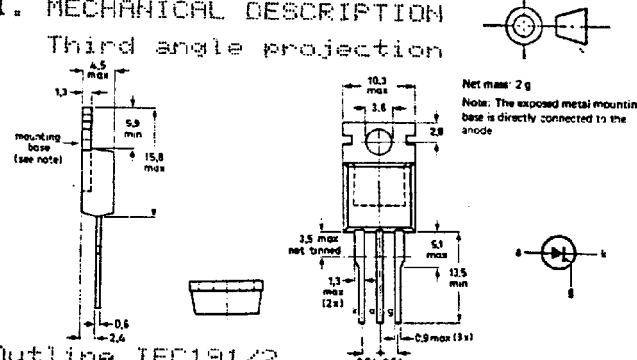


This Specification contains a small amount of data which may not be legible. It has been acquired directly from the manufacturer or standards organization and Technical Indexes/IHS have not been able to obtain a better copy.

If the quality of this Specification is not fit for your intended purpose, please contact the relevant manufacturer or standards organization to clarify the details you require.

BRITISH STANDARDS INSTITUTION 2 PARK STREET, LONDON W1A 2BS		page: 1 of: 16	BS CECC 50 011 011 CECC 50 011 011  Issue: 1 Date: April 1983																
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 Type number(s) : BT 152 400V, BT152 600V, BT152 800V																			
Construction Semiconductor material : Silicon Encapsulation material : Plastic																			
1. MECHANICAL DESCRIPTION Third angle projection  Outline IEC191/2 Marking information see page All dimensions in millimetres		2. ELECTRICAL APPLICATION Glass passivated reverse blocking thyristor in plastic encapsulation. 13A 3. ASSESSMENT LEVELS F AND L																	
4. LIMITING VALUES (Absolute Maximum Rating System) These apply over the operating temperature range, unless otherwise stated. 4.1 Voltage : 4.1.1 Crest working voltage 4.1.2 Crest working off-state voltage 4.1.3 Repetitive peak reverse voltage 4.1.4 Repetitive peak off-state voltage 4.1.5 Non-repetitive peak reverse voltage 4.1.6 Non-repetitive peak off-state voltage V_{RWM} V_{DWM} V_{RRM} V_{DRM} V_{RSM} V_{DSM} See Table 1 TABLE 1- VOLTAGE RATINGS <table><tr><th>Device type No. and Voltage Grade</th><th>V_{RWM} V_{DWM}</th><th>V_{RRM} V_{DRM}</th><th>V_{RSM} V_{DSM}</th></tr><tr><td>BT 152 400R</td><td>400V</td><td>400V</td><td>450V</td></tr><tr><td>BT 152 600R</td><td>400V</td><td>600V</td><td>650V</td></tr><tr><td>BT 152 800R</td><td>400V</td><td>800V</td><td>850V</td></tr></table>				Device type No. and Voltage Grade	V_{RWM} V_{DWM}	V_{RRM} V_{DRM}	V_{RSM} V_{DSM}	BT 152 400R	400V	400V	450V	BT 152 600R	400V	600V	650V	BT 152 800R	400V	800V	850V
Device type No. and Voltage Grade	V_{RWM} V_{DWM}	V_{RRM} V_{DRM}	V_{RSM} V_{DSM}																
BT 152 400R	400V	400V	450V																
BT 152 600R	400V	600V	650V																
BT 152 800R	400V	800V	850V																
Refer to Qualified Products List PD9002 and/or CECC 00200 for details of manufacturers approved to this specification.																			

4.2 Current ratings :

- 4.2.1 Mean on-state current at $T_{case} = 93^{\circ}\text{C}$
(see fig 1). In single phase circuits
sinusoidal 180° conduction angle
with resistive load.

- 4.2.2 Repetitive peak on-state current

- 4.2.3 Continuous (direct) on-state current

- 4.2.4 Surge (non-repetitive) on-state current:

1) Without reapplication of reverse voltage

2) With reapplication of reverse voltage

Note: Loss of gate control may occur in 4.2.4

- 4.2.5 Critical rate of rise on-state current

4.3 Gate ratings :

- 4.3.3 Peak reverse gate voltage

- 4.3.5 Peak gate power dissipation

- 4.3.6 Average gate power dissipation

4.4 Temperature ratings :

- 4.4.1 Case temperature

Maximum value for which the voltage
ratings are specified in 4.1

- 4.4.2 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.

