

CHAPTER I
INTRODUCTION



1.1 Introduction to Companders

The companders have been used for many years on carrier channels in the toll telephone cable. Their purpose is to reduce the effects of noise and interferences (e.g. crosstalk), and they are capable of giving a subjective improvement in signal-to-noise ratio.

The companders were firstly designed by using vacuum tubes, and their further developments became to use germanium diodes and transistors, and now they use transistors alone.

A compander has now been designed in which junction transistors are used as controlled elements in the variable-loss circuits as well as for rectification and amplification. Use has been made of the properties of the base-emitter junction of transistor to achieve a closer approximation to the desired compression/expansion characteristic than has previously been possible without the special selection or matching of transistors.

1.2 Advantage of Transistorized Comandor

In a comandor consisting of transistors, each transistor, consuming no filament-heating power, operates with low-voltage supplies, and possibly most important of all, it has a long lifetime of the order of 100,000 hours or more, and even at the end of this period there is no abrupt cessation of operation. Also, the transistor is very small in size and yet extremely rugged, and is capable of withstanding mechanical shocks many times greater than the gravitational force. Therefore a transistorized comandor is smaller in size than the vacuum-tube one. It needs only low-voltage dc. power supply, and greatly reduces the initial cost of installation. Heat dissipation problems are also eliminated.

1.3 The Purpose of this Thesis

The purpose of this thesis is to design, construct and test a transistorized comandor. Attempt has been made on study of transistor parameters to be utilized in a comandor circuit and verify them by experimental works.