

Technische Information / technical information



**Netz-Thyristor
Phase Control Thyristor**

T901N

Infineon Technologies Bipolar
GmbH & Co. KG

Key Parameters

V_{DRM} / V_{RRM}	3200V ... 3600V
I_{TAVM}	940A ($T_C=85^\circ\text{C}$)
I_{TSM}	19000A
V_{TO}	1,16V
r_T	0,494m Ω
R_{thJC}	17,0K/kW
Clamping Force	15 ... 24kN
Max. Diameter	76mm
Contact Diameter	50mm
Height	26mm



For type designation please refer to actual shortform catalog

Merkmale

- Volle Sperrfähigkeit 50/60Hz über einen weiten Temperaturbereich
- Hohe DC Sperrstabilität
- Hohe Stoßstrombelastbarkeit
- Hoher Gehäusebruchstrom
- Hohe Einschalt di/dt Fähigkeit

Features

- Full blocking 50/60Hz over a wide range temperature range
- High DC blocking stability
- High surge current capability
- High case non-rupture current
- High di/dt capability

Typische Anwendungen

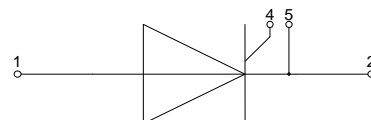
- Sanftanlasser
- Gleichrichter für Antriebsapplikationen
- Mittelspannungsumrichter
- Lastgeführte Umrichter
- Kurzschließer-Applikationen

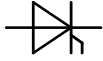
Typical Applications

- Softstarter
- Rectifier for Drives Applications
- Medium Voltage Drives
- Load Commutating Inverter
- Crowbar 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	23..26	4
QR class	27..30	4





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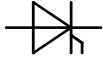
Elektrische Eigenschaften / electrical properties Höchstzulässige Werte / maximum rated values

Periodische Vorwärts- und Rückwärts-Spitzensperrspannung repetitive peak forward off-state and reverse voltage	$T_{vj} = -40^{\circ}\text{C} \dots T_{vj \max}$	$V_{\text{DRM}}, V_{\text{RRM}}$	3200 V 3400 V 3600 V
Durchlaßstrom-Grenzeffektivwert maximum RMS on-state current	$T_C = 85^{\circ}\text{C}$	I_{TRMSM}	1480 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}	940 A 1160 A 1350 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}	19000 A 17000 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	1805 $10^3 \text{ A}^2\text{s}$ 1445 $10^3 \text{ A}^2\text{s}$
Kritische Stromsteilheit critical rate of rise of on-state current	DIN IEC 60747-6 $f = 50 \text{ Hz}, i_{\text{GM}} = 3 \text{ A}, di_{\text{G}}/dt = 6 \text{ A}/\mu\text{s}$	$(di_{\text{T}}/dt)_{\text{cr}}$	300 $\text{A}/\mu\text{s}$
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 H	$(dv_{\text{D}}/dt)_{\text{cr}}$	1000 $\text{V}/\mu\text{s}$

Charakteristische Werte / characteristic values

Durchlaßspannung on-state voltage	$T_{vj} = T_{vj \max}, i_{\text{T}} = 1200\text{A}$	v_{T}	typ. 1,5 V Max. 1,75 V
Schleusenspannung threshold voltage	$T_{vj} = T_{vj \max}$	$V_{(\text{TO})}$	typ. 1 V max. 1,16 V
Ersatzwiderstand slope resistance	$T_{vj} = T_{vj \max}$	r_{T}	typ. 0,413 $\text{m}\Omega$ Max. 0,494 $\text{m}\Omega$
Durchlaßkennlinie on-state characteristic $100\text{A} \leq i_{\text{F}} \leq 1500\text{A}$ $v_{\text{T}} = A + B \cdot i_{\text{T}} + C \cdot \ln(i_{\text{T}} + 1) + D \cdot \sqrt{i_{\text{T}}}$	$T_{vj} = T_{vj \max}$	typ. max.	A -0,0764 B 0,00032 C 0,165 D 0,000816 A -0,0802 B 0,00045 C 0,2085 D -0,00524
Zündstrom gate trigger current	$T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 12 \text{ V}$	I_{GT}	max. 350 mA
Zündspannung gate trigger voltage	$T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 12 \text{ V}$	V_{GT}	max. 2,5 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. 20 mA max. 10 mA
Nicht zündende Steuerspannung gate non-trigger voltage	$T_{vj} = T_{vj \max}, v_{\text{D}} = 0,5 V_{\text{DRM}}$	V_{GD}	max. 0,4 V
Haltestrom holding current	$T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 12 \text{ V}$	I_{H}	max. 300 mA
Einraststrom latching current	$T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 12 \text{ V}, R_{\text{GK}} \geq 10 \Omega$ $i_{\text{GM}} = 3 \text{ A}, di_{\text{G}}/dt = 6 \text{ A}/\mu\text{s}, t_{\text{g}} = 20 \mu\text{s}$	I_{L}	max. 3 A
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. 200 mA
Zündverzug gate controlled delay time	DIN IEC 60747-6 $T_{vj} = 25^{\circ}\text{C}, i_{\text{GM}} = 3 \text{ A}, di_{\text{G}}/dt = 6 \text{ A}/\mu\text{s}$	t_{gd}	max. 2 μs

