

Pages 1 to 22

RELAYS, ELECTROMAGNETIC, LATCHING, 28Vdc, 15A, 2PDT, ESCC Detail Specification No. 3602/009

ISSUE 2 September 2004



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



PAGE

ISSUE 2

LEGAL DISCLAIMER AND COPYRIGHT

European Space Agency, Copyright © 2004. 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 allleged 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 Agency 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.



PAGE

ISSUE 2

2

DOCUMENTATION CHANGE NOTICE

(Refer to https://escies.org for ESCC DCR content)

DCR No.	CHANGE DESCRIPTION
129	Specification upissued to incorporate technical and editorial changes per DCR.
	·



PAGE 3

ISSUE 2

TABLE OF CONTENTS

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 Circuit Schematic 5 2. APPLICABLE DOCUMENTS 5 3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS 5 4. REQUIREMENTS 14 4.1 General 14 4.2 Deviations from Generic Specification 14 4.2.1 Deviations from Generic Specification 14 4.2.2 Deviations from Special in-Process Controls 14 4.2.1 Deviations from Special in-Process Controls 14 4.2.2 Deviations from Special in-Process Controls 14 4.2.1 Deviations from Special in-Process Controls 14 4.2.2 Deviations from Qualification Tests (Chart II) 14 4.2.3 Deviations from Special in-Process Controls 14 4.2.5 Deviations from Qualification Tests (Chart IV)	1.	GENERAL	Page 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 Circuit Schematic 5 2. APPLICABLE DOCUMENTS 5 3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS 5 4. REQUIREMENTS 14 4.1 General 14 4.2 Deviations from Generic Specification 14 4.2.1 Deviations from Generic Specification 14 4.2.2 Deviations from Generic Specification 14 4.2.1 Deviations from Generic Specification 14 4.2.2 Deviations from Generic Specification 14 4.2.1 Deviations from Final Production Tests (Chart II) 14 4.2.2 Deviations from Screening Tests (Chart III) 14 4.2.3 Deviations from Lot Acceptance Tests (Chart IV) 14 4.2.5 Deviations from Lot Acceptance Tests (Chart IV) 14 4.3.1 Dimension Check	1.1	Scope	5
1.3 Maximum Ratings 5 1.4 Parameter Derating Information 5 1.5 Physical Dimensions 5 1.6 Circuit Schematic 5 2. APPLICABLE DOCUMENTS 5 3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS 5 4. REQUIREMENTS 14 4.1 General 14 4.2 Deviations from Generic Specification 14 4.2.1 Deviations from Special In-Process Controls 14 4.2.2 Deviations from Special In-Process Controls 14 4.2.1 Deviations from Screening Tests (Chart II) 14 4.2.2 Deviations from Screening Tests (Chart III) 14 4.2.3 Deviations from Cut Acceptance Tests (Chart IV) 14 4.2.5 Deviations from Lot Acceptance Tests (Chart V) 14 4.3.1 Dimension Check 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4.1 Case 15 4.4.2		•	
1.4 Parameter Derating Information 5 1.5 Physical Dimensions 5 1.6 Circuit Schematic 5 2. APPLICABLE DOCUMENTS 5 3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS 5 4. REQUIREMENTS 14 4.1 General 14 4.2.1 Deviations from Generic Specification 14 4.2.2 Deviations from Special In-Process Controls 14 4.2.1 Deviations from Final Production Tests (Chart II) 14 4.2.2 Deviations from Qualification Tests (Chart IV) 14 4.2.3 Deviations from Qualification Tests (Chart IV) 14 4.2.5 Deviations from Lot Acceptance Tests (Chart V) 14 4.3.1 Dimension Check 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4.1 Case 15 4.4.2 Terminal Material and Finish 15 4.5.1 General 15 4.5.2 T		•	
1.5 Physical Dimensions 5 1.6 Circuit Schematic 5 2. APPLICABLE DOCUMENTS 5 3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS 5 4. REQUIREMENTS 14 4.1 General 14 4.2 Deviations from Generic Specification 14 4.2.1 Deviations from Special In-Process Controls 14 4.2.2 Deviations from Special In-Process Controls 14 4.2.3 Deviations from Screening Tests (Chart II) 14 4.2.4 Deviations from Screening Tests (Chart III) 14 4.2.5 Deviations from Coulification Tests (Chart IV) 14 4.2.5 Deviations from Dualification Tests (Chart V) 14 4.3.1 Dimension Check 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4 Materials and Finishes 15 4.4.1 Case 15 4.5.2 Terminal Identification 15 4.5.3		<u> </u>	
1.6 Circuit Schematic 5 2. APPLICABLE DOCUMENTS 5 3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS 5 4. REQUIREMENTS 14 4.1 General 14 4.2.1 Deviations from Generic Specification 14 4.2.1 Deviations from Special In-Process Controls 14 4.2.2 Deviations from Final Production Tests (Chart II) 14 4.2.3 Deviations from Screening Tests (Chart III) 14 4.2.4 Deviations from Qualification Tests (Chart IV) 14 4.2.5 Deviations from Lot Acceptance Tests (Chart V) 14 4.3.1 Dimension Check 15 4.3.1 Dimension Check 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4.1 Case 15 4.4.2 Terminal Material and Finish 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC			
3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS 5 4. REQUIREMENTS 14 4.1 General 14 4.2 Deviations from Generic Specification 14 4.2.1 Deviations from Special In-Process Controls 14 4.2.2 Deviations from Special In-Process Controls 14 4.2.3 Deviations from Final Production Tests (Chart II) 14 4.2.4 Deviations from Oualification Tests (Chart IV) 14 4.2.5 Deviations from Lot Acceptance Tests (Chart IV) 14 4.2.5 Deviations from Lot Acceptance Tests (Chart IV) 14 4.3.1 Mechanical Requirements 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4.2 Terminal Strength 15 4.4.1 Case 15 4.4.2 Terminal Material and Finish 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC Component Number 16			
4. REQUIREMENTS 14 4.1 General 14 4.2 Deviations from Generic Specification 14 4.2.1 Deviations from Special In-Process Controls 14 4.2.2 Deviations from Final Production Tests (Chart II) 14 4.2.3 Deviations from Screening Tests (Chart IV) 14 4.2.4 Deviations from Lot Acceptance Tests (Chart V) 14 4.3.1 Dimension Check 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.3.3 Terminal Strength 15 4.4.1 Case 15 4.4.2 Terminal Material and Finishes 15 4.4.2 Terminal Material and Finish 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC Component Number 16 4.5.4 Electrical Characteristics 16 4.5.5 Traceability Information 16 4.6.1 Electrical Measurements at Ro	2.	APPLICABLE DOCUMENTS	5
4.1 General 4.2 Deviations from Generic Specification 4.2.1 Deviations from Special In-Process Controls 4.2.2 Deviations from Final Production Tests (Chart II) 4.2.3 Deviations from Screening Tests (Chart III) 4.2.4 Deviations from Coulification Tests (Chart IV) 4.2.5 Deviations from Lot Acceptance Tests (Chart IV) 4.3 Mechanical Requirements 4.3.1 Dimension Check 4.3.2 Weight 4.3.3 Terminal Strength 4.4 Materials and Finishes 4.4.1 Case 4.4.2 Terminal Material and Finish 4.5 Marking 4.5 Marking 4.5.1 General 4.5.2 Terminal Identification 4.5.2 Terminal Identification 4.5.3 The ESCC Component Number 4.5.4 Electrical Characteristics 4.5.5 Traceability Information 4.6 Electrical Measurements at Room Temperature 4.6.1 Electrical Measurements at High and Low Temperatures 4.6.3 Circuits for Electrical Measurements 4.7 Screening 4.7.1 Miss Test 4.8.2 Measurements and Inspections on Completion of Environmental Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.4 Conditions for Operating Life Test	3.	TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS	5
