Lab 7: Bipolar Junction Transistors

Object: To explore the operation of the bipolar junction transistor and measure its current gain parameter, β.

Apparatus: TDS2004B Digital Oscilloscope, 10X Attenuating Probes, Simpson 260 VOM Meter, Fluke 73 DMM, Circuit Chassis, 2N2218 Transistor, Various Resistors, and Cables.

Introduction: Today we take up the most important electronic invention of the 20th century – the transistor – an active device which might be viewed as two silicon diodes arranged back-to-back.

Exercises:

1. Prepare for this experiment by obtaining a 2N2218 transistor, a medium-power device intended for general purpose switching and amplifier applications. By referring to the bottom-view pinout of the 2N2218 shown in Fig. 1, identify the emitter (E), the base (B) and collector (C) leads, and infer the directions of the BC and BE pn-junctions using the Fluke multimeter set in diode mode. From your results, draw into your notebook the correct "two-diode: schematic for the 2N2218. Is it an NPN or PNP type? Which pin is in electrical contact with the transistor case?

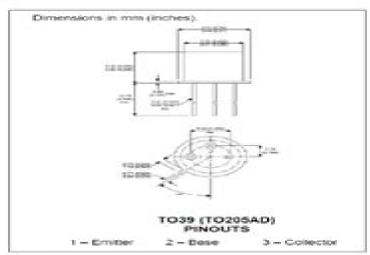


Fig. 1: Pin-out diagram for the 2N2218 bipolar junction transistor.

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