



Key Parameters

V_{BO} / V_{RRM}	7500V / 8000V
I_{TAVM}	2300A ($T_C=85^\circ\text{C}$)
I_{TSM}	93000A
V_{T0}	1,2V
r_T	0,35m Ω
R_{thJC}	4,5K/kW
Clamping Force	90 ... 130kN
Max. Diameter	172,5mm
Contact Diameter	115mm
Height	40mm



For type designation please refer to actual shortform catalog

<http://www.ifbip.com/catalog>

Merkmale

- Direkt lichtgezündeter Thyristor mit integrierter Schutzfunktion
- Volle Sperrfähigkeit 50/60Hz über einen weiten Temperaturbereich
- Hohe DC Sperrstabilität
- Hohe Stoßstrombelastbarkeit
- Extrem hohe Einschalt di/dt Fähigkeit

Features

- Light triggered thyristor with internal Break over Diode
- Full blocking 50/60Hz over a wide range temperature range
- High DC blocking stability
- High surge current capability
- Extreme high di/dt capability

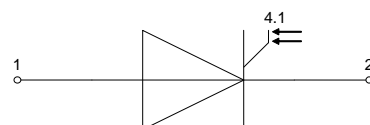
Typische Anwendungen

- Kurzschließer-Applikationen
- Pulsed Power Applikationen

Typical Applications

- Crowbar Applications
- Pulsed Power Applications

content of customer DMX code	QR code	
	DMX code digit	DMX code digit quantity
serial number	1..7	7
SP material number	8..16	9
datecode (production day)	17..18	2
datecode (production year)	19..20	2
datecode (production month)	21..22	2
vT class	23..26	4
QR class	27..30	4



www.ifbip.com
support@infineon-bip.com



Technische Information / technical information



Infineon Technologies Bipolar
 GmbH & Co. KG

Netz-Thyristor Phase Control Thyristor

T2563NH

Elektrische Eigenschaften / electrical properties Höchstzulässige Werte / maximum rated values

Periodische Rückwärts-Spitzensperrspannung repetitive peak and reverse voltage	$T_{vj} = -40^{\circ}\text{C} \dots T_{vj\text{max}}$	V_{RRM}	7500 V 8000 V
Durchlaßstrom-Effektivwert maximum RMS on-state current	$T_C = 85^{\circ}\text{C}$	I_{TRMSM}	3600 A
Dauergrenzstrom average on-state current	$T_C = 85^{\circ}\text{C}$ $T_C = 70^{\circ}\text{C}$ $T_C = 55^{\circ}\text{C}$	I_{TAVM}	2300 A 2850 A 3330 A
Stoßstrom-Grenzwert surge current	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ ms}$ $T_{vj} = T_{vj\text{max}}, t_p = 10\text{ ms}$	I_{TSM}	93000 A 90000 A
Grenzlastintegral I^2t -value	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ ms}$ $T_{vj} = T_{vj\text{max}}, t_p = 10\text{ ms}$	I^2t	43250 $10^3\text{ A}^2\text{s}$ 40500 $10^3\text{ A}^2\text{s}$
Kritische Stromsteilheit critical rate of rise of on-state current	DIN IEC 60747-6 $f = 50\text{ Hz}, P_{LM} = 40\text{mW}, t_{rise} = 0,5\mu\text{s}$	$(di_T/dt)_{cr}$	5000 A/ μs
Kritische Spannungssteilheit critical rate of rise of off-state voltage	$T_{vj} = T_{vj\text{max}}, V_D = 0,67 V_{DRM}$ 5.Kennbuchstabe / 5 th letter H	$(dv_D/dt)_{cr}$	2000 V/ μs