4.2.1 Deviations from Generic Specification 14 4.2.1 Deviations from Special In-Process Controls 14 4.2.2 Deviations from Final Production Tests (Chart II) 14 4.2.3 Deviations from Screening Tests (Chart IV) 14 4.2.4 Deviations from Qualification Tests (Chart IV) 14 4.2.5 Deviations from Lot Acceptance Tests (Chart V) 14 4.3 Mechanical Requirements 15 4.3.1 Dimension Check 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4.4 Materials and Finishes 15 4.4.1 Case 15 4.4.2 Terminal Material and Finish 15 4.5 Marking 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC Component Number 16 4.5.5 Traceability Information 16 4.5.5 Traceability Information 16 4.6.1	4.	REQUIREMENTS	14
4.2.1 Deviations from Special In-Process Controls 14 4.2.2 Deviations from Final Production Tests (Chart II) 14 4.2.3 Deviations from Screening Tests (Chart IV) 14 4.2.4 Deviations from Qualification Tests (Chart IV) 14 4.2.5 Deviations from Lot Acceptance Tests (Chart V) 14 4.3 Mechanical Requirements 15 4.3.1 Dimension Check 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4.1 Case 15 4.4.2 Terminal Material and Finishes 15 4.4.1 Case 15 4.4.2 Terminal Identification 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC Component Number 16 4.5.4 Electrical Characteristics 16 4.5.5 Traceability Information 16 4.6.1 Electrical Measurements 16 4.6.2 Electrical Measurements at Room Temperature 16 4.6.3 <	4.1	General	14
4.2.2 Deviations from Final Production Tests (Chart III) 14 4.2.3 Deviations from Screening Tests (Chart III) 14 4.2.4 Deviations from Qualification Tests (Chart IV) 14 4.2.5 Deviations from Lot Acceptance Tests (Chart V) 14 4.3 Mechanical Requirements 15 4.3.1 Dimension Check 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4 Materials and Finishes 15 4.4.1 Case 15 4.4.2 Terminal Material and Finish 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC Component Number 16 4.5.4 Electrical Characteristics 16 4.5.5 Traceability Information 16 4.6 Electrical Measurements at Room Temperature 16 4.6.1 Electrical Measurements at High and Low Temperatures 16 4.6.2 Electrical Measurements at High and Low Temperatures 16 4.7.1 Miss Test 16	4.2	Deviations from Generic Specification	14
4.2.3 Deviations from Screening Tests (Chart III) 14 4.2.4 Deviations from Qualification Tests (Chart IV) 14 4.2.5 Deviations from Lot Acceptance Tests (Chart V) 14 4.3 Mechanical Requirements 15 4.3.1 Dimension Check 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4 Materials and Finishes 15 4.4.1 Case 15 4.4.2 Terminal Material and Finish 15 4.5 Marking 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC Component Number 16 4.5.4 Electrical Characteristics 16 4.5.5 Traceability Information 16 4.6 Electrical Measurements 16 4.6.1 Electrical Measurements at High and Low Temperatures 16 4.6.2 Electrical Measurements at High and Low Temperatures 16 4.7.1 Miss Test 16 4.7.2 Conditions for Screening	4.2.1	Deviations from Special In-Process Controls	14
4.2.4 Deviations from Qualification Tests (Chart IV) 14 4.2.5 Deviations from Lot Acceptance Tests (Chart V) 14 4.3 Mechanical Requirements 15 4.3.1 Dimension Check 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4 Materials and Finishes 15 4.4.1 Case 15 4.4.2 Terminal Material and Finish 15 4.5 Marking 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC Component Number 16 4.5.4 Electrical Characteristics 16 4.5.5 Traceability Information 16 4.6 Electrical Measurements 16 4.6.1 Electrical Measurements at Room Temperature 16 4.6.2 Electrical Measurements at High and Low Temperatures 16 4.6.3 Circuits for Electrical Measurements 16 4.7.2 Conditions for Screening 16 4.7.1 Miss Test		·	
4.2.5 Deviations from Lot Acceptance Tests (Chart V) 4.3 Mechanical Requirements 4.3.1 Dimension Check 4.3.2 Weight 4.3.3 Terminal Strength 4.4 Materials and Finishes 4.4.1 Case 4.4.1 Case 4.4.2 Terminal Material and Finish 4.5 Marking 4.5.1 General 4.5.2 Terminal Identification 4.5.3 The ESCC Component Number 4.5.4 Electrical Characteristics 4.5.5 Traceability Information 4.6 Electrical Measurements 4.6.1 Electrical Measurements 4.6.2 Electrical Measurements at Room Temperature 4.6.3 Circuits for Electrical Measurements 4.7 Screening 4.7.1 Miss Test 4.7.2 Conditions for Screening 4.8 Environmental and Endurance Tests 4.8.1 Measurements and Inspections on Completion of Environmental Tests 4.8.2 Measurements and Inspections on Completion of Environmental Tests 4.8.3 Measurements and Inspections on Completion of Environmental Tests 4.8.4 Conditions for Operating Life Test 4.8.5 Measurements and Inspections on Completion of Endurance Tests 4.8.4 Conditions for Operating Life Test 4.8.5 Conditions for Operating Life Test	4.2.3		
4.3.1 Mechanical Requirements 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4.4 Case 15 4.4.1 Case 15 4.4.2 Terminal Material and Finish 15 4.5.5 Marking 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC Component Number 16 4.5.4 Electrical Characteristics 16 4.5.5 Traceability Information 16 4.6 Electrical Measurements 16 4.6.1 Electrical Measurements at Room Temperature 16 4.6.2 Electrical Measurements at High and Low Temperatures 16 4.6.3 Circuits for Electrical Measurements 16 4.7 Screening 16 4.7.1 Miss Test 16 4.7.2 Conditions for Screening 16 4.7.3 Electrical Circuit for Screening 16 4.8.1 Measurements and Inspections on Completion of Environmental Tests 20 <td></td> <td>, ,</td> <td></td>		, ,	
4.3.1 Dimension Check 15 4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4 Materials and Finishes 15 4.4.1 Case 15 4.4.2 Terminal Material and Finish 15 4.5 Marking 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC Component Number 16 4.5.4 Electrical Characteristics 16 4.5.5 Traceability Information 16 4.6 Electrical Measurements 16 4.6.1 Electrical Measurements at Room Temperature 16 4.6.2 Electrical Measurements at High and Low Temperatures 16 4.6.3 Circuits for Electrical Measurements 16 4.7 Screening 16 4.7.1 Miss Test 16 4.7.2 Conditions for Screening 16 4.7.3 Electrical Circuit for Screening 16 4.8 Environmental and Endurance Tests 20 4.8.1<			
