SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

19EET202 / ANALOG ELECTRONICS

II YEAR / III SEMESTER

UNIT-3: IC FABRICATION AND OPTO ELECTRONIC DEVICES

TRANSISTORS-BJT FABRICATION

What We'll Discuss

TOPIC OUTLINE

Introduction

Fabrication types

Working

Applications

Introduction

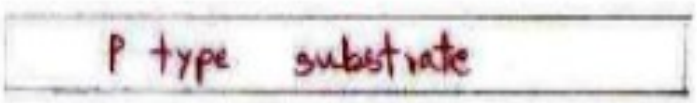
A bipolar junction transistor (BJT) is a type of transistor that uses both electrons and electron holes as charge carriers.

In contrast, a unipolar transistor, such as a field-effect transistor (FET), uses only one kind of charge carrier.

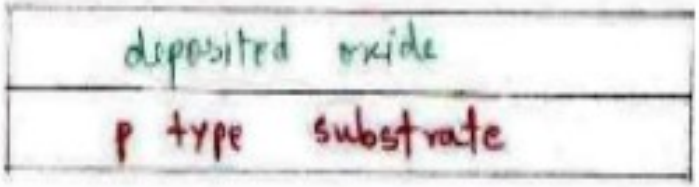
A bipolar transistor allows a small current injected at one of its terminals to control a much larger current flowing between the terminals, making the device capable of amplification or switching.

