _{CE} =V _{GE}				0,0002	3	4	5	V
Collector-emitter saturation voltage Kollektor-Emitter Sättigungsspannung	V _{CE(sat)}	T _J =25°C T _J =125°C		15		5	1,5	2,3	2,8		V
Collector-emitter cut-off incl.FRED Kollektor-Emitter Reststrom inkl.FRED	I _{CES}	T _J =25°C T _J =125°C		0	600				0,06		mA
Gate-emitter leakage current Gate-Emitter Reststrom	I _{GES}	T _J =25°C T _J =150°C		25	0				120		nA
Turn-on delay time Einschaltverzögerungszeit	t _{d(on)}	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5			11		ns
Rise time Anstiegszeit	t _r	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5			10		ns
Turn-off delay time Abschaltverzögerungszeit	t _{d(off)}	T _J =25°C T _J =125°C	Rgoff=32 Ohm	15	300	5			135		ns
Fall time Fallzeit	t _f	T _J =25°C T _J =125°C	Rgoff=32 Ohm	15	300	5			40		ns
Turn-on energy loss per pulse Einschaltverlustenergie pro Puls	E _{on}	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5			0,102		mWs
Turn-off energy loss per pulse Abschaltverlustenergie pro Puls	E _{off}	T _J =25°C T _J =125°C	Rgoff=32Ohm	15	300	5			0,102		mWs
Input capacitance Eingangskapazität	C _{ies}	T _J =25°C T _J =125°C	f=1MHz	0	25				0,264		nF
Output capacitance Ausgangskapazität	C _{oss}	T _J =25°C T _J =125°C	f=1MHz	0	25				0,029		nF
Reverse transfer capacitance Rückwirkungskapazität	C _{rss}	T _J =25°C T _J =125°C	f=1MHz	0	25				0,017		nF
Gate charge Gate Ladung	Q _{Gate}	T _J =25°C T _J =125°C		15	480	4			24		nC
Thermal resistance chip to heatsink per chip Wärmewiderstand Chip-Kühlkörper pro Chip	R _{th,JH}		Thermal grease thickness≤50um Wärmeleitpaste Dicke≤50um λ = 0,61 W/mK						2,7		K/W

Diode Inverter

Diode Wechselrichter

Diode forward voltage Durchlaßspannung	V _F	T _J =25°C T _J =125°C					5	1	1,54	2,2	V
Peak reverse recovery current Rückstromspitze	I _{RM}	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5			1,17		A
Reverse recovery time Sperrverzögerungszeit	t _{rr}	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5			10,6		ns
Reverse recovered charge Sperrverzögerungsladung	Q _{rr}	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5			63		uC
Reverse recovered energy Sperrverzögerungsenergie	E _{rec}	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5			0,342		mWs
Thermal resistance chip to heatsink per chip Wärmewiderstand Chip-Kühlkörper pro Chip	R _{th,JH}		Thermal grease thickness≤50um Wärmeleitpaste Dicke≤50um λ = 0,61 W/mK						3,4		K/W

flow PIM® 1, 600V

Characteristic values

Description	Symbol	Conditions				Datasheet values			Unit
		T(°C)	Other conditions (Rgon-Rgoff)	VGE(V) VGS(V)	VCE(V) VDS(V)	IC(A) IF(A) Id(A)	Min	Typ	

Transistor BRC

Transistor BRC

Gate emitter threshold voltage Gate-Schwellenspannung	V _{GE(th)}	T _J =25°C T _J =125°C	VCE=VGE			0,0002	3	4	5	V
Collector-emitter saturation voltage Kollektor-Emitter Sättigungsspannung	V _{CE(sat)}	T _J =25°C T _J =125°C		15		5	1,5	2,3	2,8	V
Collector-emitter cut-off Kollektor-Emitter Reststrom	I _{CES}	T _J =25°C T _J =125°C		0	600				0,02	mA
Gate-emitter leakage current Gate-Emitter Reststrom	I _{GES}	T _J =25°C T _J =150°C		25	0				100	nA
Turn-on delay time Einschaltverzögerungszeit	t _{d(on)}	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5		11		ns
Rise time Anstiegszeit	t _r	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5		13		ns
Turn-off delay time Abschaltverzögerungszeit	t _{d(off)}	T _J =25°C T _J =125°C	Rgoff=32 Ohm	15	300	5		132		ns
Fall time Fallzeit	t _f	T _J =25°C T _J =125°C	Rgoff=32 Ohm	15	300	5		38		ns
Turn-on energy loss per pulse Einschaltverlustenergie pro Puls	E _{on}	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5		0,103		uWs
Turn-off energy loss per pulse Abschaltverlustenergie pro Puls	E _{off}	T _J =25°C T _J =125°C	Rgoff=32 Ohm	15	300	5		0,105		uWs
Input capacitance Eingangskapazität	C _{iss}	T _J =25°C T _J =125°C	f=1MHz	0	25			0,264	0,32	nF
Output capacitance Ausgangskapazität	C _{oss}	T _J =25°C T _J =125°C	f=1MHz	0	25			0,029		nF
Reverse transfer capacitance Rückwirkungskapazität	C _{rss}	T _J =25°C T _J =125°C	f=1MHz	0	25			0,017		nF
Gate charge Gate Ladung	Q _{gate}	T _J =25°C T _J =125°C		15	480	4		24	31	nC
Thermal resistance chip to heatsink per chip Wärmewiderstand Chip-Kühlkörper pro Chip	R _{th,jh}		Thermal grease thickness≤50um Wärmeleitpaste Dicke≤50um λ = 0,61 W/mK						2,7	K/W

Diode BRC

Diode BRC

Diode forward voltage Durchlaßspannung	V _f	T _J =25°C T _J =125°C				5	1	1,54	2,2	V
Reverse current Sperrstrom	I _r	T _J =25°C			600				0,06	uA
Peak reverse recovery current Rückstromspitze	IRM	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5		10,6		A
Reverse recovery time Sperrverzögerungszeit	trr	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5		63		ns
Reverse recovered charge Sperrverzögerungsladung	Qrr	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5		0,342		uC
Reverse recovered energy Sperrverzögerungsenergie	Erec	T _J =25°C T _J =125°C	Rgon=64 Ohm	15	300	5		0,053		mWs
Thermal resistance chip to heatsink per chip Wärmewiderstand Chip-Kühlkörper pro Chip	R _{th,jh}		Thermal grease thickness≤50um Wärmeleitpaste Dicke≤50um λ = 0,61 W/mK						3,4	K/W

NTC-Thermistor

NTC-Widerstand

Rated resistance Nennwiderstand	R ₂₅	TC=25°C	Tol. ±5%				4,2	4,7	5,3	kOhm
Deviation of R100 Abweichung von R100	D _{R/R}	TC=100°C						2,56		%/K
Power dissipation given Epcos-Typ Verlustleistung Epcos-Typ angeben	P	TC=25°C						210		mW
B-value B-Wert	B _(25/100)		Tol. ±3%					3530		K