4.3.2 Weight 15 4.3.3 Terminal Strength 15 4.4 Materials and Finishes 15 4.4.1 Case 15 4.4.2 Terminal Material and Finish 15 4.5 Marking 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC Component Number 16 4.5.4 Electrical Characteristics 16 4.5.5 Traceability Information 16 4.6 Electrical Measurements 16 4.6.1 Electrical Measurements at Room Temperature 16 4.6.2 Electrical Measurements at High and Low Temperatures 16 4.6.2 Electrical Measurements 16 4.7 Screening 16 4.7.1 Miss Test 16 4.7.2 Conditions for Screening 16 4.7.3 Electrical Circuit for Screening 16 4.8.1 Measurements and Inspections on Completion of Environmental Tests 20 4.8.2 Measurements and Inspections on Completion of Environ		·	
4.3.3 Terminal Strength 4.4 Materials and Finishes 4.4.1 Case 15 4.4.2 Terminal Material and Finish 4.5 Marking 15 4.5.1 General 15 4.5.2 Terminal Identification 15 4.5.3 The ESCC Component Number 16 4.5.4 Electrical Characteristics 16 4.5.5 Traceability Information 16 4.6 Electrical Measurements 16 4.6.1 Electrical Measurements at Room Temperature 16 4.6.2 Electrical Measurements at High and Low Temperatures 16 4.6.3 Circuits for Electrical Measurements 16 4.7 Screening 16 4.7.1 Miss Test 17 4.7.2 Conditions for Screening 18 4.7.3 Electrical Circuit for Screening 19 4.7.4 Measurements and Inspections on Completion of Environmental Tests 19 4.8.2 Measurements and Inspections on Completion of Endurance Tests 19 4.8.3 Measurements and Inspections on Completion of Endurance Tests 19 4.8.4 Conditions for Operating Life Test 20 4.8.5 Measurements and Inspections on Completion of Endurance Tests 20 4.8.6 Measurements and Inspections on Completion of Endurance Tests 20 4.8.7 Measurements and Inspections on Completion of Endurance Tests 20 4.8.8 Measurements and Inspections on Completion of Endurance Tests 20 4.8.9 Measurements and Inspections on Completion of Endurance Tests 20 4.8.1 Measurements and Inspections on Completion of Endurance Tests 20 4.8.3 Measurements and Inspections on Completion of Endurance Tests 20 4.8.4 Conditions for Operating Life Test			
4.4 Materials and Finishes 4.4.1 Case 4.4.2 Terminal Material and Finish 4.5 Marking 4.5.1 General 4.5.2 Terminal Identification 4.5.3 The ESCC Component Number 4.5.4 Electrical Characteristics 4.5.5 Traceability Information 4.5.6 Electrical Measurements 4.6.1 Electrical Measurements 4.6.1 Electrical Measurements at Room Temperature 4.6.2 Electrical Measurements at High and Low Temperatures 4.6.3 Circuits for Electrical Measurements 4.7 Screening 4.7.1 Miss Test 4.7.2 Conditions for Screening 4.7.3 Electrical Circuit for Screening 4.8 Environmental and Endurance Tests 4.8.1 Measurements and Inspections on Completion of Environmental Tests 4.8.2 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.4 Conditions for Operating Life Test 4.8.5 Conditions for Operating Life Test 4.8.6 Conditions for Operating Life Test			
4.4.1 Case 4.4.2 Terminal Material and Finish 4.5 Marking 4.5.1 General 4.5.2 Terminal Identification 4.5.3 The ESCC Component Number 4.5.4 Electrical Characteristics 4.5.5 Traceability Information 4.6 Electrical Measurements 4.6.1 Electrical Measurements at Room Temperature 4.6.2 Electrical Measurements at High and Low Temperatures 4.6.3 Circuits for Electrical Measurements 4.7 Screening 4.7.1 Miss Test 4.7.2 Conditions for Screening 4.7.3 Electrical Circuit for Screening 4.8 Environmental and Endurance Tests 4.8.1 Measurements and Inspections on Completion of Environmental Tests 4.8.2 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.4 Conditions for Operating Life Test 4.8.5 Measurements and Inspections on Completion of Endurance Tests 4.8.4 Conditions for Operating Life Test			
4.4.2Terminal Material and Finish154.5Marking154.5.1General154.5.2Terminal Identification154.5.3The ESCC Component Number164.5.4Electrical Characteristics164.5.5Traceability Information164.6Electrical Measurements164.6.1Electrical Measurements at Room Temperature164.6.2Electrical Measurements at High and Low Temperatures164.6.3Circuits for Electrical Measurements164.7Screening164.7.1Miss Test164.7.2Conditions for Screening164.7.3Electrical Circuit for Screening164.8Environmental and Endurance Tests204.8.1Measurements and Inspections on Completion of Environmental Tests204.8.2Measurements and Inspections on Completion of Endurance Tests204.8.3Measurements and Inspections on Completion of Endurance Tests204.8.4Conditions for Operating Life Test20			
4.5 Marking 4.5.1 General 4.5.2 Terminal Identification 4.5.3 The ESCC Component Number 4.5.4 Electrical Characteristics 4.5.5 Traceability Information 4.6 Electrical Measurements 4.6.1 Electrical Measurements at Room Temperature 4.6.2 Electrical Measurements at High and Low Temperatures 4.6.3 Circuits for Electrical Measurements 4.7 Screening 4.7.1 Miss Test 4.7.2 Conditions for Screening 4.7.3 Electrical Circuit for Screening 4.8 Environmental and Endurance Tests 4.8.1 Measurements and Inspections on Completion of Environmental Tests 4.8.2 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.4 Conditions for Operating Life Test 4.8.5 Conditions for Operating Life Test 4.8.6 Conditions for Operating Life Test 4.8.7 Conditions for Operating Life Test 4.8.8 Conditions for Operating Life Test			
4.5.1 General 4.5.2 Terminal Identification 4.5.3 The ESCC Component Number 4.5.4 Electrical Characteristics 4.5.5 Traceability Information 4.6 Electrical Measurements 4.6.1 Electrical Measurements at Room Temperature 4.6.2 Electrical Measurements at High and Low Temperatures 4.6.3 Circuits for Electrical Measurements 4.7 Screening 4.7.1 Miss Test 4.7.2 Conditions for Screening 4.7.3 Electrical Circuit for Screening 4.8 Environmental and Endurance Tests 4.8.1 Measurements and Inspections on Completion of Environmental Tests 4.8.2 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.4 Conditions for Operating Life Test 4.8.5 Terminal Identification 4.5 Electrical Circuit for Screening 4.6 Environmental and Endurance Tests 4.7 Electrical Circuit for Screening 4.8 Environmental and Endurance Tests 4.8 Measurements and Inspections on Completion of Endurance Tests 4.8 Measurements and Inspections on Completion of Endurance Tests 4.8 Conditions for Operating Life Test			
4.5.2Terminal Identification154.5.3The ESCC Component Number164.5.4Electrical Characteristics164.5.5Traceability Information164.6Electrical Measurements164.6.1Electrical Measurements at Room Temperature164.6.2Electrical Measurements at High and Low Temperatures164.6.3Circuits for Electrical Measurements164.7Screening164.7.1Miss Test164.7.2Conditions for Screening164.7.3Electrical Circuit for Screening164.8Environmental and Endurance Tests204.8.1Measurements and Inspections on Completion of Environmental Tests204.8.2Measurements and Inspections on Completion of Endurance Tests204.8.3Measurements and Inspections on Completion of Endurance Tests204.8.4Conditions for Operating Life Test20			
