



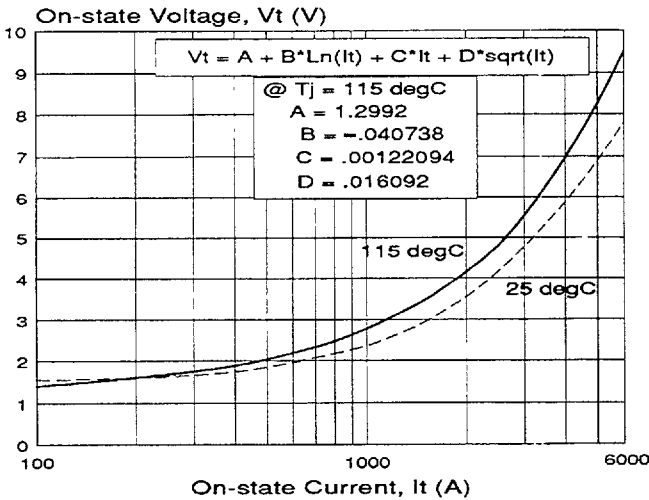
# C720 53mm / 7kV THYRISTOR

Type C720 thyristor is suitable for phase control applications such as HVDC valves, static VAR compensators and synchronous motor drives.

The silicon junction is manufactured by the proven multi-diffusion process and is supplied in an industry standard disc-type package, ready to mount to forced or naturally cooled heat dissipators using commercially available mechanical clamping hardware.

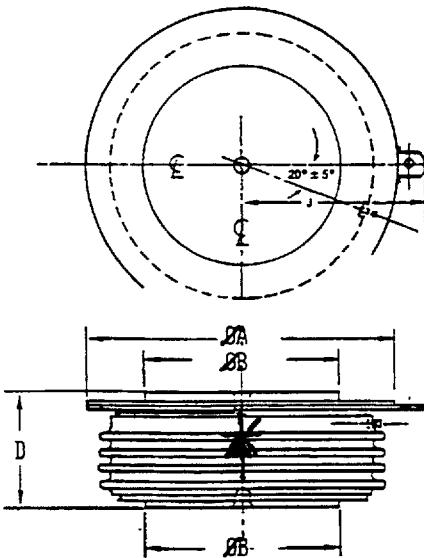
## ON-STATE CHARACTERISTIC

On-state Characteristic  
Process Maximum @  $T_j = 115 \text{ degC}$



C716:716vt1

## MECHANICAL OUTLINE



### MAXIMUM DIMENSIONS

$\varnothing A = 2.96 \text{ in (75.18 mm)}$   
 $\varnothing B = 1.900 \text{ in (48.26 mm)}$   
 $D = 1.07 \text{ in (27.18 mm)}$