Charakteristische Werte / characteristic values

Schutzzündspannung (statisch) protective break over voltage	$T_{vj} = 25^{\circ}\text{C} \dots T_{vj\text{max}}$ Typischer Degradationsfaktor ist 0,16%/K für $T_{vj} = 0^{\circ}\text{C}..25^{\circ}\text{C}$ Typical de-rating factor of 0,16%/K is applicable for $T_{vj} = 0^{\circ}\text{C}..25^{\circ}\text{C}$	V_{BO}	min. 7500 V
Durchlaßspannung on-state voltage	$T_{vj} = T_{vj\text{max}}, i_T = 5000\text{A}, V_D = 200\text{V}$	V_T	typ. 2,75 V max. 2,95 V
Schleusenspannung threshold voltage	$T_{vj} = T_{vj\text{max}}$	$V_{(TO)}$	typ. 1,12 V max. 1,20 V
Ersatzwiderstand slope resistance	$T_{vj} = T_{vj\text{max}}$	r_T	typ. 0,326 m Ω max. 0,350 m Ω
Durchlaßkennlinie on-state characteristic $v_T = A + B \cdot i_T + C \cdot \ln(i_T + 1) + D \cdot \sqrt{i_T}$	$T_{vj} = T_{vj\text{max}}$ $500\text{A} \leq i_F \leq 6000\text{A}$	typ. max.	A 1,2357 B -2,89E-05 C -0,1322 D 0,03946 A 1,2406 B -2,253E-05 C -0,1232 D 0,04056
minimale Zündlichtleistung minimum gate trigger light power	$T_{vj} = 25^{\circ}\text{C}, V_D = 200\text{V}$	P_{LM}	max. 40 mW
Haltestrom holding current	$T_{vj} = 25^{\circ}\text{C}$	I_H	max. 100 mA
Einraststrom latching current	$T_{vj} = 25^{\circ}\text{C}, V_D = 150\text{V},$ $P_{LM} = 40\text{mW}, t_{rise} = 0,5\mu\text{s}$	I_L	max. 1 A
Rückwärts-Sperrstrom reverse blocking current	$T_{vj} = T_{vj\text{max}}$ $V_R = V_{RRM}$	i_R	max. 900 mA
Zündverzug gate controlled delay time	DIN IEC 60747-6 $T_{vj} = 25^{\circ}\text{C}, V_D = 1000\text{V},$ $P_{LM} = 40\text{mW}, t_{rise} = 0,5\mu\text{s}$	t_{gd}	max. 5 μs