Output inverter

Figure 1. Typical output characteristics
Output inverter IGBT
 $I_c = f(V_{CE})$

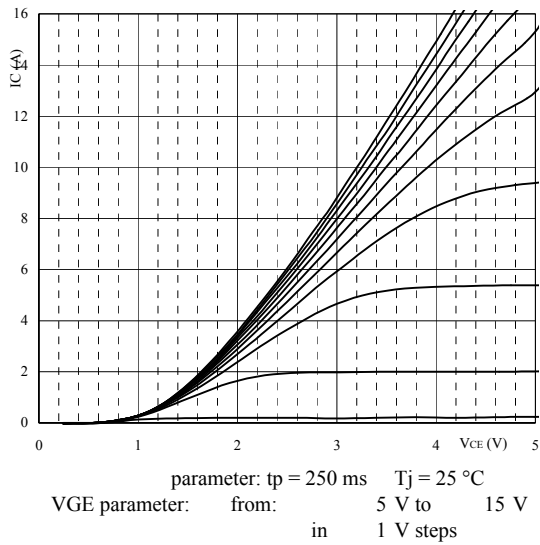


Figure 2. Typical output characteristics
Output inverter IGBT
 $I_c = f(V_{CE})$

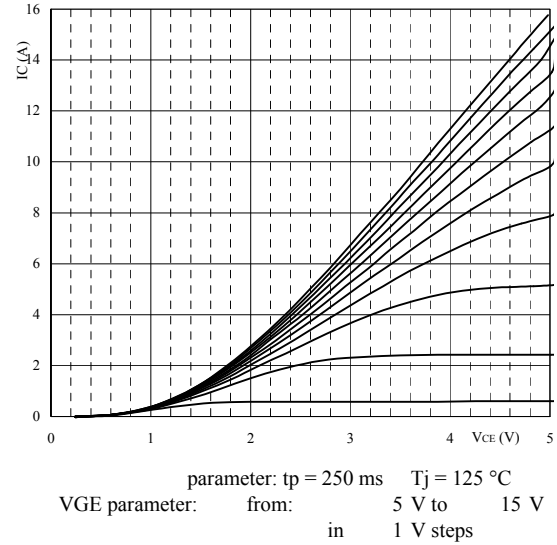


Figure 3. Typical transfer characteristics
Output inverter IGBT
 $I_c = f(V_{GE})$

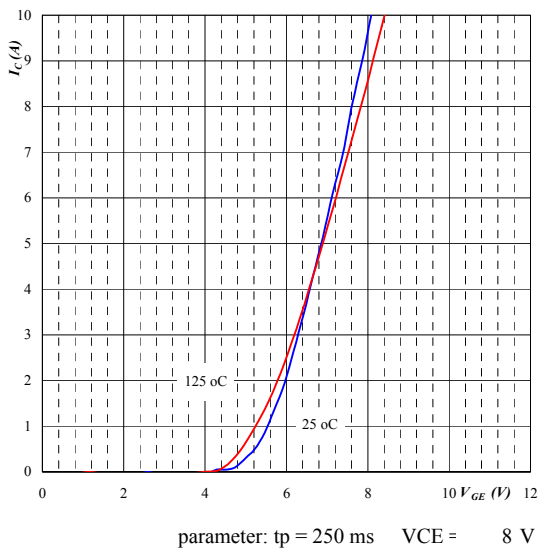
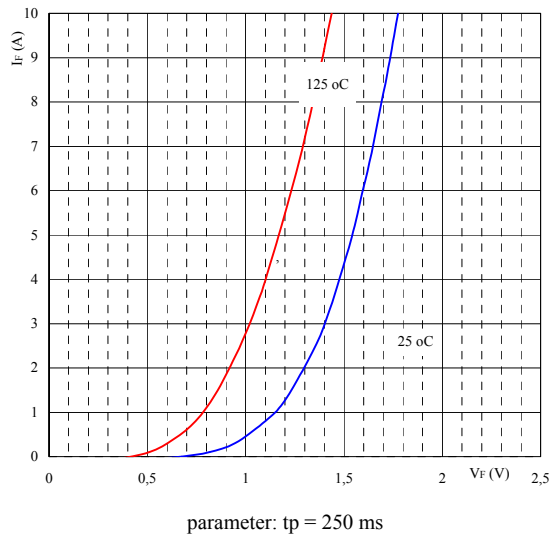
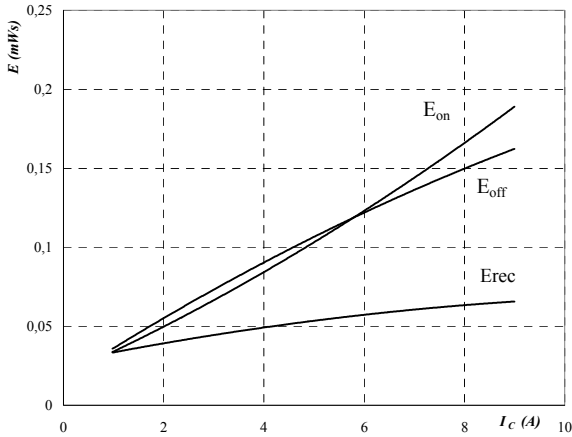


Figure 4. Typical diode forward current as a function of forward voltage
Output inverter FRED $I_F = f(V_F)$



Output inverter

Figure 5. Typical switching energy losses as a function of collector current
Output inverter IGBT
 $E = f(I_c)$



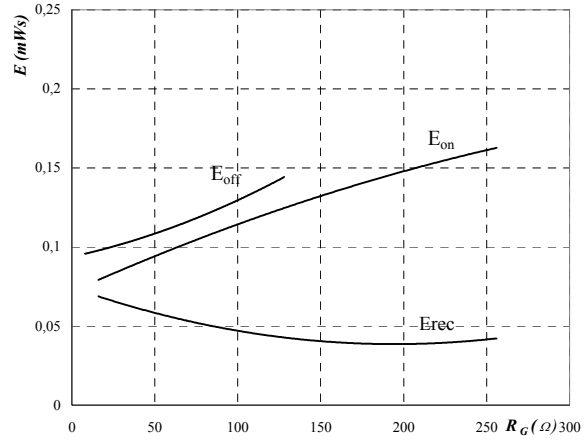
inductive load, Tj = 125 °C

VCE = 300 V

VGE = 15 V

RGon = 2*RGoff = 64 Ω

Figure 6. Typical switching energy losses as a function of gate resistor
Output inverter IGBT
 $E = f(R_G)$



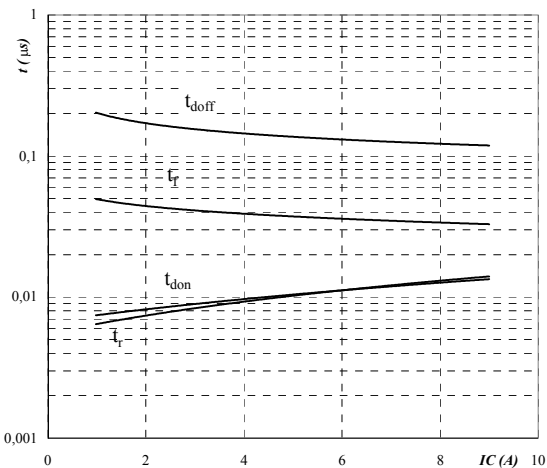
inductive load, Tj = 125 °C

VCE = 300 V

VGE = 15 V

Ic = 5 A

Figure 7. Typical switching times as a function of collector current
Output inverter IGBT
 $t = f(I_c)$



