

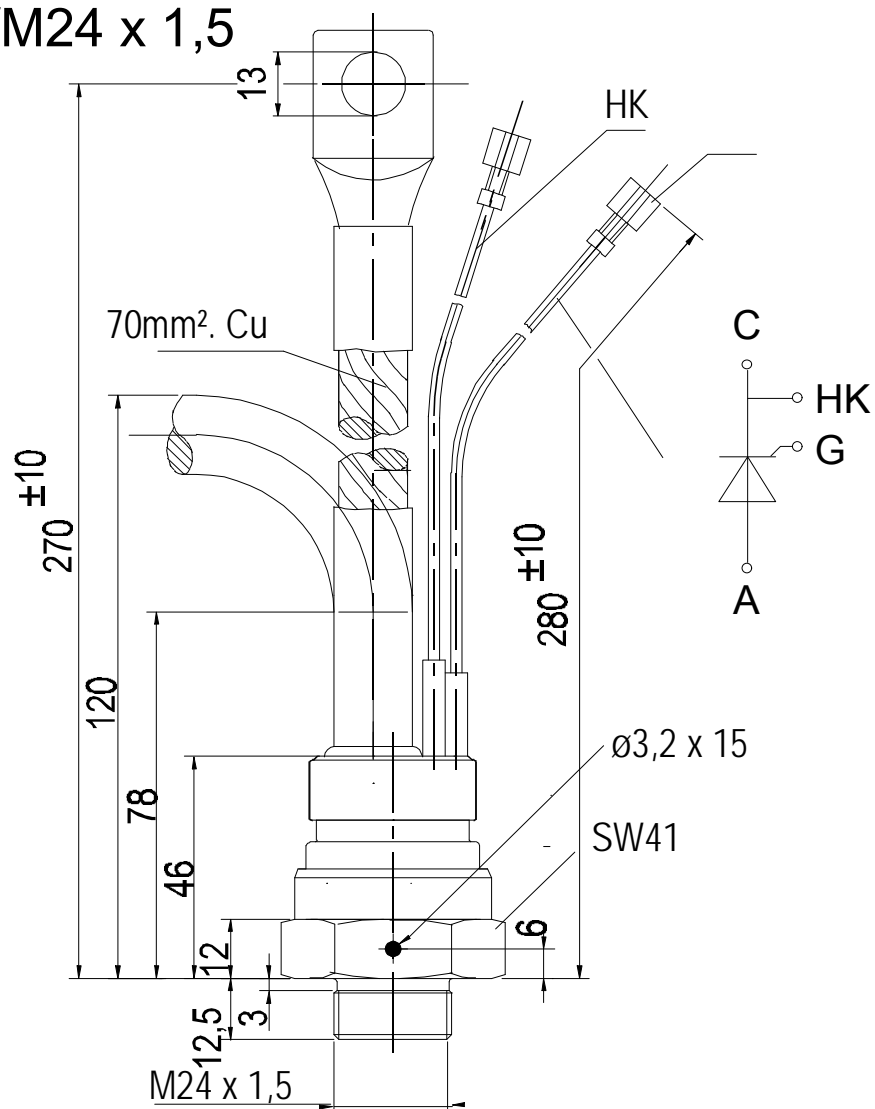


European Power-Semiconductor and Electronics Company

# Marketing Information

## T 271 N

SW41 /M24 x 1,5



# T 271 N

## Elektrische Eigenschaften

### Höchstzulässige Werte

Periodische Vorwärts- und Rückwärts-Spitzensperrspannung

Vorwärts-Stoßspitzensperrspannung

Rückwärts-Stoßspitzensperrspannung

Durchlaßstrom-Grenzeffektivwert

Dauergrenzstrom

Stoßstrom-Grenzwert

Grenzlastintegral

Kritische Stromsteilheit

Kritische Spannungssteilheit

### Charakteristische Werte

Durchlaßspannung

Schleusenspannung

Ersatzwiderstand

Zündstrom

Zündspannung

Nicht zündender Steuerstrom

Nicht zündende Steuerspannung

Haltestrom

Einraststrom

Vorwärts- und Rückwärts-Sperrstrom

Zündverzögerung

Freiwerdzeit

## Electrical properties

### Maximum rated values

repetitive peak forward off-state and reverse voltages

non-repetitive peak forward off-state voltage

non-repetitive peak reverse voltage

RMS on-state current

average on-state current

surge current

$I^2 t$ -value

critical rate of rise of on-state current

critical rate of rise of off-state voltage

### Characteristic values

on-state voltage

threshold voltage

slope resistance

gate trigger current

gate trigger voltage

gate non-trigger current

gate non-trigger voltage

holding current

latching current

forward off-state and reverse currents

gate controlled delay time

circuit commutated turn-off time

## Thermal properties

thermal resistance, junction to case

thermal resistance, case to heatsink

max. junction temperature

