Chapter 6
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base emitter collector with multimeter? how to check pnp and npn? electronics Electronic Basics #22: Transistor (BJT) as a Switch Transistors -Field Effect and Bipolar Transistors: MOSFETS and BJTs Page 9/55

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#### Transistors

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operation -Current-voltage characteristics -Biasing a BJT -Small-signal models -Singlestage amplifiers Conclusions ELEC-H402/CH6: BJT 2. BJT structure • BJT is a three-port structure

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Chapter 6 Bipolar Junction Transistors (Bansistors Chapter 6: Bipolar Junction Transistors (BJT) Sections 6.1-6.6 Signal amplification is important in many applications, such as telecomm Page 16/55

unications. Before the advent of transistors, signal amplification was accomplished using vacuum tubes. Transistors are much smaller and do not need a long warm-up time needed with Page 17/55

vacuum tubes.
The invention of the

Chapter 6: Bipolar Junction Transistors (BJT) Chapter 6 Bipolar Junction Transistors wiki.ctsnet.org Bipolar Junction Transistors Page 18/55

Chapter Summary: The bipolar junction transistor (BJT) is a threeterminal device. The terminals are called the emitter, base, and collector. As shown in Figure 6-1, the collector and emitter are made Page 19/55

using the same type of

[MOBI] Chapter 6 Bipolar Junction Transistors 362 Bipolar Junction Transistors (BJT) Chapter 6 +3 V Rp 2.2 ? RB 20 k? Rc 2.2 k? -3 V Figure P6.58 6.59 In Page 20/55

the circuit shown in Fig. P6.58, the transistor has ?=50. Find the values of V,, we, and Vc,

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(BJTs) includes 63 full step-bystep solutions. This textbook survival quide was created for the textbook: Microelectronic Circuits (The Oxford Series in Electrical and Computer Engineering) , edition: 7. Page 22/55

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new era of solidstate circuits Replaced by MOSFET SOIS predominant transistors Simplified structure of the npn transistor npn symbol pnp symbol · Simplified structure of the npn transistor Page 24/55

cross section

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Hee Univ. Fall, 2015 2. Introduction. • IN THIS CHAPTER YOU WILL LEARN. •The physical structure of the bipolar transistor and how it works. How the voltage between two terminals of the

transistor
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controls the current that flows through the third terminal, and the equations that describe these current-voltage relationships.

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Tong In Oh This preview shows page 1 -100011 Of 39 pages. Chater 6 Bipolar Junction Transistor (BJT) Xiulan Cheng/Shirla Cheng 2012-05-20 Prepared by Xiulan Cheng/ ???. Basic about BJT Invention Page 28/55

Invented in 1948 by Bardeen, Brattain and Shocklev in Bell Lab (First Transistor) Bipolar Both types of carriers (electron and hole) play important roles in operation of BJT Field Effect Page 29/55

Transistor (FET) is unipolar minority device.

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physical structure of the bipolar transistor and how it works. How the voltage between two terminals of the transistor controls ...

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Transistor ... Bipolar transistors are so named because the controlled current must go through two types of semiconductor material: P and N. The current consists of both electron and hole flow, in Page 33/55

different parts of the transistor. Bipolartors transistors consist of either a P-N-P or an N-P-N semiconductor "sandwich" structure.

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do not need a
long warm- up
time needed

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equivalent circuit for a bipolar junction transistor.The model is shown in Figure 5.6.1.It consists of an input impedance, r p, an output impedance r 0,and a voltage controlled current source Page 40/55

described by the transconductance, g m.In addition it contains the base-emitter capacitances, the junction capacitance ...

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how it works. How the voltage between two terminals of the transistor controls the current that flows through the third terminal, and the equations that describe these currentvoltage Page 45/55

relationships.
How to analyze and design circuits that contain bipolar transistors, resistors, and dc sources ...

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. . .

 The two Page 46/55

junctions are termed the baseemitter junction and the basecollector junction • The term bipolar refers to the use of both holes and electrons as charge carriers in the transistor Page 47/55

structure • In order for the transistor to operatetors properly, the two junctions must have the correct dc bias voltages - the base-emitter (BE) junction is forward biased(>=0.7V)for Si, >=0.3VPage 48/55

for Ge) - the base-collector (BC) junction is reverse biased Architecture of a BJTs

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answers key for
Multiple Choice
Questions in
Chapter 6:
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Board Exam. 1.
c. 3. 2. a.
Amplify weak
signals. 3. d.
Schockley. 4. b.
Holes. 5. c. 0.7
V. 6. a. Forwardbiased. 7. b.

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13 Bipolar Junction Transistors 1 Chapter 13 Bipolar Junction Transistors 2 Chapter 13 Bipolar Junction Transistors 1. Understand bipolar junction transistor operation in amplifier Page 52/55

circuits. 2.
Analyze simple
amplifiers using
the load-line
technique and
understand the
causes of
nonlinear
distortion. 3 3.

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Chapter 5: Bipolar Junction Transistors: Review Ouestions Describe the motion of electrons and holes in a pnp bipolar transistor biased in the forward active mode with V BC =0. What is the Page 54/55

definition of the emitter efficiency? Explain in words and provide the corresponding equation.

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