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Elektrische Eigenschaften / electrical properties Charakteristische Werte / characteristic values

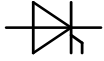
Freiwerdezeit circuit commutated turn-off time	$T_{vj} = T_{vj\max}$, $i_{TM} = I_{TAVM}$ $V_{RM} = 100\text{ V}$, $v_{DM} = 0,67 V_{DRM}$ $dv_D/dt = 20\text{ V}/\mu\text{s}$, $-di_T/dt = 10\text{ A}/\mu\text{s}$ 4.Kennbuchstabe / 4 th letter O	t_q	typ.	300	μs
Sperrverzögerungsladung recovered charge	$T_{vj} = T_{vj\max}$ $i_{TM} = I_{TAVM}$, $-di_T/dt = 10\text{ A}/\mu\text{s}$ $V_R = 0,5V_{RRM}$, $V_{RM} = 0,8V_{RRM}$	Q_r	max.	7,5	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.	220	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.	18,5	K/kW
			max.	17,0	K/kW
			max.	30,5	K/kW
			max.	38,5	K/kW
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	<u>Kühlfläche / cooling surface</u> beidseitig / two-sided einseitig / single-sided	R_{thCH}	max.	4,0	K/kW
			max.	8,0	K/kW
Höchstzulässige Sperrschichttemperatur maximum junction temperature		$T_{vj\max}$		125	$^\circ\text{C}$
Betriebstemperatur operating temperature		$T_{c\text{ op}}$		-40...+125	$^\circ\text{C}$
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		15...24	kN
Steueranschlüsse control terminals	DIN 46244	Gate Kathode /Cathode		A 2,8x0,8 A 4,8x0,8	
Gewicht weight		G	typ.	550	g
Kriechstrecke creepage distance				25	mm
Schwingfestigkeit vibration resistance	f = 50 Hz			50	m/s ²



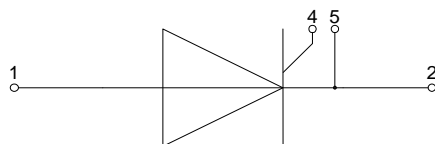
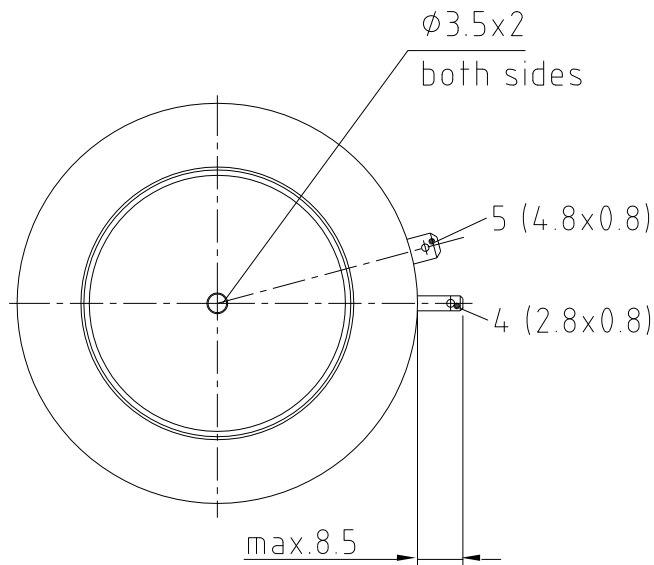
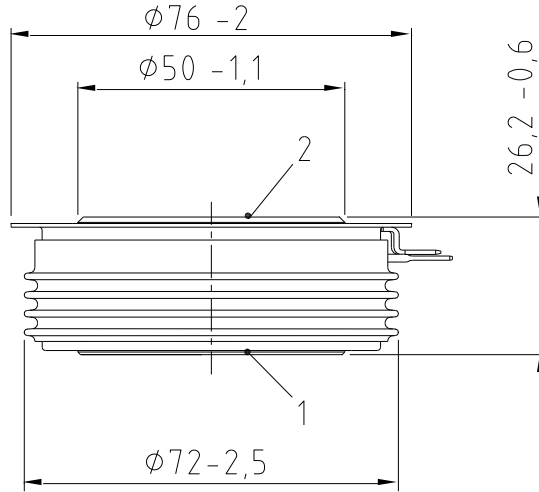
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- 1: Anode/anode
- 2: Kathode/cathode
- 4: Gate
- 5: Hilfskathode/
cathode (control terminal)