**Key Parameters**

V_{DRM} / V_{RRM}	1600V -1800V
I_{TAVM}	2610A ($T_C=85\text{ }^\circ\text{C}$)
I_{TSM}	44000A
V_{TO}	0,85V
r_T	0,106m Ω
R_{thJC}	11,7K/kW
Clamping Force	30...65kN
Max. Diameter	100 mm
Contact Diameter	65 mm
Height	26,5 mm



For type designation please refer to actual short form catalog
<http://www.ifbip.com/catalog>

Merkmale

- Volle Sperrfähigkeit 50/60Hz über einen weiten Temperaturbereich
- Hohe DC Sperrstabilität
- Hohe Stoßstrombelastbarkeit
- Industrie-Standard-Gehäuse

Features

- Full blocking 50/60Hz over a wide range temperature range
- High DC blocking stability
- High surge current capability
- Industrial standard package

Typische Anwendungen

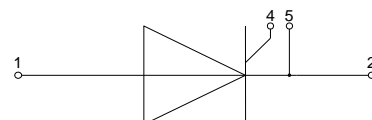
- Sanftanlasser
- Mittelspannungsumrichter
- Gleichrichter für Antriebsapplikationen

Typical Applications

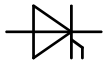
- Soft starter
- Medium voltage converters
- Rectifier for drives applications



content of customer DMX 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 (optional)	23..26	4
QR class (optional)	27..30	4



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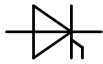
**Netz-Thyristor**
Phase Control Thyristor**T2600N**Infineon Technologies Bipolar
GmbH & Co. KG**Elektrische Eigenschaften / Electrical properties**
Höchstzulässige Werte / Maximum rated values

Periodische Vorwärts- und Rückwärts-Spitzensperrspannung repetitive peak forward off-state and reverse voltages	$T_{vj} = -40^{\circ}\text{C} \dots T_{vj \max}$	$V_{\text{DRM}}, V_{\text{RRM}}$	1600 1800	V V
Vorwärts-Stossspitzensperrspannung non-repetitive peak forward off-state voltage	$T_{vj} = -40^{\circ}\text{C} \dots T_{vj \max}$	V_{DSM}	1600 1800	V V
Rückwärts-Stossspitzensperrspannung non-repetitive peak reverse voltage	$T_{vj} = +25^{\circ}\text{C} \dots T_{vj \max}$	V_{RSM}	1700 1900	V V
Durchlassstrom-Effektivwert RMS on-state current	$T_C = 85^{\circ}\text{C}$	I_{TRMS}	4100	A
Dauergrenzstrom average on-state current	$T_C = 85^{\circ}\text{C}$	I_{TAVM}	2610	A
Dauergrenzstrom average on-state current	$T_C = 55^{\circ}\text{C}, \theta = 180^{\circ}\sin, t_p = 10\text{ms}$	I_{TAVM}	3580	A
Durchlaßstrom-Effektivwert RMS on-state current		I_{TRMS}	5630	A
Stossstrom-Grenzwert surge current	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$ $T_{vj} = T_{vj \max}, t_p = 10\text{ms}$	I_{TSM}	44000 36000	A A
Grenzlastintegral I^2t -value	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$ $T_{vj} = T_{vj \max}, t_p = 10\text{ms}$	I^2t	9680 6480	$10^3 \text{ A}^2\text{s}$ $10^3 \text{ A}^2\text{s}$
Kritische Stromsteilheit critical rate of rise of on-state current	DIN IEC 60747-6 $f = 50 \text{ Hz}, i_{\text{GM}} = 1\text{A}, di_{\text{G}}/dt = 1\text{A}/\mu\text{s}$	$(di_{\text{T}}/dt)_{\text{cr}}$	200	$\text{A}/\mu\text{s}$
Kritische Spannungssteilheit critical rate of rise of off-state voltage	$T_{vj} = T_{vj \max}, V_{\text{D}} = 0,67 V_{\text{DRM}}$ 5.Kennbuchstabe / 5 th letter F	$(dv_{\text{D}}/dt)_{\text{cr}}$	1000	$\text{V}/\mu\text{s}$

