

CONTENTS

CONTRIBUTORS	ix
PREFACE	xi

1

Difference in Electron Drag Stresses on Dislocation Motion in the Normal and the Superconducting States for Type I and Type II Superconductors

M. SUENAGA and J. M. GALLIGAN

I. INTRODUCTION	1
II. EXPERIMENTAL	4
III. THEORY	14
IV. DISCUSSION	26
V. SUMMARY	30
APPENDIX	30
REFERENCES	31

2

Elastic Wave Propagation in Thin Layers

G. W. FARNELL and E. L. ADLER

I. INTRODUCTION	35
II. WAVE EQUATION AND BOUNDARY CONDITIONS	37
III. ISOTROPIC PROBLEM	44
IV. CRYSTAL SYMMETRY	88
V. ANISOTROPIC EXAMPLES	109
REFERENCES	126

3**Solid State Control Elements Operating on Piezoelectric Principles**

F. L. N-NAGY and G. C. JOYCE

I. INTRODUCTION	129
II. BASIC PHENOMENOLOGICAL THEORY	131
III. ELECTROSTATIC DEVICES	132
IV. THE BIMORPH ACTUATOR IN A CONTROL LOOP	145
V. DERIVATION OF TRANSFER FUNCTION OF CANTILEVER BIMORPH ACTUATOR	149
VI. PIEZOELECTRIC STEPPING MOTOR IN CONTROL LOOP	153
VII. A LASER BEAM DEFLECTOR SYSTEM	156
VIII. FUTURE DEVELOPMENT	163
REFERENCES	165

4**Monolithic Crystal Filters**

W. J. SPENCER

I. INTRODUCTION	167
II. THICKNESS VIBRATIONS IN THIN PIEZOELECTRIC PLATES	171
III. EQUIVALENT ELECTRICAL NETWORKS FOR THICKNESS VIBRATIONS IN THIN PIEZOELECTRIC PLATES	191
IV. PROCESS TECHNOLOGY	201
V. MCF APPLICATIONS	213
REFERENCES	219

5**Design and Technology of Piezoelectric Transducers for Frequencies
Above 100 MHz**

E. K. SITTING

I. INTRODUCTION	221
II. THE EQUIVALENT CIRCUIT OF A TRANSDUCER AND ITS TERMINAL PARAMETERS	224

Contents	vii
III. MASON'S EQUIVALENT CIRCUIT	229
IV. THE TRANSDUCER WITH A SINGLE PIEZOELECTRIC LAYER	233
V. TRANSDUCERS WITH MULTIPLE PIEZOELECTRIC LAYERS AND INTERLACED COMB SURFACE WAVE TRANSDUCERS	254
VI. MATERIALS	258
VII. TECHNOLOGICAL METHODS	263
VIII. DISCUSSION AND CONCLUSIONS	271
REFERENCES	272
AUTHOR INDEX	277
SUBJECT INDEX	282
CONTENTS OF PREVIOUS VOLUMES	289