prepared by: TM	date of publication: 2011-05-02
approved by: JP	revision: 11.0



Technische Information / technical information



Infineon Technologies Bipolar
GmbH & Co. KG

Netz-Thyristor Phase Control Thyristor

T2563NH

Elektrische Eigenschaften / electrical properties

Charakteristische Werte / characteristic values

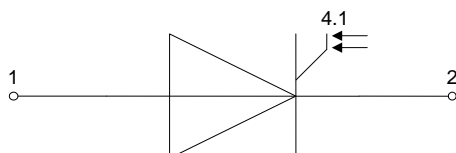
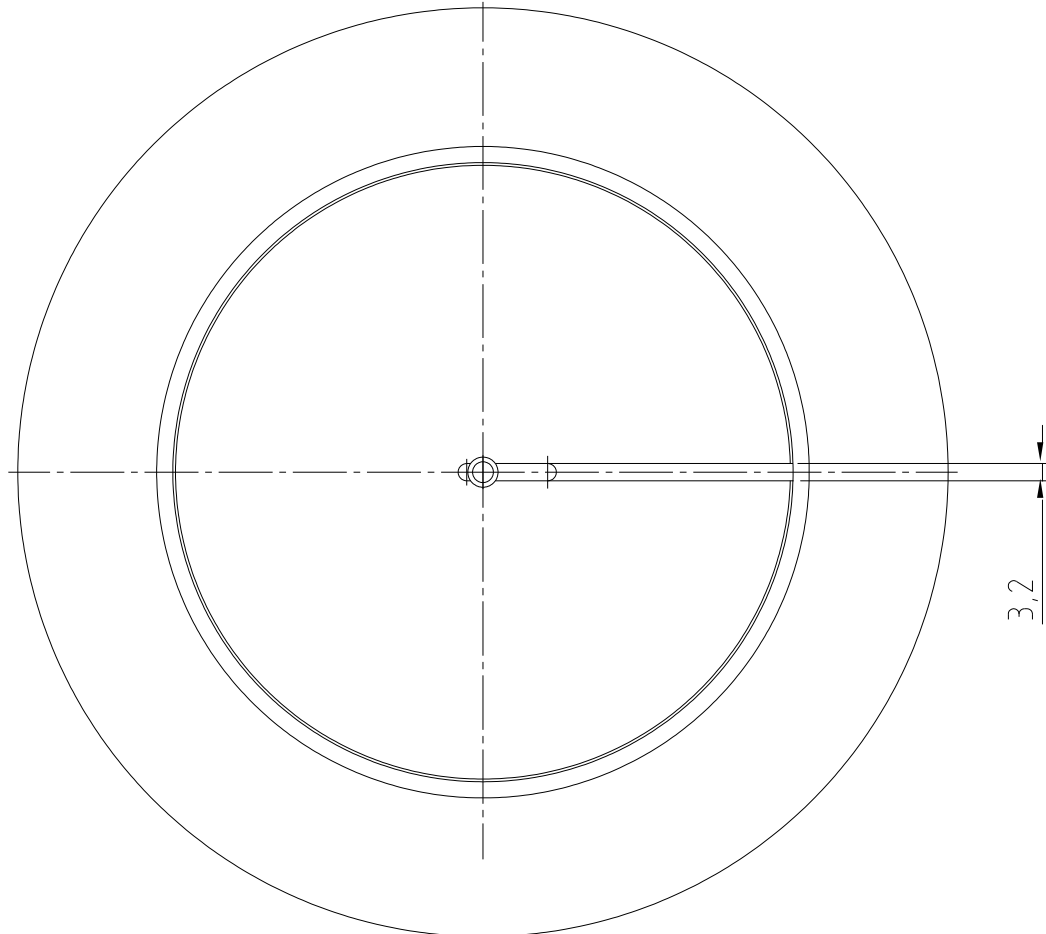
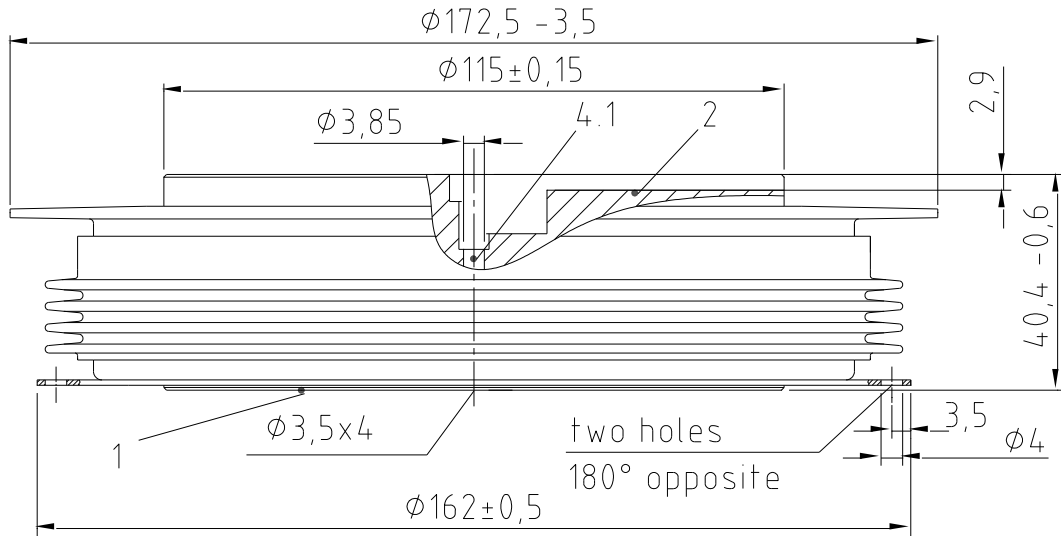
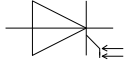
Freiwerdezeit circuit commutated turn-off time	$T_{vj} = T_{vj\max}$, $i_{TM} = I_{TAVM}$ $V_{RM} = 100\text{ V}$, $v_{DM} = 0,67 V_{DRM}$ $dv_D/dt = 20\text{ V}/\mu\text{s}$, $-di_T/dt = 10\text{ A}/\mu\text{s}$ 4.Kennbuchstabe / 4 th letter O	t_q	typ.	550	μs
Sperrverzögerungsladung recovered charge	$T_{vj} = T_{vj\max}$ $i_{TM} = I_{TAVM}$, $-di_T/dt = 10\text{ A}/\mu\text{s}$ $V_R = 0,5V_{RRM}$, $V_{RM} = 0,8V_{RRM}$	Q_r	max.	22	mAs
Rückstromspitze peak reverse recovery current	$T_{vj} = T_{vj\max}$ $i_{TM} = I_{TAVM}$, $-di_T/dt = 10\text{ A}/\mu\text{s}$ $V_R = 0,5V_{RRM}$, $V_{RM} = 0,8V_{RRM}$	I_{RM}	max.	400	A