Charakteristische Werte / Characteristic values

Durchlassspannung on-state voltage	$T_{vj} = T_{vj \max}, i_{\text{T}} = 8\text{kA}$	v_{T}	max. 1,7	V
Schleusenspannung threshold voltage	$T_{vj} = T_{vj \max}$	$V_{(\text{TO})}$	max 0,85	V
Ersatzwiderstand slope resistance	$T_{vj} = T_{vj \max}$	r_{T}	max 0,106	$\text{m}\Omega$
Durchlasskennlinie on-state characteristic $v_{\text{T}} = A + B \cdot i_{\text{T}} + C \cdot \ln(i_{\text{T}} + 1) + D \cdot \sqrt{i_{\text{T}}}$	$T_{vj} = T_{vj \max}$	A= B= C= D=	4,300E-01 7,883E-05 4,422E-02 2,659E-03	
Zündstrom gate trigger current	$T_{vj} = 25^{\circ}\text{C}, V_{\text{D}} = 12\text{V}$	I_{GT}	max. 250	mA
Zündspannung gate trigger voltage	$T_{vj} = 25^{\circ}\text{C}, V_{\text{D}} = 12\text{V}$	V_{GT}	max. 2	V
Nicht zündender Steuerstrom gate non-trigger current	$T_{vj} = T_{vj \max}, V_{\text{D}} = 12\text{V}$ $T_{vj} = T_{vj \max}, V_{\text{D}} = 0,5 V_{\text{DRM}}$	I_{GD}	max. 10 max. 5	mA mA
Nicht zündende Steuerspannung gate non-trigger voltage	$T_{vj} = T_{vj \max}, V_{\text{D}} = 0,5 V_{\text{DRM}}$	V_{GD}	max. 0,25	V
Haltestrom holding current	$T_{vj} = 25^{\circ}\text{C}, V_{\text{D}} = 12\text{V}$	I_{H}	max. 300	mA
Einraststrom latching current	$T_{vj} = 25^{\circ}\text{C}, V_{\text{D}} = 12\text{V}, R_{\text{GK}} \geq 10\Omega$ $i_{\text{GM}} = 1\text{A}, di_{\text{G}}/dt = 1\text{A}/\mu\text{s},$ $t_{\text{g}} = 20\mu\text{s}$	I_{L}	max. 1500	mA
Vorwärts- und Rückwärts-Sperrstrom forward off-state and reverse current	$T_{vj} = T_{vj \max}$ $V_{\text{D}} = V_{\text{DRM}}, V_{\text{R}} = V_{\text{RRM}}$	$i_{\text{D}}, i_{\text{R}}$	max. 350	mA
Zündverzug gate controlled delay time	DIN IEC 60747-6 $T_{vj} = 25^{\circ}\text{C}, i_{\text{GM}} = 1\text{A},$ $di_{\text{G}}/dt = 1\text{A}/\mu\text{s}$	t_{gd}	max. 4	μs

prepared by:	HR	date of publication:	2021-03-10
approved by:	MS	revision:	3.1



Technische Information /
technical information



**Netz-Thyristor
Phase Control Thyristor**

T2600N

Infineon Technologies Bipolar
GmbH & Co. KG

Elektrische Eigenschaften / Electrical properties
Charakteristische Werte / Characteristic values