operating temperature

storage temperature

## Mechanical properties

Si-pellet with pressure contact

tightening torque

weight, case design E

creepage distance

humidity classification

vibration resistance

outline, attached

$$t_{vj} = -40^\circ\text{C} \dots t_{vj \max}$$

$$t_{vj} = -40^\circ\text{C} \dots t_{vj \max}$$

$$t_{vj} = +25^\circ\text{C} \dots t_{vj \max}$$

$$t_c = 85^\circ\text{C}$$

$$t_c = 52^\circ\text{C}$$

$$t_{vj} = 25^\circ\text{C}, t_p = 10 \text{ ms}$$

$$t_{vj} = t_{vj \max}, t_p = 10 \text{ ms}$$

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$$V_D \leq 67\%, V_{DRM}, f = 50 \text{ Hz}$$

$$f = 50 \text{ Hz}, i_{GM} = 1 \text{ A}, di_G/dt = 1 \text{ A}/\mu\text{s}$$

$$t_{vj} = t_{vj \max}, V_D = 67\% V_{DRM}$$

$$5. \text{ Kennbuchstabe/5th letter C}$$

$$5. \text{ Kennbuchstabe/5th letter F}$$

$$t_{vj} = t_{vj \max}, i_T = 400 \text{ A}$$

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$$t_{vj} = 25^\circ\text{C}, V_D = 6 \text{ V}$$

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$$t_{vj} = t_{vj \max}, V_D = 6 \text{ V}$$

$$t_{vj} = t_{vj \max}, V_D = 0,5 V_{DRM}$$

$$t_{vj} = t_{vj \max}, V_D = 0,5 V_{DRM}$$

$$t_{vj} = 25^\circ\text{C}, V_D = 12 \text{ V}, R_A = 5,6 \Omega$$

$$t_{vj} = 25^\circ\text{C}, V_D = 12 \text{ V}, R_{GK} > 10 \Omega$$

$$i_{GM} = 1 \text{ A}, di_G/dt = 1 \text{ A}/\mu\text{s}, t_g = 20 \mu\text{s}$$

$$t_{vj} = t_{vj \max}, V_D = V_{DRM}, V_R = V_{RRM}$$

$$t_{vj} = 25^\circ\text{C}, i_{GM} = 1 \text{ A}, di_G/dt = 1 \text{ A}/\mu\text{s}$$