SILICON POWER CORPORATION

175 GREAT VALLEY PKWY., MALVERN, PA 19355 USA

## PRINCIPAL RATINGS AND CHARACTERISTICS

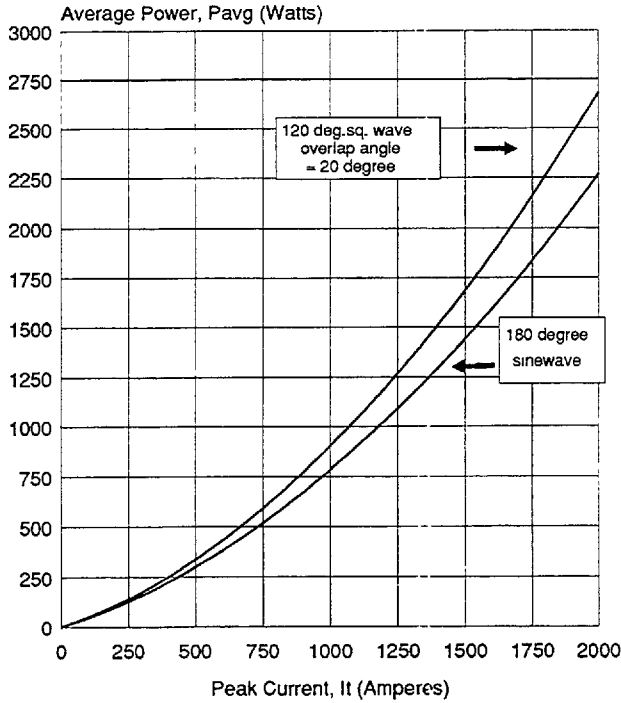
Repetitive peak off-state & reverse volts	$V_{DRM}$ $V_{RRM}$	$T_j = 0$ to $115^\circ\text{C}$	up to 7000	V
Repetitive working crest voltage	$V_{DWM}$ $V_{RWM}$	$T_j = 0$ to $115^\circ\text{C}$	$0.8V_{DRM}$ $0.8V_{RRM}$	ma
off-state & reverse leakage current	$I_{DWM}$ $I_{RWM}$	$T_j = 0$ to $115^\circ\text{C}$	75	ma
Average on-state current	$I_{T(AV)}$	$T_{amb} = 70^\circ\text{C}$	550	A
Peak half-cycle non-rep surge current	$I_{TSM}$	60 Hz 50 Hz	6 5.5	kA
On-state voltage	$V_{TM}$	$I_T = 500\text{A}$ $t_p = 8\text{ms}$ $T_j = 115^\circ\text{C}$	2.00	V
Critical rate of rise of on-state current	$di/dt$	$T_j = 115^\circ\text{C}$ rep 60 Hz	50	A/us
allowable snubber discharge	$V_a = .67V_{DRM}$		50	A
Critical rate of rise of off-state voltage	$dv/dt$	$T_j = 115^\circ\text{C}$ $V_{DCRIT} = 60\%V_{DRM}$	1500	V/us
Recovery current	$I_{RM}$	$T_j = 115^\circ\text{C}$ 2A/us 5A/us	60 100	A
minimum snap factor	$S = 0.3$			
Turn-on delay	$t_d$	$V_d = .5V_{DRM}$	5	us
Turn-off time	$T_{off}$	5A/us, -100V 20V/us to 2000V	600	us
Thermal resistance	$R_{\theta JC}$		.025	c/w
Externally applied clamping force	F		5500 24.5	lbs. kN

## REPETITIVE PEAK REVERSE AND OFF-STATE BLOCKING VOLTAGE

$T_j = 0 \text{ to } 115^\circ\text{C}$

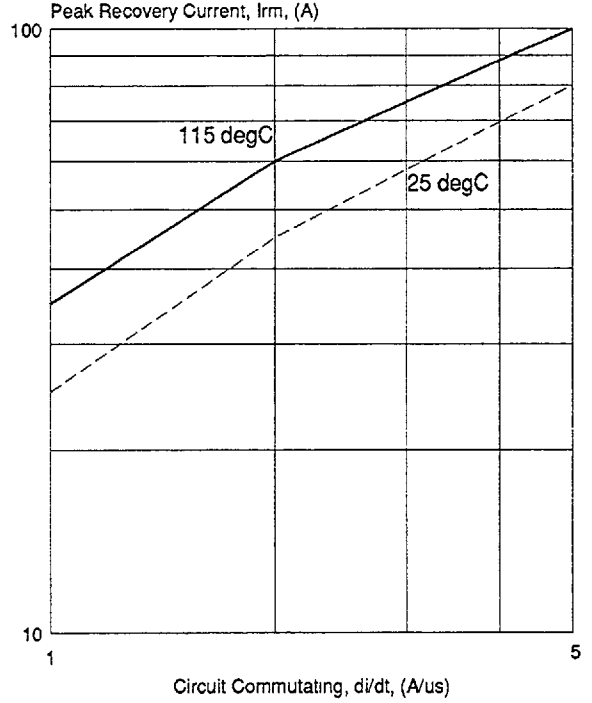
MODEL	$V_{DRM}$ (volts)	$V_{RRM}$ (volts)
C720GP	7000	7000
C720FE	6500	6500
C720FP	6000	6000
C720EE	5500	5500

FULL CYCLE AVERAGE POWER LOSS  
versus  
PEAK CURRENT at 50/60 Hz  
(plasma spreading and conduction loss)



c716los1(vt=2.0)

MAXIMUM PEAK RECOVERY CURRENT  
versus COMMUTATING di/dt



**Full Cycle Power Loss (watts)**  
50/60Hz, T<sub>p</sub> = 115°C  
I<sub>p</sub> (peak)    half-sine    3 ph  
(A)            180°            120°

I <sub>p</sub> (peak) (A)	half-sine 180°	3 ph 120°
100	45	48
200	97	106
300	157	173
400	224	250
500	299	336
600	381	431
700	470	535
800	566	647
900	670	769
1000	780	899
1200	1023	1186
1400	1293	1508
1600	1590	1864
1800	1914	2255
2000	2268	2680

### GATE SUPPLY REQUIREMENTS

Open circuit voltage	30 V
Short circuit current	3 A
- rise time	0.5us
Pulse duration (min)	20 us