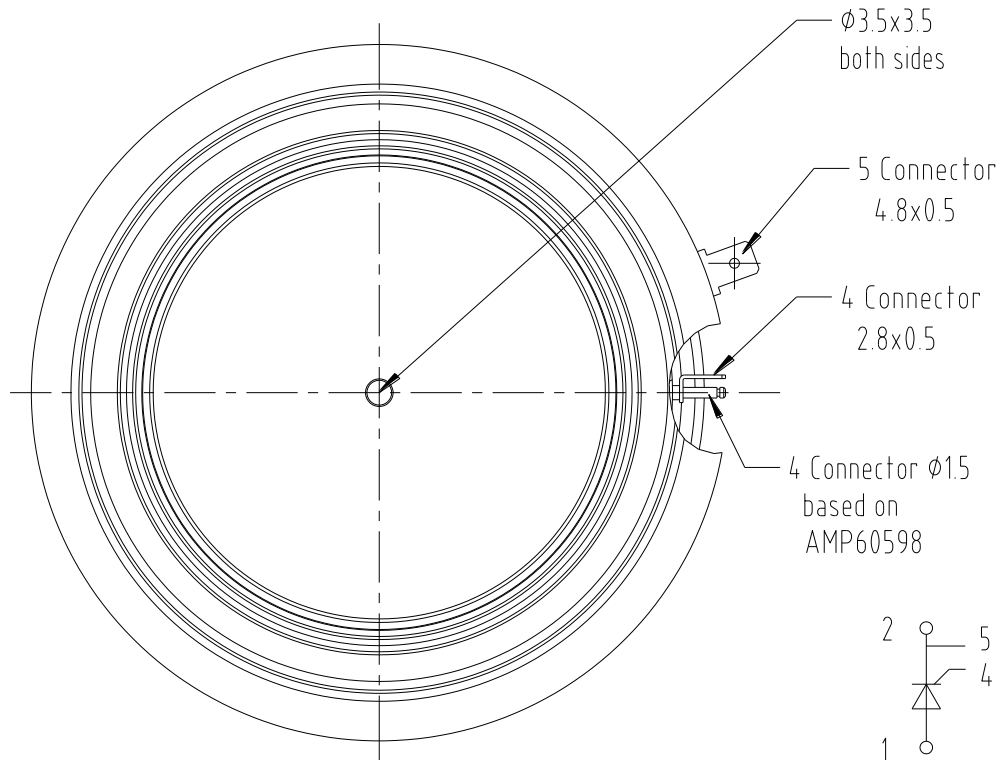
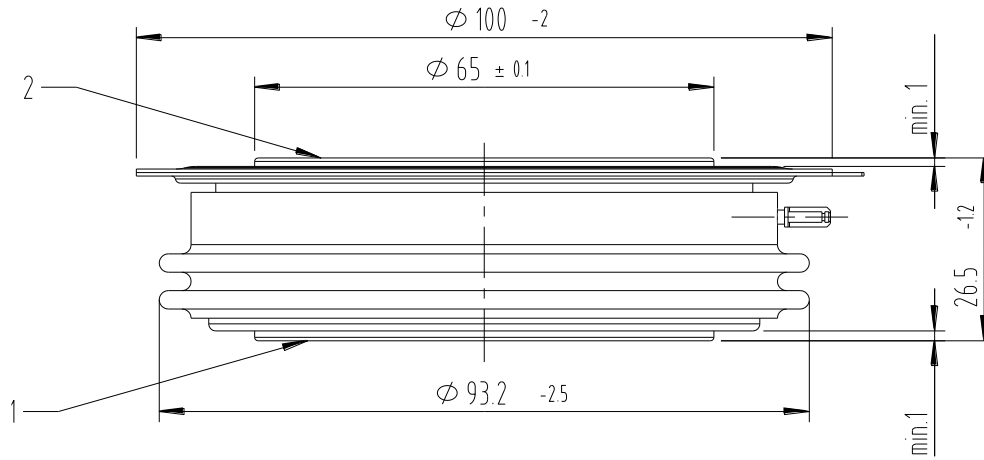
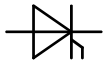
Freiwerdezeit circuit commutated turn-off time	$T_{vj} = T_{vj,max}$, $i_{TM} = I_{TAVM}$ $V_{RM} = 100V$, $V_{DM} = 0,67 V_{DRM}$ $dv_D/dt = 20V/\mu s$, $-di_T/dt = 10A/\mu s$ 4.Kennbuchstabe / 4 th letter O	t_q	typ.	250	μs
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Thermische Eigenschaften / 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, $\theta = 180^\circ\text{sin}$ Anode / anode, DC Kathode / cathode, $\theta = 180^\circ\text{sin}$ Kathode / cathode, DC	R_{thJC}	max.	12,5	K/kW
			max.	11,7	K/kW
			max.	23,2	K/kW
			max.	22,5	K/kW
			max.	25,0	K/kW
			max.	24,5	K/kW
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	<u>Kühlfläche / cooling surface</u> beidseitig / two-sides einseitig / single-sides	R_{thCH}	max.	3,0	K/kW
			max.	6,0	K/kW
Höchstzulässige Sperrschichttemperatur maximum junction temperature		$T_{vj,max}$		135	$^\circ C$
Betriebstemperatur operating temperature		$T_{c,op}$		-40...+135	$^\circ C$
Lagertemperatur storage temperature		T_{stg}		-40...+150	$^\circ C$

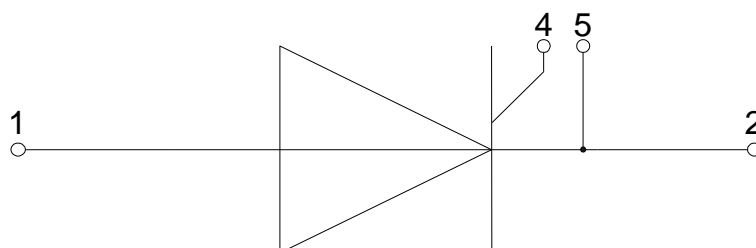
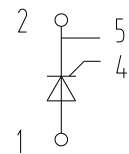
Mechanische Eigenschaften / Mechanical properties

Gehäuse, siehe Anlage case, see annex				Seite 4 page 4	
Si-Element mit Druckkontakt Si-pellet with pressure contact					
Anpresskraft clamping force		F		30...65	kN
Steueranschlüsse control terminals	Gate (flat) Gate (round, based on AMP 60598) Kathode / cathode			A 2,8x0,5 \varnothing 1,5 A 4,8x0,5	mm mm mm
Gewicht weight		G	typ.	900	g
Kriechstrecke creepage distance				25	mm
Schwingfestigkeit vibration resistance	f = 50Hz			50	m/s ²

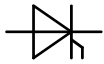


strike distance: 15mm
creepage distance: 25mm

overall height based
on contact pressure



- 1: Anode / Anode**
- 2: Kathode / Cathode**
- 4: Gate**
- 5: Hilfskathode/
Auxiliary Cathode**