4.5.3The ESCC Component Number164.5.4Electrical Characteristics164.5.5Traceability Information164.6Electrical Measurements164.6.1Electrical Measurements at Room Temperature164.6.2Electrical Measurements at High and Low Temperatures164.6.3Circuits for Electrical Measurements164.7Screening164.7.1Miss Test164.7.2Conditions for Screening164.7.3Electrical Circuit for Screening164.8Environmental and Endurance Tests204.8.1Measurements and Inspections on Completion of Environmental Tests204.8.2Measurements and Inspections during Endurance Tests204.8.3Measurements and Inspections on Completion of Endurance Tests204.8.4Conditions for Operating Life Test20			
4.5.4 Electrical Characteristics 4.5.5 Traceability Information 4.6 Electrical Measurements 4.6.1 Electrical Measurements at Room Temperature 4.6.2 Electrical Measurements at High and Low Temperatures 4.6.3 Circuits for Electrical Measurements 4.7 Screening 4.7.1 Miss Test 4.7.2 Conditions for Screening 4.7.3 Electrical Circuit for Screening 4.8 Environmental and Endurance Tests 4.8.1 Measurements and Inspections on Completion of Environmental Tests 4.8.2 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.4 Conditions for Operating Life Test 4.8.5 Conditions for Operating Life Test 4.8.6 Electrical Circuit for Screening 4.8 Environmental and Endurance Tests 4.8.1 Conditions for Operating Life Test 4.8.2 Conditions for Operating Life Test			
4.5.5 Traceability Information 4.6 Electrical Measurements 4.6.1 Electrical Measurements at Room Temperature 4.6.2 Electrical Measurements at High and Low Temperatures 4.6.3 Circuits for Electrical Measurements 4.7 Screening 4.7.1 Miss Test 4.7.2 Conditions for Screening 4.7.3 Electrical Circuit for Screening 4.8 Environmental and Endurance Tests 4.8.1 Measurements and Inspections on Completion of Environmental Tests 4.8.2 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.4 Conditions for Operating Life Test 4.8.5 Conditions for Operating Life Test 4.8.6 Electrical Circuit for Screening 4.8.7 Electrical Circuit for Screening 4.8.8 Environmental and Endurance Tests 4.8.9 Measurements and Inspections on Completion of Endurance Tests 4.8.9 Conditions for Operating Life Test		•	
4.6 Electrical Measurements at Room Temperature 4.6.1 Electrical Measurements at Room Temperature 4.6.2 Electrical Measurements at High and Low Temperatures 4.6.3 Circuits for Electrical Measurements 4.7 Screening 4.7.1 Miss Test 4.7.2 Conditions for Screening 4.7.3 Electrical Circuit for Screening 4.8 Environmental and Endurance Tests 4.8.1 Measurements and Inspections on Completion of Environmental Tests 4.8.2 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.4 Conditions for Operating Life Test 4.8.5 Conditions for Operating Life Test 4.8.6 Inspections on Completion of Endurance Tests 4.8.7 Conditions for Operating Life Test 4.8.8 Conditions for Operating Life Test			
4.6.1 Electrical Measurements at Room Temperature 4.6.2 Electrical Measurements at High and Low Temperatures 16 4.6.3 Circuits for Electrical Measurements 16 4.7 Screening 16 4.7.1 Miss Test 16 4.7.2 Conditions for Screening 16 4.7.3 Electrical Circuit for Screening 16 4.8 Environmental and Endurance Tests 18 4.8.1 Measurements and Inspections on Completion of Environmental Tests 19 4.8.2 Measurements and Inspections on Completion of Endurance Tests 19 4.8.3 Measurements and Inspections on Completion of Endurance Tests 19 4.8.4 Conditions for Operating Life Test 20 4.8.5 Conditions for Operating Life Test			
4.6.2 Electrical Measurements at High and Low Temperatures 4.6.3 Circuits for Electrical Measurements 4.7 Screening 4.7.1 Miss Test 4.7.2 Conditions for Screening 4.7.3 Electrical Circuit for Screening 4.8 Environmental and Endurance Tests 4.8.1 Measurements and Inspections on Completion of Environmental Tests 4.8.2 Measurements and Inspections on Completion of Endurance Tests 4.8.3 Measurements and Inspections on Completion of Endurance Tests 4.8.4 Conditions for Operating Life Test 4.8.5 Conditions for Operating Life Test 4.8.6 Conditions for Operating Life Test 4.8.7 Conditions for Operating Life Test 4.8.8 Conditions for Operating Life Test 4.8.9 Conditions for Operating Life Test			
4.6.3 Circuits for Electrical Measurements 4.7 Screening 4.7.1 Miss Test 4.7.2 Conditions for Screening 4.7.3 Electrical Circuit for Screening 4.8 Environmental and Endurance Tests 4.8.1 Measurements and Inspections on Completion of Environmental Tests 4.8.2 Measurements and Inspections during Endurance Tests 4.8.3 Measurements and Inspections on Completion of Environmental Tests 4.8.4 Conditions for Operating Life Test 16 17 18 19 19 19 10 10 10 11 10 11 11		•	
4.7Screening164.7.1Miss Test164.7.2Conditions for Screening164.7.3Electrical Circuit for Screening164.8Environmental and Endurance Tests204.8.1Measurements and Inspections on Completion of Environmental Tests204.8.2Measurements and Inspections during Endurance Tests204.8.3Measurements and Inspections on Completion of Endurance Tests204.8.4Conditions for Operating Life Test20		·	
4.7.1Miss Test164.7.2Conditions for Screening164.7.3Electrical Circuit for Screening164.8Environmental and Endurance Tests204.8.1Measurements and Inspections on Completion of Environmental Tests204.8.2Measurements and Inspections during Endurance Tests204.8.3Measurements and Inspections on Completion of Endurance Tests204.8.4Conditions for Operating Life Test20			
4.7.2Conditions for Screening164.7.3Electrical Circuit for Screening164.8Environmental and Endurance Tests204.8.1Measurements and Inspections on Completion of Environmental Tests204.8.2Measurements and Inspections during Endurance Tests204.8.3Measurements and Inspections on Completion of Endurance Tests204.8.4Conditions for Operating Life Test20			
4.7.3Electrical Circuit for Screening164.8Environmental and Endurance Tests204.8.1Measurements and Inspections on Completion of Environmental Tests204.8.2Measurements and Inspections during Endurance Tests204.8.3Measurements and Inspections on Completion of Endurance Tests204.8.4Conditions for Operating Life Test20			
4.8 Environmental and Endurance Tests 20 4.8.1 Measurements and Inspections on Completion of Environmental Tests 20 4.8.2 Measurements and Inspections during Endurance Tests 20 4.8.3 Measurements and Inspections on Completion of Endurance Tests 20 4.8.4 Conditions for Operating Life Test 20			
4.8.1Measurements and Inspections on Completion of Environmental Tests204.8.2Measurements and Inspections during Endurance Tests204.8.3Measurements and Inspections on Completion of Endurance Tests204.8.4Conditions for Operating Life Test20			
4.8.2Measurements and Inspections during Endurance Tests204.8.3Measurements and Inspections on Completion of Endurance Tests204.8.4Conditions for Operating Life Test20			
4.8.3 Measurements and Inspections on Completion of Endurance Tests 20 4.8.4 Conditions for Operating Life Test 20		· · · · · · · · · · · · · · · · · · ·	
4.8.4 Conditions for Operating Life Test 20			
·			



