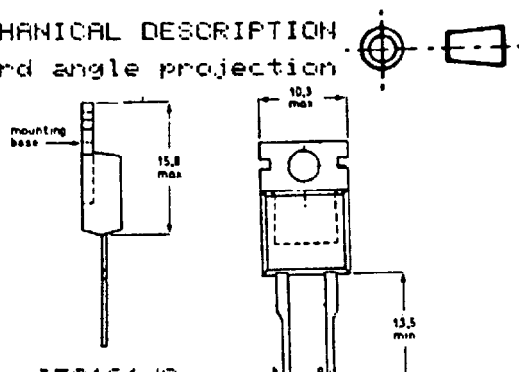


BRITISH STANDARDS INSTITUTION 2 PARK STREET, LONDON W1A 2BS		page: 1	BS CECC 50 009 021 CECC 50 009 021																		
Specification available from: MULLARD LIMITED, Mullard House, Torrington Place, London WC1E 7HD		of: 17	Issue: 2 Date: JULY 1982																		
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH BS CECC 50 000:1981																					
DETAIL SPECIFICATION FOR CASE-RATED RECTIFIER DIODES. Type numbers BY229 200, BY229 400, BY229 600, BY229 800 and BY229 1000																					
Construction Semiconductor material : Silicon Encapsulation material : Plastic																					
1. MECHANICAL DESCRIPTION Third angle projection  Outline IEC191/2 Marking information see page 3 All dimensions in millimetres		2. ELECTRICAL APPLICATION CASE RATED, FAST, SOFT RECOVERY SILICON RECTIFIER DIODE. 7 A AV. SQUAREWAVE. 3. ASSESSMENT LEVELS F AND L PLUS ADDITIONAL TESTS.																			
4. LIMITING VALUES (Absolute Maximum System) These apply over the operating temperature range, unless otherwise stated. 4.1 Voltage : 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 } See Table 1																					
TABLE 1- VOLTAGE RATINGS <table><tr><th>Type number</th><th>V_R V_{RWM}</th><th>V_{RSM} V_{RRM}</th></tr><tr><td>BY229 200</td><td>150</td><td>200</td></tr><tr><td>BY229 400</td><td>300</td><td>400</td></tr><tr><td>BY229 600</td><td>500</td><td>600</td></tr><tr><td>BY229 800</td><td>600</td><td>800</td></tr><tr><td>BY229 1000</td><td>800</td><td>1000</td></tr></table>				Type number	V_R V_{RWM}	V_{RSM} V_{RRM}	BY229 200	150	200	BY229 400	300	400	BY229 600	500	600	BY229 800	600	800	BY229 1000	800	1000
Type number	V_R V_{RWM}	V_{RSM} V_{RRM}																			
BY229 200	150	200																			
BY229 400	300	400																			
BY229 600	500	600																			
BY229 800	600	800																			
BY229 1000	800	1000																			
Refer to Qualified Products List PD9002 and/or CECC 00200 for details of manufacturers approved to this specification.																					

4.2 Current:

- 4.2.1.1 Forward current at the breakpoint temperature
(see figure 1) $T_{case} = 101^{\circ}C$ sinusoidal $I_{F(RV)max}$ 6.5 A
waveform, 108° conduction angle (upto 500KHz)
- 4.2.1.2 As 4.2.1.1 except squarewave 0.5 $I_{F(RV)max}$ 7 A
- 4.2.2 Repetitive peak forward I_{FRM} 60 A
- 4.2.3 RMS forward current $I_{F(rms)}$ 10 A
- 4.2.4 Non-repetitive peak forward surge current I_{FSM} 60 A
 $T_{case} = 150^{\circ}C$ Duration = 10 ms
With reapplication of reverse voltage.

4.3 Temperature

- 4.3.1 Case temperature
Maximum value for which the voltage ratings are specified in 4.1 $T_{case max}$ $150^{\circ}C$
- 4.3.2 Virtual junction temperature
Minimum and maximum values of the junction temperature for which the voltage and current ratings in 4.1 and 4.2 apply $T_{(vj)min}$ $-40^{\circ}C$
 max $150^{\circ}C$
- 4.3.3 Storage temperature $T_{stg min}$ $-40^{\circ}C$
 max $150^{\circ}C$
- Mechanical**
See appendix 2.

5. ELECTRICAL CHARACTERISTICS

The following characteristics are given at $T_{case} = 25^{\circ}C$, unless otherwise stated.

5.1 Forward voltage :

- 5.1.1 Maximum peak forward voltage at $I_{FM} = 22 A$
corresponding to $I_F (RV) = 7 A$ V_{FM} 1.9 V

5.2 Reverse current :

Maximum value of the peak reverse current I_{RM} at the rated repetitive reverse voltage V_{RRM} :

- 5.2.1 Without forward dissipation I_{RM1} 10 μA
- 5.2.2 At $T_{case} = 150^{\circ}C$ without forward dissipation I_{RM2} 1.5 mA

5.3 Total power dissipation :

Maximum total power dissipation graphs as a function of the mean forward current and conduction angle P_{tot}

See fig 1
and fig 2

5.4 Recovery :**5.4.1 Recovered charge**

Maximum value when switched from
 $I_F = 2 \text{ A to } V_R = 30 \text{ V, } -dI_F/dt = 20 \text{ A/}\mu\text{s}$ Q_r 0.7 μC

5.4.2 Reverse recovery time

Maximum value when switched from
 $I_F = 2 \text{ A to } V_R = 30 \text{ V, } -dI_F/dt = 20 \text{ A/}\mu\text{s}$ t_{rr} 450 ns

5.4.3 Reverse recovery current

Maximum value when switched from
 $I_F = 2 \text{ A to } V_R = 30 \text{ V, } -dI_F/dt = 20 \text{ A/}\mu\text{s}$ I_{rr} 60 A/ μs

5.5 Thermal resistance :

Maximum thermal resistance junction to case R_{th} 4.5 $^{\circ}\text{C/W}$

6.0 MARKING

- 1 Each rectifier shall bear the following markings:
 - (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.