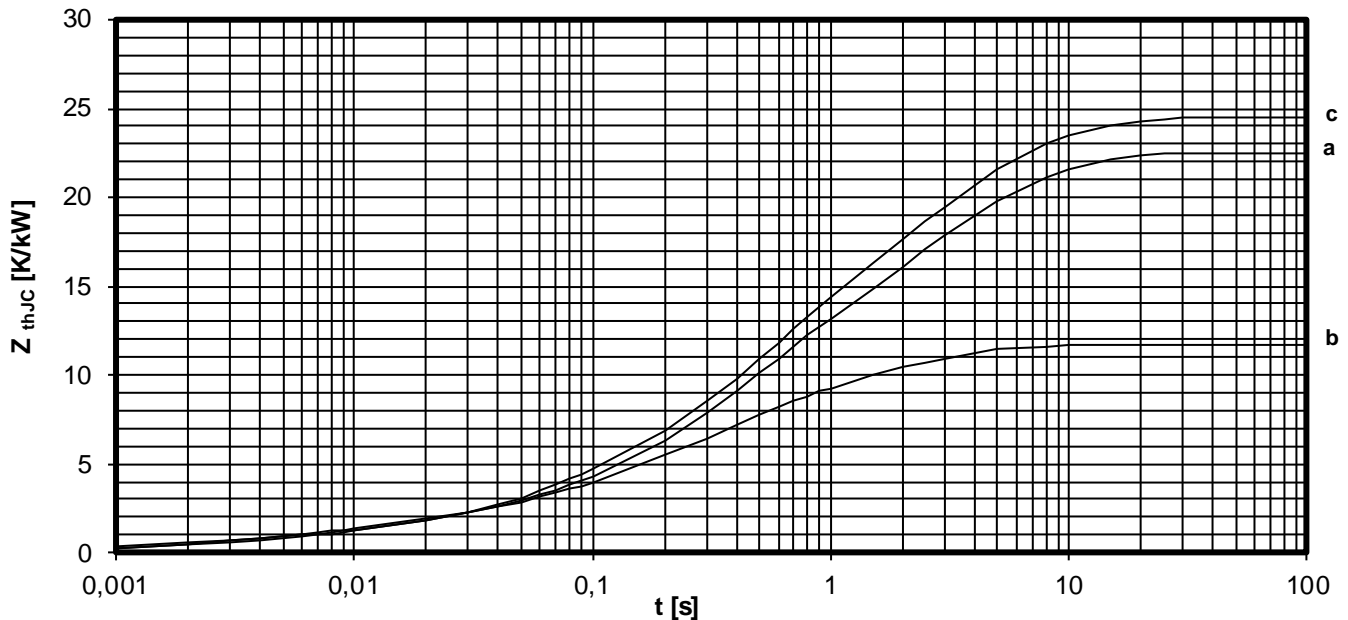


Analytische Elemente des transienten Wärmewiderstandes Z_{thJC} für DC
Analytical elements of transient thermal impedance Z_{thJC} for DC

Kühlung / Cooling	Pos. n	1	2	3	4	5	6	7
beidseitig two-sided	R_{thn} [K/kW]	3,2	4,24	2,74	0,91	0,57	0,03	0
	τ_n [s]	2,05	0,449	0,134	0,0135	0,00298	0,00029	1
anodenseitig anode-sided	R_{thn} [K/kW]	4,72	8,50	7,60	1,05	0,6	0,04	0
	τ_n [s]	6,1	1,9	0,31	0,024	0,0023	0,00029	1
kathodenseitig cathode-sided	R_{thn} [K/kW]	4,77	9	8,05	2,05	0,60	0,04	0
	τ_n [s]	6,1	2,05	0,38	0,057	0,003	0,00029	1

Analytische Funktion / Analytical function:

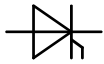
$$Z_{thJC} = \sum_{n=1}^{n_{max}} R_{thn} \left(1 - e^{-\frac{t}{\tau_n}} \right)$$



Transienter innerer Wärmewiderstand für DC / Transient thermal impedance for DC

$$Z_{thJC} = f(t)$$

- a - Anodenseitige Kühlung / Anode-sided cooling
- b - Beidseitige Kühlung / Two-sided cooling
- c - Kathodenseitige Kühlung / Cathode-sided cooling