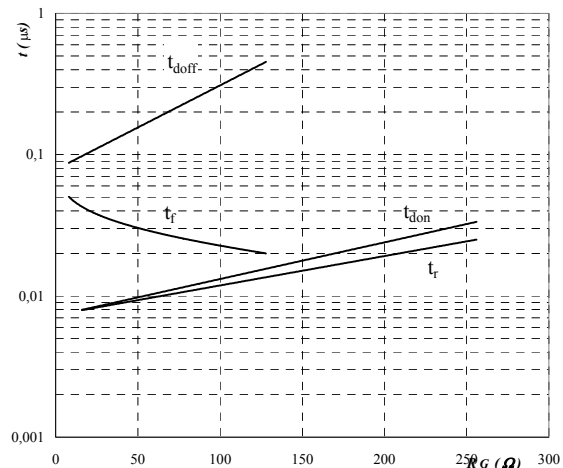
inductive load, Tj = 125 °C

VCE = 300 V

VGE = 15 V

RGon = 2*RGoff = 64 Ω

Figure 8. Typical switching times as a function of gate resistor
Output inverter IGBT
 $t = f(R_G)$



inductive load, Tj = 125 °C

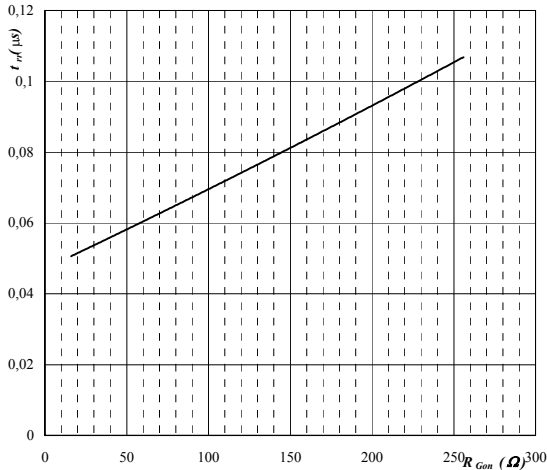
VCE = 300 V

VGE = 15 V

Ic = 5 A

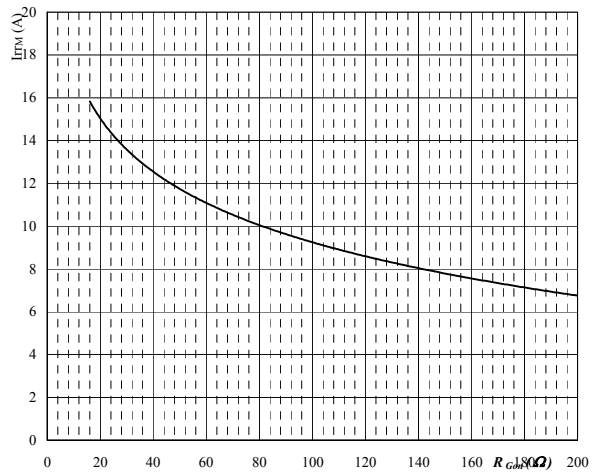
Output inverter

Figure 9. Typical reverse recovery time as a function of IGBT turn on gate resistor
Output inverter FRED diode
 $t_{rr} = f(R_{gon})$



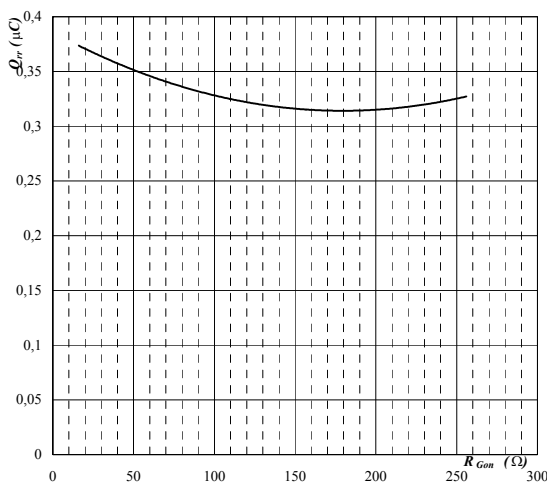
Tj = 125 °C
VR = 300 V
IF = 5 A

Figure 10. Typical reverse recovery current as a function of IGBT turn on gate resistor
Output inverter FRED diode
 $I_{RRM} = f(R_{gon})$



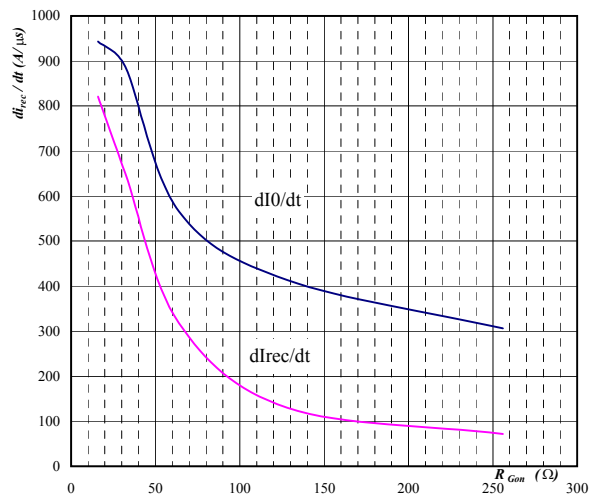
Tj = 125 °C
VR = 300 V
IF = 5 A

Figure 11. Typical reverse recovery charge as a function of IGBT turn on gate resistor
Output inverter FRED diode
 $Q_{rr} = f(R_{gon})$



Tj = 125 °C
VR = 300 V
IF = 5 A

Figure 12. Typical rate of fall of forward and reverse recovery current as a function of IGBT turn on gate resistor
Output inverter FRED diode
 $dI_0/dt, dI_{rec}/dt = f(R_{gon})$

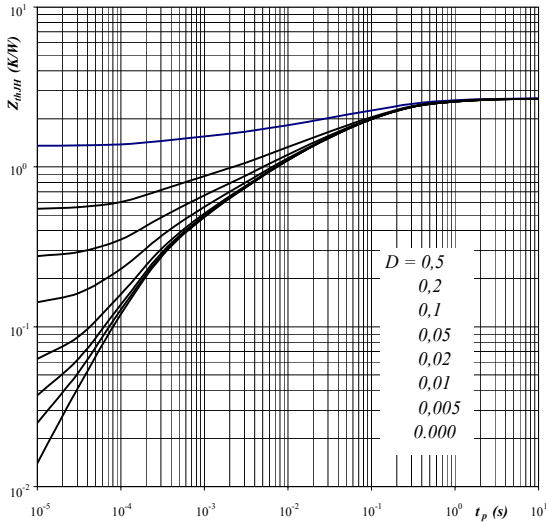


Tj = 125 °C
VR = 300 V
IF = 5 A

Output inverter

Figure 13. IGBT transient thermal impedance as a function of pulse width

$Z_{thJH} = f(t_p)$



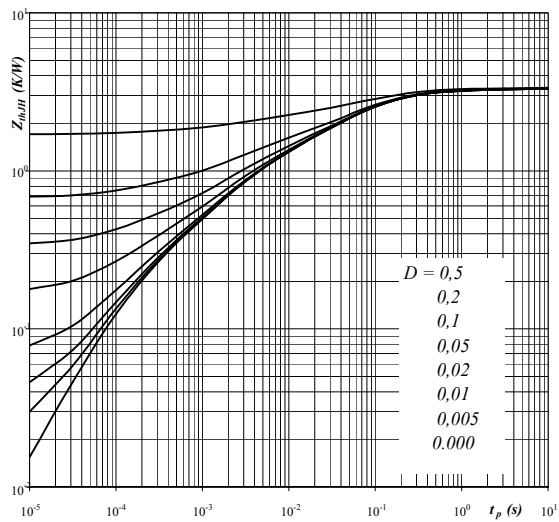
Parameter: $D = t_p / T$ RthJH 2,7 K/W

IGBT thermal model values

R (C/W)	Tau (s)
0,05	5,3E+01
0,19	1,3E+00
0,80	1,7E-01
0,61	3,9E-02
0,55	7,2E-03
0,26	1,1E-03
0,25	2,2E-04

Figure 14. FRED transient thermal impedance as a function of pulse width

$Z_{thJH} = f(t_p)$



Parameter: $D = t_p / T$ RthJH 3,4 K/W

FRED thermal model values

R (C/W)	Tau (s)
0,10	1,2E+02
0,16	1,6E+00
0,84	1,8E-01
1,09	4,6E-02
0,64	6,9E-03
0,42	1,3E-03
0,16	1,4E-04

Output inverter

Figure 15. Power dissipation as a function of heatsink temperature
Output inverter IGBT
 $P_{tot} = f(T_h)$