$$\text{siehe Techn.Erl./see Techn. Inf.}$$

$$V_{DRM}, V_{RRM} \quad 2000 \quad 2200 \quad 2400 \quad V$$

$$2500$$

$$V_{DSM} = V_{DRM} \quad 2000 \quad 2200 \quad 2400 \quad V$$

$$2500$$

$$V_{RSM} = V_{RRM} \quad 2100 \quad 2300 \quad 2500 \quad V$$

$$2600$$

$$I_{TRMSM} \quad 650 \quad A$$

$$I_{TAVM} \quad 270 \quad A$$

$$414 \quad A$$

$$I_{TSM} \quad 7500 \quad A$$

$$7000 \quad A$$

$$I^2 t \quad 281000 \quad A^2 s$$

$$245000 \quad A^2 s$$

$$(di_T/dt)_{cr} \quad 60 \quad A/\mu s$$

$$(dv/dt)_{cr}$$

$$500 \quad V/\mu s$$

$$1000 \quad V/\mu s$$

$$V_T \quad \text{max. } 2,35 \quad V$$

$$V_{T(TO)} \quad 1,07 \quad V$$

$$r_T \quad 0,87 \quad m\Omega$$

$$I_{GT} \quad \text{max. } 250 \quad mA$$

$$V_{GT} \quad \text{max. } 1,5 \quad V$$

$$I_{GD} \quad \text{max. } 20 \quad mA$$

$$\text{max. } 10$$

$$V_{GD} \quad \text{max. } 0,4 \quad V$$

$$I_H \quad \text{max. } 250 \quad mA$$

$$I_L \quad \text{max. } 1500 \quad mA$$

$$i_D, i_R \quad \text{max. } 50 \quad mA$$

$$t_{gd} \quad \text{max. } 2,2 \quad \mu s$$

$$t_q \quad \text{typ. } 300 \quad \mu s$$

$$R_{thJC} \quad \text{max. } 0,091 \quad ^\circ\text{C}/W$$

$$\text{max. } 0,085 \quad ^\circ\text{C}/W$$

$$R_{thCK} \quad \text{max. } 0,02 \quad ^\circ\text{C}/W$$

$$t_{vj \max} \quad 125 \quad ^\circ\text{C}$$

$$t_{c \text{ op}} \quad -40 \dots +125 \quad ^\circ\text{C}$$

$$t_{stg} \quad -40 \dots +150 \quad ^\circ\text{C}$$

$$M \quad 60 \quad Nm$$

$$G \quad \text{typ. } 600 \quad g$$

$$12 \quad mm$$

$$DIN 40040 \quad C$$

$$f = 50 \text{ Hz} \quad 50 \quad m/s^2$$

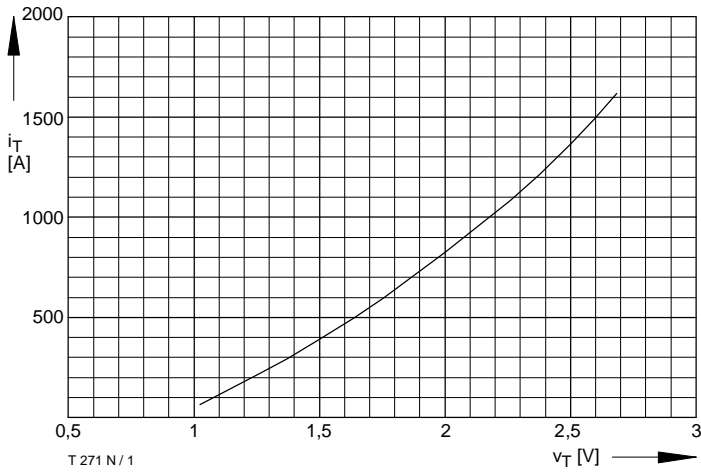


Bild / Fig. 1  
Grenzdurchlaßkennlinie / Limiting on-state characteristic  
 $i_T = f(v_T)$ ,  $t_{vj} = t_{vj \text{ max}}$

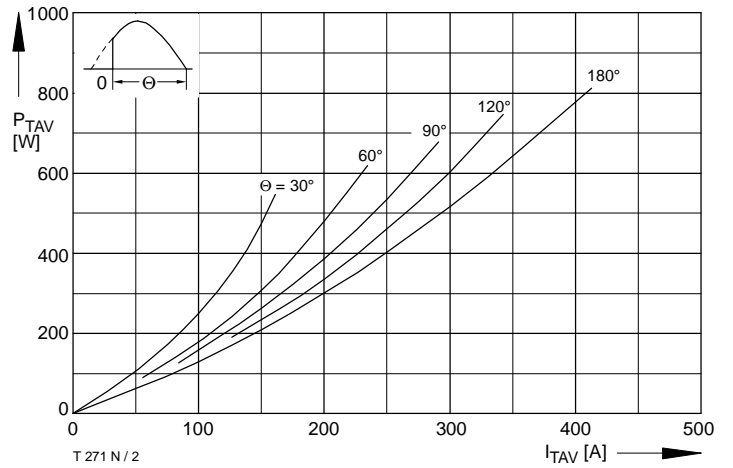


Bild / Fig. 2  
Durchlaßverlustleistung / On-state power loss  $P_{TAV} = f(I_{TAV})$   
Parameter: Stromflußwinkel / Current conduction angle  $\theta$