PAGE 4 ISSUE 2

TABLE	<u>s</u>	<u>Page</u>
1(a)	Type Variants	6
1(b)	Maximum Ratings	6
2	Electrical Measurements at Room Temperature	17
3	Electrical Measurements at High and Low Temperatures	18
4	Measurements during Screening	19
5(a)	Conditions for Screening	19
5(b)	Conditions for Operating Life Test	19
6	Measurements and Inspection on Completion of Environmental Tests and at Intermediate Points and on Completion of Endurance Testing	21
FIGUE	RES	
1	Not applicable	
2	Physical Dimensions	7
3	Circuit Schematic	13
4	Circuits for Electrical Measurements	19
5(a)	Electrical Circuits for Screening	19
5(b)	Electrical Circuits for Operating Life Test	19

APPENDICES (Applicable to specific Manufacturers only) None.



PAGE

ISSUE 2

5

1. GENERAL

1.1 SCOPE

This specification details the ratings, physical and electrical characteristics, test and inspection data for a Relay, Electromagnetic, Latching, 28Vdc, 15A, 2PDT. It shall be read in conjunction with ESA/SCC Generic Specification No. 3602, the requirements of which are supplemented herein.

1.2 COMPONENT TYPE VARIANTS

Variants of the basic type relays 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 relays specified herein, are scheduled in Table 1(b).

1.4 PARAMETER DERATING INFORMATION (Figure 1)

Not applicable.

1.5 PHYSICAL DIMENSIONS

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

1.6 <u>CIRCUIT SCHEMATIC</u>

The circuit schematic, showing terminal identification etc. for the relays specified herein, is shown in Figure 3.

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. 3602 for Relays, Electromagnetic, Latching.
- (b) MIL-STD-202, Test Methods for Electronic and Electrical Component Parts.

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.



PAGE 6 ISSUE 2

TABLE 1(a) - TYPE VARIANTS

VARIANT (NOTE 1)	DESCRIPTION	FIGURE
01, 11	Straight terminals and plain case	2(a)
02, 12	Hook terminals and plain case	2(b)
03, 13	Straight terminals and horizontal flange mount	2(c)
04, 14	Hook terminals and horizontal flange mount	2(d)
05, 15	Straight terminals and vertical flange mount	2(e)
06, 16	Hook terminals and vertical flange mount	2(f)
07, 17	As variant 01 + polarising pin	2(a)
08, 18	As variant 03 + polarising pin	2(c)
09, 19	As variant 05 + polarising pin	2(e)

NOTES

1. Variant differences are Coil Resistance (see Table 2, Item 9).

TABLE 1(b) - MAXIMUM RATINGS

No.	CHARACTERISTICS	SYMBOL	MAXIMUM RATING	UNIT	REMARKS
1	Rated Coil Voltage:- 28V 12V 6V	V _{CR}	28 12 6.0	Vdc	Note 3
2	Coil Voltage Range:- 28V 12V 6V	V _{CR}	26.5 to 32 11 to 14.5 5.5 to 7.3	Vdc	
3	Rated Contact Current Resistive Load	I _{CR}	15	Α	28Vdc resistive Note 1
4	Overload Current Resistive	l _{overL}	40	Α	28Vdc resistive See Table 6
5	Rated Contact Current Inductive Load	lcL	8.0	Α	28Vdc inductive Note 1
6	Contact Resistance	R _C	10	mΩ	At rated current
7	High Temperature	T _{amb}	+ 125	°C	
8	Low Temperature	T _{amb}	- 65	°C	
9	Soldering Temperature	T _{sol}	+ 260	°C	Note 2

NOTES

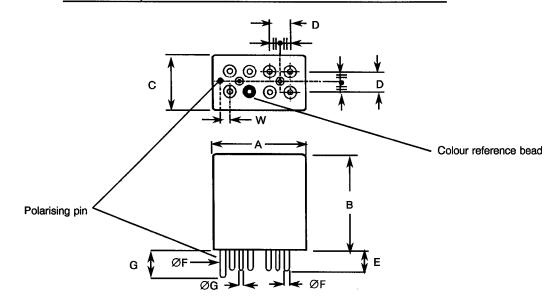
- 1. Relays should not be used in change over-mode where the potential difference between stationary contacts is greater than 10V and the switched current is greater than 0.1A.
- 2. Duration 10 seconds maximum at a distance of not less than 3.0mm from the device body and the same terminal shall not be resoldered until 3 minutes have elapsed.
- 3. The Coil Voltage rise time shall be less than $0.1t_L$ or t_r . The coil voltage shall be applied for a minimum time of $10t_L$ or $10t_r$.



PAGE ISSUE 2

FIGURE 2 - PHYSICAL DIMENSIONS

FIGURE 2(a) - VARIANTS 01 AND 11, RELAY WITH STRAIGHT TERMINALS AND PLAIN CASE VARIANT 07, IDENTICAL TO VARIANT 01 + POLARISING PIN VARIANT 17, IDENTICAL TO VARIANT 11 + POLARISING PIN



SYMBOL	MILLIMETRES		
STIVIBOL	MIN.	MAX.	
Α	-	26.00	
В	-	25.70	
С	-	13.30	
D	4.98	5.18	
E	6.70	7.10	
ØF	1.55	1.62	
G	7.40	8.00	
ØG	0.60	0.80	
W	2.34	2.74	

NOTES

1. Symbols G and W are for Variants 07 & 17 only.



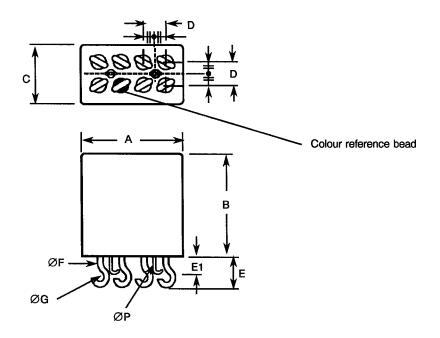
PAGE

ISSUE 2

8

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(b) - VARIANTS 02 AND 12, RELAY WITH HOOK TERMINALS AND PLAIN CASE



SYMBOL	MILLIMETRES		
STIVIBOL	MIN.	MAX.	
Α	-	26.00	
В	-	25.70	
С	-	13.30	
D	4.80	5.20	
E	-	8.00	
E 1	-	4.50	
ØF	1.52	1.63	
ØG	1.75	2.25	
ØP	0.60	0.80	