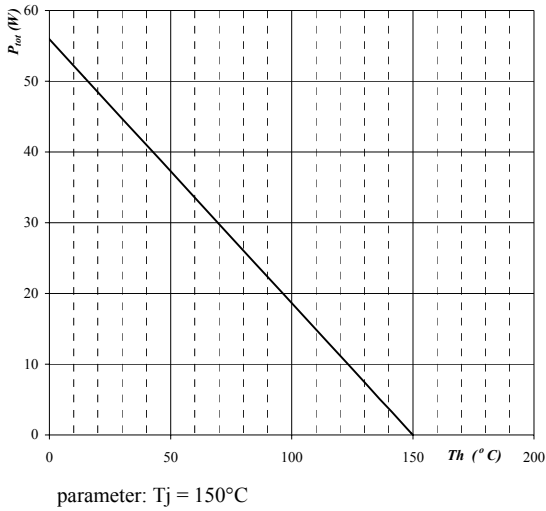


Figure 16. Collector current as a function of heatsink temperature
Output inverter IGBT
 $I_c = f(T_h)$

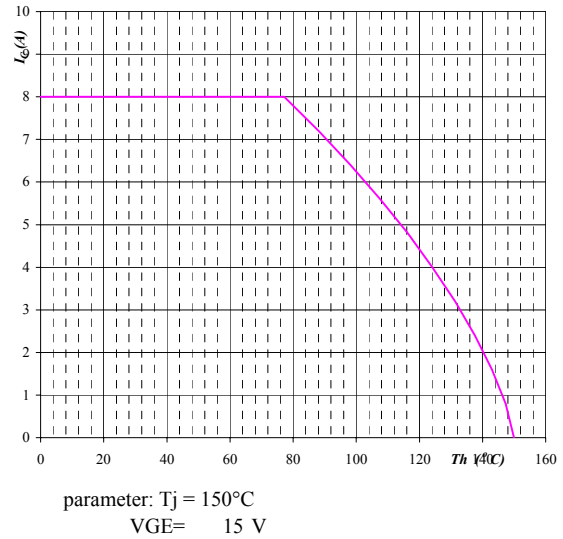


Figure 17. Power dissipation as a function of heatsink temperature
Output inverter FRED
 $P_{tot} = f(T_h)$

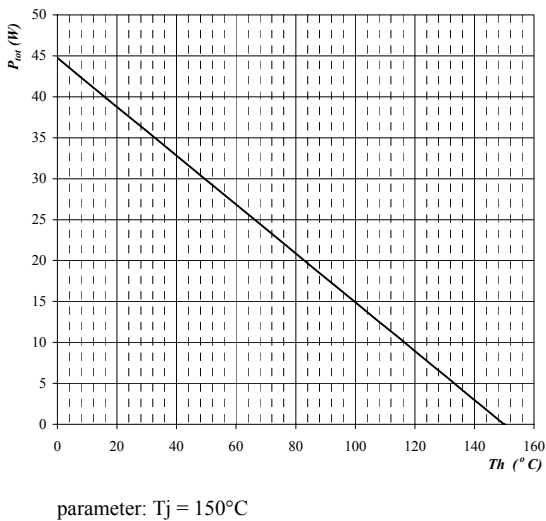
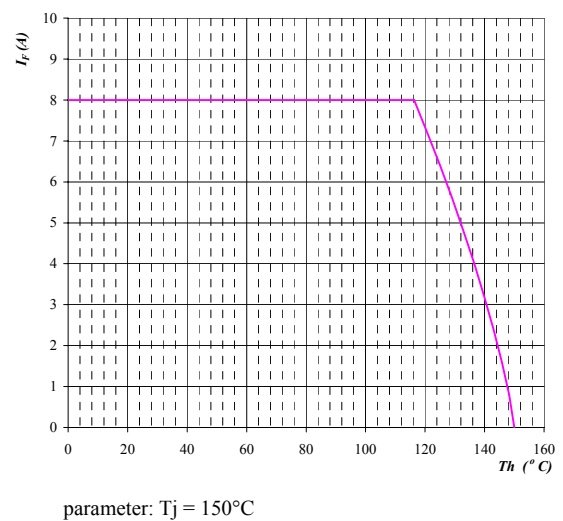


Figure 18. Forward current as a function of heatsink temperature
Output inverter FRED
 $I_F = f(T_h)$



Brake

Figure 19. Typical output characteristics
Brake IGBT
 $I_c = f(V_{CE})$

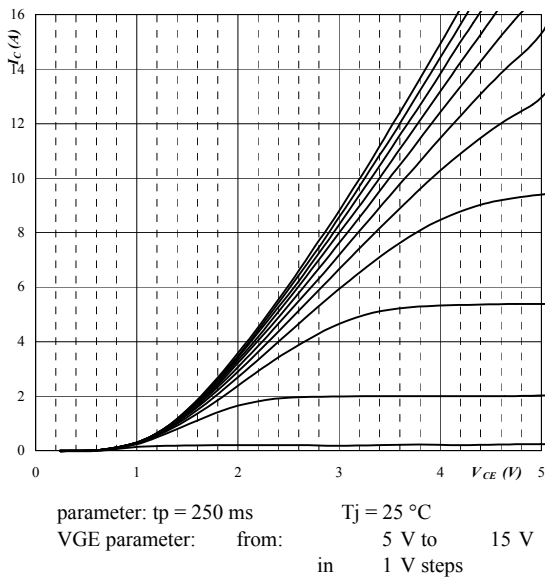


Figure 20. Typical output characteristics
Brake IGBT
 $I_c = f(V_{CE})$

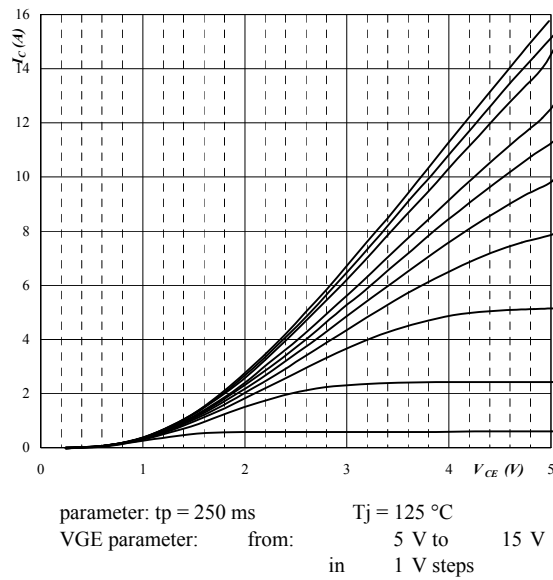


Figure 21. Typical transfer characteristics
Brake IGBT
 $I_c = f(V_{GE})$

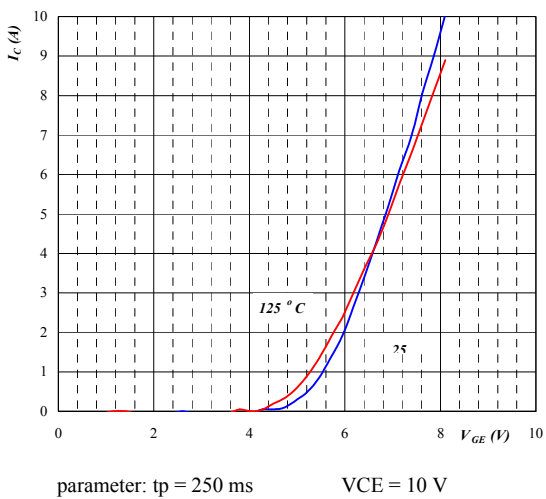
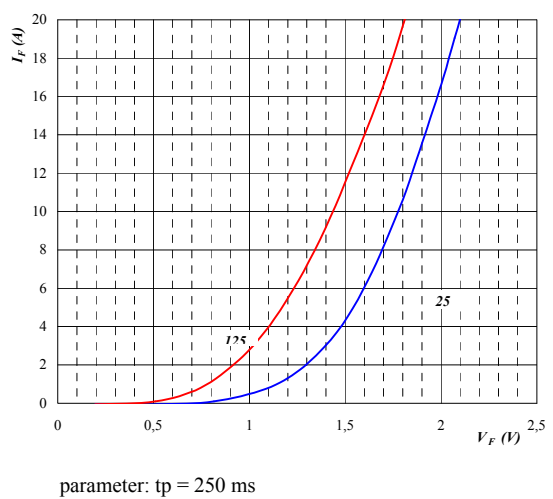
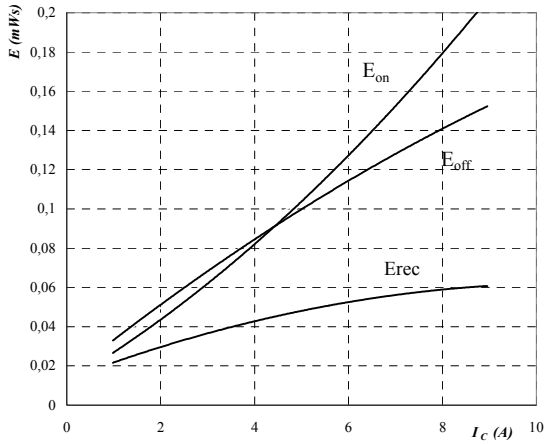


