
Netz-Thyristor
Phase Control Thyristor
T420N

 Infineon Technologies Bipolar
 GmbH & Co. KG

Elektrische Eigenschaften / Electrical properties

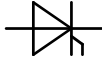
Höchstzulässige Werte / Maximum rated values

Periodische Vorwärts- und Rückwärts-Spitzensperrspannung repetitive peak forward off-state and reverse voltages	$T_{vj} = -40^{\circ}\text{C} \dots T_{vj \max}$	$V_{\text{DRM}}, V_{\text{RRM}}$	1200 1400	1600 1800	V V
Vorwärts-Stosspitzensperrspannung non-repetitive peak forward off-state voltage	$T_{vj} = -40^{\circ}\text{C} \dots T_{vj \max}$	V_{DSM}	1200 1400	1600 1800	V V
Rückwärts-Stosspitzensperrspannung non-repetitive peak reverse voltage	$T_{vj} = +25^{\circ}\text{C} \dots T_{vj \max}$	V_{RSM}	1300 1500	1700 1900	V V
Durchlassstrom-Grenzeffektivwert maximum RMS on-state current		I_{TRMSM}		750	A
Dauergrenzstrom average on-state current	$T_{\text{C}} = 85^{\circ}\text{C}$	I_{TAVM}		424	A
Dauergrenzstrom average on-state current	$T_{\text{C}} = 55^{\circ}\text{C}, \theta = 180^{\circ}\sin, t_{\text{p}} = 10 \text{ ms}$	I_{TAVM}		610	A
Durchlaßstrom-Effektivwert RMS on-state current		I_{TRMS}		960	A
Stossstrom-Grenzwert surge current	$T_{vj} = 25^{\circ}\text{C}, t_{\text{p}} = 10 \text{ ms}$ $T_{vj} = T_{vj \max}, t_{\text{p}} = 10 \text{ ms}$	I_{TSM}		7200 6400	A A
Grenzlastintegral I^2t -value	$T_{vj} = 25^{\circ}\text{C}, t_{\text{p}} = 10 \text{ ms}$ $T_{vj} = T_{vj \max}, t_{\text{p}} = 10 \text{ ms}$	I^2t		260 205	$10^3 \text{ A}^2\text{s}$ $10^3 \text{ A}^2\text{s}$
Kritische Stromsteilheit critical rate of rise of on-state current	DIN IEC 60747-6 $f = 50 \text{ Hz}, i_{\text{GM}} = 1 \text{ A}, di_{\text{G}}/dt = 1 \text{ A}/\mu\text{s}$	$(di_{\text{T}}/dt)_{\text{cr}}$		120	A/ μs
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	V/ μs

Charakteristische Werte / Characteristic values

Durchlassspannung on-state voltage	$T_{vj} = T_{vj \max}, i_{\text{T}} = 1500 \text{ A}$ $T_{vj} = T_{vj \max}, i_{\text{T}} = 300 \text{ A}$	V_{T}	max. max.	2,1 1,2	V V
Schleusenspannung threshold voltage	$T_{vj} = T_{vj \max}$	$V_{(\text{TO})}$		0,9	V
Ersatzwiderstand slope resistance	$T_{vj} = T_{vj \max}$	r_{T}		0,75	m Ω
Durchlasskennlinie $100 \text{ A} \leq i_{\text{T}} \leq 2100 \text{ A}$ 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=		1,064E+00 2,088E-04 -1,031E-01 3,807E-02	
Zündstrom gate trigger current	$T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 12\text{V}$	i_{GT}	max.	200	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. max.	10 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.	0,2	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.	1200	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.	50	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