PAGE

ISSUE 2

9

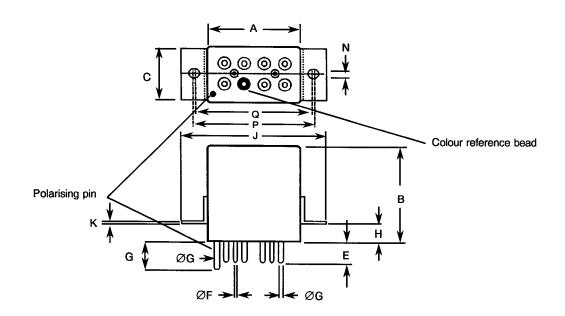
FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) -

VARIANTS 03 AND 13, RELAY WITH STRAIGHT TERMINALS AND HORIZONTAL FLANGE MOUNT

VARIANT 08, IDENTICAL TO VARIANT 03 + POLARISING PIN

VARIANT 18, IDENTICAL TO VARIANT 13 + POLARISING PIN



SYMBOL	MILLIMETRES	
STIVIBOL	MIN.	MAX.
Α	-	26.00
В	-	25.70
С	-	13.34
E	6.70	7.10
ØF	0.60	0.80
G	7.40	8.00
ØG	1.55	1.62
Н	3.80	4.20
J	-	43.60
K	0.90	1.10
N	3.70	3.90
Р	36.45	36.95
Q	35.20	35.70

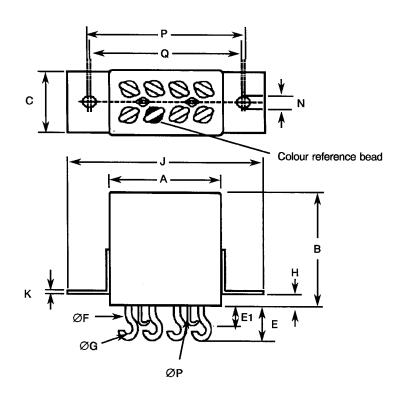


PAGE 10

ISSUE 2

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(d) - VARIANTS 04 AND 14, RELAY WITH HOOK TERMINALS AND HORIZONTAL FLANGE MOUNT



SYMBOL	MILLIMETRES	
STIVIBUL	MIN.	MAX.
Α	-	26.00
В	-	25.70
С	-	13.34
Ε	-	8.00
E1	-	4.50
ØF	1.52	1.63
ØG	1.75	2.25
Н	3.80	4.20
J	-	43.60
K	0.90	1.10
N	3.70	3.90
Р	36.45	36.95
ØP	0.60	0.80
Q	35.20	35.70



PAGE 11

ISSUE 2

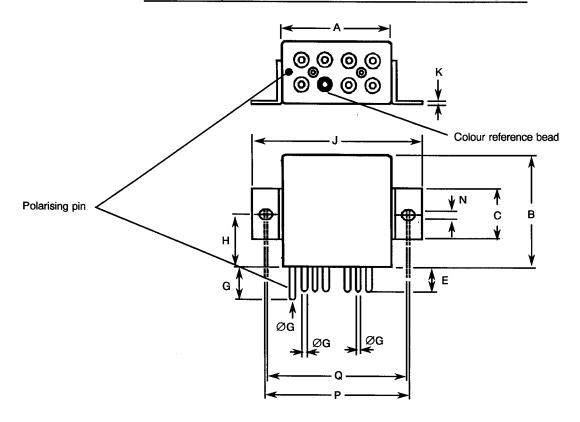
FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(e) -

VARIANTS 05 AND 15, RELAY WITH PLUG-IN TERMINALS AND VERTICAL FLANGE MOUNT

VARIANT 09, IDENTICAL TO VARIANT 05 + POLARISING PIN

VARIANT 19, IDENTICAL TO VARIANT 15 + POLARISING PIN



SYMBOL	MILLIMETRES		
STIVIBOL	MIN.	MAX.	
Α	-	26.00	
В	-	25.70	
С	-	13.34	
E	6.70	7.10	
ØF	0.60	0.80	
G	7.40	8.00	
ØG	1.55	1.62	
Н	12.50	12.90	
J	-	43.60	
K	0.90	1.10	
N	3.70	3.90	
Р	36.45	36.95	
Q	35.20	35.70	

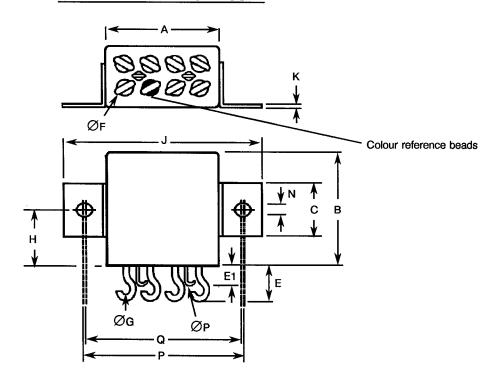


PAGE 12

ISSUE 2

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(f) - VARIANTS 06 AND 16, RELAY WITH HOOK TERMINALS AND VERTICAL FLANGE MOUNT



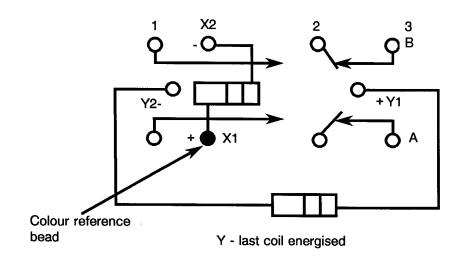
SYMBOL	MILLIMETRES	
STIVIBOL	MIN.	MAX.
Α	-	26.00
В	-	26.00
С	-	13.34
Е	-	8.00
E1	-	4.50
ØF	1.52	1.63
ØG	1.75	2.25
Н	12.50	12.90
J	-	43.60
K	0.90	1.10
N	3.70	3.90
P	36.45	36.95
ØP	0.60	0.80
Q	35.20	35.70



PAGE 13

ISSUE 2

FIGURE 3 - CIRCUIT SCHEMATIC



As viewed from terminal side

NOTESNumbers appear for reference purposes only.



PAGE 14

ISSUE 2

4. REQUIREMENTS

4.1 GENERAL

The complete requirements for procurement of the relays specified herein are stated in this specification and ESA/SCC Generic Specification No. 3602 for Relays, Electromagnetic Latching. 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 <u>DEVIATIONS FROM GENERIC SPECIFICATION</u>

4.2.1 <u>Deviations from Special In-process Controls</u>

None.

4.2.2 Deviations from Final Production Tests (Chart II)

None.

4.2.3 <u>Deviations from Screening Tests (Chart III)</u>

(a) Para 9.6, Vibration Scan: Frequency Range: 10 - 3000Hz.

4.2.4 <u>Deviations from Qualification Tests (Chart IV)</u>

- (a) Para 9.10, Vibration: Frequency Range: 10 3000Hz.
- (b) Para 9.11, Mechanical Shock: Test Condition 'C'.
- (c) Para 9.12, Overload: Separate tests shall be performed for N/O and N/C contacts. Overload current shall be 40A resistive.