Figure 22. Typical diode forward current as a function of forward voltage
Brake FRED $I_F = f(V_F)$



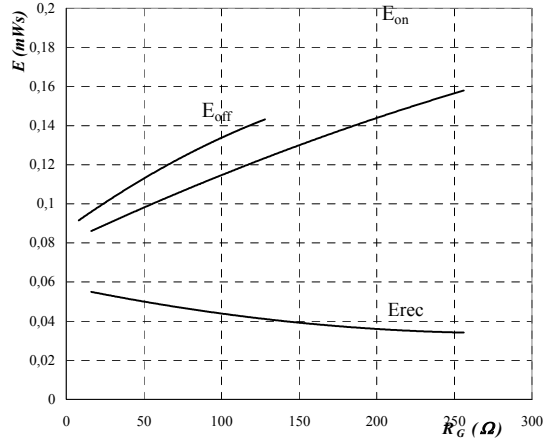
Brake

Figure 23. Typical switching energy losses as a function of collector current
Brake IGBT
 $E = f(I_c)$



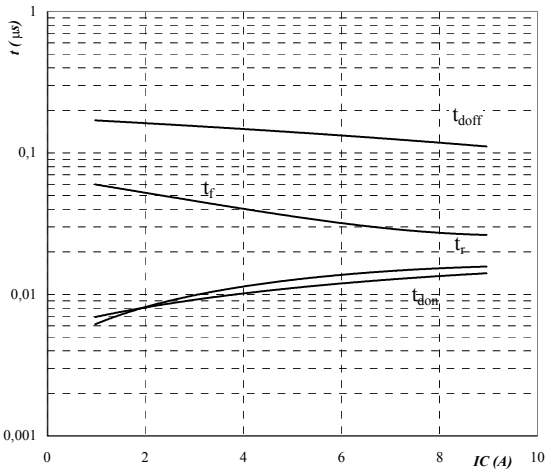
inductive load, T_j = 125 °C
VCE = 300 V
VGE = 15 V
RGon = 2*RGoff = 64 Ω

Figure 24. Typical switching energy losses as a function of gate resistor
Brake IGBT
 $E = f(RG)$



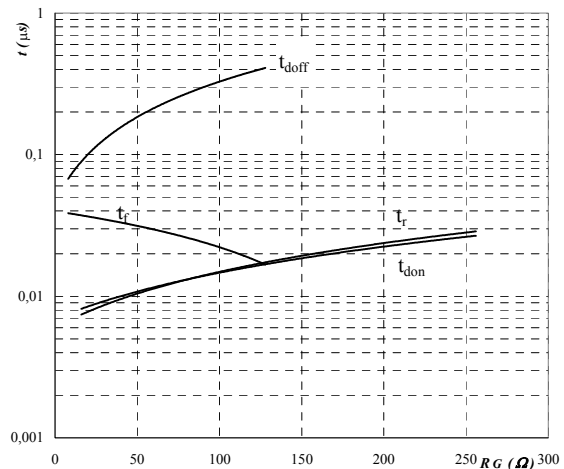
inductive load, T_j = 125 °C
VCE = 300 V
VGE = 15 V
Ic = 5 A

Figure 25. Typical switching times as a function of collector current
Brake IGBT
 $t = f(I_c)$



inductive load, T_j = 125 °C
VCE = 300 V
VGE = 15 V
RGon = 2*RGoff = 64 Ω

Figure 26. Typical switching times as a function of gate resistor
Brake IGBT
 $t = f(RG)$