Fabrication of BJT

1. p-type substrate

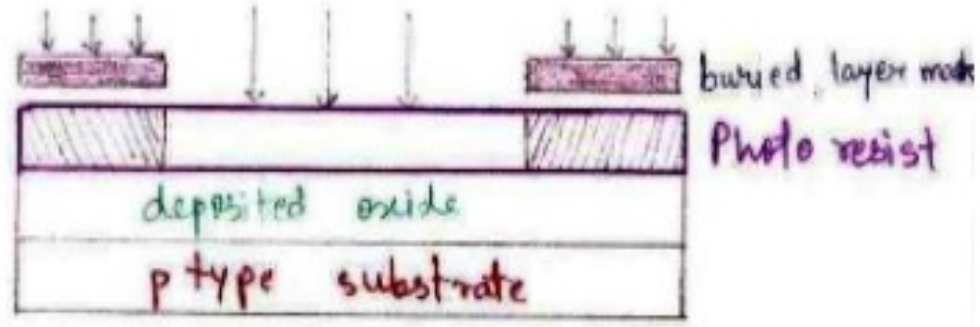


2. Oxide deposition (CVD)



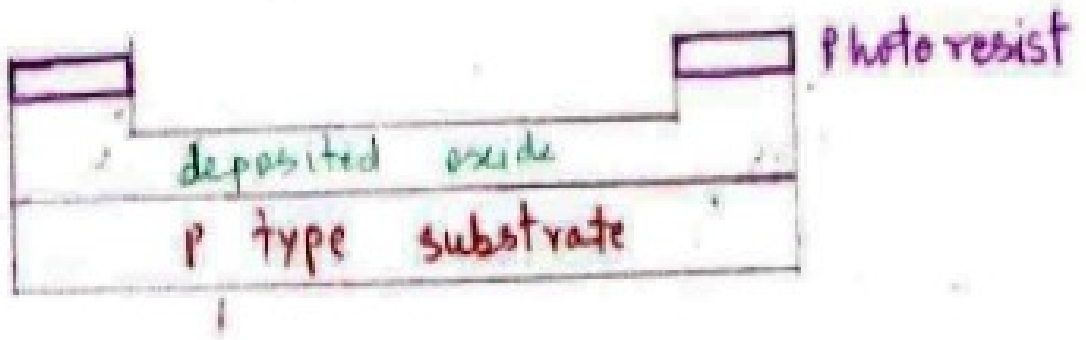
Contd…

3. Patterning of first oxide



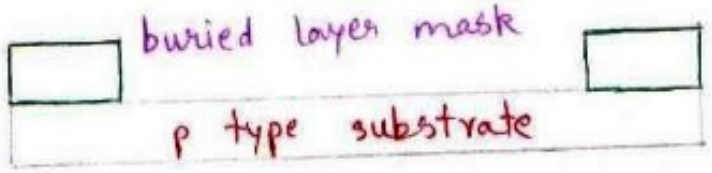
Etching

Etching of first oxide

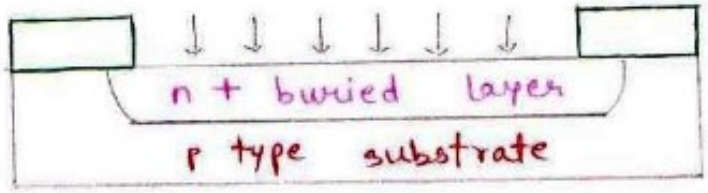


Burried layer

Final Buried Layer Window



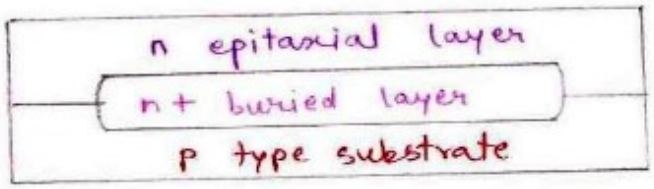
Buried Layer Implant



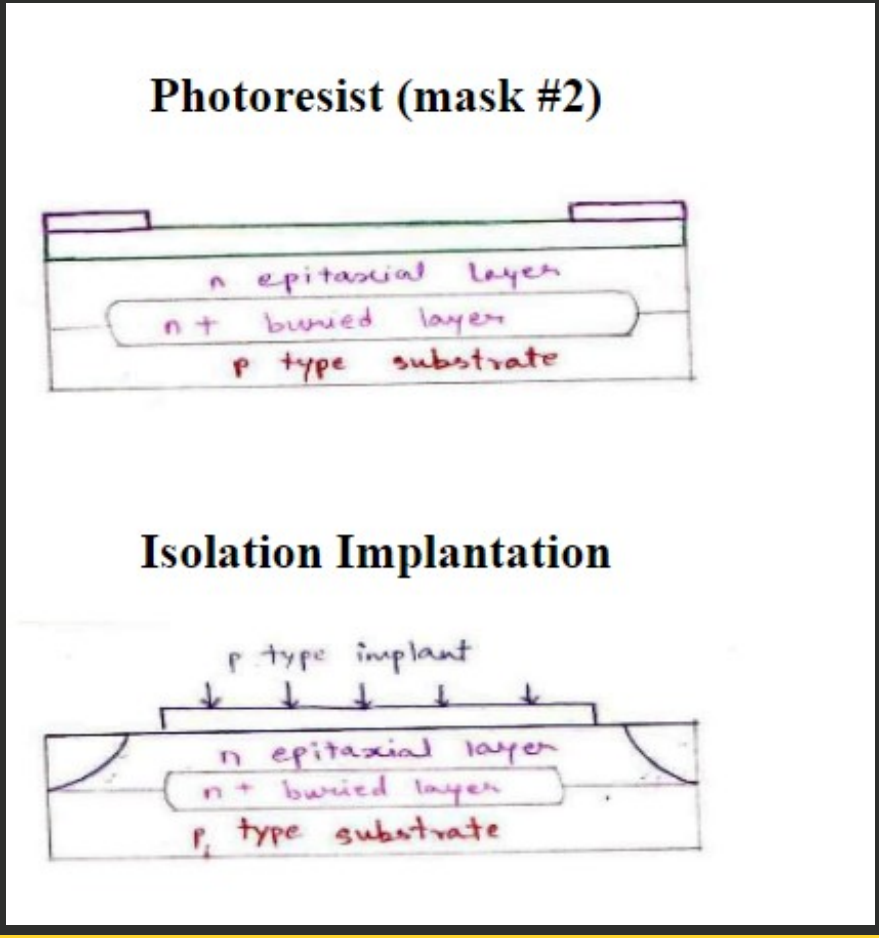
Burried layer

Final Buried Layer

Final epiLayer

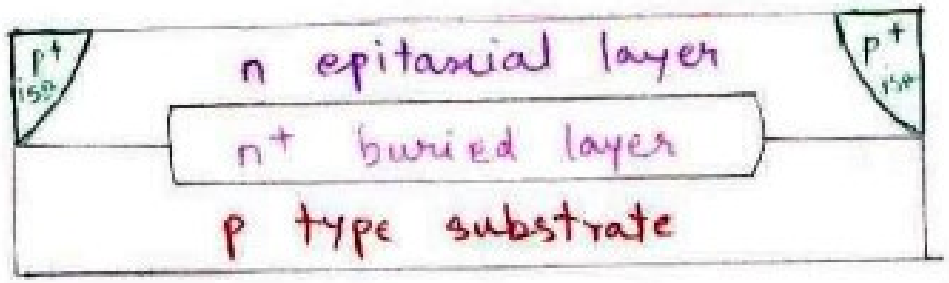


Isolation Implantation



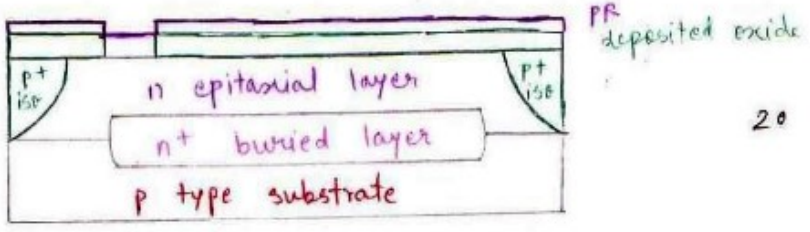