7.0 ORDERING INFORMATION

The following minimum information is necessary to order a specific device, unless otherwise specified :

- precise type number
- CECC reference of detail specification with issue number and/or date when relevant
- level of quality assessment as defined in appendix II A of CECC 50 000, and, if required, screening sequence as defined in appendix VI of CECC 50 000
- any other particulars.

8. TEST CONDITIONS AND INSPECTION REQUIREMENTS

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

BS CECC 50 009-021

Issue 2 Date JULY 1982

All tests are non-destructive (3.5.6 of CECC 50 000)			GROUP A Lot by lot		IL Inspection level AQL given in %				
EXAMINATION OR TEST	REF	CONDITIONS at T _{case} =25°C unless other wise stated	INSPECTION REQUIREMENTS						
			LIMITS			LEVELS			
						F		L	
			MIN	MAX	UNITS	IL	AQL	IL	AQL
SUB-GROUP A1 Visual inspection	4.2.1					I	.65	I	.65
SUB-GROUP A2a Non operatives Open circuit Short circuit	4.3.4	I _{FM} = 22 A	0.7	7	V V	II	0.1	II	0.1
SUB-GROUP A2b Peak forward voltage V _{FM}	4.3.4 D-041	I _{FM} = 22 A		1.9	V	II	.65	II	.65
Peak reverse current I _{RM1}	4.3.4 D-042	V _{RRM} as table 1 f=50Hz		10	uA				
SUB-GROUP A3 Recovered charge Q _r	4.3.4 D-045	I _F = 2 A V _R = 30 V -dI _r /dt = 20 A/us		0.7	uC	1	2.5	1	2.5
CTR INFORMATION	Attributes information for SUB-GROUPS A1,A2a, and A2b								

BS CECC 50 009-021

Issue 2 Date JULY 1982

Tests marked (D) are destructive (3.5.6 of CECC 50 000)			GROUP B Lot by lot			IL Inspection level AQL given in %			
EXAMINATION OR TEST	REF	Conditions at $T_{case} = 25^{\circ}C$ unless other wise stated	INSPECTION REQUIREMENTS			LEVELS			
			LIMITS			F		L	
			MIN	MAX	UNITS	IL	AQL	IL	AQL
SUB-GROUP B1 MAJOR DIMENSIONS	4.2.2	IEC 191-2 D SO 179 E		15.8 10.3	mm mm	S2	2.5	S2	2.5
Permanence of marking			See note 1						
SUB-GROUP B2c Surge (non-repet) forward current I_{FSM}	4.3.4 D-043	$I_{FSM} = 60 A$ One half cycle Max. impedance reverse volts source = 1K V as table 1 $T_{RWM} = 150^{\circ}C$ case				S4	4.0	S4	4.0
SUB-GROUP B4 Solderability	4.4.7	Soldering iron method				S4	2.5	S4	2.5
SUB-GROUP B5 Rapid change of temperature followed by Accelerated damp heat	4.4.4 4.4.2	Test No 0 to 100 $^{\circ}C$ Method 1 6 cycles				S4	4.0	na	na
SUB-GROUP B8 Electrical endurance 168 + 72 - 10 h	4.5.2.5	at rated V_{RWM} table 1 $T_{case} = 150^{\circ}C$ $f=50Hz$ mounting base to heatsink				S3	4.0	na	na
Note 1: The marking shall withstand all the tests of the relevant detail specification which could cause change or damage, and shall remain legible. Note 2: See CECC 50 000, Issue 3 for plastic encapsulation (non cavity) devices.									

Tests marked (D) are destructive (3.5.6 of CECC 50 000)			GROUP B (cont) lot by lot		IL Inspection level AGL given in %				
EXAMINATION OR TEST	REF.	CONDITIONS at T _{case} = 25 °C unless other wise stated	INSPECTION REQUIREMENTS						
			LIMITS			LEVELS			
						F		L	
			MIN	MAX	UNITS	IL	AGL	IL	AGL
Post-test end-points for sub-groups B2(c) and B5									
Peak forward voltage V _{FM}	4.3.4 D-041	I _{FM} = 22 A		1.9	V				
Peak reverse current I _{RM1}	4.3.4 D-042	V _{RRM} as Table1 f=50 Hz		10	uA				
Post-test end-points for sub-group B8									
Peak forward voltage V _{FM}	4.3.4 D-041	I _{FM} = 22 A		2.1	V				
Peak reverse current I _{RM1}	4.3.4 D-042	V _{RRM} as Table1 f=50 Hz		20	uA				
CTR INFORMATION	Attributes information for SUB-GROUPS B2(c), B4,B5 and B8.								