- 4.4.3 Storage temperature

4.5 Mechanical ratings :

See appendix 1

5. ELECTRICAL CHARACTERISTICSThe following characteristics are
given at $T_{case} = 25^{\circ}\text{C}$, unless otherwise stated.5.1 On-state voltage :

- 5.1.1 Maximum peak on-state voltage at
- $I_{TM} = 40\text{A}$
-
- corresponding to
- $I_{F(AV)} = 13\text{A}$

5.3 Reverse current :

Maximum value of the peak reverse current

 I_{RM} at the rated repetitive reverse voltage V_{RRM} :

- 5.3.1 Without forward dissipation

- 5.3.2 At
- $T_{case} = 115^{\circ}\text{C}$
- without forward dissipation

 $I_{T(AV)max}$ 13A I_{TRM} 200A I_T 20A I_{TSM} 200A I_{TSM} 200A dI/dt 200A/ μs V_{RGM} 5V P_{RGM} 20W P_{GM} 0.5W $G(AV)$ $T_{CASE max}$ 115°C $T_{(vj)min}$ -40°C T_{max} 115°C $T_{stg min}$ -40°C T_{max} 150°C V_{TM} 1.75V V_{RRM} I_{RM1} 100 μA I_{RM2} 5mA

- 5.5 Off-state current ;
Maximum value of the peak off-state current
 I_{DM} at the rated repetitive peak off-state
voltage V_D
- 5.5.1 Without forward dissipation I_{DM1} 100 μ A
- 5.5.2 At $T_{(vj)} = 115^\circ\text{C}$ without forward dissipation I_{DM2} 5mA
- 5.6 Holding current
Holding current $V_D = 12\text{V}$ $R_{GK} = \text{open circuit}$
 $I_{H(\min)}$ 1mA
 $I_{H(\max)}$ 60mA
- 5.7 Latching current
Maximum latching current $V_D = 12\text{V}$ $R_{GK} = \text{O/C}$ I_L 60mA
- 5.8 Gate trigger current
Maximum gate trigger current I_{GT} 32mA
- 5.9 Gate trigger voltage
Maximum gate trigger voltage V_{GT} 1V
- 5.10 Gate non-trigger voltage
Maximum gate non-trigger voltage at
 $T_{(vj)} = 115^\circ\text{C}$ V_{GD} 0.25V
- 5.11 Critical rate of rise of off-state voltage
Maximum rate of rise of off-state voltage
 $V_D = V_{DM}$ $T_{(vj)} = 115^\circ\text{C}$ dv/dt 200V/ μ s
- 5.13 Total power dissipation
Maximum total power dissipation graphs as a
function of the mean on-state current and
conduction angle P_{tot} See fig 1
- 5.14 Thermal resistance
Maximum thermal resistance junction to case R_{th} 1.1 $^\circ\text{C/W}$

6.0 MARKING

Each thyristor shall bear the following marking:

- the type number, e.g. BT152 400V
- the factory identification code
- the date code

7.0 ORDERING INFORMATION

Orders for these thyristors shall state:

- quantity
- manufacturers type number (see page 1)
- the CECC specification number
- the assessment level (F or L) required
- if required, screen sequence selected from appendix VI of BS 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 BS CECC 50 000). All tests are made at $T_{case} = 25 \pm 5^{\circ}C$ 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 lot by lot		IL Inspection level AQL given in %			
EXAMINATION OR TEST	REF.	CONDITIONS at $T_{case} = 25^{\circ}C$ unless otherwise stated	INSPECTION REQUIREMENTS						
			LIMITS			LEVELS			
			MIN	MAX	UNITS	F		L	
						IL	AQL	IL	AQL
SUB-GROUP A1 Visual inspection	4.2.1					1	.65	1	.65
SUB-GROUP A2a Non-operatives Open circuit Short circuit	4.3.4	V_{TM} at $I_{TM} = 40A$ $R_{GK} = 0/C$	0.7	7	V	11	0.1	11	0.1
SUB-GROUP A2b Peak on-state voltage V_{TM} Peak reverse current I_{RM1} Gate trigger current I_{GT} Gate trigger voltage V_{GT}	4.3.4 T.101 4.3.4 T.102 4.3.4 T-109	$I_{TM} = 40A$ $R_{GK} = 0/C$ $V_{RM} = \text{Table 1}$ $f = 50Hz$ $R_{GK} = 0/C$ $V_D = 12V$ $R_{GK} = 0/C$ $f = 50Hz$ scope method		1.75	V	11	1.0	11	1.0
SUB-GROUP A3 Peak reverse current I_{RM2} Peak off-state current I_{DM2}	4.3.4 T.102 4.3.4 T.103	$V_{RM} = \text{Table 1}$ $f = 50Hz$ $R_{GK} = 0/C$ $T_{case} = 115^{\circ}C$ $V_{DM} = \text{Table 1}$ $f = 50Hz$ $R_{GK} = 0/C$ $T_{case} = 115^{\circ}C$		5	mA	1	2.5	1	2.5
SUB-GROUP A4 Critical rate of rise of off-state voltage dv/dt Gate non-trigger voltage V_{GD}	4.3.4 T-112 4.3.4 T-110	$V_D = 0.7 * V_{DM}$ (exponential rate of rise) $R_{GK} = 0/C$ $T_{case} = 115^{\circ}C$ $V_{DM} = \text{Table 1}$ $R_{GK} = 0/C$ $T_{case} = 115^{\circ}C$	200 250		V/us mV	S3	2.5	S3	2.5
CTR INFORMATION	Attributes information for Sub-groups A1 and A2								