Isolated Structure

Final isolated structure

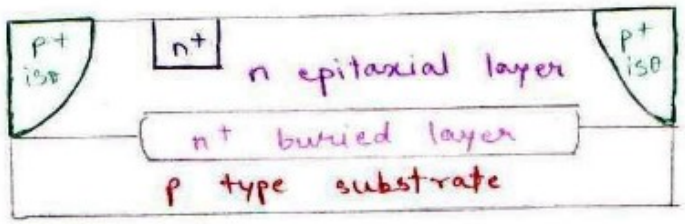


Final structure

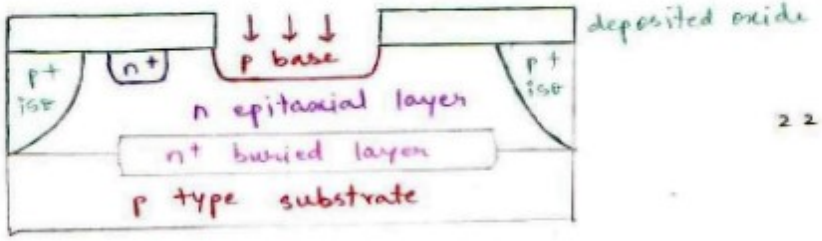
Sinker mask exposure and Photoresist (mask #3)



Final Sinker Structure



Base Region Implantation



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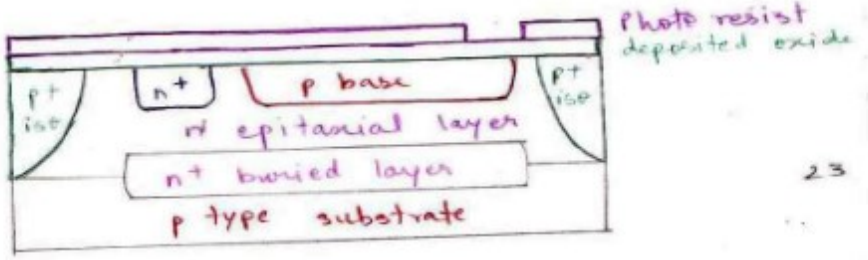
Final Base Region (mask #5)



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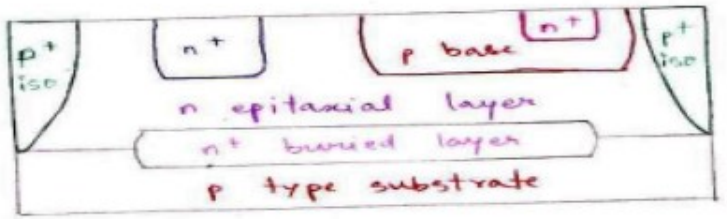
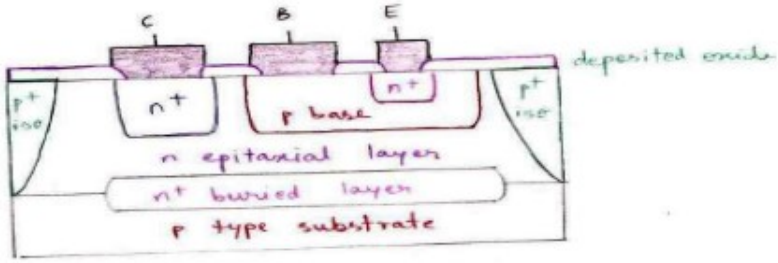
Emitter Implant



Final Contact Cuts and Metal Deposition



THANK YOU