Thermische Eigenschaften / thermal properties

Innerer Wärmewiderstand thermal resistance, junction to case	<u>Kühlfläche / cooling surface</u> beidseitig / two-sided, $\theta = 180^\circ\text{sin}$ beidseitig / two-sided, DC Anode / anode, DC Kathode / cathode, DC	R_{thJC}	max.	4,8	K/kW
			max.	4,5	K/kW
			max.	8,2	K/kW
			max.	10,0	K/kW
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	<u>Kühlfläche / cooling surface</u> beidseitig / two-sided einseitig / single-sided	R_{thCH}	max.	1,0	K/kW
			max.	2,0	K/kW
Höchstzulässige Sperrschichttemperatur maximum junction temperature		$T_{vj\max}$		120	$^\circ\text{C}$
Betriebstemperatur operating temperature		$T_{c\text{op}}$		-40...+120	$^\circ\text{C}$
Lagertemperatur storage temperature		T_{stg}		-40...+150	$^\circ\text{C}$

Mechanische Eigenschaften / mechanical properties

Gehäuse, siehe Anlage case, see annex				Seite 4 page 4	
Si-Element mit Druckkontakt Si-pellet with pressure contact					
Anpresskraft clamping force		F		90...130	kN
Gewicht weight		G	typ.	4000	g
Kriechstrecke creepage distance				49	mm
Schwingfestigkeit vibration resistance	f = 50 Hz			50	m/s ²



- 1: Anode/anode
- 2: Kathode/cathode
- 4.1: Gate

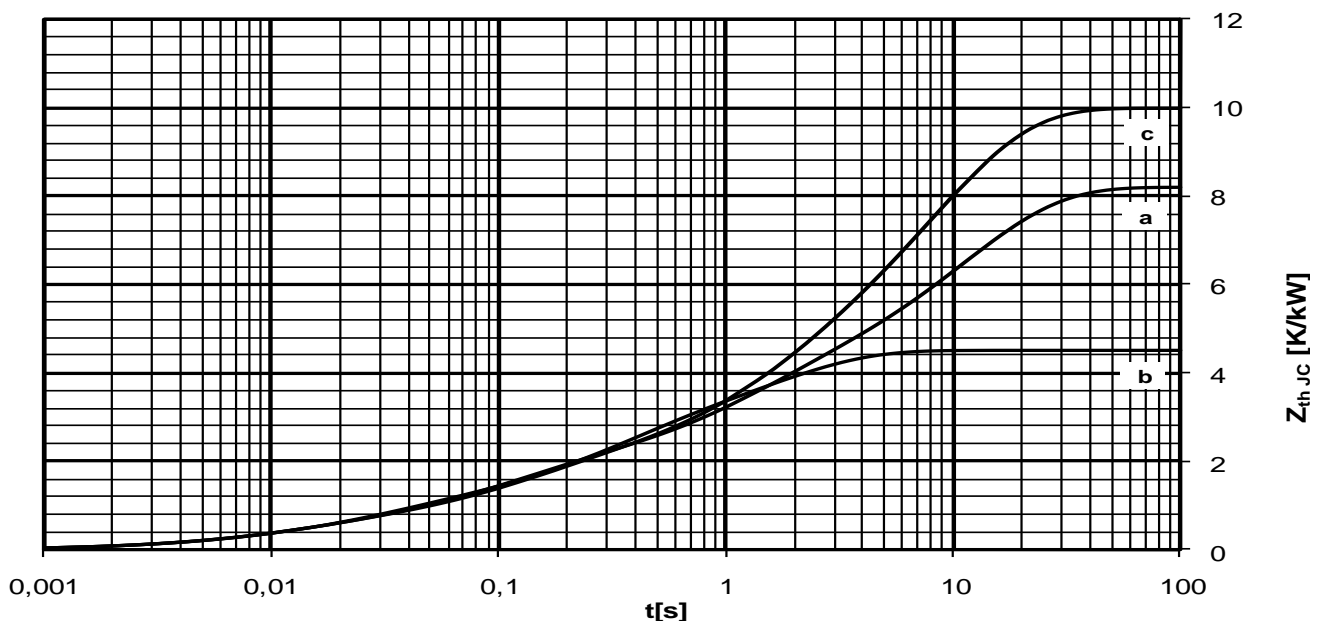


Analytische Elemente des transienten Wärmewiderstandes Z_{thJC} /
analytical elements of transient thermal impedance Z_{thJC}