4.2.5 <u>Deviations from Lot Acceptance Tests (Chart V)</u>

- (a) Para 9.10, Vibration: Frequency Range: 10 3000Hz.
- (b) Para 9.11, Mechanical Shock: Test Condition 'C'.
- (c) Para 9.12, Overload: Separate tests shall be performed for N/O and N/C contacts. Overload current shall be 40A resistive.
- (d) Para. 9.16, Intermediate Current: The number of operations shall be 5000.



PAGE 15

ISSUE 2

4.3 MECHANICAL REQUIREMENTS

4.3.1 Dimension Check

The dimensions of the relays specified herein shall be verified in accordance with the requirements set out in Para 9.5 of ESA/SCC Generic Specification No. 3602 and shall conform to those shown in Figure 2.

4.3.2 Weight

The maximum weight of the relays specified herein shall be 46 grammes.

4.3.3 Terminal Strength

The requirements for terminal strength testing are specified in Section 9 of ESA/SCC Generic Specification No. 3602. The test conditions shall be as follows:-

Pull Test

Applied Force: 50 Newtons minimum for 1.6mm diameter terminals.

15 Newtons minimum for 0.7mm diameter terminals.

Duration:

5 seconds minimum

Para's 9.17.2 and 9.17.3 are not applicable.

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 relays 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 <u>Case</u>

Copper nickel, welded construction, Sn/Pb plated. Neither electro-deposited tin nor any paint shall be used.

4.4.2 Terminal Material and Finish

The terminal material shall be Type 'H' 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 and the following paragraphs. When the component is too small to accommodate all of the marking specified, as much as space permits shall be marked and the marking information, in full, shall accompany the component in its primary package.

The information to be marked and the order of precedence, shall be as follows:-

- (a) Terminal Identification.
- (b) The ESCC Component Number.
- (c) Electrical Characteristics.
- (d) Traceability Information.

4.5.2 Terminal Identification

Terminal identification shall be marked on the relay can in accordance with Figure 3.



PAGE 16

ISSUE 2

4.5.3 The ESCC Co.	mponent Number
--------------------	----------------

Each component shall bear the ESCC Component Number which shall	oe constituted and marked
	360200902B
Detail Specification Number	
Type Variant (see Table 1(a)) ———————————————————————————————————	
Testing Level ———————————————————————————————————	

4.5.4 Electrical Characteristics

The electrical characteristic to be marked is the rated coil voltage. The information shall be constituted and marked as follows:-

Coil Voltage	Coil Res	Code	
Coll Voltage	Variants 01 to 09	Variants 11 to 19	Code
28Vdc	300Ω	600Ω	28V
12Vdc	60Ω	150Ω	12V
6.0Vdc	15Ω	38Ω	6V

4.5.5 <u>Traceability Information</u>

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

4.6 <u>ELECTRICAL MEASUREMENTS</u>

4.6.1 <u>Electrical Measurements at Room Temperature</u>

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

4.6.2 <u>Electrical Measurements at High and Low Temperatures</u>

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

4.6.3 <u>Circuits for Electrical Measurements</u> (Figure 4)

Not applicable.

4.7 <u>SCREENING</u>

4.7.1 Miss Test

During the miss test, the contact resistance shall be continuously monitored and not exceed the values specified in Table 4 of this specification.

4.7.2 Conditions for Screening

The requirements for screening are specified in Section 7 of ESA/SCC Generic Specification No. 3602. The conditions for screening shall be as specified in Table 5(a) of this specification.

4.7.3 Electrical Circuit for Screening (Figure 5(a))

Not applicable.



PAGE 17

ISSUE 2

TABLE 2 - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE

No.	CHARACTERISTICS	SYMBOL	ESA/SCC 3602	TEST	LIM	ITS	UNIT
INO.	CHARACTERISTICS	SYMBOL	TEST METHOD	CONDITION	MIN.	MAX.	UNIT
1	Latch Voltage:- 28V 12V 6V	UL	Para. 9.3.1	Para. 9.3.1	9.1 3.6 1.8	14 6.6 3.3	V
2	Reset Voltage:- 28V 12V 6V	U _R	Para. 9.3.2	Para. 9.3.2	9.1 3.6 1.8	14 6.6 3.3	V
3	Latch Time	t∟	Para. 9.3.4	Para. 9.3.4	-	15	ms
4	Reset Time	t _r	Para. 9.3.4	Para. 9.3.4	-	15	ms
5	Bounce Time	t _b	Para. 9.3.4	Para. 9.3.4	-	1.0	ms
6	Insulation Resistance	Ri	Para. 9.3.7	Para. 9.3.7 at 500Vdc	100	-	МΩ
7	Voltage Proof	VP	Para. 9.3.6	Para. 9.3.6 Note 1	1250	-	Vrms
8	Contact Voltage Drop	V _d	Para. 9.3.3	Para. 9.3.3 15A - 6.0Vdc	-	150	mV
9	Coil Resistance Latch and Reset Variants 01 to 09: 28V 12V 6V Variants 11 to 19: 28V 12V 6V	R _B	Para. 9.3.5	Para. 9.3.5	270 54 13.5 540 135 34	330 66 16.5 660 165 42	Ω

NOTES1. 1000V between coil and case, between open contacts; 350V between coils.



PAGE 18

ISSUE 2

TABLE 3 - ELECTRICAL MEASUREMENTS AT HIGH AND LOW TEMPERATURES

No.	CHARACTERISTICS	SYMBOL	ESA/SCC 3602	TEST	LIM	ITS	UNIT
INO.	OF IANACTERIS (103	STIVIBOL	TEST METHOD	CONDITION	MIN.	. MAX.	UNIT
1	Latch Voltage:- 28V 12V 6V	UL	Para. 9.3.1	Para. 9.3.1	6.3 2.5 1.3	19.8 9.0 4.5	V
2	Reset Voltage:- 28V 12V 6V	U _R	Para. 9.3.2	Para. 9.3.2	6.3 2.5 1.3	19.8 9.0 4.5	V
3	Latch Time	t∟	Para. 9.3.4	Para. 9.3.4	-	15	ms
4	Reset Time	t _r	Para. 9.3.4	Para. 9.3.4	-	15	ms
5	Bounce Time	t _b	Para. 9.3.4	Para. 9.3.4	-	1.0	ms
6	Insulation Resistance	Ri	Para. 9.3.7	Para. 9.3.7 at 500Vdc Note 1	50	-	МΩ

NOTES

- 1. This measurement shall be made only at the high temperature condition.
- 2. Limits Min. apply to measurements at -55°C and Limits Max. to +125°C.



PAGE 19

ISSUE 2

FIGURE 4 - CIRCUITS FOR ELECTRICAL MEASUREMENTS

Not applicable.

TABLE 4 - MEASUREMENTS DURING SCREENING

No.	CHARACTERISTICS	SYMBOL	ESA/SCC 3602 TEST METHOD	TEST CONDITIONS	MAXIMUM LIMIT	UNIT
10	Miss Test, Contact Resistance	R _C	Para. 9.8	Para. 9.8	100	Ω

TABLE 5(a) - CONDITIONS FOR SCREENING

No.	CHARACTERISTICS	SYMBOL	CONDITION	UNIT
1	Ambient High Temperature	T _{amb}	+ 125(+ 0 - 3)	°C
2	Ambient Low Temperature	T _{amb}	-65(+3-0)	°C
3	Ambient Room Temperature	T _{amb}	+22±3	°C

TABLE 5(b) - CONDITIONS FOR OPERATING LIFE TEST

No.	CHARACTERISTICS	SYMBOL	CONDITION	UNIT
1	Ambient Temperature	T _{amb}	+ 125(+ 0 - 3)	°C
2	Contact Load Resistive	V	28 15	Vdc Adc

FIGURE 5(a) - ELECTRICAL CIRCUITS FOR SCREENING

Not applicable.