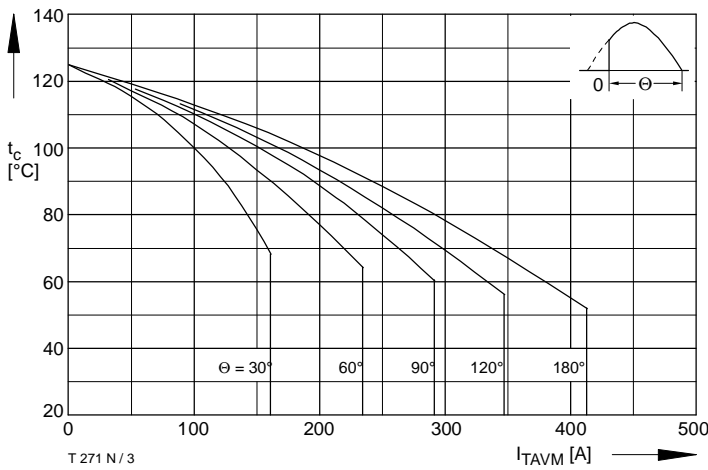


Bild / Fig. 3  
Höchstzulässige Gehäusetemperatur / Max. allowable case temperature  
 $t_c = f(I_{TAVM})$   
Parameter: Stromflußwinkel / Current conduction angle  $\theta$

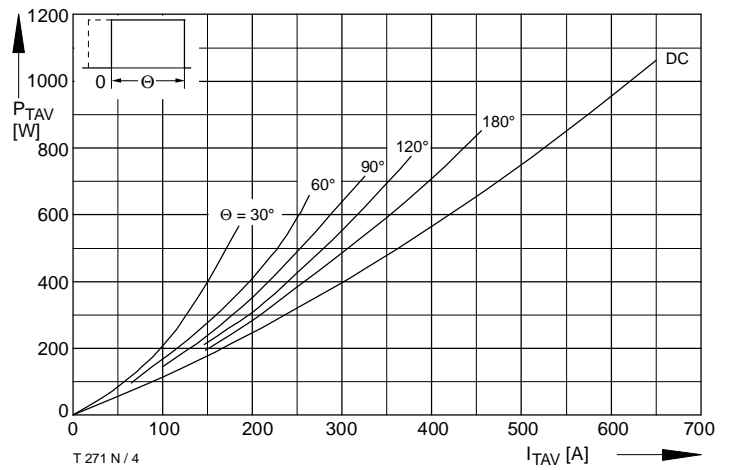


Bild / Fig. 4  
Durchlaßverlustleistung / On-state power loss  $P_{TAV} = f(I_{TAV})$   
Parameter: Stromflußwinkel / Current conduction angle  $\theta$

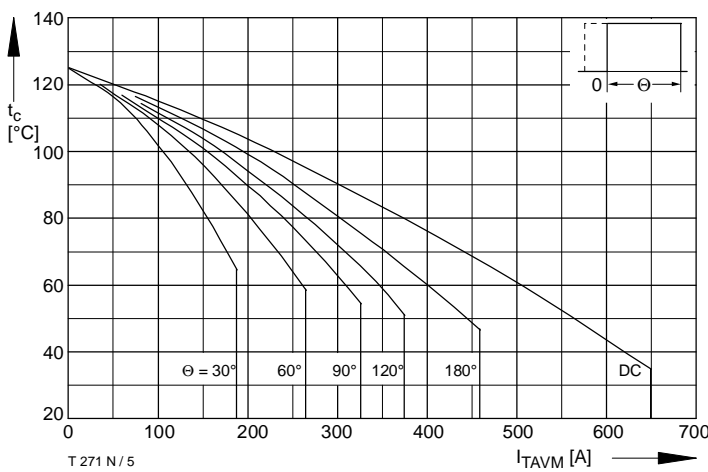


Bild / Fig. 5  
Höchstzulässige Gehäusetemperatur / Max. allowable case temperature  
 $t_c = f(I_{TAVM})$   
Parameter: Stromflußwinkel / Current conduction angle  $\theta$