	Pos. n	1	2	3	4	5	6	7
beidseitig two-sided	R_{thn} [K/kW]	2,06	1,6	0,76	0,080			
	τ_n [s]	1,6	0,27	0,026	0,0054			
anodenseitig anode-sided	R_{thn} [K/kW]	4,67	1,84	1,31	0,38			
	τ_n [s]	11,128	1,0396	0,09265	0,01079			
kathodenseitig cathode-sided	R_{thn} [K/kW]	6,66	1,64	1,24	0,46			
	τ_n [s]	8,2498	1,2122	0,1124	0,0119			

Analytische Funktion / analytical function:

$$Z_{thJC} = \sum_{n=1}^{n_{max}} R_{thn} \left(1 - e^{-\frac{t}{\tau_n}} \right)$$

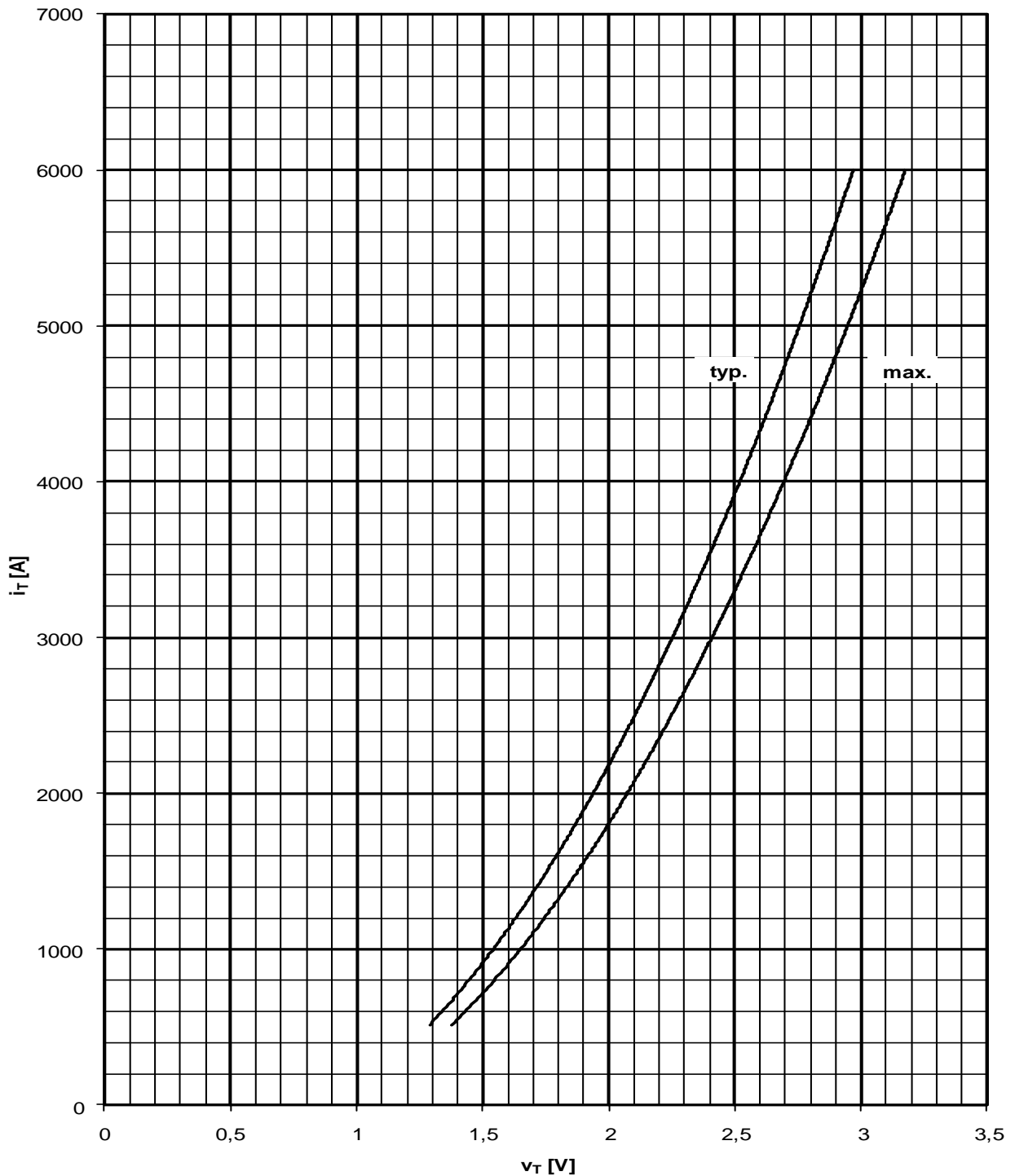
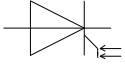