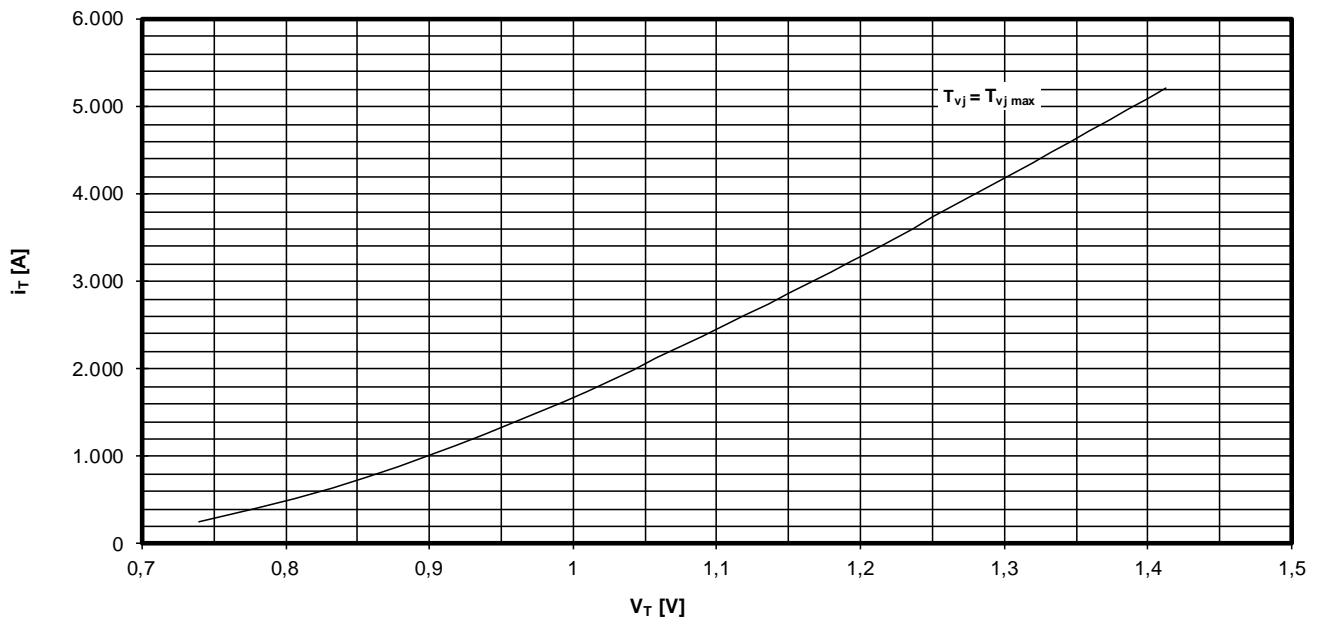
Erhöhung des $Z_{th DC}$ bei Sinus und Rechteckströmen mit unterschiedlichen Stromflusswinkeln Θ
Rise of $Z_{th DC}$ for sinewave and rectangular current with different current conduction angles Θ

$$\Delta Z_{th \Theta \sin} / \Delta Z_{th \Theta \text{ rec}}$$

Kühlung / Cooling	$\Delta Z_{th \Theta \sin 180^\circ}$ [K/kW]	$\Delta Z_{th \Theta \text{ rec } 180^\circ}$ [K/kW]	$\Delta Z_{th \Theta \text{ rec } 120^\circ}$ [K/kW]	$\Delta Z_{th \Theta \text{ rec } 90^\circ}$ [K/kW]	$\Delta Z_{th \Theta \text{ rec } 60^\circ}$ [K/kW]	$\Delta Z_{th \Theta \text{ rec } 30^\circ}$ [K/kW]
beidseitig two-sided	0,799	1,046	1,705	2,176	2,821	3,765
anodenseitig anode-sided	0,642	0,984	1,671	2,204	2,992	4,220
kathodenseitig cathode-sided	0,660	0,905	1,495	1,930	2,538	3,450