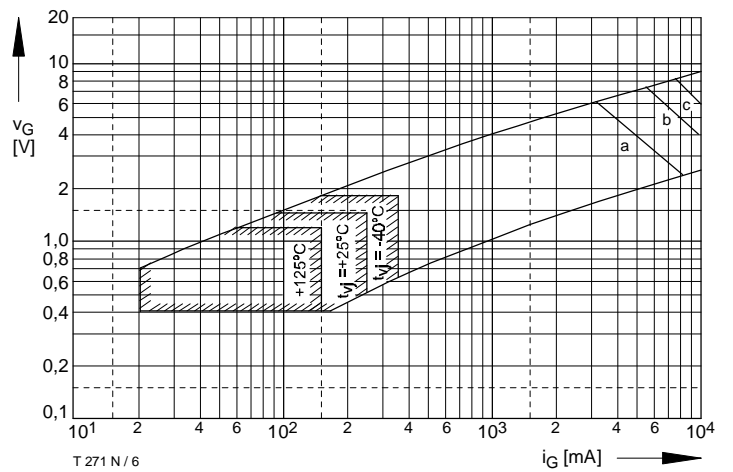


Bild / Fig. 6  
Steuercharakteristik mit Zündbereichen / Gate characteristic with triggering areas  $v_G = f(i_G)$ ,  $V_D = 6 \text{ V}$   
Parameter:

	a	b	c
Steuerimpulsdauer / trigger puls duration $t_g$ [ms]	10	1	0,5
Höchstzulässige Spitzensteuerverlustleistung / Max. rated peak gate power dissipation [W]	20	40	60

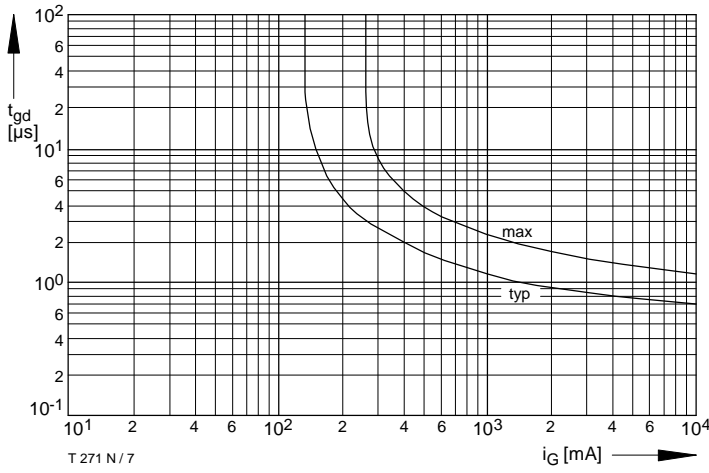


Bild / Fig. 7  
Zündverzögerung / Gate controlled delay time  $t_{gd} = f(i_G)$   
 $t_{vj} = 25^\circ\text{C}$ ,  $di_G/dt = i_{GM}/1\mu\text{s}$

