



TECHNICAL PUBLICATION

**DP380**

ISSUE 1

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## Stud-Base Silicon Rectifier Diodes Type PHN/PHR380

### 370 amperes average: up to 2400 volts $V_{RRM}$

**RATINGS** Maximum values at 180°C Tj unless stated otherwise

RATING	CONDITIONS	SYMBOL	
Average forward current	Half sine wave 100 °C case temperature	$I_{F(AV)}$	370A
RMS current		$I_{F(RMS)}$	600A
DC forward current		$I'_F$	600A
Peak one-cycle surge (non repetitive)	8.3ms duration $\left\{ \begin{array}{l} 60\% V_{RRM} \text{ re-applied} \\ V_R \leq 10 \text{ volts} \end{array} \right.$	$I_{FSM(1)}$ $I_{FSM(2)}$	5830A 6413A
Maximum permissible surge energy	8.3ms duration $\left\{ \begin{array}{l} 60\% V_{RRM} \text{ re-applied} \\ V_R \leq 10 \text{ volts} \end{array} \right.$  3ms duration $V_R \leq 10 \text{ volts}$	$I^2 t (1)$ $I^2 t (2)$	146470A <sup>2</sup> s 177510A <sup>2</sup> s 135000A <sup>2</sup> s
Case operating temperature		$T_C$	-30, +180°C
Storage temperature		$T_{stg}$	-40, +200°C

**CHARACTERISTICS** Maximum values at 180°C Tj unless stated otherwise

CHARACTERISTIC	CONDITIONS	SYMBOL	
Peak forward voltage drop	At 1200A, $I_{FM}$	$V_{FM}$	1.88V
Forward conduction threshold voltage		$V_o$	0.99V
Forward conduction slope resistance		$r$	0.74mΩ
Peak reverse current	At $V_{RRM}$	$I_{RRM}$	15mA
Thermal resistance junction to case for a diode with a maximum forward volt-drop characteristic	DC and 180° sine wave 120° rectangular wave	$R_{th(j-c)}$	0.13°C/W 0.14°C/W
Thermal resistance case to heatsink		$R_{th(c-hs)}$	0.04°C/W

VOLTAGE CODE	16	18	20	22	24				
Repetitive voltage $V_{RRM}$	1600	1800	2000	2200	2400				
Non-repetitive voltage $V_{RSM}$	1700	1900	2100	2300	2500				

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

S	W	● ●	P	H	●	3	8	0
FIXED BASIC CODE	VOLTAGE CODE (see above)	FIXED OUTLINE CODE	STUD POLARITY N = cathode R = anode	FIXED TYPE CODE				