FIGURE 5(b) - ELECTRICAL CIRCUITS FOR OPERATING LIFE TEST

Not applicable.



PAGE 20

ISSUE 2

4.8 <u>ENVIRONMENTAL AND ENDURANCE TESTS (CHARTS IV AND V OF ESA/SCC GENERIC SPECIFICATION No. 3602)</u>

4.8.1 Measurements and Inspections on Completion of Environmental Tests

The parameters to be measured and inspections to be performed on completion of environmental tests are scheduled in Table 6. Unless otherwise stated, the measurements shall be performed at T_{amb} = +22 ±3 °C.

4.8.2 Measurements and Inspections during Endurance Tests

The parameters to be measured and inspections to be performed during endurance tests are scheduled in Table 6. Unless otherwise stated, the measurements shall be performed at T_{amb} = +22 ±3 °C.

4.8.3 Measurements and Inspections on Completion of Endurance Tests

The parameters to be measured and inspections to be performed on completion of endurance tests are scheduled in Table 6. Unless otherwise stated, the measurements shall be performed at T_{amb} = +22 ±3 °C.

4.8.4 Conditions for Operating Life Test (Part of Endurance Testing)

The requirements for operating life testing are specified in Section 9 of ESA/SCC Generic Specification No. 3602. The conditions for operating life testing shall be as specified in Table 5(b) of this specification.

4.8.5 Electrical Circuit for Operating Life Test (Figure 5(b))

Not applicable.



PAGE 21

ISSUE 2

TABLE 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL TESTS AND AT INTERMEDIATE POINTS AND ON COMPLETION OF ENDURANCE TESTING

	ESA/SCC GENERIC S	SPEC. NO. 3602	MEASUREMENTS AND	NSPECTIONS		LIM	ITS	
No.	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS	SYMBOL	MIN.	MAX.	UNIT
01	Vibration	Para. 9.10 and Para. 4.2.4 of this spec.	Measurements during Test Contact Monitoring	ESA/SCC 3602 Para. 9.10	-		-	-
			Final Measurements Visual Examination	-	-		1	_
02	Mechanical Shock	Para. 9.11 and Para. 4.2.4 of this spec.	Measurements during Test Contact Monitoring	ESA/SCC 3602 Para. 9.11	-	-	_	-
			Final Measurements Electrical Measurements Visual Examination	Table 2 Items 7-8-1-2 -	-	Tab -	le 2 -	-
03	Overload	Para. 9.12 and Table 1(b) Item 4 and Para. 4.2.4 of	Measurements during Test Contact Voltage Drop	ESA/SCC 3602 Para. 9.12.2	V _d	Para.	9.12.2 	mV
		this spec.	Final Measurements Fuse Continuity Contact Voltage Drop (3) Insulation Resistance Voltage Proof (all Points) (2) Electrical Measurements	Table 2 Item 8 Table 2 Item 6 Table 2 Item 7 Table 2 Items 1-2-3-4-5-9	- Va Ri VP	Cont - 50 1000 Tab	175 - -	mV MΩ Vrms
04	Thermal Shock	Para. 9.13	During 5th Cycle Electrical Measurements at +125°C Electrical Measurements at -65°C Final Measurements Visual Examination	In Conditioning Chamber Table 3 Items 1-2-3-4-6 Table 3 Items 1-2-3-4		Tab Tab	le 3 -	-
05	Salt Spray	Para. 9.14	Voltage Proof (all Points) Final Measurements	Table 2 Item 7	VP	Tab	le 2	Vrms
		•	Visual Examination Electrical Measurements	Table 2 Items 1-2-3-4-5-6-8-9		- Tab	- le 2	
06	Intermediate Current	Para. 9.16 and Para. 4.2.5 of this spec.	Voltage Proof (all Points) (2) Measurements during Test Contact Voltage Drop	Table 2 Item 7 ESA/SCC 3602 Para. 9.16.2	VP V _d	1000 Para.	9.16.2	Vrms mV
			Final Measurements Insulation Resistance Voltage Proof (all Points) (2) Electrical Measurements	Table 2 Item 6 Table 2 Item 7 Table 2	Ri VP	50 1000 Tab	- - le 2	MΩ Vrms
			Contact Voltage Drop (3)	Items 1-2-3-4-5-9 ESA/SCC 3602 Para. 9.16.2	V _d	Para.	9.16.2	mV
07	Terminal Strength	Para. 9.17 and Para. 4.3.3 of this spec.	Visual Examination	ESA/SCC 3601 Para. 9.17.3	-	-	-	-

NOTES

- 1. The tests in this table refer to either Chart IV or V and shall be used as applicable.
- 2. 350Vrms between coils.
- 3. Reading time 5 to 10 seconds, if required.



PAGE 22

ISSUE 2

TABLE 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL TESTS AND AT INTERMEDIATE POINTS AND ON COMPLETION OF ENDURANCE TESTING (CONT'D)

	ESA/SCC GENERIC S	SPEC. NO. 3602	MEASUREMENTS AND	INSPECTIONS		LIM	ITS	
No.	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS	SYMBOL	MIN.	MAX.	UNIT
80	Resistance to Soldering Heat	Para. 9.18	Electrical Measurements	Table 2 Items 1-2-6-8-9		Tab	le 2	
09	Operating Life Resistive	Para's 9.19, 9.19.1 and Table 5(b) of this spec.	Measurements during Test Contact Voltage Drop Final Measurements Fuse Continuity Contact Voltage Drop (3) Insulation Resistance Voltage Proof (all Points) (2) Electrical Measurements	ESA/SCC 3602 Para. 9.19.1 Table 2 Item 8 Table 2 Item 6 Table 2 Item 7 Table 2 Items 1-2-3-4-5-9	V _d - V _d Ri VP	Para. 9 Conti - 50 1000 Tab	inuity 175 - -	mV mV MΩ Vrms
10	Inductive Life		Measurements during Test Contact Voltage Drop Final Measurements Fuse Continuity Contact Voltage Drop (3) Insulation Resistance Voltage Proof (all Points) (2) Electrical Measurements	ESA/SCC 3602 Para. 9.19.1 Table 2 Item 8 Table 2 Item 6 Table 2 Item 7 Table 2 Items 1-2-3-4-5-9	V _d - V _d Ri VP	Para. : Conti - 50 1000 Tab	nuity 175 - -	mV MΩ Vrms
11	Mechanical Life	Para. 9.19.4	Final Measurements Contact Voltage Drop Electrical Measurements	Table 2 Item 8 Table 2 Items 1-2-3-4-5-9		- Tab	175 le 2	mV

NOTES

- 1. The tests in this table refer to either Chart IV or V and shall be used as applicable.
- 2. 350Vrms between coils.
- 3. Reading time 5 to 10 seconds, if required.