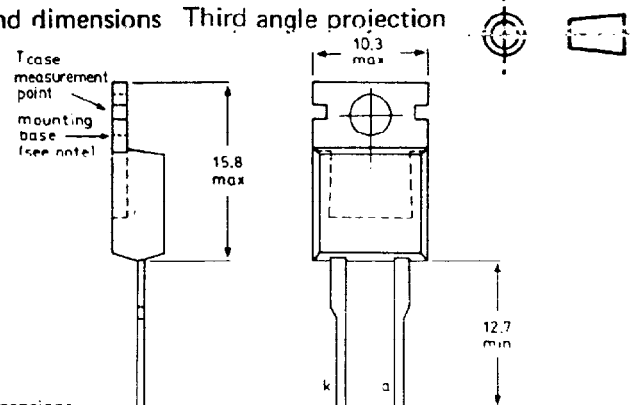


BRITISH STANDARDS INSTITUTION 2, PARK STREET, LONDON, W1A 2BS	BS CECC 50 009-014 CECC 50 009-014 ISSUE 2, MARCH 1980
Specification available from:- As shown in PD 9002, CECC 002-00 and MULLARD LIMITED Mullard House, Torrington Place, London, WC1E 7HD	 Page 1 of 15 pages
ELECTRONIC COMPONENTS OF ASSESSED QUALITY DETAIL SPECIFICATION IN ACCORDANCE WITH BS CECC 50 000: 1977	MANUFACTURER'S TYPE NUMBER BYW29 SERIES See PD 9002 and CECC 00200
Outline and dimensions Third angle projection  For detail dimensions IEC 191-2 SO179 Note: The exposed metal mounting-base is directly connected to the cathode Marking information see page 3 All dimensions in millimetres	For ordering information see page 3 FAST RECOVERY CASE RATED SILICON RECTIFIER DIODE PRIMARILY INTENDED FOR HIGH FREQUENCY SWITCHING 7.6 A 50, 100, 150 AND 200 V EPITAXIAL RECTIFIER DIODE PLASTIC ENCAPSULATED ASSESSMENT LEVELS F AND L PLUS ADDITIONAL TESTS

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	V_{RWM}
4.1.2. Repetitive peak reverse voltage	V_{RRM}
4.1.3. Non-repetitive peak reverse voltage	V_{RSM}
4.1.4. Continuous (dc) reverse voltage	V_R

TABLE 1 – VOLTAGE RATINGS

Type number	V_{RWM} and V_R V_{RRM} and V_{RSM} (V)
BYW29-50	50
BYW29-100	100
BYW29-150	150
BYW29-200	200

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

4.2.1.1. Mean forward current at the breakpoint temperature, $T_{case} = 125^{\circ}\text{C}$ sinusoidal waveform, 180° conduction angle (up to 500 kHz) see Fig.1b	$I_{F(AV)}$	7 A
4.2.1.2. As 4.2.1.1. except squarewave $\delta = 0.5$ See Fig.1a	$I_{F(AV)}$	7.6 A
4.2.2. Repetitive peak forward current	I_{FRM}	80 A
4.2.3. Non-repetitive peak forward surge current, $T_{case} = 150^{\circ}\text{C}$, Duration = 10 ms with reapplication of V_{RRM}	I_{FSM}	80 A
4.2.4. RMS forward current For derating curves of $I_{F(AV)}$ against T_{case} , see Fig.1 and 2	$I_{F(RMS)}$	12 A

4.3. Temperature ratings

4.3.1. Maximum case temperature at which the above voltage ratings apply	T_{case}	150°C
4.3.2. Minimum and maximum virtual junction temperatures at which the above voltage and current ratings apply	$T_{(vj)}$	-40°C min. 150°C max.
4.3.3. Minimum and maximum storage temperatures	T_{stg}	-40°C min. 150°C max.

4.4 Mechanical ratings – See Appendix 2

5. ELECTRICAL CHARACTERISTICS (All at $T_{case} = 25^{\circ}\text{C}$ unless otherwise stated)

5.1.1. Maximum peak forward voltage at $I_{FM} = 25$ A corresponding to $I_{F(AV)} = 7.6$ A	V_{FM1}	1.4 V
5.1.2. Maximum peak forward voltage at $I_{FM} = 5$ A, $T_{case} = 100^{\circ}\text{C}$	V_{FM2}	0.85 V
5.2.1. Maximum peak reverse current at V_{RRM} from Table 1	I_{RM1}	100 μA
5.2.2. Maximum peak reverse current at V_{RRM} from Table 1 $T_{case} = 150^{\circ}\text{C}$	I_{RM2}	10 mA
5.2.3. Maximum peak reverse current at V_{RRM} from Table 1 $T_{case} = 100^{\circ}\text{C}$	I_{RM3}	0.6 mA
5.3. Total power dissipation	P_{tot}	See Figs.1 and
5.4.1. Maximum recovered charge when switched from $I_F = 2$ A to $V_R = 30$ V, $-dI_F/dt = 20$ A/ μs	Q_r	15 nC
5.4.2. Maximum reverse recovery time when switched from $I_F = 1$ A to $V_R = 30$ V, $-dI_F/dt = 50$ A/ μs (see also Fig.3)	t_{rr}	35 nS
5.4.3. Maximum slope of reverse recovery current with $I_F = 2$ A, $V_R = 30$ V, $-dI_F/dt = 2$ A/ μs	dI_{rr}/dt	5 A/ μs
5.5. Maximum thermal resistance, junction to case	R_{th}	2.7°C/W

