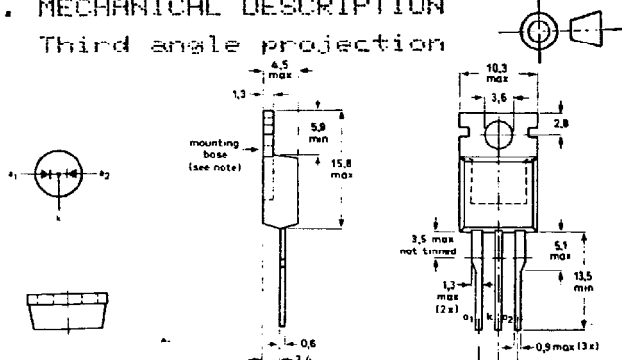


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BRITISH STANDARDS INSTITUTION 2 PARK STREET, LONDON W1A 2BS		Page: BS CECC 50 009 026 1 CECC 50 009 of: 18 Issue: 1 Date: Sept. 1981																				
Specification available from: MULLARD LIMITED, Mullard House, Torrington Place, London WC1E 7HD																						
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH BS CECC 50 000:1981																						
DETAIL SPECIFICATION FOR CASE-RATED RECTIFIER DIODES Type number(s) : BYV32 series																						
Construction Semiconductor material : Silicon Encapsulation material : Plastic																						
1. MECHANICAL DESCRIPTION Third angle projection 		2. ELECTRICAL APPLICATION Double rectifier diodes. Fast recovery case rated silicon double, epitaxial, rectifier diodes primarily intended for high frequency switching circuits. The device is common-cathode 20.0 A 50, 100, 150, and 200V 3. ASSESSMENT LEVELS F AND L																				
Outline IEC191/2 PR 89 Marking information see page 3 Dimensions in mm																						
4. LIMITING VALUES (Absolute Maximum Rating System) These apply over the operating temperature range, 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 See Table 1																						
TABLE 1- VOLTAGE RATINGS <table><tr><td>Type number</td><td>V_R V_{RWM}</td><td>and</td><td>V_{RSM} V_{RRM}</td></tr><tr><td>BYV32 - 50</td><td></td><td></td><td>50 V</td></tr><tr><td>BYV32 - 100</td><td></td><td></td><td>100 V</td></tr><tr><td>BYV32 - 150</td><td></td><td></td><td>150 V</td></tr><tr><td>BYV32 - 200</td><td></td><td></td><td>200 V</td></tr></table>			Type number	V_R V_{RWM}	and	V_{RSM} V_{RRM}	BYV32 - 50			50 V	BYV32 - 100			100 V	BYV32 - 150			150 V	BYV32 - 200			200 V
Type number	V_R V_{RWM}	and	V_{RSM} V_{RRM}																			
BYV32 - 50			50 V																			
BYV32 - 100			100 V																			
BYV32 - 150			150 V																			
BYV32 - 200			200 V																			
Refer to Qualified Products List PD9002 and/or CECC 00200 for details of manufacturers approved to this specification.																						

