DOCUMENT CHANGE REQUEST

DCR number 257	Changes required for: General	Originator: S thacker
Date: 2006/05/16	Date sent: 2006/05/16	Organisation: ESA/ESTEC
Status: IMPLEMENTED		

Title:	Diodes Voltage Regulators, based on series BZX85C		
Number:	5102/002	Issue:	1

Other documents affected:

Page:

Page 18 Table 6 (plus minor editorial amendments throughout)

Paragraph:

Page 18 Table 6 (plus minor editorial amendments throughout)

Original wording:

Proposed wording:

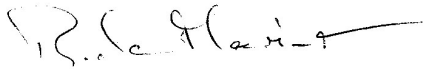
See attached mark-up for details.

Table 6 amend limits as follows:
VZ min = (2)
VZ max = (3)
IR min = -
IR max = (5)

plus editorial amendments:
"ESA/SCC" & "SCC" changed to "ESCC" throughout spec
ESCC logo used (was ESA/SCC)

Justification:

correction of error.

Attachments:
DCR_attachment_5102002.pdf, null
Modifications:
N/A
Approval signature:

Date signed:
2006-05-16

MARK-up FOR DCR
S. Thacker.
2/MAY/2006.



DIODES, VOLTAGE REGULATORS,

BASED ON SERIES BZX85C

ESCC Detail Specification No. 5102/002

ISSUE ~~1~~ 2

~~October 2002~~
MAY 2006



Document Custodian: European Space Agency - see https://escies.org

LEGAL DISCLAIMER AND COPYRIGHT

European Space Agency, Copyright © 2006. All rights reserved.

The European Space Agency disclaims any liability or responsibility, to any person or entity, with respect to any loss or damage caused, or alleged to be caused, directly or indirectly by the use and application of this ESCC publication.

This publication, without the prior permission of the European Space Ageny and provided that it is not used for a commercial purpose, may be:

- copied in whole in any medium without alteration or modification.
- copied in part, in any medium, provided that the ESCC document identification, comprising the ESCC symbol, document number and document issue, is removed.

european space agency
agence spatiale européenne

Pages 1 to 18

DIODES, VOLTAGE REGULATORS,

BASED ON SERIES BZX85C

ESA/SCC Detail Specification No. 5102/002

delete page.

space components
coordination group

Issue/Rev.	Date	Approved by	
		SCCG Chairman	ESA Director General or his Deputy
Issue 3	March 1983	-	-
Revision 'A'	August 1989	-	-
Revision 'B'	July 1993	-	-
Revision 'C'	October 1994		
Revision 'D'	July 1996		

DOCUMENTATION CHANGE NOTICE

Rev. Letter	Rev. Date	CHANGE Reference / Item	Approved DCR No.
		This issue supersedes Issue 2 and incorporates all modifications agreed on the basis of DCR 21022, Policy DCR 21019, "Appendices to Detail Specifications" and the following DCR's:-	
		Cover page	None
		DCN	None
		Table 1(a) : For Type Variant 11, High Temperature I_R limit changed to 20µA.	22197
		Table 1(b) : P_D changed to 1.3W;	22172
		T_{stg} changed to -65 to +150°C	22172
		Figure 1 : Figure modified	22172
		Para 2 : MIL-STD-1276 deleted	21025
		Para 4.4.2 : Paragraph rewritten	21025
		Table 3 : Note 3 added to Table and Notes	22172
		Appendix 'A' : Added	24020
'A'	August'89	P1. Cover page	None
		P2. DCN	None
		P10. Figure 2 : Min G dimension changed to 3.60 mm	22729
'B'	July '93	P1. Cover page	None
		P2. DCN	None
		P4. ToC : Appendix for T.E.G. deleted	23493
		P6. Table 1(a) : Lead Material and/or Finish added	21025
		P7. Table 1(a) : Lead Material and/or Finish added	21025
		P11. Para. 4.2.2 : PIND deviation amended	21043
		Para. 4.2.3 : Radiographic Inspection deviation amended	21049
		P16. Table 3 : Note 3 deleted	21047
		P19/20. Appendix 'A' : Pages deleted (Appendix for T.E.G.)	23493