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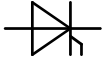
Freiwerdezeit circuit commutated turn-off time	$T_{vj} = T_{vj\ max}$, $i_{TM} = I_{TAVM}$ $V_{RM} = 100\ V$, $V_{DM} = 0,67\ V_{DRM}$ $dv_D/dt = 20\ V/\mu s$, $-di_T/dt = 10\ A/\mu s$ 4.Kennbuchstabe / 4 th letter O	t_q	typ. 220	μs
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Thermische Eigenschaften / 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. 0,056 °C/W max. 0,053 °C/W max. 0,085 °C/W max. 0,083 °C/W max. 0,154 °C/W max. 0,151 °C/W	
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	<u>Kühlfläche / cooling surface</u> beidseitig / two-sides einseitig / single-sides	R_{thCH}	max. 0,0075 °C/W max. 0,0015 °C/W	
Höchstzulässige Sperrschichttemperatur maximum junction temperature		$T_{vj\ max}$	125	°C
Betriebstemperatur operating temperature		$T_{c\ op}$	-40...+125	°C
Lagertemperatur storage temperature		T_{stg}	-40...+150	°C

Mechanische Eigenschaften / Mechanical properties

Gehäuse, siehe Anlage case, see annex			Seite 3 page 3	
Si-Element mit Druckkontakt Si-pellet with pressure contact				
Anpresskraft clamping force		F	5...10	kN
Steueranschlüsse control terminals	Gate (flat) Gate (round, based on AMP 60598) Kathode / cathode		A 2,8x0,5 mm $\varnothing 1,5$ mm A 4,8x0,5 mm	
Gewicht weight		G	typ. 110	g
Kriechstrecke creepage distance			6	mm
Schwingfestigkeit vibration resistance	f = 50 Hz		50	m/s ²

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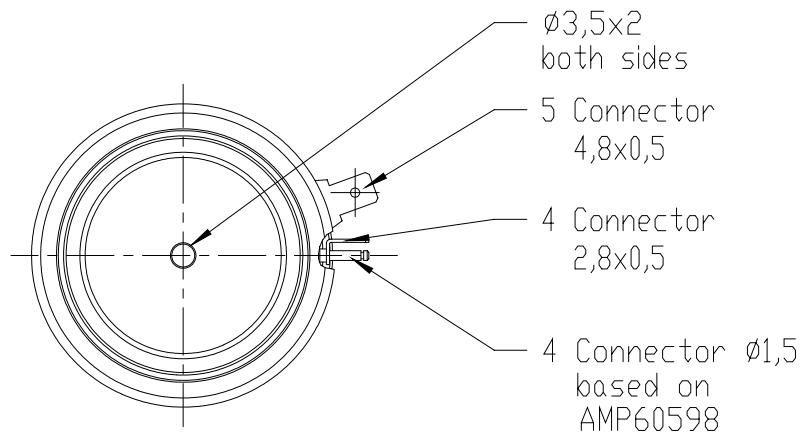
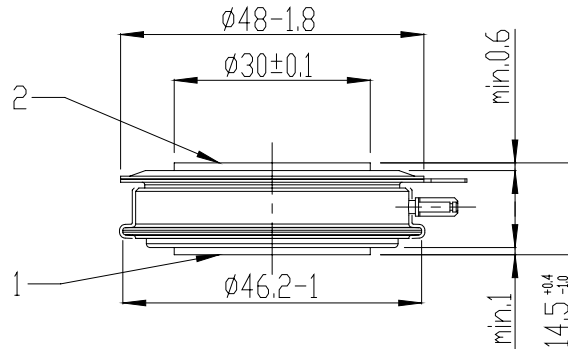
Datenblatt / Data sheet



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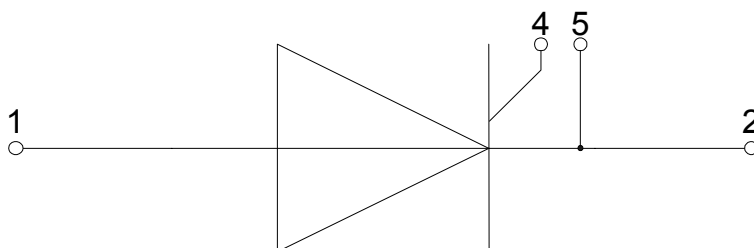
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strike distance: 5,0mm
creepage distance: 6,0mm

overall height based
on contact pressure



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