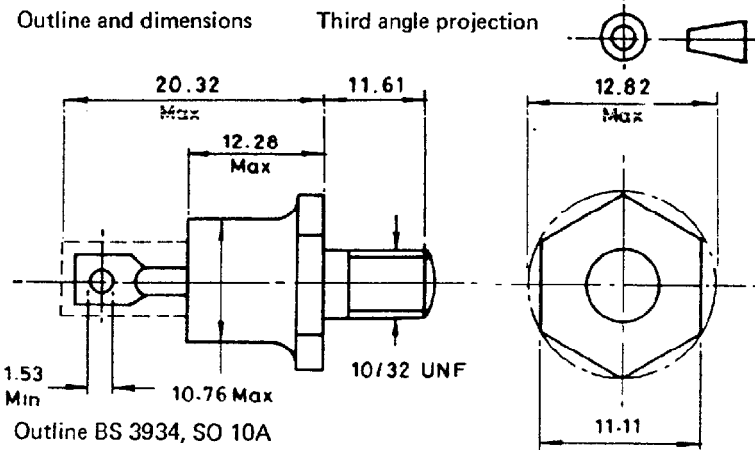


BRITISH STANDARDS INSTITUTION 2, PARK STREET, LONDON, W1A 2BS	BS CECC 50009-010 ISSUE 2 SEPTEMBER 1979  PAGE 1 OF 16 PAGES
SPECIFICATION AVAILABLE FROM:— AS SHOWN IN PD 9002, CECC 00200 AND WESTCODE SEMICONDUCTORS, WESTINGHOUSE BRAKE AND SIGNAL CO. LTD., CHIPPENHAM, WILTS. SN15 1JD. ENGLAND TELEPHONE: CHIPPENHAM (0249) 4141 TELEX 44751	
ELECTRONIC COMPONENTS OF ASSESSED QUALITY DETAIL SPECIFICATION IN ACCORDANCE WITH BS CECC 50 000: 1977	MANUFACTURER'S TYPE NUMBER SXAN 6—20 SERIES SXAR 6—20 SERIES SEE PD 9002 AND CECC 00200 FOR ORDERING INFORMATION SEE PAGE 3
Outline and dimensions Third angle projection  Outline BS 3934, SO 10A All dimensions in millimetres Marking information see page 3	CASE RATED SILICON RECTIFIER DIODE 6 to 20 A 200 to 1200 V STUD MOUNTED HERMETICALLY SEALED
	ASSESSMENT LEVEL F

4. LIMITING VALUES

Absolute maximum values which apply over the operating temperature range, (See 4.3), unless otherwise stated.

4.1 Voltage Ratings

- 4.1.1 Crest working reverse voltage
- 4.1.2 Repetitive peak reverse voltage
- 4.1.3 Non-repetitive peak reverse voltage
- 4.1.4 Continuous (dc) reverse voltage

V_{RWM}
 V_{RRM}
 V_{RSM}
 V_R

TABLE 1 VOLTAGE RATINGS

Type Number	V_{RWM} (V)	V_{RRM} (V)	V_{RSM} (V)	V_R (V)
S2ANX or S2ARX	180	200	300	140
S4ANX or S4ARX	360	400	500	260
S6ANX or S6ARX	540	600	700	420
S8ANX or S8ARX	720	800	900	560
S10ANX or S10 ARX	900	1000	1100	700
S12ANX or S12 ARX	1080	1200	1300	810

X = Current rating, see Table 2

NOTE Normal polarity, (Stud cathode), S2AN6 to S12AN20

Reverse polarity (Stud anode), S2AR6 to S12AR20

Refer to Qualified Products List PD 9002 and/or CECC 00200 for details of manufacturers approved to this specification

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4.2 Current Ratings

(See Table 2)

- 4.2.1 Mean forward current at the breakpoint temperature (See Fig. 1 to 4), sinusoidal waveform, 180° conduction angle, with resistive load. $I_{F(AV)}$
- 4.2.4.1 Non-repetitive peak forward surge current, $T_{case} = 150^{\circ}\text{C}$, Duration = 10 ms with re-application of V_{RWM} I_{FSM1}
- 4.2.4.2 Non-repetitive peak forward surge current, $T_{case} = 150^{\circ}\text{C}$, without re-application of reverse voltage. I_{FSM2}
- 4.2.5 RMS forward current, for derating curves of $I_{F(AV)}$ against T_{case} , see Fig. 1(b) to 4(b). $I_{F(RMS)}$

TABLE 2 CURRENT RATINGS

Col 1	2	3	4	5
Type Number	$I_{F(AV)}$ (A)	$I_{FSM(1)}$ (A)	$I_{FSM(2)}$ (A)	$I_{F(RMS)}$ (A)
SXXXAN6 or SXXXAR6	6	105	120	9.4
SXXXAN12 or SXXXAR12	10	175	200	15.7
SXXXAN15 or SXXXAR15	15	263	300	23.5
SXXXAN20 or SXXXAR20	20	350	400	31.4

XXX = Voltage grade. See Table 1.

4.3 Temperature Ratings

- 4.3.1 Maximum case temperature at which the above voltage ratings apply. $T_{case} 150^{\circ}\text{C}$
- 4.3.2 Minimum and maximum virtual junction temperatures at which the above voltage and current ratings apply. $T_{(vj)} -55^{\circ}\text{C min.}$
150°C max.
- 4.3.3 Minimum and maximum storage temperatures. $T_{stg} -55^{\circ}\text{C min.}$
150°C max.