6. MARKING

- (1) Each rectifier diode shall bear the following marking:
 - (a) The diode arrow graphical symbol pointing towards the cathode.
 - (b) The type number.
 - (c) The factory identification code.
- (2) Each package containing one or more of these rectifiers shall bear markings (b) and (c) above and in addition
 - (d) The date code.
 - (e) The BS CECC detail specification number.

7. RELATED DOCUMENTS

IEC191/2	Mechanical standardisation 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	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:

1. Quantity
2. Manufacturer's type number (see Table 1)
3. The CECC detail specification number
4. The assessment level (F or L) required

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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. Marking must withstand all tests of this specification which might change or damage it, and must remain legible.

TABLE 2 – INSPECTION REQUIREMENTS

GROUP A – Lot by lot

n.a. = not applied

Examination or test	Ref.	Conditions at $T_{\text{case}} = 25^\circ\text{C}$ unless otherwise stated	Inspection requirements					
			Limits		Units	Levels	IL	AQL %
			Min.	Max.				
Subgroup A1						F	I	0.65
Visual inspection	4.2.1.					L	I	0.65
Subgroup A2a						F	II	0.25
Non-operatives		V_{FM} at $I_{\text{FM}} = 25 \text{ A}$				L	II	0.2
Open circuit			0.7	7	Volts			
Short circuit					Volts			
Subgroup A2b						F	II	0.65
Peak forward voltage, V_{FM1}	4.3.4. D-041	$I_{\text{FM}} = 25 \text{ A}$	—	1.4	V	L	II	0.65
Peak reverse current I_{RM1}	4.3.4. D-042	V_{RRM} as Table 1 $f = 50 \text{ Hz}$	—	100	μA			
Subgroup A3						F	I	2.5
Recovered charge Q_i	4.3.4. D-045	$I_{\text{F}} = 2 \text{ A}$ $V_{\text{R}} = 30 \text{ V}$ $-dI_{\text{F}}/dt = 20 \text{ A}/\mu\text{s}$	—	15	nC	L	I	2.5

GROUP B – Lot by lot

Subgroup B1						F	S-2	2.5
Major dimensions	4.2.2.	IEC 191-2 SO179	D	—	15.8	L	S-2	2.5
			E	—	10.3			
Subgroup B2c						F	S-4	4.0
Non-repetitive peak forward surge current I_{FSM}	4.3.4. D-043	$I_{\text{FSM}} = 80 \text{ A}$ One half cycle. $f = 50 \text{ Hz}$ V_{RWM} as Table 1. Maximum impedance of reverse voltage source = $1 \text{ k}\Omega$. $T_{\text{case}} = 150^\circ\text{C}$				L	S-4	4.0
Subgroup B4						F	S-4	2.5
Solderability	4.4.7	Soldering iron method				L	S-4	2.5

GROUP B – Lot by lot (contd.)

n.a. = not applied

Examination or test	Ref.	Conditions at $T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise stated	Inspection requirements					
			Limits		Units	Levels	IL	AQL %
			Min.	Max.				
Subgroup B5						F	S-4	4.0
Rapid change of temperature followed by Accelerated damp heat (D)	4.4.4.	Test Nc – 0 to 100°C				L	na	na
	4.4.2.	Method 1 28 days						
Subgroup B8						F	S-3	4.0
Electrical endurance	4.5.2.5.	168 (–10 + 72 h) $f = 50\text{ Hz}$, $T_{\text{case}} = 150^{\circ}\text{C}$ Mounting-base to heatsink V_{RWM} as Table 1				L	na	na
Post-test end-points for subgroups B2c and B5								
Peak forward voltage, V_{FM}	4.3.4. D-041	$I_{\text{FM}} = 25\text{ A}$	–	1.4	V			
Peak reverse current, I_{RM1}	4.3.4. D-042	V_{RRM} as Table 1, $f = 50\text{ Hz}$	–	100	μA			
Post-test end-points for subgroup B8								
Peak forward voltage, V_{FM}	4.3.4. D-041	$I_{\text{FM}} = 25\text{ A}$	–	1.54	V			
Peak reverse current, I_{RM1}	4.3.4. D-042	V_{RRM} as Table 1 $f = 50\text{ Hz}$	–	200	μA			
CTR information		Attributes information for subgroups B2c, B4, B5 and B8						

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