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Component Reliability

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Macmillan Engineering Evaluations

Published by

The Macmillan Press Limited

Technical and Industrial Publishing Unit

Managing Editor William F Waller

AMITPP AsslRefEng

Advertisement Representative Alan Kay

General Manager Barry Gibbs

The Macmillan Press Limited
Brunel Road Basingstoke Hampshire UK

Price £3.50

ISBN 978-1-349-01187-2 ISBN 978-1-349-01185-8 (eBook)
DOI 10.1007/978-1-349-01185-8

© The Macmillan Press Limited 1971

Softcover reprint of the hardcover 1st edition 1971 978-0-333-12540-3

SBN 333 125 401

Foreword

This book has been published in response to the ever increasing interest in the reliability of electronic components and equipments. In order to present an integrated view of the subject both component manufacturers and users have contributed to the editorial content.

The first three chapters deal with vital introductory subjects and outline terminology, the link between terminology and mathematical expressions and the thinking behind a new quality assurance system. Chapter 1 stresses the importance of correct terminology and the standardisation of terms when discussing failure modes, causes and periods.

Chapters 4–12 inclusive deal with specific electronic components split by generic type and treated from the viewpoint of the component manufacturer. Each chapter considers such factors as design characteristics and their bearing on reliability, the choice of a suitable production technology, the economics of the manufacturing process, component availability and reliability characteristics. Where it is applicable information on trends in component manufacture which will influence the operation of the device is given.

The mathematics of system reliability forms the subject matter of Chapter 13 and provides a lead into the next four chapters which are evaluations of components used for particular equipment areas. These chapters cover the domestic consumer market, defence electronics, commercial radio and computers. They deal with aspects of compatibility, price, availability, standardisation and performance requirements.

Chapters 18, 19 and 20 cover the special requirements of equipments operating in particular environments. They evaluate the needs imposed by extremes of climate, severe variations of pressure and large magnitudes of mechanical shock.

Throughout the book the forthcoming metrication of industry has been a consideration and the majority of data are presented in SI units. However, flexibility has also been a factor and a number of non-preferred SI units are used and, occasionally, where it is felt the subject warrants it, British units are used and an SI conversion factor given.

Contents

Chapter 1	page	7
-----------	------	---

Reliability Terminology

F G Barnes MA CEng MIERE
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Chapter 2	page	11
-----------	------	----

Mathematical Expressions of Reliability

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Chapter 3	page	17
-----------	------	----

Quality Assurance System

A G Manson
Group Standards Co-ordinator
The Plessey Company Limited
Components Group

Chapter 4	page	21
-----------	------	----

Capacitors

A T Pitt BSc(Hons)
Chief Chemist
Dubilier Limited

Chapter 5	page	29
-----------	------	----

Resistors

B C Roberts MA
Electrical Research Association

Chapter 6	page	37
-----------	------	----

Coils and Transformers

A Porter CEng MIEE
Technical Manager
Whiteley Electrical Radio Company Limited

Chapter 7	page	45
-----------	------	----

Relays and Contacts

D S Knights
Engineering Manager
B & R Relays Limited

Chapter 8	page 57	Chapter 15	page 119
Electronic Tubes		Defence Electronic Equipment	
R E B Wyke <i>CEng FIEE FIEI</i> <i>Quality Controller</i> GEC Electronic Tubes The M-O Valve Company Limited		W P Cole <i>BSc A Inst P</i> and J R T Low <i>CEng MIEE</i> <i>Company Quality Manager</i> and <i>Head of Environmental Engineering</i> Marconi Space and Defence Systems Limited	
Chapter 9	page 65	Chapter 16	page 125
Printed Circuit Boards		Commercial Radio Communications	
A A Ward <i>Head of Quality Control Laboratory</i> The MEL Equipment Company Limited		I G Gourlay <i>Deputy Chief Engineer Fixed Equipment Laboratory</i> Pye Telecommunications Limited	
Chapter 10	page 75	Chapter 17	page 135
Semiconductors and Integrated Circuits		Computer Equipment	
H C Bate <i>BSc</i> <i>Reliability Engineer</i> Mullard Southampton		L Knight <i>MIEE</i> <i>Manager Quality and Reliability Services</i> <i>Systems Group Quality Assurance</i> International Computers Limited	
Chapter 11	page 83	Chapter 18	page 143
Connectors		Geographical Environments	
R T Lovelock <i>FIEE</i> <i>Technical Director</i> Belling and Lee Limited		L Rhodes <i>CEng MIMechE</i> <i>Head of Component Reliability and Measurement Group</i> Signals Research Development Establishment	
Chapter 12	page 91	Chapter 19	page 147
Thin Film Circuits		High Altitude & Varying Pressure Areas	
W Holt <i>BSc ARCS</i> <i>Technical Manager</i> The Plessey Company Limited Microelectronics Division		R G MacKay <i>CEng MIERE</i> <i>Assistant Chief Electronics Engineer Space Division</i> Hawker Siddeley Dynamics Limited	
Chapter 13	page 99	Chapter 20	page 153
Aspects of System Reliability		Mechanical Shock Areas	
T A Wesolowski <i>Low BSc(Eng)</i> <i>Reliability Group Leader</i> Central Electricity Research Laboratories		J Harris <i>CEng MIERE</i> <i>Engineering Manager</i> Decca Radar Limited	
Chapter 14	page 109	Product Guide	page 161
Consumer Entertainment Industry		Glossary of Terms	page 169
E Spielberg <i>BSc</i> <i>Manager, Components Engineering</i> Rank Bush Murphy Limited			