4.4 Mechanical Ratings

- 4.4.1 Maximum permissible torque on nut 1.7 Nm
- 4.4.2 Recommended torque on nut for good thermal contact 1.6 Nm
- 4.4.3 Minimum permissible torque on nut for good thermal contact 1.5 Nm

5. ELECTRICAL CHARACTERISTICS

(See Table 3)

All characteristics at $T_{case} = 25^{\circ}\text{C}$ unless otherwise stated.

- 5.1 Maximum peak forward voltage at I_{FM} corresponding to $I_{F(AV)}$ see Table 3 V_{FM} Table 3 Col 4
- 5.2.1 Maximum peak reverse current at V_{RRM} from Table 1 $I_{RM1} 50 \mu\text{A}$
- 5.2.2 Maximum peak reverse current at V_{RRM} from Table 1 $I_{RM2} 2 \text{ mA}$
 $T_{case} = 150^{\circ}\text{C}$.
- 5.3 Total power dissipation P_{tot} see Figs 1, 3, 5 and 7
- 5.5 Maximum thermal resistance, junction to case $R_{th} 1.25^{\circ}\text{C/W}$

TABLE 3 ELECTRICAL CHARACTERISTICS

Col. 1	2	3	4
Type Number	$I_{FM}(A)$	$I_{F(AV)}(A)$	$V_{FM}(V)$
SXXXAN6, SXXXAR6	18.8	6	1.15
SXXXAN12, SXXXAR12	31.4	10	1.22
SXXXAN15, SXXXAR15	47.0	15	1.29
SXXXAN20, SXXXAR20	62.8	20	1.35

6. MARKING

6.1 Each rectifier diode shall bear the following marking:—

- The diode arrow graphical symbol pointing towards the cathode
- The type number
- The factory identification code

6.2 Each package containing one or more of these rectifiers shall bear markings b and c above and in addition

- The date code
- The BS CECC detail specification number.

7. RELATED DOCUMENTS

IEC 191/2	Mechanical standardisation of semiconductor devices
BS 3934	Dimensions of semiconductor devices
BS 6001	Sampling procedures and tables for inspection by attributes
BS E9000	General requirements of electronic components of assessed quality harmonised with the Cenelec Electronic Components Committee system
PD 9002, BS 9000	Component selection guide
CECC 00200	Qualified product list
BS CECC 50 000	Generic specification for discrete semiconductor devices

8. ORDERING INFORMATION

Orders for these diodes shall state:—

- Quantity
- Manufacturer's type number, (See Tables 1 and 2)
- This BS CECC detail specification number, issue number and date.

9. TEST CONDITIONS AND INSPECTION REQUIREMENTS

Samples submitted to tests marked (D) shall not be accepted for release (see clause 3.5.6 of BS CECC 50 000). All tests shall be made at $T_{\text{case}} = 25 \pm 5^{\circ}\text{C}$ unless otherwise stated. Markings must withstand all tests of this specification which might change or damage it, and must remain legible.

TABLE 4 INSPECTION REQUIREMENTS

GROUP A Lot by lot

IL = Inspection Level

AQL given in %

Examination or test	BS CECC 50 000 Ref.	Conditions at $T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise specified	Inspection Requirements				
			Limits			IL	AQL
			Min.	Max.	Units		
<u>Subgroup A1</u> Visual inspection	4.2.1					I	1.5
<u>Subgroup A2</u> Peak forward voltage, V_{FM}	4.3.4 D-041	I_{FM} as Table 3	—	As Table 3	V	II	0.65
Peak reverse current I_{RM1}	4.3.4 D-042	V_{RWM} as Table 1 $f = 50 \text{ Hz}$	—	50	μA		

GROUP B Lot by lot

Examination or test	BS CECC 50 000 Ref.	Conditions at $T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise specified	Inspection Requirements				
			Limits			IL	AQL
			Min.	Max.	Units		
<u>Subgroup B1</u> Major dimensions	4.2.2	BS 3934, $\varnothing D$ SO-10A J		12.82 20.32	mm mm	S-2	2.5
<u>Subgroup B2c</u> Non-repetitive peak forward surge current I_{FSM1}	4.3.4 D-043	I_{FSM} as table 2 col 3 One half cycle, $f = 50 \text{ Hz}$, V_{RWM} as Table 1, $T_{\text{case}} = 150^{\circ}\text{C}$				S-4	4.0
<u>Subgroup B4</u> Solderability	4.4.7	Solder bath method				S-4	2.5
<u>Subgroup B5</u> Rapid change of temperature followed by accelerated damp heat (D)	4.4.4 4.4.2	Test Na, -55°C to 150°C Method 1				S-4	4.0

Examination or test	BS CECC 50 000 Ref.	Conditions at $T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise specified	Inspection Requirements				
			Limits			IL	AQL
			Min.	Max.	Units		
<u>Subgroup B8</u> Electrical endurance	4.5.2.5	168 (-10, +72)h $f = 50 \text{ Hz}$, Stud mounted, V_{RWM} as Table 1				S-3	4.0
<u>Post-test end-points for subgroups B2c and B5</u>							
Peak forward voltage, V_{FM}	4.3.4 D-041	I_{FM} as Table 3	—	As Table 3	V		
Peak reverse current, I_{RM1}	4.3.4 D-042	V_{RRM} as Table 1 $f = 50 \text{ Hz}$	—	50	uA		
<u>Post-test end-points for subgroup B8</u>							
Peak forward voltage, V_{FM}	4.3.4 D-041	I_{FM} as Table 3	—	As Table 3 +10%	V		
Peak reverse current, I_{RM1}	4.3.4 D-042	V_{RRM} as Table 1 $f = 50 \text{ Hz}$	—	100	uA		
CTR information	Attributes information for subgroups B2c, B4, B5 and B8						