inductive load, T_j = 125 °C
VCE = 300 V
VGE = 15 V
Ic = 5 A

Brake

Figure 27. IGBT transient thermal impedance as a function of pulse width

$Z_{thJH} = f(t_p)$

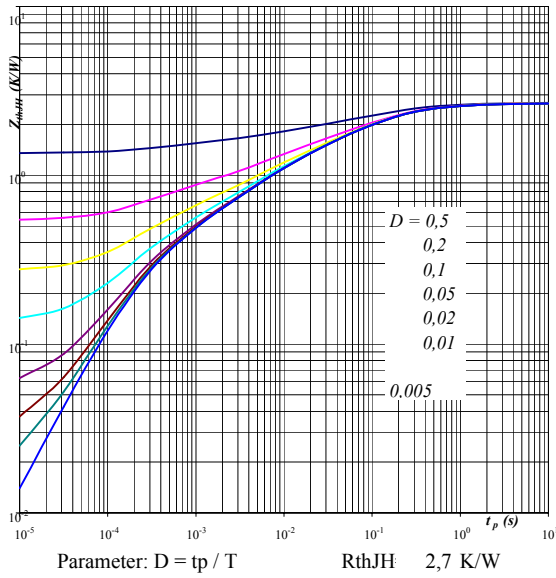


Figure 28. FRED transient thermal impedance as a function of pulse width

$Z_{thJH} = f(t_p)$

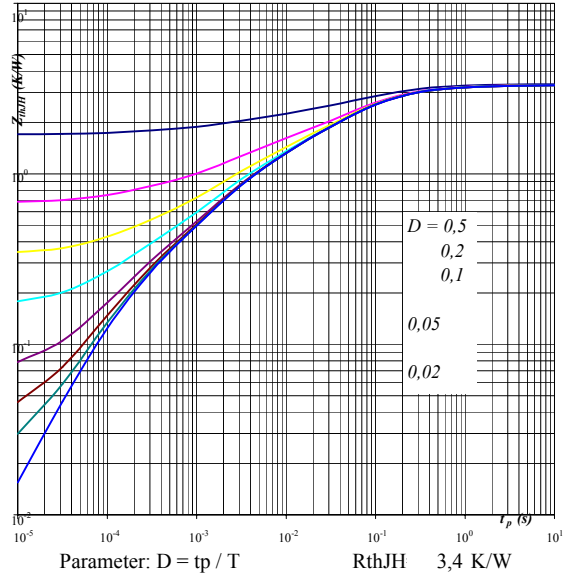


Figure 29. Power dissipation as a function of heatsink temperature

Brake IGBT
 $P_{tot} = f(T_h)$

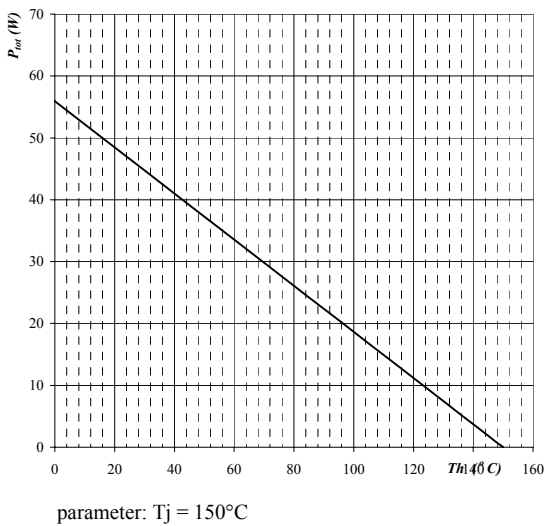
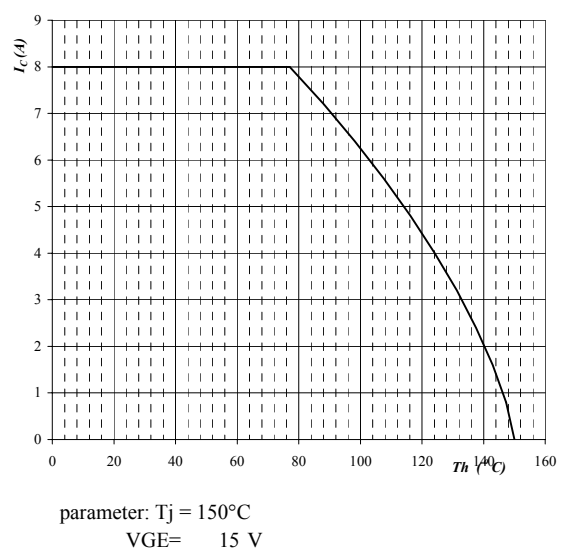


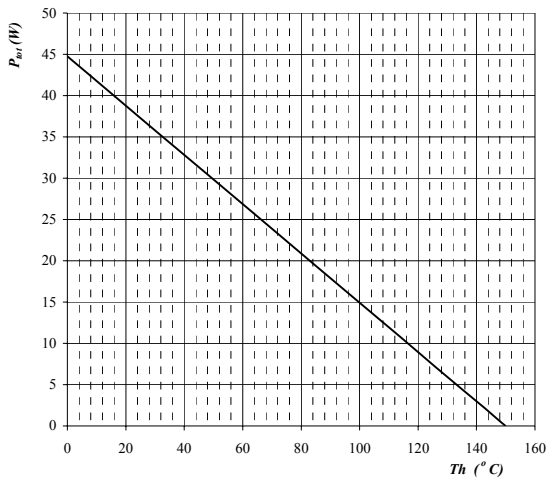
Figure 30. Collector current as a function of heatsink temperature

Brake IGBT
 $I_c = f(T_h)$



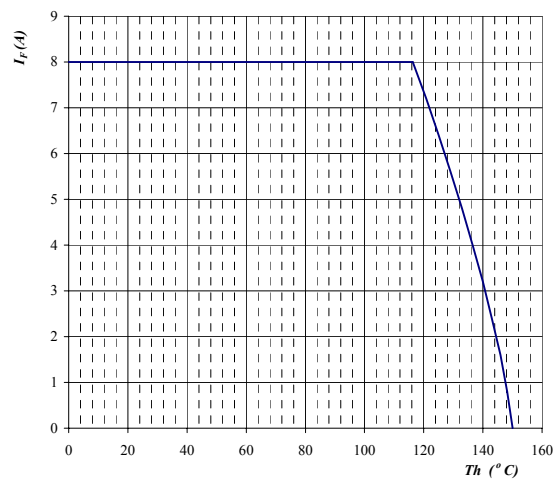
Brake

Figure 31. Power dissipation as a function of heatsink temperature
Brake FRED
 $P_{tot} = f(T_h)$



parameter: T_j = 150°C

Figure 32. Forward current as a function of heatsink temperature
Brake FRED
 $I_F = f(T_h)$



parameter: T_j = 150°C

Input rectifier bridge

Figure 33. Typical diode forward current as a function of forward voltage

Rectifier diode $I_F = f(V_F)$

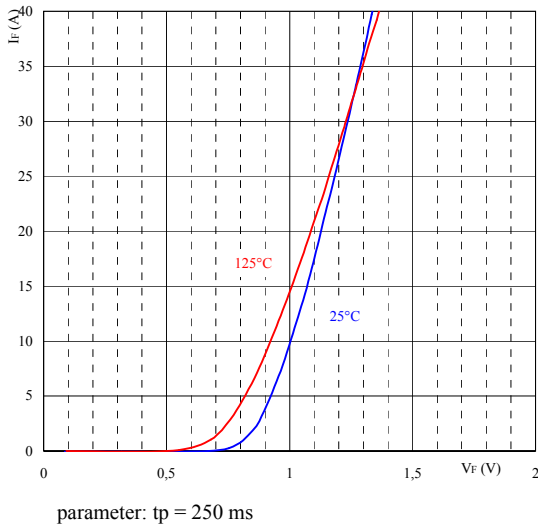


Figure 34. Diode transient thermal impedance as a function of pulse width

$Z_{thJH} = f(t_p)$

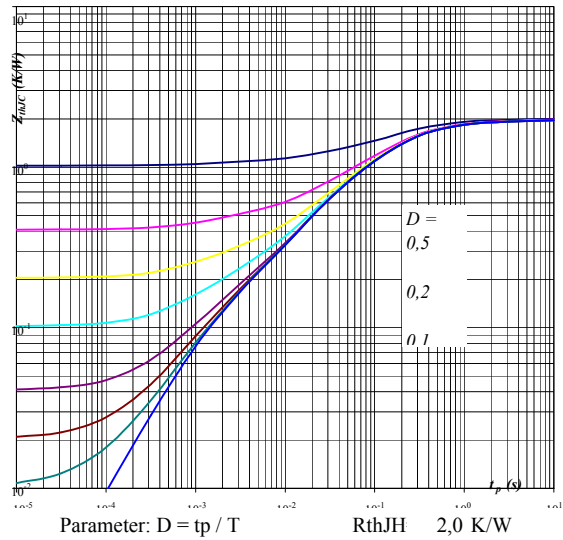


Figure 35. Power dissipation as a function of heatsink temperature

Rectifier diode $P_{tot} = f(T_h)$

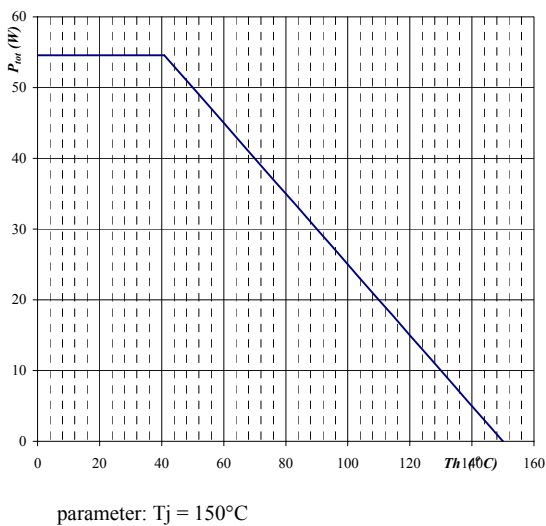
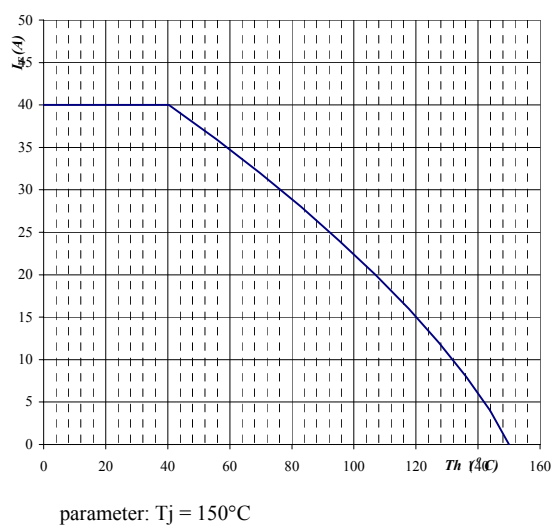