DOCUMENTATION CHANGE NOTICE

Rev. Letter	Rev. Date	CHANGE Reference Item	Approved DCR No.
'C'	Oct. '94	P1. Cover page P2A. DCN : Page added P16. Table 3 : No. 1, reference to Note 3 deleted This document has been transferred from hardcopy to electronic format. The content is unchanged but minor differences in presentation exist.	None None 23638
'D'	July '96	P1. Cover page P2A. DCN P3. T of C : Para. 1.7 entry added P5. Para. 1.7 : Paragraph added	None None 21083 21083
	DCR No.		
	TBA	Specification up issued to incorporate editorial and technical changes per DCR.	

logo changed on all pages to ESCC logo.

TABLE OF CONTENTS

		Page
1.	**GENERAL**	**5**
1.1	Scope	5
1.2	Component Type Variants	5
1.3	Maximum Ratings	5
1.4	Parameter Derating Information	5
1.5	Physical Dimensions	5
1.6	Functional Diagram	5
1.7	High Temperature Test Precautions	5
2.	**APPLICABLE DOCUMENTS**	**5**
3.	**TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS**	**11**
4.	**REQUIREMENTS**	**11**
4.1	General	11
4.2	Deviations from Generic Specification	11
4.2.1	Deviations from Special In-process Controls	11
4.2.2	Deviations from Final Production Tests (Chart II)	11
4.2.3	Deviations from Burn-in and Electrical Measurements (Chart III)	11
4.2.4	Deviations from Qualification Tests (Chart IV)	12
4.2.5	Deviations from Lot Acceptance Tests (Chart V)	12
4.3	Mechanical Requirements	12
4.3.1	Dimension Check	12
4.3.2	Weight	12
4.3.3	Terminal Strength	12
4.4	Materials and Finishes	12
4.4.1	Case	13
4.4.2	Lead Material and Finish	13
4.5	Marking	13
4.5.1	General	13
4.5.2	Lead Identification	13
4.5.3	The ESCC Component Number	13
4.5.4	Traceability Information	13
4.5.5	Marking of Small Components	13
4.6	Electrical Measurements	14
4.6.1	Electrical Measurements at Room Temperature	14
4.6.2	Electrical Measurements at High and Low Temperatures	14
4.6.3	Circuits for Electrical Measurements	14

		Page
4.7	Burn-in Tests	14
4.7.1	Parameter Drift Values	14
4.7.2	Conditions for Burn-in	14
4.7.3	Electrical Circuits for Burn-in	14
4.8	Environmental and Endurance Tests (Charts IV and V of ESA/SCC Generic Specification No. 5000)	17
4.8.1	Electrical Measurements on Completion of Environmental Tests	17
4.8.2	Electrical Measurements at Intermediate Points and on Completion of Endurance Tests	17
4.8.3	Conditions for Operating Life Tests (Part of Endurance Testing)	17
4.8.4	Electrical Circuits for Operating Life Tests	17
4.8.5	Conditions for High Temperature Storage Test (Part of Endurance Testing)	17

TABLES

1(a)	Type Variants	6
1(b)	Maximum Ratings	8
2	Electrical Measurements at Room Temperature (d.c. and a.c. Parameters)	15
3	Electrical Measurements at High and Low Temperatures	16
4	Parameter Drift Values	16
5	Conditions for Burn-in	16
6	Electrical Measurements at Intermediate Points and on Completion of Endurance Testing	18

FIGURES

1	Parameter Derating Information	9
2	Physical Dimensions	10
3	Functional Diagram	10
4	Test Circuits	15
5	Electrical Circuit for Burn-in	16

APPENDICES (Applicable to specific Manufacturers only)
None.

1. GENERAL

1.1 SCOPE

This specification details the ratings, physical and electrical characteristics, test and inspection data for Diodes, Voltage Regulator, based on Series BZX 85.

It shall be read in conjunction with ESA/SCC Generic Specification No. 5000, the requirements of which are supplemented herein.

ESCC

1.2 COMPONENT TYPE VARIANTS

Variants of the basic diodes specified herein, which are also covered by this specification, are given in Table 1(a).