Transienter innerer Wärmewiderstand für DC/ transient thermal impedance $Z_{thJC} = f(t)$ for DC

a : Anodenseitige Kühlung / anode-sided cooling

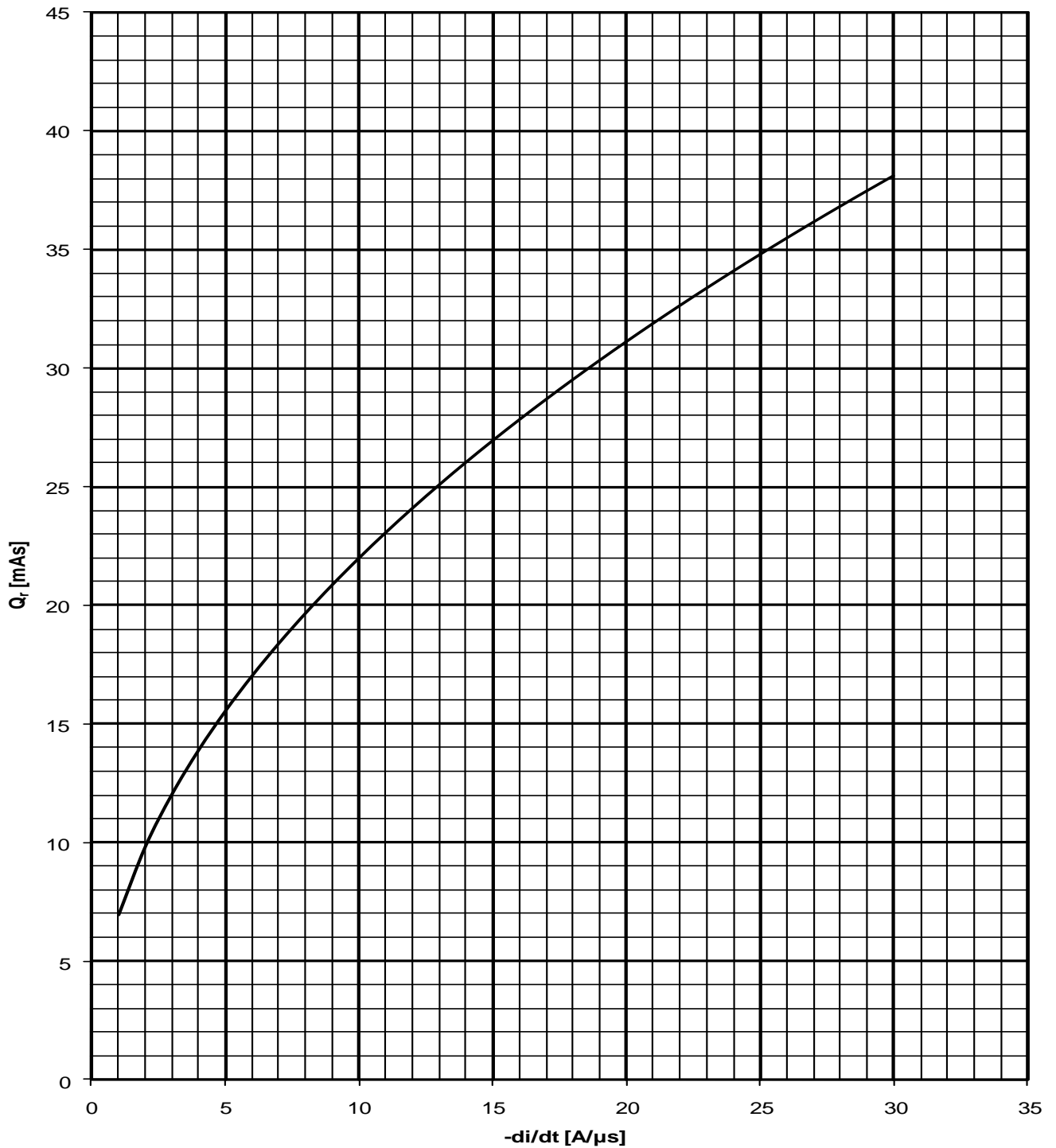
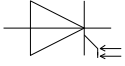
b : Beidseitige Kühlung / two-sided cooling