Figure 36. Forward current as a function of heatsink temperature

Rectifier diode $I_F = f(T_h)$

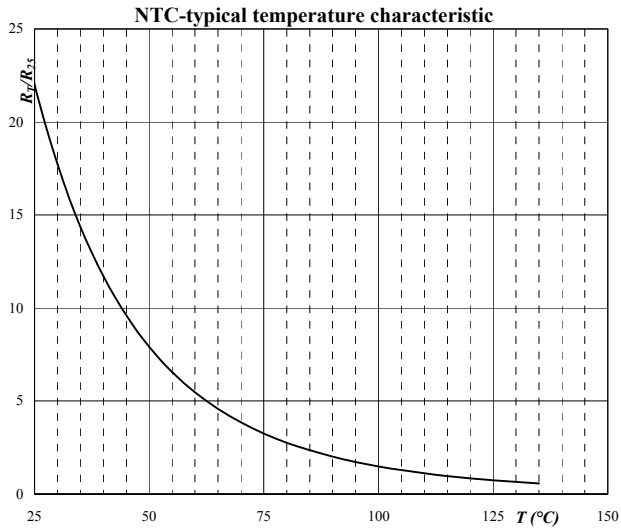


Thermistor

**Figure 37. Typical NTC characteristic
as a function of temperature**

NTC

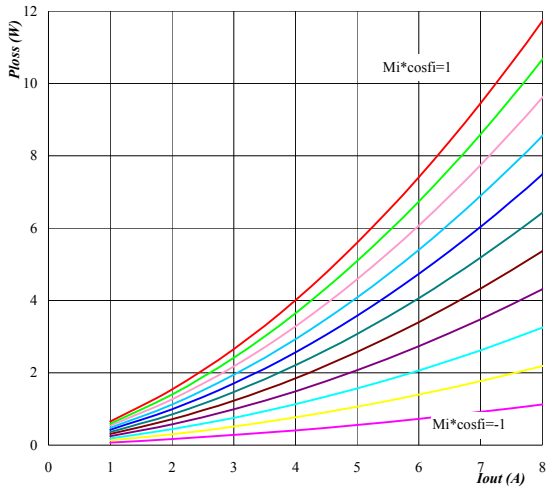
$$R_T / R_{25} = f(T)$$



Output inverter application

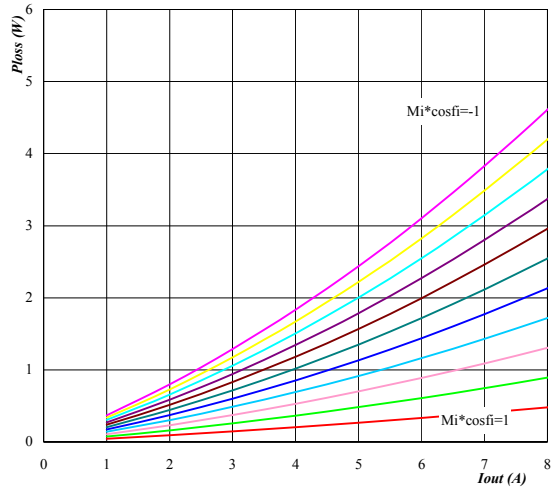
General conditions: 3 phase SPWM, $V_{geon} = 15\text{ V}$ $V_{geoff} = 0\text{V}$ $R_{gon} = 64\text{ ohms}$ $R_{goff} = 32\text{ ohms}$

Figure 1. Typical average static loss as a function of output current
IGBT $P_{loss} = f(I_{out})$



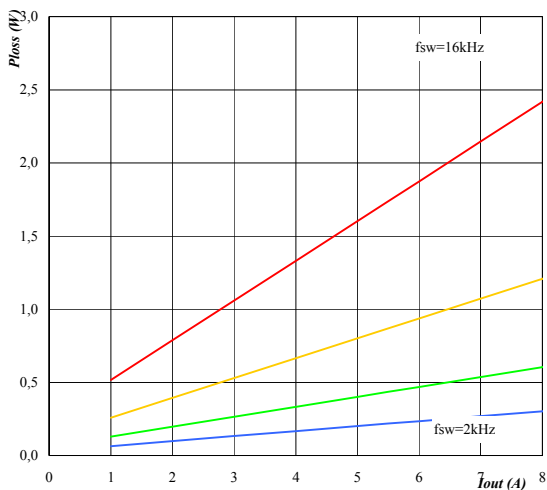
Conditions: $T_j = 125^\circ\text{C}$
Modulation index * $\cos\phi$
parameter $M_i \cdot \cos\phi$ from -1,00 to 1,00
in 0,20 steps

Figure 2. Typical average static loss as a function of output current
FRED $P_{loss} = f(I_{out})$



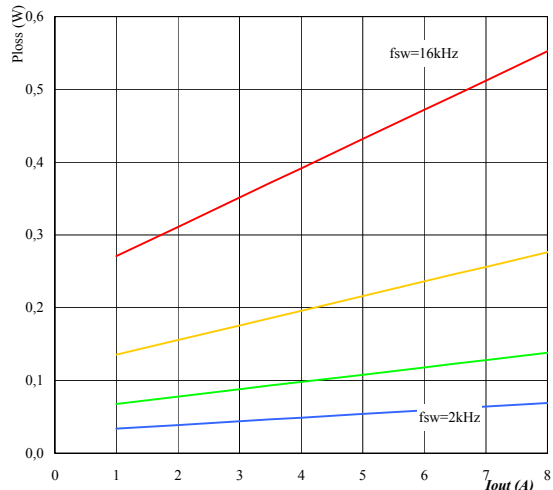
Conditions: $T_j = 125^\circ\text{C}$
Modulation index * $\cos\phi$
parameter $M_i \cdot \cos\phi$ from -1,00 to 1,00
in 0,20 steps

Figure 3. Typical average switching loss as a function of output current
IGBT $P_{loss} = f(I_{out})$



Conditions: $T_j = 125^\circ\text{C}$
DC link = 320 V
Switching freq. f_{sw} from 2 kHz to 16 kHz
parameter in * 2 steps

Figure 4. Typical average switching loss as a function of output current
FRED $P_{loss} = f(I_{out})$



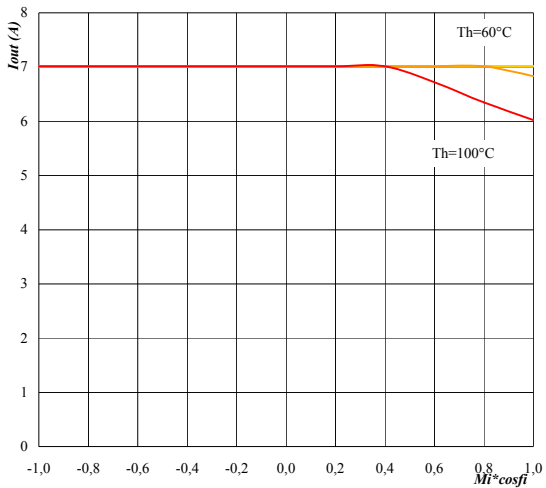
Conditions: $T_j = 125^\circ\text{C}$
DC link = 320 V
Switching freq. f_{sw} from 2 kHz to 16 kHz
parameter in * 2 steps

Output inverter application

General conditions: 3 phase SPWM, $V_{geon} = 15\text{ V}$ $V_{geoff} = 0\text{V}$ $R_{gon} = 64\text{ ohms}$ $R_{goff} = 32\text{ ohms}$

Figure 5. Typical available 50Hz output current as a function of $Mi \cdot \cos\phi_i$