1.3 MAXIMUM RATINGS

The maximum ratings, which shall not be exceeded at any time during use or storage, applicable to the diodes specified herein, are scheduled in Table 1(b).

1.4 PARAMETER DERATING INFORMATION

The derating information applicable to the diodes specified herein is shown in Figure 1.

1.5 PHYSICAL DIMENSIONS

The physical dimensions of the diodes specified herein are shown in Figure 2.

1.6 FUNCTIONAL DIAGRAM

The functional diagram, showing lead identification, of the diodes specified herein, is shown in Figure 3.

1.7 HIGH TEMPERATURE TEST PRECAUTIONS

For tin-lead plated or solder-dipped lead finish, all tests to be performed at a temperature that exceeds +125°C shall be carried out in a 100% inert atmosphere.

2. APPLICABLE DOCUMENTS

The following documents form part of this specification and shall be read in conjunction with it:

(a) ESA/SCC Generic Specification No. 5000 for Discrete Semiconductors.

(b) MIL-STD-750, Test Methods and Procedures for Semiconductor Devices.

ESCC

ESA/SCC ⇒ ESCC throughout spec.

3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS

For the purpose of this specification, the terms, definitions, abbreviations, symbols and units specified in ESA/SCC Basic Specification No. 21300 shall apply.

4. REQUIREMENTS

4.1 GENERAL

The complete requirements for procurement of the diodes specified herein are stated in this specification and ESA/SCC Generic Specification No. 5000 for Discrete Semiconductors. Deviations from the Generic Specification applicable to this specification only, are listed in Para. 4.2.

Deviations from the applicable Generic Specification and this Detail Specification, formally agreed with specific Manufacturers on the basis that the alternative requirements are equivalent to the ESA/SCC requirements and do not affect the components' reliability, are listed in the appendices attached to this specification.

4.2 DEVIATIONS FROM GENERIC SPECIFICATION

4.2.1 Deviations from Special In-process Controls

Not applicable.

4.2.2 Deviations from Final Production Tests (Chart II)

(a) Bond Strength Test: Shall not be performed.

(b) Die Shear Test: Shall not be performed.

(c) Particle Impact Noise Detection (PIND) Test: Not applicable.

4.2.3 Deviations from Burn-in and Electrical Measurements (Chart III)

(a) H.T.R.B. Test: Shall not be performed.

(b) Radiographic Inspection: Not applicable.

4.2.4 Deviations from Qualification Tests (Chart IV)

(a) Bond Strength Test: Shall not be performed.

(b) Die Shear Test: Shall not be performed.

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

None.

4.3 MECHANICAL REQUIREMENTS

4.3.1 Dimension Check

The dimensions of the diodes specified herein shall be checked. They shall conform to those shown in Figure 2.

4.3.2 Weight

The maximum weight of the diodes specified herein shall be 0.5 grammes.

4.3.4 Terminal Strength

The requirements for terminal strength testing are specified in Section 9 of ESA/SCC Generic Specification No. 5000. The test conditions shall be as follows:-

Test Condition : 'A'.
Applied Force : 5.0 Newtons.
Duration : 10 seconds

4.4 MATERIALS AND FINISHES

The materials and finishes shall be as specified herein. Where a definite material is not specified, a material which will enable the diodes specified herein to meet the performance requirements of this specification shall be used. Acceptance or approval of any constituent material does not guarantee acceptance of the finished product.

4.4.1 Case

Glass, hermetically sealed.

4.4.2 Lead Material and Finish

The lead material shall be Type 'C' with Type '3 or 4' finish in accordance with the requirements of ESA/SCC Basic Specification No. 23500.

4.5 MARKING

4.5.1 General

The marking of all components delivered to this specification shall be in accordance with the requirements of ESA/SCC Basic Specification No. 21700. Each component shall be marked in respect of:-

(a) Lead Identification. ESCC

(b) The SCC Component Number.

(c) Traceability Information.

4.5.2 Lead Identification

Lead identification shall be as shown in Figures 2 and 3 of this specification.

