

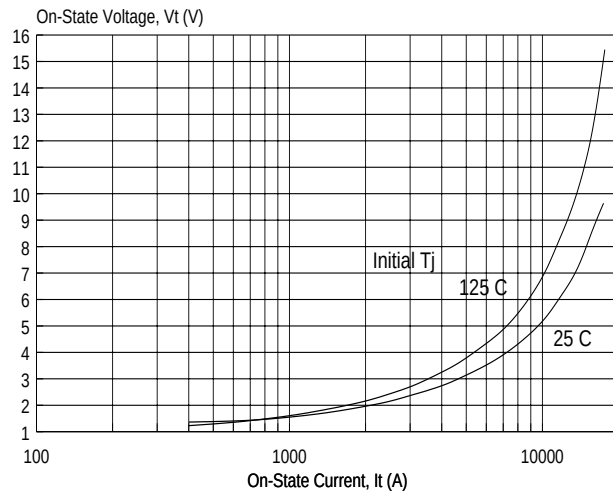
## SDT122 53mm / 4.0kV THYRISTOR

Type SDT122 thyristor is suitable for phase control applications such as HMDC 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.

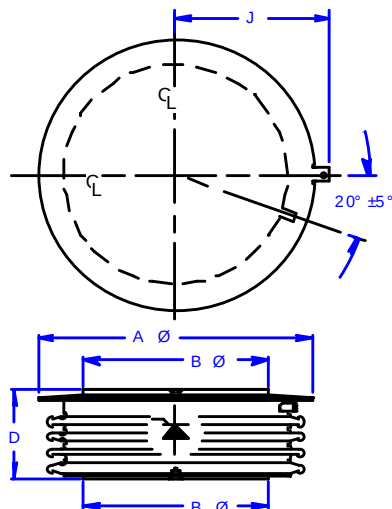
### ON-STATE CHARACTERISTIC

Process Maximum  
8 ms Sine Pulses



95f.

### MECHANICAL OUTLINE



$A \Phi = 2.96$  in (75.2 mm)  
 $B \Phi = 1.90$  in (48.3 mm)  
 $D = 1.07$  in (27.2 mm)

### PRINCIPAL RATINGS AND CHARACTERISTICS

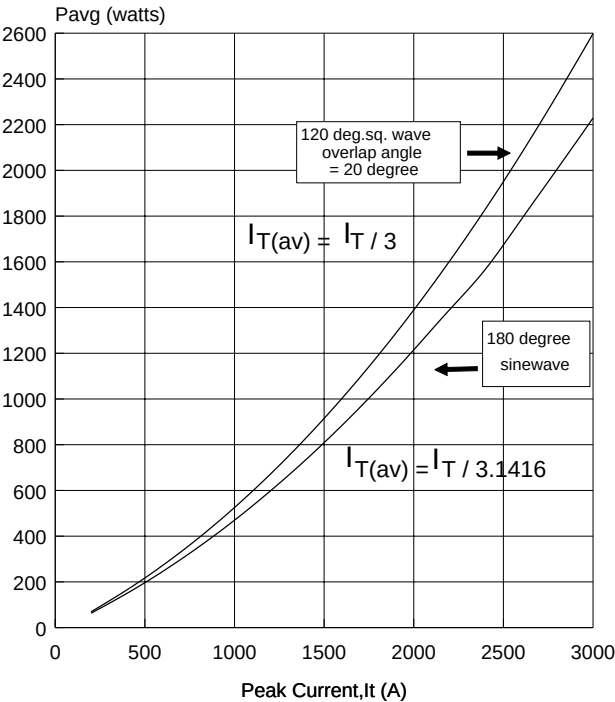
|                                            |                        |                                                                         |                              |           |
|--------------------------------------------|------------------------|-------------------------------------------------------------------------|------------------------------|-----------|
| Repetitive peak off-state & reverse volts  | $V_{DRM}$<br>$V_{RRM}$ | $T_j = 0$<br>to $125^\circ\text{C}$                                     | up to<br>4000                | V         |
| Repetitive working crest voltage           | $V_{DWM}$<br>$V_{DRM}$ | $T_j = 0$<br>to $125^\circ\text{C}$                                     | $0.8V_{DRM}$<br>$0.8V_{RRM}$ |           |
| Off-state & reverse leakage current        | $I_{DWM}$<br>$I_{RRM}$ | $T_j = 0$<br>to $125^\circ\text{C}$                                     | 75<br>75                     | ma        |
| Average on-state current                   | $I_{T(AV)}$            | $T_{case} = 70^\circ\text{C}$                                           | 950                          | A         |
| Peak half-cycle non-rep surge current      | $I_{TSM}$              | 60 Hz<br>50 Hz                                                          | 16.0<br>14.7                 | kA        |
| On-state voltage                           | $V_{TM}$               | $I_T = 1\text{ kA}$<br>$t_p = 8\text{ ms}$<br>$T_j = 125^\circ\text{C}$ | 1.60                         | V         |
| Critical rate of rise of on-state current  | $di/dt$<br>rep         | $T_j = 125^\circ\text{C}$<br>60 Hz                                      | 75                           | A/us      |
| Critical rate of rise of off-state voltage | $dv/dt$                | $T_j = 125^\circ\text{C}$<br>$V_D = 0.8V_{DRM}$                         | 1000                         | V/us      |
| Recovery current                           | $I_{RM}$               | $T_j = 125^\circ\text{C}$<br>2A/us<br>5A/us                             | 60<br>110                    | A         |
| Turn-on delay                              | $t_0$                  | $V_d = 0.5V_{DRM}$                                                      | 3                            | us        |
| Turn-off time                              | $T_{off}$              | 5A/us, -100V<br>20V/us to 2000V                                         | 500                          | us        |
| Thermal resistance                         | $R_{thjc}$             |                                                                         | .025                         | c/w       |
| Externally applied clamping force          | F                      |                                                                         | 5500<br>24.5                 | lbs<br>kN |