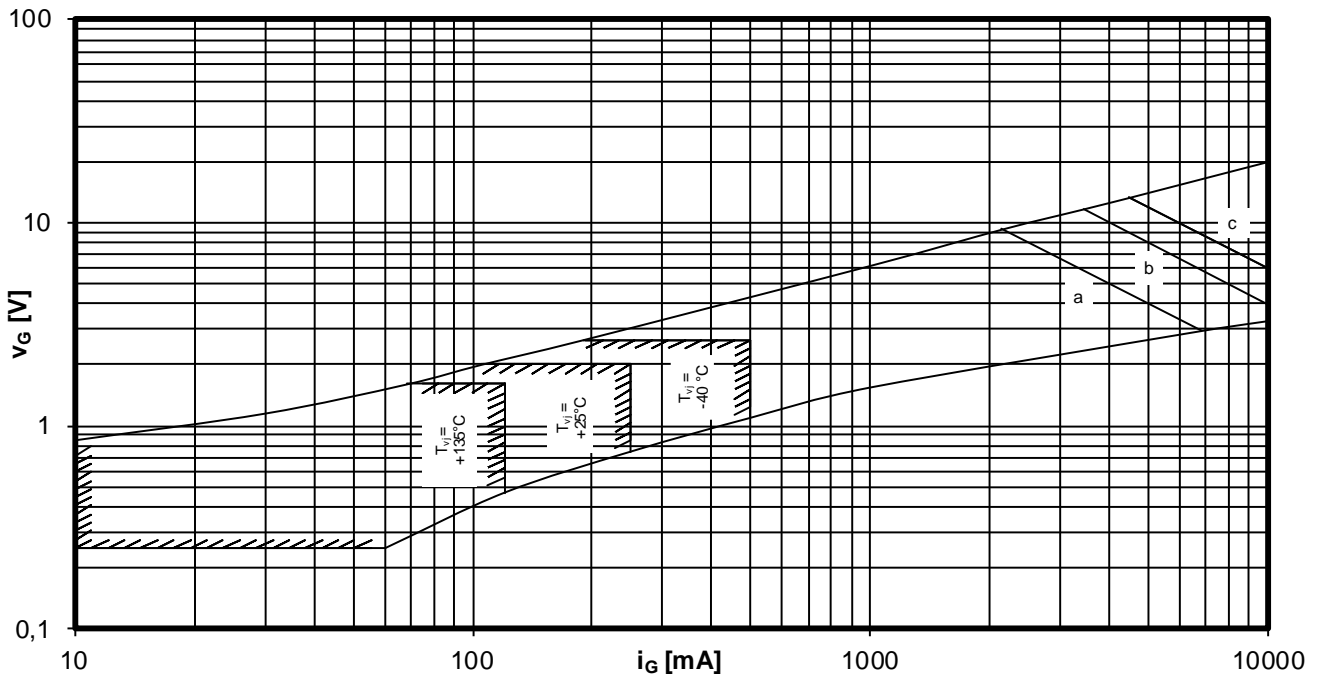
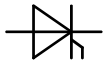
$$Z_{th \Theta \sin} = Z_{th DC} + \Delta Z_{th \Theta \sin}$$

$$Z_{th \Theta \text{ rec}} = Z_{th DC} + \Delta Z_{th \Theta \text{ rec}}$$



Grenzdurchlasskennlinie / Limiting on-state characteristic $i_T = f(v_T)$

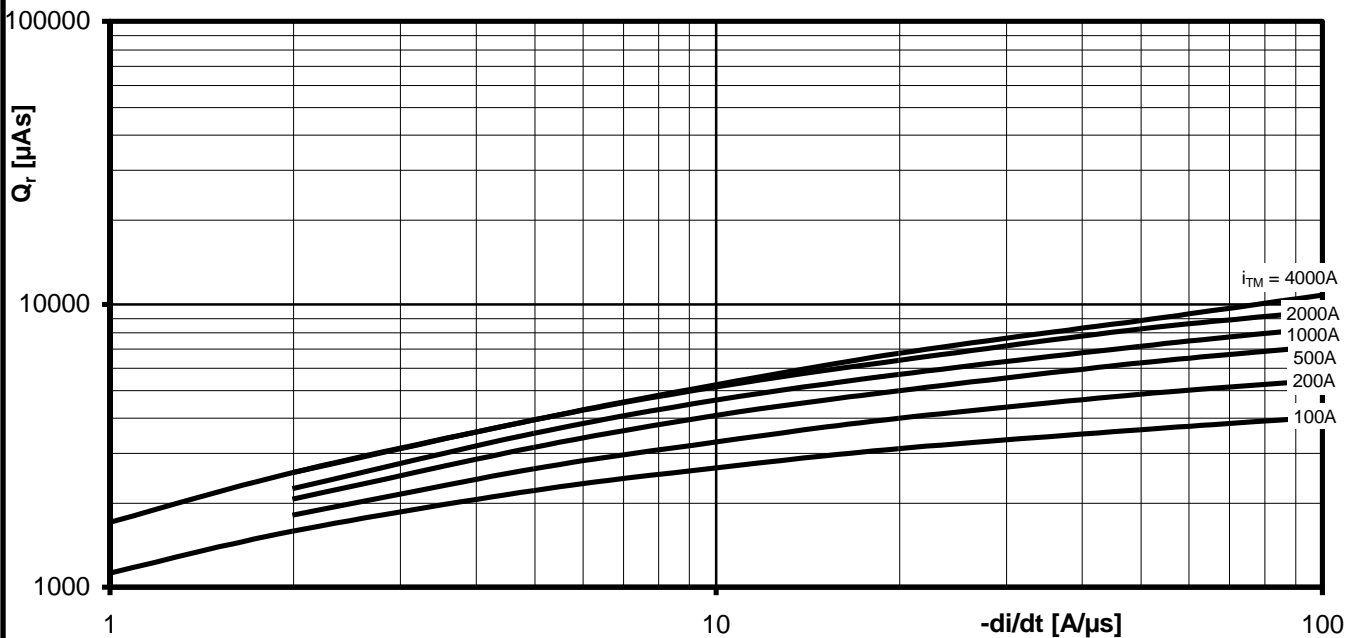
$$T_{vj} = T_{vj \text{ max}}$$



Steuercharakteristik $v_G = f(i_G)$ mit Zündbereichen für $V_D = 12\text{ V}$
Gate characteristic $v_G = f(i_G)$ with triggering area for $V_D = 12\text{ V}$