c : Kathodenseitige Kühlung / Cathode-sided cooling



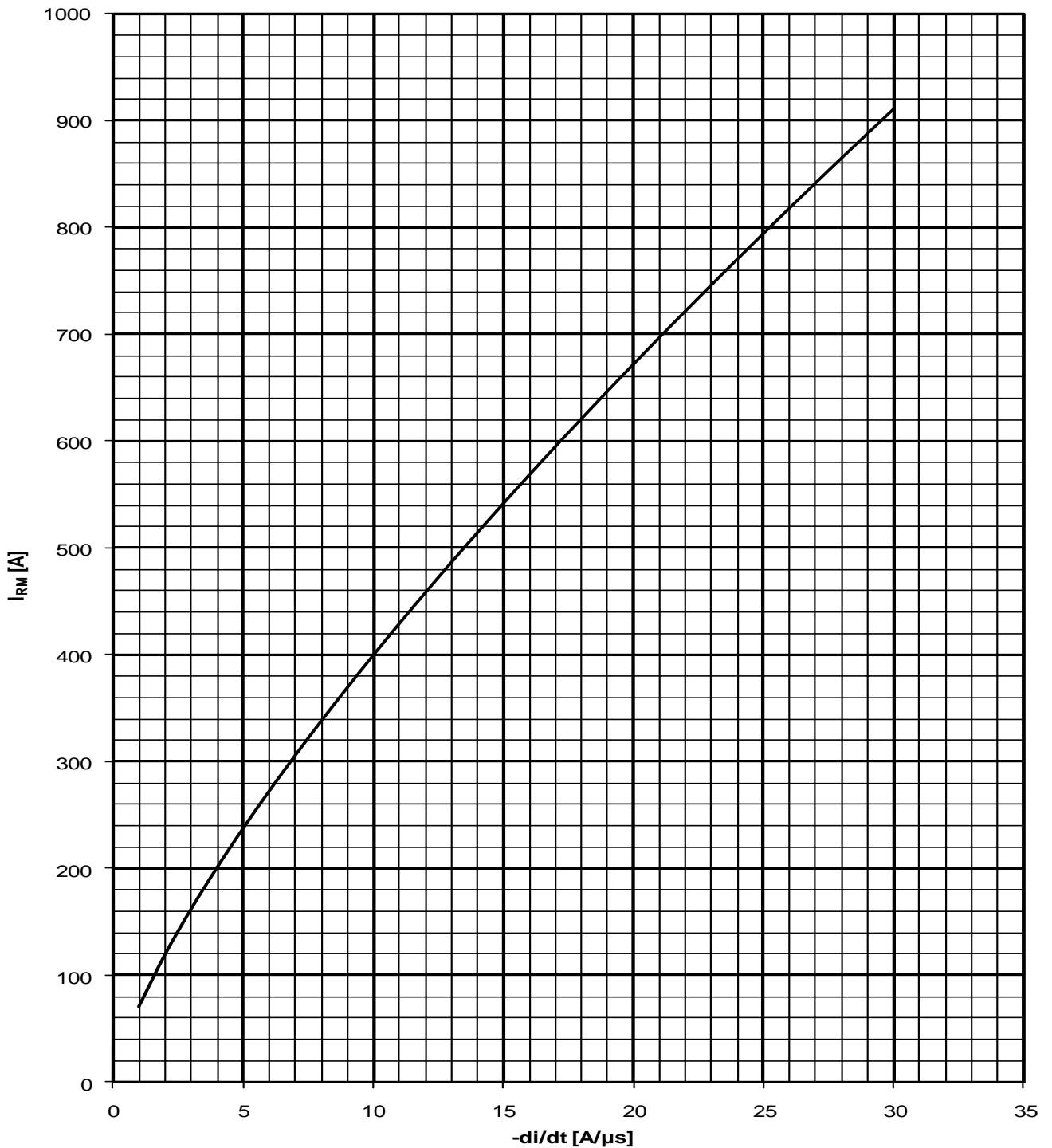
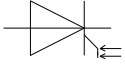
Grenzdurchlaßkennlinie / limiting on-state characteristic $i_T = f(v_T)$