4.2	<u>Current ratings:</u> (both diodes conducting (see note 1))		
4.2.1.1	Mean forward current at the breakpoint temperature, sinusoidal waveform, 180° conduction angle (up to 500 kHz) see Fig.1	$T_{case} = 120^{\circ}C; I_{F(AV)max}$	18 A
		$T_{case} = 125^{\circ}C; I_{F(AV)max}$	16 A
4.2.1.2	As 4.2.1.1. except squarwave = 0.5 see Fig.2	$T_{case} = 119^{\circ}C; I_{F(AV)max}$	20 A
		$T_{case} = 125^{\circ}C; I_{F(AV)max}$	16.5 A
4.2.2	Repetitive peak forward current	$I_{FRM} max$	300 A
4.2.4	Non-repetitive peak forward surge current, $T_{case} = 150^{\circ}C$, Duration = 10 ms with reapplication of V_{RRM} (each diode) RMS forward current	$I_{FSM} max$	150 A
	For derating curves of $I_{F(AV)}$ against T_{case} , see Fig. 1 and 2		
4.3	<u>Temperature ratings:</u>		
4.3.1	Maximum case temperatures at which the above voltage ratings apply	$T_{case} max$	150°C
4.3.2	Minimum and maximum virtual junction temperatures at which the above voltage and current ratings in 4.1 and 4.2 apply	$T_{(vj)} min$ max	-40°C 150°C
4.3.3	Storage temperatures	$T_{stg} min$ max	-40°C 150°C
4.4	<u>Mechanical ratings:</u> See Appendix 2		
Note 1: The limits for both diodes apply whether both diodes conduct simultaneously or on alternate half cycles.			
5.	<u>ELECTRICAL CHARACTERISTICS PER DIODE</u>		
The following characteristics are given at $T_{case} = 25^{\circ}C$, unless otherwise stated.			
5.1.1	Maximum peak forward voltage at $I_{FM} = 30 A$ corresponding to $I_F (AV) = 10 A$	$V_{FM1} max$	1.25 V
5.1.2	Maximum peak forward voltage at $I_{FM} = 5A, T_{case} = 100^{\circ}C$	$V_{FM2} max$	0.85 V
5.2.1	Maximum peak reverse current at V_{RRM} from Table 1	$I_{RM1} max$	50 uA
5.2.2	Maximum peak reverse current at V_{RRM} from Table 1, $T_{case} = 150^{\circ}C$	$I_{RM2} max$	10.0mA
5.2.3	Maximum peak reverse current at V_{RRM} from Table 1, $T_{case} = 100^{\circ}C$	$I_{RM3} max$	0.6 mA
5.3	Total power dissipation	P_{tot}	see Fig. 1 and 2

- 5.4.1 Maximum recovered charge when switched
from $I_F = 2 \text{ A}$ to $V_R = 30 \text{ V}$
 $dI_F/dt = 20 \text{ A/us}$ $Q_{rr} \text{ max } 15 \text{ nC}$
- 5.4.2 Maximum reverse recovery time when switched
from $I_F = 1 \text{ A}$ to $V_R = 30 \text{ V}$
 $dI_F/dt = 50 \text{ A/us}$ (see also Fig. 3) $t_{rr} \text{ max } 35 \text{ ns}$
- 5.4.3 Maximum slope of reverse recovery with
 $I_F = 2 \text{ A}$, $V_R = 30 \text{ V}$, $dI_F/dt = 2 \text{ A/us}$ $dI_{rr}/dt \text{ max } 5 \text{ A/us}$
- 5.5 Maximum thermal resistance, junction
to case $R_{th} \text{ max } 1.6^\circ\text{C/W}$

6.0 MARKING

- (1) Each rectifier diode 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

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

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 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.

All tests are non-destructive (3.5.6 of CECC 50 000)			GROUP A			IL Inspection level AQL given in %			
Both diodes to be tested			Lot by lot						
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	1.5	I	1.5
SUB-GROUP A2a Non operatives Open circuit Short circuit	4.3.4	V _{FM} at I _{FM} = 30 A	0.7	7	V V	II	0.1	II	0.1
SUB-GROUP A2b Peak forward voltage V _{FM1}	4.3.4 D-041	I _{FM} = 30 A	-	1.25	A				
Peak reverse current I _{RM1}	4.3.4 D-042	V _{RRM} = Table 1 f= 50 Hz	-	50	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	-	15	nC	II	.65	II	.65
CTR INFORMATION	Attributes information for SUB-GROUPS A1 and A2								

Tests marked (D) are destructive (3.5.6 of CECC 50 000)				GROUP B Lot by lot			IL Inspection level AQL given in %			
Both diodes to be tested										
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 B1 Major Dimensions	4.2.2	IEC 191-2 D 80178 E	-	15.8	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} = 150 A One half cycle. f = 50 Hz V _{RWM} as Table 1; T _{case} = 150 °C Maximum impedance of reverse voltage source = 1 k .				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 °C Method 1 28 days				S4	4.0	na	na	
SUB-GROUP B8 Electrical endurance 168 + 72 - 10 h	4.5.2.5	V _{RWM} = Table 1 T _{case} = 150 °C f = 50 Hz Mounting base to heatsink				S3	4.0	na	na	
Note 1: The marking must withstand all the tests of the relevant detail specification which could cause change or damage, and shall remain legible.										