Typical code SW16PHR380 = 1600V<sub>RRM</sub> diode with stud anode

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

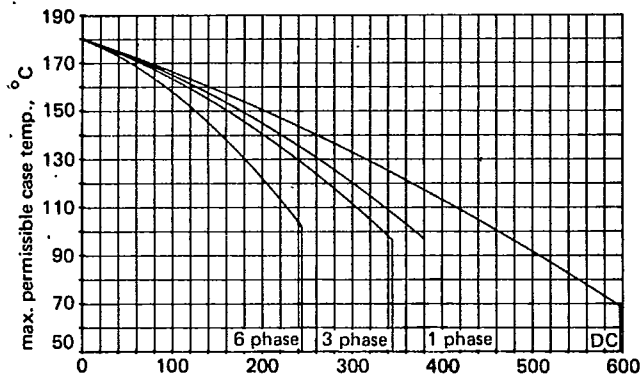


Figure 1 Dissipation and stud temperature v. mean forward current

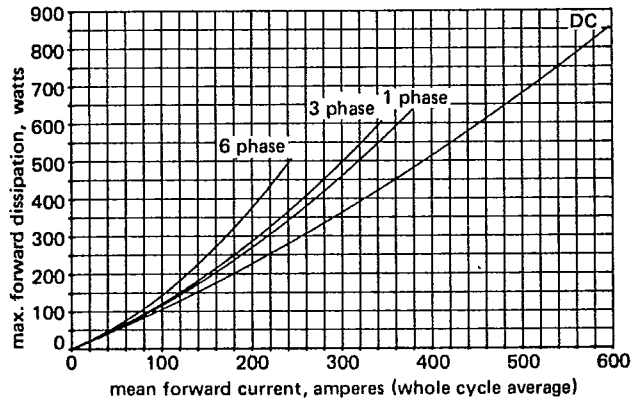


Figure 2 Max. non repetitive surge current at initial junction temperature 180°C

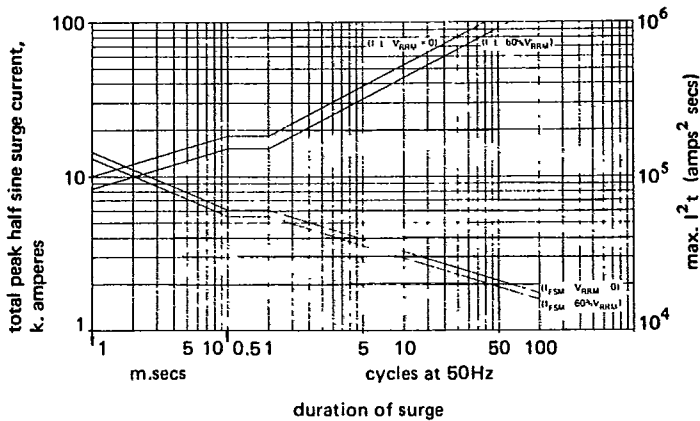


Figure 3 Forward voltage characteristic

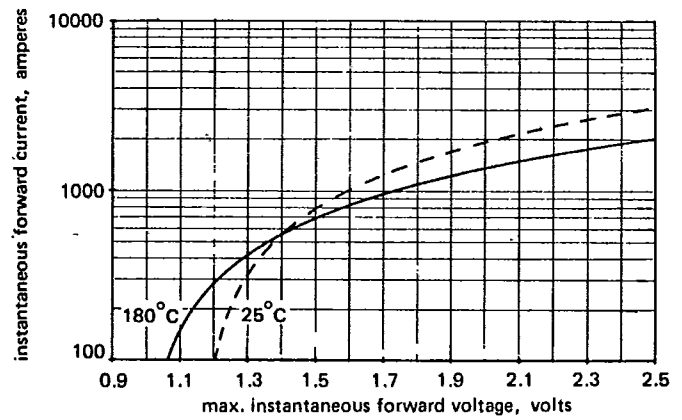


Figure 4 Transient thermal impedance, junction to case

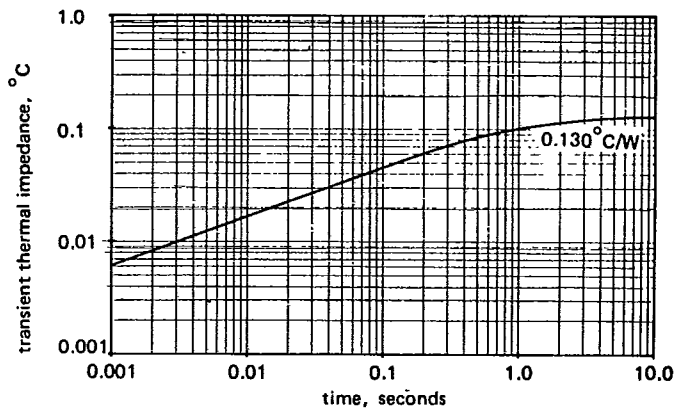
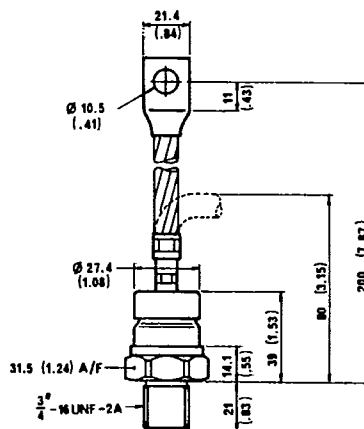


Figure 5 Mounting Torque 2.50 - 2.77 KgM threads not to be lubricated Weight: 250 grams dimensions in mm (inches)



Mounting Torque  
2.50 - 2.77 KgM  
threads not to be  
lubricated

Weight: 250 grams

dimensions  
in mm (inches)

## Westcode Semiconductors

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