



# Type SF53-xx80

## High Frequency Inverter grade Capsule Thyristor

Distributed amplified gate for high di/dt and low switching losses

Maximum mean on-state current						<b>I<sub>FAV</sub></b>	<b>800 A</b>		
Maximum repetitive peak off-state and reverse voltage						<b>U<sub>DRM</sub></b>	<b>1200 ÷ 2200 V</b>		
Turn-off time						<b>U<sub>RRM</sub></b>	<b>25; 32; 40 μs</b>		
<b>U<sub>DRM</sub>, U<sub>RRM</sub>, V</b>		1200	1300	1400	1500	1600	1800	2000	2200
<b>Voltage code - <b>XX</b></b>		12	13	14	15	16	18	20	22
<b>T<sub>vj</sub>, °C</b>	- 60 ÷ 125								

### MAXIMUM ALLOWABLE RATINGS

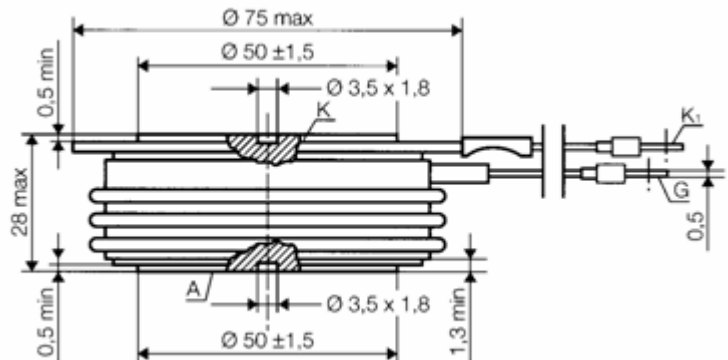
Symbols and parameters		Units	SF53-xx80	Conditions
<b>I<sub>FAV</sub></b>	Mean on-state current	A	800 1190	T <sub>c</sub> =84°C, T <sub>c</sub> =55°C, 180° half-sine wave, 50 Hz
<b>I<sub>TRMS</sub></b>	RMS on-state current	A	<b>1255</b>	T <sub>c</sub> =84 °C, 50 Hz
<b>I<sub>TSM</sub></b>	Surge on-state current	kA	17	T <sub>vj</sub> =125°C U <sub>R</sub> =0 tp=10 ms
(di/dt) cr	Critical rate of rise of on-state current: non – repetitive repetitive	A/μs	2000 1250	T <sub>vj</sub> =125°C; U <sub>D</sub> =0,67 U <sub>DRM</sub> , Gate pulse : 10V,5Ω, 1μs rise time, 10μs
<b>U<sub>RGM</sub></b>	Peak reverse gate voltage	V	5	
<b>T<sub>stg</sub></b>	Storage temperature	°C	-60 ÷ 125	
<b>T<sub>vj</sub></b>	Junction temperature	°C	-60 ÷ 125	

### CHARACTERISTICS

Symbols and parameters		Units	SF53xx80	Conditions
<b>U<sub>TM</sub></b>	Peak on-state voltage	V	2,4	T <sub>vj</sub> =25°C, I <sub>TM</sub> =3,14 I <sub>TAV</sub>
<b>U<sub>T(TO)</sub></b>	Threshold voltage	V	1,56	T <sub>vj</sub> =125°C
<b>r<sub>T</sub></b>	Slope resistance	mΩ	0,42	T <sub>vj</sub> =125°C
<b>I<sub>DRM</sub></b> <b>I<sub>RRM</sub></b>	Repetitive peak off-state and reverse current	mA	70 70	T <sub>vj</sub> =125°C, U <sub>D</sub> = U <sub>DRM</sub> U <sub>R</sub> = U <sub>RRM</sub>

I <sub>L</sub>	Latching current	A	15	T <sub>vj</sub> =25°C; U <sub>D</sub> =12V, Gate pulse: 10V, 5Ω, 1μs rise time, 10μs
I <sub>H</sub>	Holding current	A	1,0	T <sub>vj</sub> =25°C; U <sub>D</sub> =12, Gate open
U <sub>GT</sub>	Gate trigger direct voltage	V	2,5	T <sub>vj</sub> =25°C; U <sub>D</sub> =12V
I <sub>GT</sub>	Gate trigger direct current	A	0,3	T <sub>vj</sub> =25°C; U <sub>D</sub> =12V
U <sub>GD</sub>	Gate non-trigger direct voltage	V	0,25	T <sub>vj</sub> =125°C; U <sub>D</sub> =0,67 U <sub>DRM</sub>
t <sub>gd</sub>	Delay time	μs	2,5	T <sub>vj</sub> =25°C, U <sub>D</sub> =500V, I <sub>TM</sub> =800A Gate pulse: 10V, 5Ω, 1μs rise time, 10μs
t <sub>gt</sub>	Turn-on time	μs	4,0	
t <sub>q</sub>	Turn-off time	μs	25÷40 32÷50	T <sub>vj</sub> =125°C, I <sub>TM</sub> =800A, di <sub>R</sub> /dt= 10 A/μs U <sub>R</sub> =100V U <sub>D</sub> =0,67 U <sub>DRM</sub> Di <sub>D</sub> /dt= 50 A/μs Di <sub>D</sub> /dt= 200 A/μs
Q <sub>rr</sub>	Recovered charge	μC	450	T <sub>vj</sub> =125°C, I <sub>TM</sub> =800A, di <sub>R</sub> /dt= 50 A/μs, U <sub>R</sub> =100V
(di <sub>D</sub> /dt) cr	Critical rate of rise of off-state voltage	V/μs	500 1000	T <sub>vj</sub> =125°C; U <sub>D</sub> =0,67 U <sub>DRM</sub> Gate open
R <sub>thjc</sub>	Thermal resistance junction to case	°C/W	0,021	Direct current, double side cooled

Mounting force : 19 – 28 kN  
Weight : 580 gram



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