4.5.3 The SCC Component Number ESCC

Each component shall bear the SCC Component Number which shall be constituted and marked as follows:

510200202B

Detail Specification Number

Type Variant (see Table 1(a))

Testing Level (B or C, as applicable)

4.5.4 Traceability Information

Each component shall be marked in respect of traceability information in accordance with the requirements of ESA/SCC Basic Specification No. 21700.

4.5.5 Marking of Small Components

When it is considered that the component is too small to accommodate the marking as specified above, as much as space permits shall be marked. The order of precedence shall be as follows:-

(a) Lead Identification - ESCC

(b) The SCC Component Number.

(c) Traceability Information.

The marking information in full shall accompany each component in its primary package.

4.6 ELECTRICAL MEASUREMENTS

4.6.1 Electrical Measurements at Room Temperature

The parameters to be measured at room temperature are scheduled in Table 2. The measurements shall be performed at $T_{amb} = +22 \pm 3$ °C.

4.6.2 Electrical Measurements at High and Low Temperatures

The parameters to be measured at high and low temperatures are scheduled in Table 3.

4.6.3 Circuits for Electrical Measurements

Circuits for use in performing the electrical measurements listed in Tables 2 and 3 of this specification are shown in Figure 4.

4.7 BURN-IN TESTS

4.7.1 Parameter Drift Values

The parameter drift values applicable to burn-in are specified in Table 4 of this specification. Unless otherwise stated, the measurements shall be performed at $T_{amb} = +22 \pm 3$ °C. The parameter drift value (Δ) applicable to the parameters scheduled, shall not be exceeded. In addition to these drift value requirements, the appropriate limit value specified for a given parameter in Table 2 shall not be exceeded.

4.7.2 Conditions for Burn-in

The requirements for burn-in are specified in Section 7 of ESA/SCC Generic Specification No. 5000. The conditions for burn-in shall be as specified in Table 5 of this specification.

4.7.3 Electrical Circuits for Burn-in

Circuits for use in performing the burn-in tests are shown in Figure 5 of this specification.

4.8 ENVIRONMENTAL AND ENDURANCE TESTS (CHARTS IV AND V OF ESA/SCC GENERIC SPECIFICATION NO. 5000)

4.8.1 Electrical Measurements on Completion of Environmental Tests

The parameters to be measured on completion of environmental tests are scheduled in Table 2. The measurements shall be performed at $T_{amb} = +22 \pm 3$ °C.

4.8.2 Electrical Measurements at Intermediate Points and on Completion of Endurance Tests

The parameters to be measured at intermediate points and on completion of endurance testing are scheduled in Table 6.

4.8.3 Conditions for Operating Life Tests (Part of Endurance Testing)

The requirements for operating life testing are specified in Section 9 of ESA/SCC Generic Specification No. 5000. The conditions for operating life testing shall be the same as specified in Table 5 for the burn-in test.

4.8.4 Electrical Circuits for Operating Life Tests

The circuit to be used for performance of the operating life test shall be the same as shown in Figure 5 for burn-in.

4.8.5 Conditions for High Temperature Storage Test (Part of Endurance Testing)

The requirements for the high temperature storage test are specified in ESA/SCC Generic Specification No. 5000. The temperature to be applied shall be the maximum storage temperature specified in Table 1(b) of this specification.

TABLE 6 - ELECTRICAL MEASUREMENTS AT INTERMEDIATE POINTS AND ON COMPLETION OF ENDURANCE TESTING

No.	CHARACTERISTICS	SYMBOL	SPEC. AND TEST METHOD	TEST CONDITIONS	LIMITS		UNIT
					MIN.	MAX.	
1	Zener Voltage	V_Z	MIL-STD-750 Method 4022	I_Z = (1)	~~(2)~~ (2)	~~(2)~~ (3)	V
2	Reverse Current	I_R	MIL-STD-750 Method 4016	V_R = (4)	~~(5)~~ –	(5)	µA

NOTES

1. See Column 6 of Table 1(a).
2. See Column 4 of Table 1(a).
3. See Column 5 of Table 1(a).
4. See Column 9 of Table 1(a).
5. See Column 10 of Table 1(a).