

## Voltage Regulator Trainer (BJT Shunt, Series & Zener Diode)

### Model : SB-111

**SINCOM SB-111 Voltage Regulator** is **All-In-One** simply designed trainer useful to study the operation, line and load regulation characteristics of BJT Shunt, BJT Series and Zener Shunt Voltage Regulator with variable load in a simple experimental way. This has separate modules of BJT Shunt, BJT Series and Zener Shunt voltage regulator circuits. The trainer is without meters and has the facility to connect the external analog or digital Voltmeter and Ammeter in the circuit.

### Features

- ❖ User friendly Design
- ❖ Three Separate modules of BJT Shunt, BJT Series and Zener Shunt Voltage Regulator circuits
- ❖ For BJT Shunt-One Silicon NPN Transistors and Two Zener diode are provided as a controlling elements
- ❖ For BJT Series-Two Silicon NPN Transistors and One Zener diode are provided as a controlling elements
- ❖ For Zener Shunt- Two Zener diodes of different voltage ratings are provided
- ❖ Variable Regulated DC Output voltage
- ❖ Low forward voltage drop
- ❖ High operating Temperature range
- ❖ Variable Resistive Load
- ❖ Facility to vary wide range of applied DC Input voltage
- ❖ Facility to vary regulated Output DC Voltage
- ❖ In-Built Variable regulated DC Power Supply
- ❖ Very Easy for Operation
- ❖ Multi color Circuit Diagram printed on the front panel of the white board.
- ❖ Enclosed in an attractive, light weight, High Quality, Poly Coated Imported Pine Wooden cabinet
- ❖ Facility to connect external Digital/Analog Voltmeter and Ammeter
- ❖ Interconnections by 2mm high quality banana sockets and pins
- ❖ Maximum Test points to explore all the corners of experiment
- ❖ 1 Year Warranty

### Technical Specifications

▪ AC Mains Power Supply	: 230V $\pm$ 10%, 50Hz
▪ DC Power Supply	: IC Regulated Variable 0V to +12V/500mA
▪ Load Resistor	: 10K $\Omega$ Variable Resistive Load
▪ Regulation type	: Line and Load Regulation
▪ <b>For BJT Shunt Circuit</b>	
• Unregulated DC Input Vin	: 0 to 12V DC Input
• Regulated DC Output Vo	: Two DC Outputs of 6.2V and 6.8V, $\pm$ 10%
• Output Voltage Control	: By Two Zener Diodes at sampling network
• Transistors Used	: One BJT NPN Silicon-BC548



An ISO 9001:2015 Co.

• Zener Diodes Used	: Two Zener diodes of 5.6V and 6.2V
• Forward Voltage Drop	: 1.2V at $T_A = 25^\circ C$
<b>▪ For BJT Series Circuit</b>	
• Unregulated DC Input $V_{in}$	: 0 to 12V DC Input
• Regulated DC Output $V_o$	: Variable @ 6V to 11V
• Output Voltage Control	: By 10KΩ Potentiometer at sampling network
• Transistors Used	: Two No-BJT NPN Silicon- SL100 and BC548
• Forward Voltage Drop	: 1.2V at $T_A = 25^\circ C$
<b>▪ For Zener Shunt Circuit</b>	
• Unregulated DC Input $V_{in}$	: 0 to 12V DC Input
• Regulated DC Output $V_o$	: 6.2V and 6.8V DC $\pm 10\%$
• Zener Diodes Used	: Two Nos.
• Zener Voltage $V_z$	: 6.2V and 6.8V, $\pm 10\%$
• Diode Package	: DO-41 Tape and Reel type
• Forward Voltage Drop	: 1.2V at $T_A = 25^\circ C$
• Current Controlling Resistor	: MFR 470Ω, $\pm 5\%$ in series
▪ Weight	: 3.0 kg (approx)
▪ Dimensions (mm)	: L 270 x W 390 x H 130
▪ Interconnections	: 2mm Banana sockets
▪ Operating Temperature	: 0-50°C, 80% RH

### Learning Scope

- To Study operation of Shunt Voltage Regulator using Transistor.
- To Study operation of Series Voltage Regulator using Transistor.
- To Study operation of Zener Diode as a Shunt Voltage Regulator.
- To Study Change in O/P Voltage w.r.t. change in I/P Voltage with Load RL constant (Line Regulation)
- To Study Change in O/P Voltage w.r.t change in Load RL with I/P voltage constant (Load Regulation)

### Other Instruments Required

**SINCOM Digital Multi VI meter (DMVI) : Model DMVI-03** Range  $V_1$ -20V,  $I_1$ -20mA,  $V_2$ -20V,  $I_2$ -200mA DC

**Accessories Included :** Set of Patch Cord and Details Instruction Manual