$$T_{vj} = T_{vj \text{ max}}$$



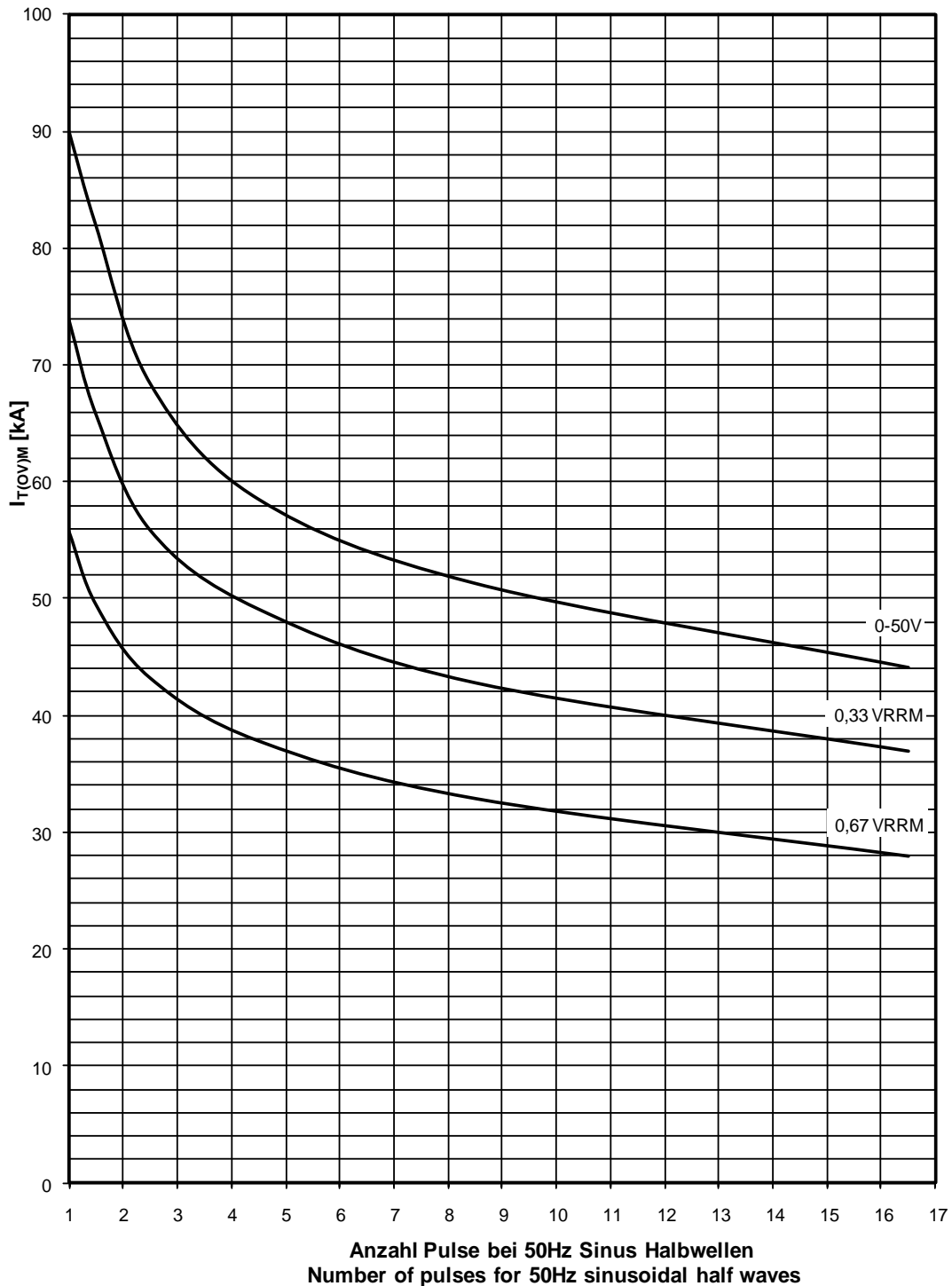
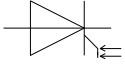
Sperrverzögerungsladung / recovered charge $Q_r = f(-di/dt)$

$$T_{vj} = T_{vjmax}, V_R = 0,5 V_{RRM}, V_{RM} = 0,8 V_{RRM}$$



Rückstromspitze / peak reverse recovery current $I_{RM} = f(-di/dt)$

$$T_{vj} = T_{vjmax}, V_R = 0,5 V_{RRM}, V_{RM} = 0,8 V_{RRM}$$



Typische Abhängigkeit des Grenzstromes $I_{T(OV)M}$ von der Anzahl für eine Folge von Sinus Halbwellen bei 50Hz.

Parameter: Rückwärtsspannung V_{RM}

Typical dependency of maximum overload on-state current $I_{T(OV)M}$ as a number of a sequence of sinusoidal half waves at 50Hz. Parameter: peak reverse voltage V_{RM}

$$I_{T(OV)M} = f(\text{pulses}, V_{RM}); T_{vj} = T_{vjmax}$$