Höchstzulässige Spitzensteuerverlustleistung / Maximum rated peak gate power dissipation $P_{GM} = f(t_g)$:

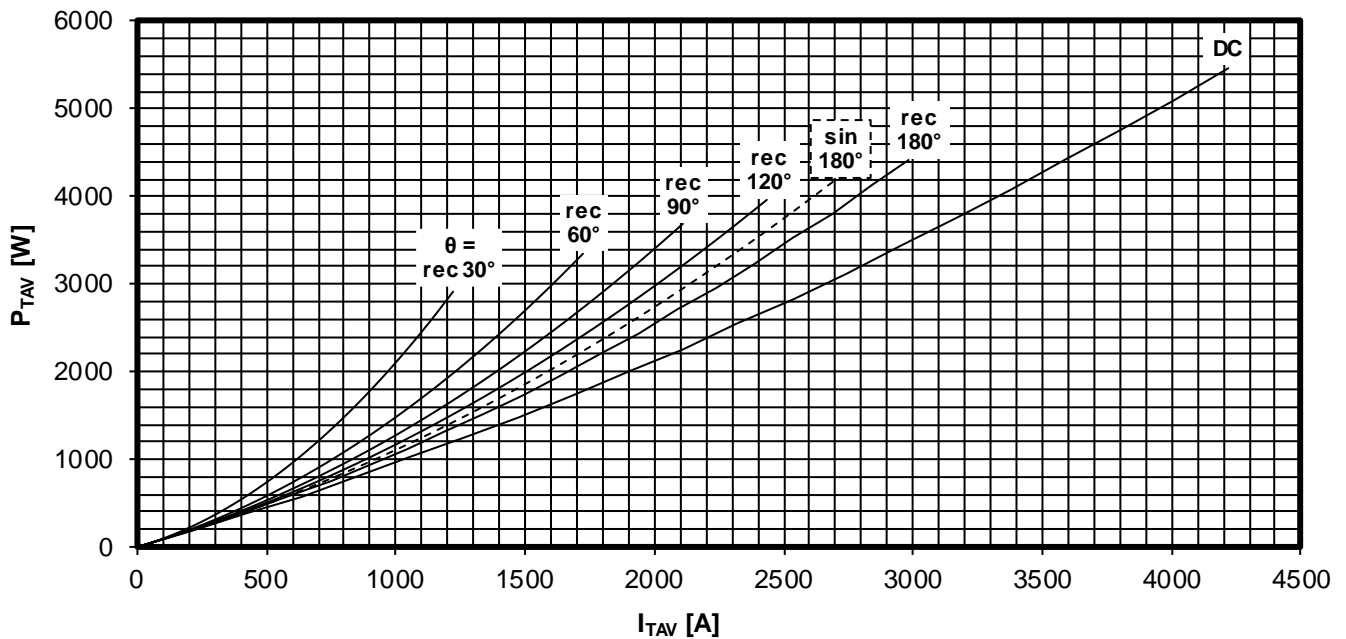
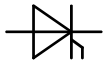
a - 20W / 10ms b - 40W / 1ms c - 60W / 0,5ms



