



# WESTCODE SEMICONDUCTORS

 TECHNICAL  
PUBLICATION

**DC 300**

ISSUE 1

June, 1980

## Ceramic Capsule Silicon Diodes Type CXC300

*650 amperes average: up to 1500 volts  $V_{RRM}$*

**RATINGS** Maximum values at 180°C T<sub>j</sub> unless stated otherwise

| RATING                                                   | CONDITIONS                                                                                                                                                                                                      | SYMBOL                       |                                                                            |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------------------------------------------------|
| Average forward current                                  | Half sine wave $\left\{ \begin{array}{l} 55^{\circ}\text{C heatsink temperature} \\ \text{(double side cooled)} \\ 100^{\circ}\text{C heatsink temperature} \\ \text{(single side cooled)} \end{array} \right.$ | $I_{F(AV)}$                  | 650A<br>300A                                                               |
| RMS current                                              | 25°C heatsink temp., double side cooled                                                                                                                                                                         | $I_{F(RMS)}$                 | 1170A                                                                      |
| DC forward current                                       | 25°C heatsink temp., double side cooled                                                                                                                                                                         | $I_F$                        | 1000 A                                                                     |
| Peak one-cycle surge (non repetitive) of forward current | 8.3ms duration $\left\{ \begin{array}{l} 60\% V_{RRM} \text{ re-applied} \\ V_R \leq 10 \text{ volts} \end{array} \right.$                                                                                      | $I_{FSM(1)}$<br>$I_{FSM(2)}$ | 5830A<br>6413A                                                             |
| Maximum permissible surge energy                         | 8.3ms duration $\left\{ \begin{array}{l} 60\% V_{RRM} \text{ re-applied} \\ V_R \leq 10 \text{ volts} \end{array} \right.$<br>3ms duration $V_R \leq 10 \text{ volts}$                                          | $I^2 t (1)$<br>$I^2 t (2)$   | 147440A <sup>2</sup> s<br>177510A <sup>2</sup> s<br>135000A <sup>2</sup> s |
| Operating temperature range                              |                                                                                                                                                                                                                 | $T_{hs}$                     | -30, + 180°C                                                               |
| Storage temperature                                      |                                                                                                                                                                                                                 | $T_{stg}$                    | -40, + 200°C                                                               |

**CHARACTERISTICS** Maximum values at 180°C T<sub>j</sub> unless stated otherwise

| CHARACTERISTIC                                                                                         | CONDITIONS                                       | SYMBOL         |                      |
|--------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------|----------------------|
| Peak forward voltage drop                                                                              | At 1500A, $I_{FM}$                               | $V_{FM}$       | 2.08V                |
| Forward conduction threshold voltage                                                                   |                                                  | $V_o$          | 0.95V                |
| Forward conduction slope resistance                                                                    |                                                  | $r$            | 0.75mΩ               |
| Peak reverse current                                                                                   | At $V_{RRM}$                                     | $I_{RRM}$      | 15mA                 |
| Thermal resistance junction to heatsink. for a device with a maximum forward volt-drop characteristic. | Capsule Single side cooled<br>Double side cooled | $R_{th(j-hs)}$ | 0.18°C/W<br>0.09°C/W |

| VOLTAGE CODE $\longrightarrow$   | 02  | 04  | 06  | 08  | 10   | 12   | 14   | 15   |  |
|----------------------------------|-----|-----|-----|-----|------|------|------|------|--|
| Repetitive voltage $V_{RRM}$     | 200 | 400 | 600 | 800 | 1000 | 1200 | 1400 | 1500 |  |
| Non-repetitive voltage $V_{RSM}$ | 300 | 500 | 700 | 900 | 1100 | 1300 | 1500 | 1600 |  |

**ORDERING INFORMATION** (Please quote device code as explained below — 10 digits)

| S                   | W                           | ●                                                      | ● | C | X | C                  | 3 | 0 | 0 |
|---------------------|-----------------------------|--------------------------------------------------------|---|---|---|--------------------|---|---|---|
| FIXED<br>BASIC CODE | VOLTAGE CODE<br>(see above) | FIXED OUTLINE CODE<br>DO — 200 AA<br>cold weld capsule |   |   |   | FIXED<br>TYPE CODE |   |   |   |

 Typical code SW12CXC300 = 1200V<sub>RRM</sub> type CXC300 diode

*In the interest of product improvement, Westcode reserves the right to change specifications at any time without notice.*

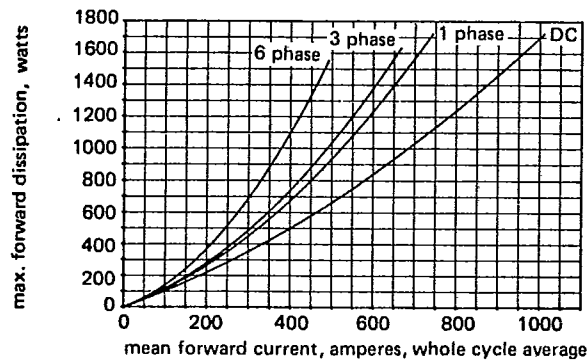
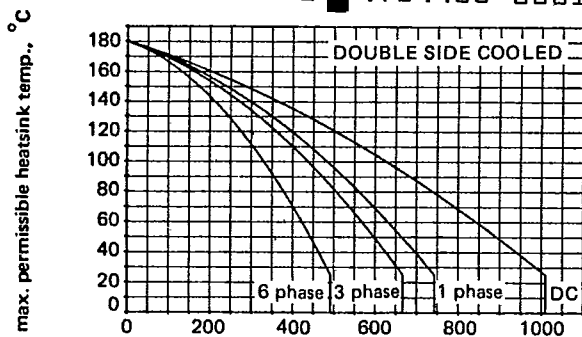