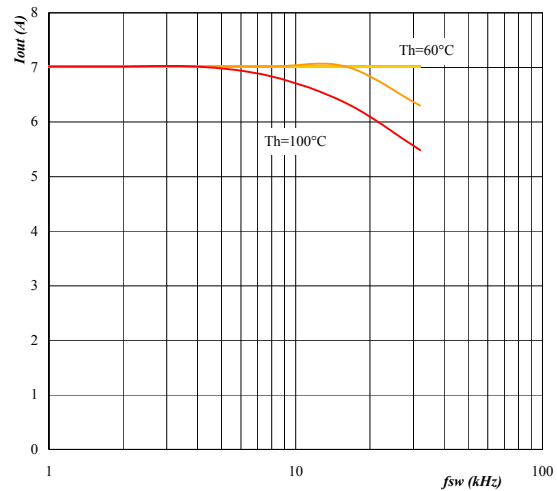
Phase $I_{out} = f(Mi \cdot \cos\phi_i)$



Conditions: $T_j = 125\text{C}$
DC link = 320 V
fsw = 16 kHz
Heatsink temp. T_h from 60 °C to 100 °C
parameter in 5 °C steps

Figure 6. Typical available 50Hz output current as a function of switching frequency

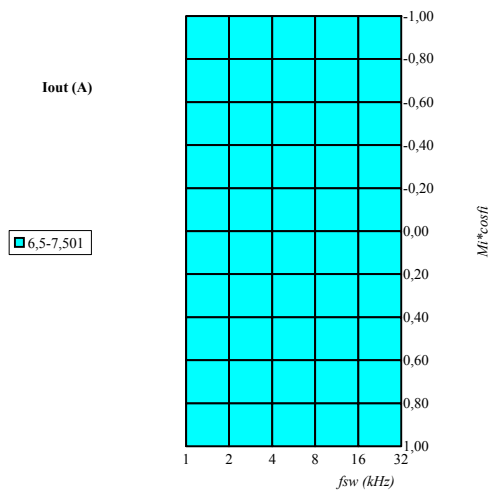
Phase $I_{out} = f(f_{sw})$



Conditions: $T_j = 125\text{C}$
DC link = 320 V
 $Mi \cdot \cos\phi_i = 0,8$
Heatsink temp. T_h from 60 °C to 100 °C
parameter in 5 °C steps

Figure 7. Typical available 50Hz output current as a function of $Mi \cdot \cos\phi_i$ and fsw

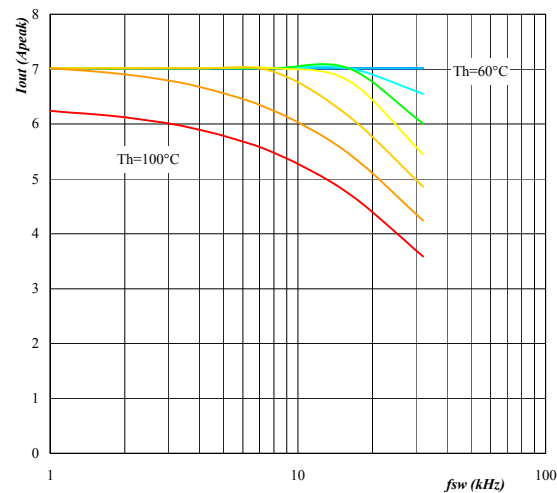
Phase $I_{out} = f(f_{sw}, Mi \cdot \cos\phi_i)$



Conditions: $T_j = 125\text{C}$
DC link = 320 V
 $T_h = 80\text{ °C}$

Figure 8. Typical available 0Hz output current as a function of switching frequency

Phase $I_{outpeak} = f(f_{sw})$



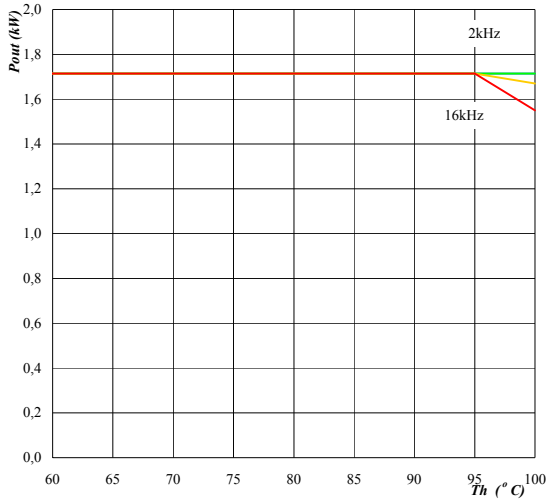
Conditions: $T_j = 125\text{C}$
DC link = 320 V
Heatsink temp. T_h from 60 °C to 100 °C
parameter in 5 °C steps

Output inverter application

General conditions: 3 phase SPWM, $V_{geon} = 15\text{ V}$ $V_{geoff} = 0\text{V}$ $R_{gon} = 64\text{ ohms}$ $R_{goff} = 32\text{ ohms}$

Figure 9. Typical available electric peak output power as a function of heatsink temperature

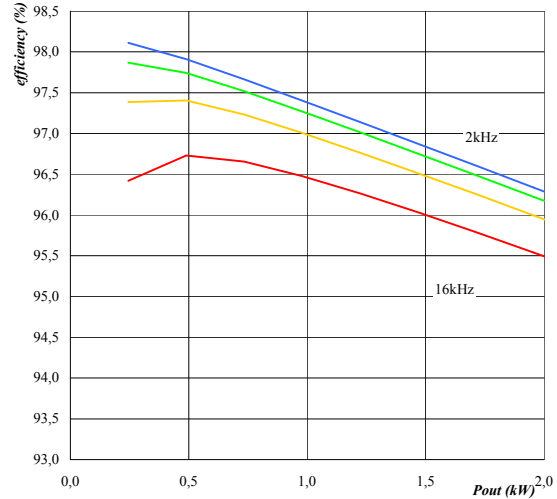
Inverter $P_{out} = f(Th)$



Conditions: $T_j = 125\text{C}$
 DC link = 320 V
 Modulation index $M_i = 1$
 $\cos\phi = 0,80$
 Switching freq. parameter fsw from 2 kHz to 16 kHz in * 2 steps

Figure 10. Typical efficiency as a function of output power

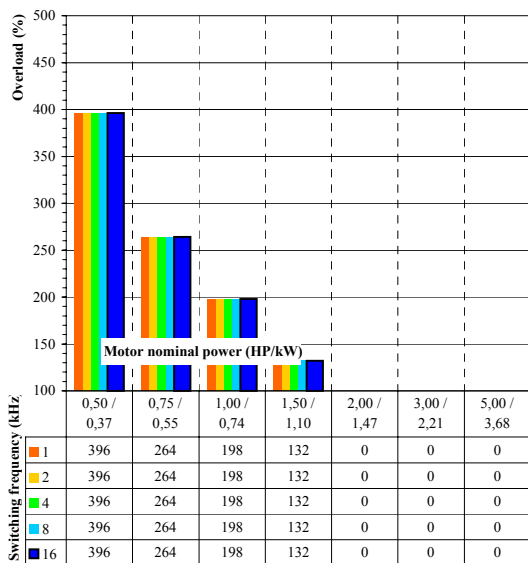
Inverter efficiency = $f(P_{out})$



Conditions: $T_j = 125\text{C}$
 DC link = 320 V
 Modulation index $M_i = 1$
 $\cos\phi = 0,80$
 Switching freq. parameter fsw from 2 kHz to 16 kHz in * 2 steps

Figure 11. Typical available overload factor as a function of motor power and switching frequency

Inverter $P_{peak}/P_{nom} = f(P_{nom}, f_{sw})$



Conditions: $T_j = 125\text{C}$
 DC link = 320 V
 Modulation index $M_i = 1$
 $\cos\phi = 0,8$
 Switching freq. parameter fsw from 1 kHz to 16 kHz in * 2 steps
 Heatsink temperature = 80 °C
 Motor efficiency = 0,85