Sperrverzögerungsladung / Recovered charge $Q_r = f(di/dt)$

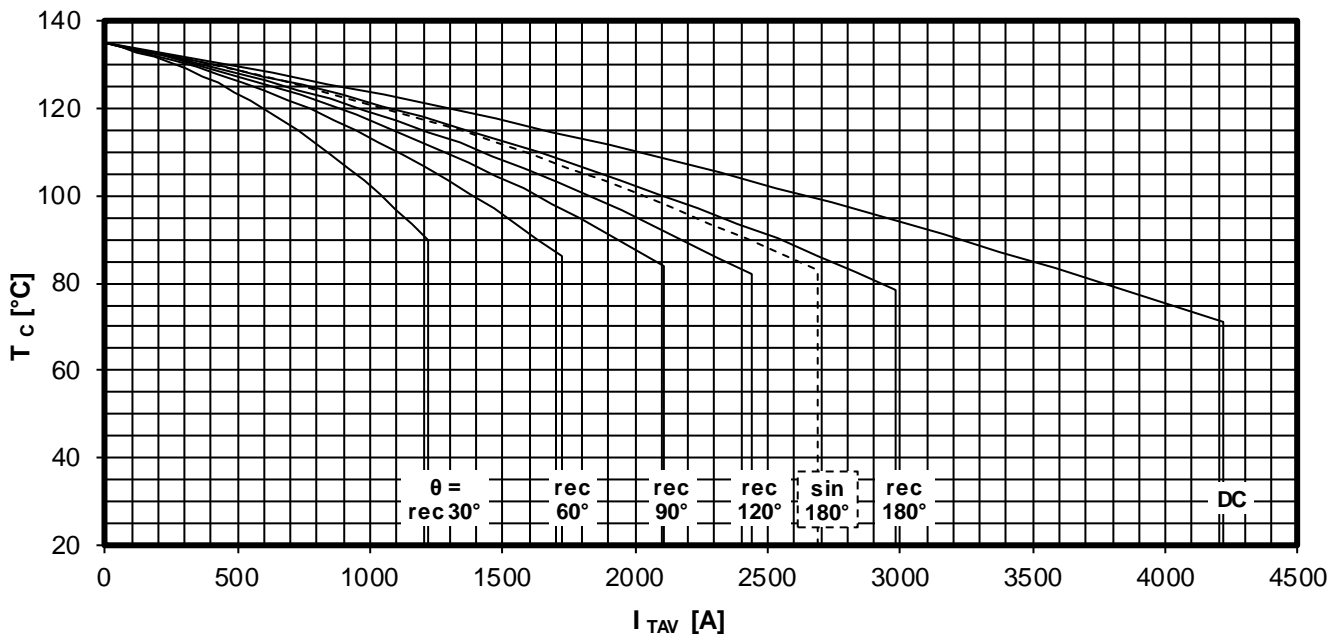
$T_{vj} = T_{vjmax}$, $V_R \leq 0,5 V_{RRM}$, $V_{RM} = 0,8 V_{RRM}$

Parameter: Durchlassstrom / On-state current i_{TM}



Durchlassverlustleistung / On-state power loss $P_{TAV} = f(I_{TAV})$

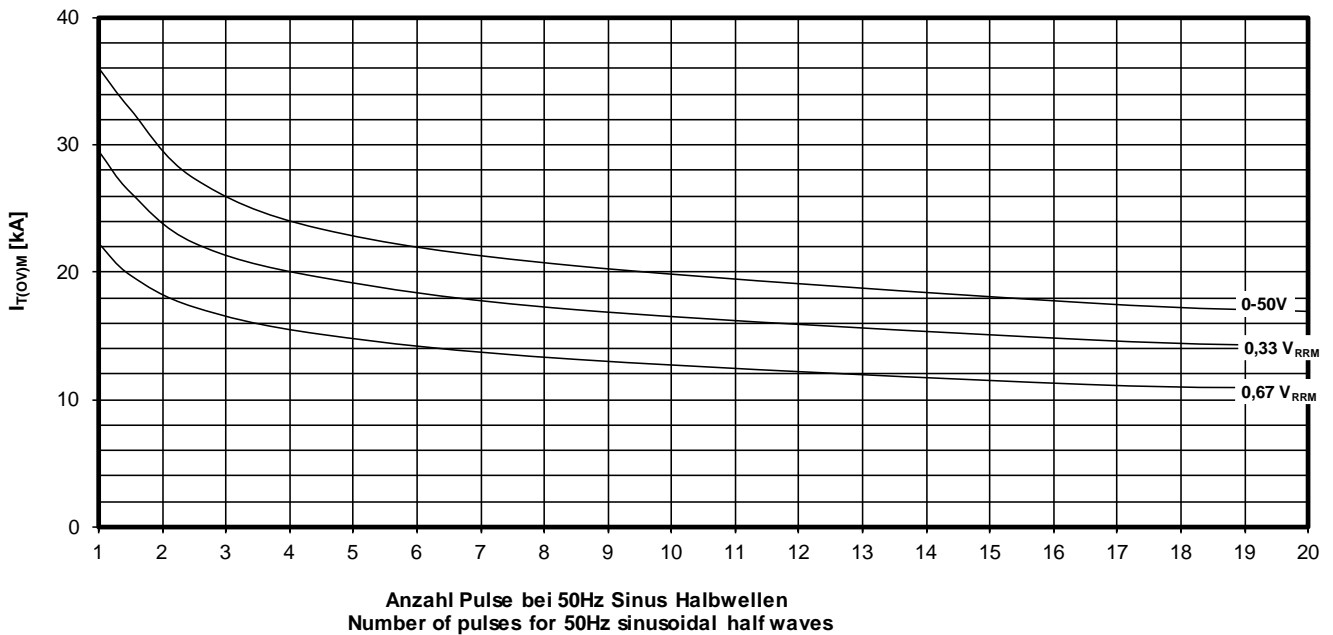
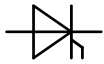
Parameter: Stromflusswinkel Θ / Current conduction angle Θ



Höchstzulässige Gehäusetemperatur / Maximum allowable case temperature $T_c = f(I_{TAV})$

Beidseitige Kühlung / Two-sided cooling

Parameter: Stromflusswinkel Θ / Current conduction angle Θ



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