Figure 1 Dissipation / sink temperature v. mean forward current

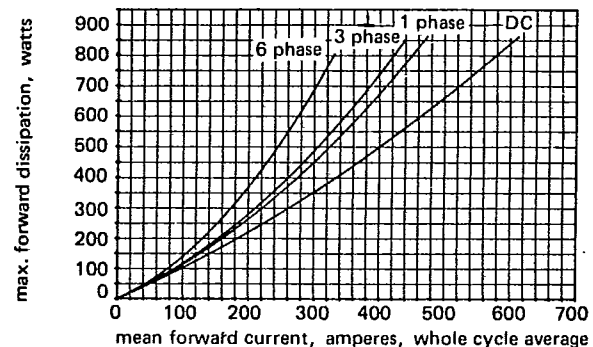
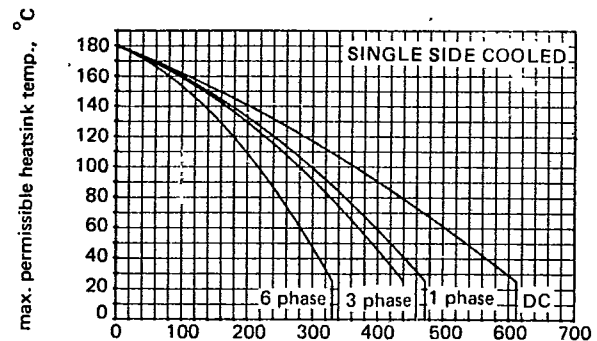


Figure 2 Dissipation / sink temperature v. mean forward current

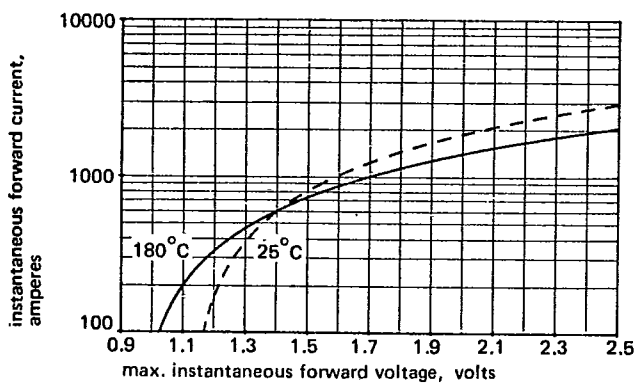


Figure 3 Forward voltage characteristic

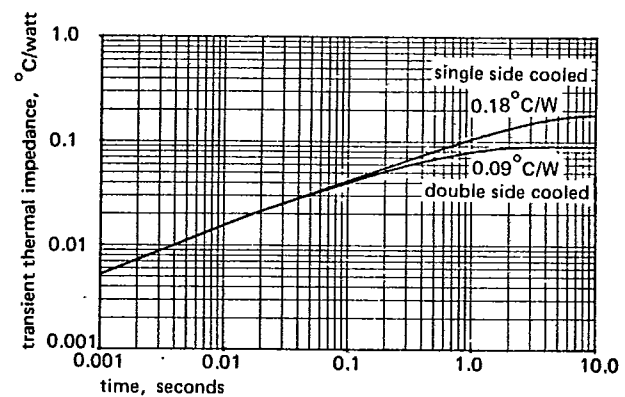


Figure 4 Transient thermal impedance, junction to heatsink

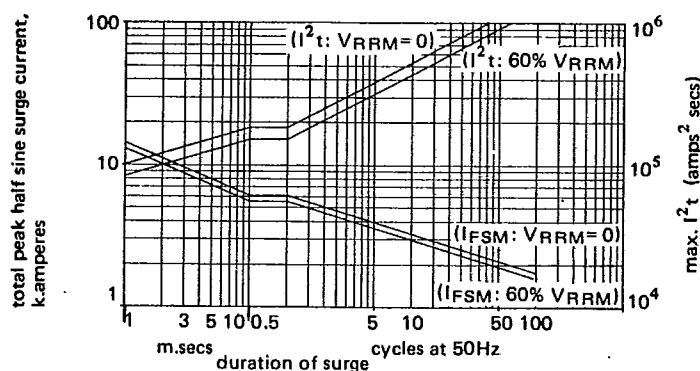
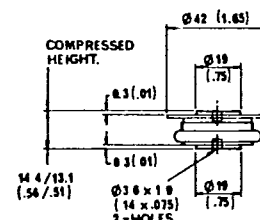


Figure 5 Max. non repetitive surge current at initial junction temperature 180°C



DO - 200 AA

Dimensions in mm (inches)

Mounting Force: 330 - 550Kg

Weight: 70 grams

**Westcode Semiconductors**

0-02 Fair Lawn Avenue

Fair Lawn, New Jersey 07410

Telephone: (201) 791-3020

Telex: 130389