### REPETITIVE PEAK REVERSE AND OFF-STATE BLOCKING VOLTAGE

$T_j = 0$  to  $125^\circ\text{C}$

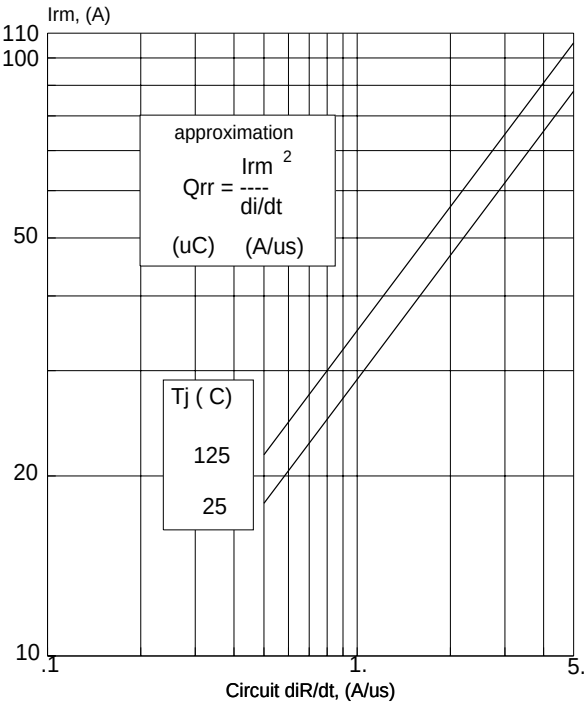
| MODEL    | $V_{DRM}$<br>(volts) | $V_{RRM}$<br>(volts) |
|----------|----------------------|----------------------|
| SDT122FT | 4000                 | 4000                 |
| SDT122FS | 3900                 | 3900                 |
| SDT122FR | 3800                 | 3800                 |
| SDT122FP | 3700                 | 3700                 |
| SDT122FM | 3600                 | 3600                 |
| SDT122FK | 3500                 | 3500                 |

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



95f:

MAXIMUM PEAK RECOVERY CURRENT



95F:

Full Cycle Power Loss (watts)

50/60 Hz, Tj=125°C

| It (peak)<br>(A) | Half-sine | 3 Phase |
|------------------|-----------|---------|
|                  | 180°      | 120°    |
| 200              | 63        | 69      |
| 400              | 147       | 162     |
| 600              | 244       | 270     |
| 800              | 351       | 390     |
| 1000             | 468       | 523     |
| 1200             | 596       | 669     |
| 1400             | 734       | 828     |
| 1600             | 883       | 1001    |
| 1800             | 1043      | 1187    |
| 2000             | 1213      | 1387    |
| 2200             | 1394      | 1601    |
| 2400             | 1556      | 1829    |
| 2600             | 1789      | 2071    |
| 2800             | 2004      | 2327    |
| 3000             | 2229      | 2598    |

GATE SUPPLY REQUIREMENTS

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