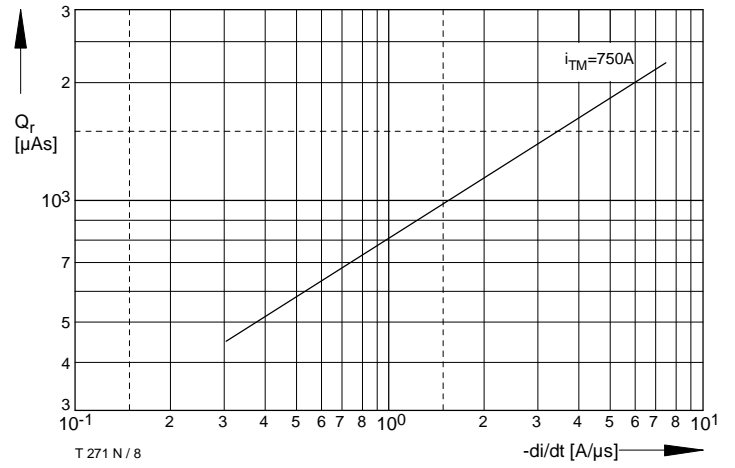


Bild / Fig. 8  
Sperrverzögerungsladung / Recovered charge  $Q_r = f(di/dt)$   
 $t_{vj} = t_{vj\ max}$ ,  $v_R = 0,5 V_{RRM}$ ,  $v_{RM} = 0,8 V_{RRM}$   
Parameter: Durchlaßstrom / On-state current  $i_{TM}$

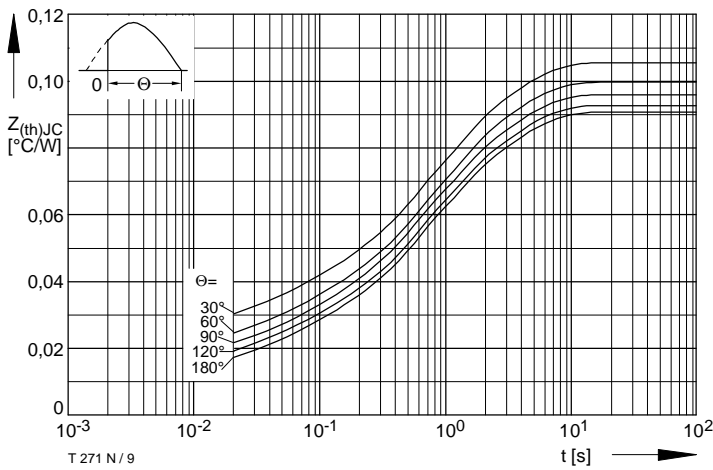


Bild / Fig. 9  
Transienter innerer Wärmewiderstand / Transient thermal impedance  
 $Z_{thJC} = f(t)$   
Parameter: Stromflußwinkel / current conduction angle  $\theta$

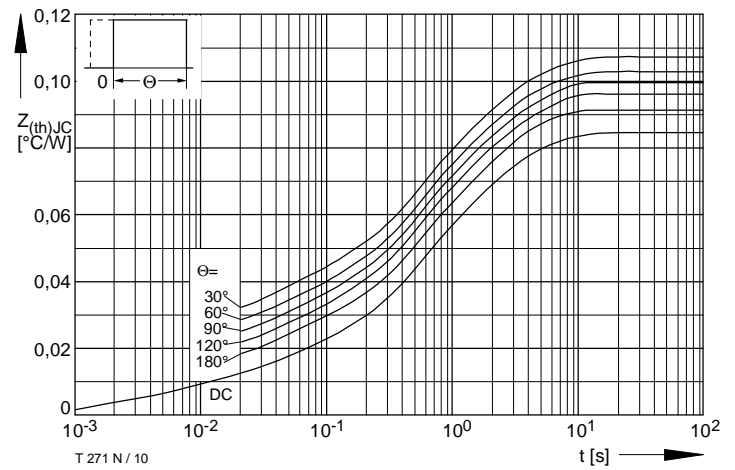


Bild / Fig. 10  
Transienter innerer Wärmewiderstand / Transient thermal impedance  
 $Z_{thJC} = f(t)$   
Parameter: Stromflußwinkel / current conduction angle  $\theta$

Analytische Elemente des transienten Wärmewiderstandes  $Z_{thJC}$  pro Zweig für DC  
Analytical elements of transient thermal impedance  $Z_{thJC}$  per arm for DC

Pos. n	1	2	3	4	5
$R_{thn} [^\circ\text{C/W}]$	0,00008	0,0071	0,0104	0,038	0,0294
$\tau_n [s]$	0,0004	0,0046	0,052	0,595	2,98

Analytische Funktion / Analytical function:

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