

Lab Equipment Guide

Curve tracer.

Introduction

This guide is a reference for the following equipment:

Equipment

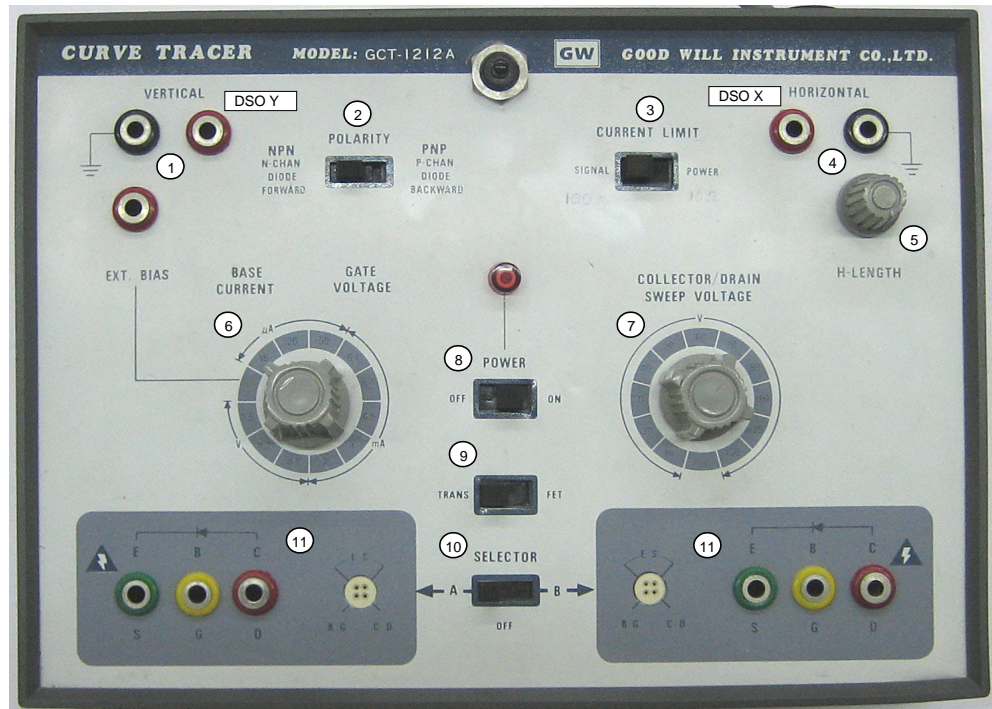
- Curve Tracer (CT) – Goodwill GCT-1212A

LEG1.2

Curve Tracer

The curve tracer has the following layout:

CT front panel



The curve tracer (CT) is used to display the $i \sim v$ characteristic of a semiconductor device on an oscilloscope. It has an internal voltage that sweeps from 0 V to some positive value, and back again, at a rate of 100 times per second. The current drawn by the device-under-test while it is being subjected to this sweeping voltage is passed through a resistor and made available as a voltage. It can also step a voltage or current in defined increments which can be applied to the third terminal of devices such as the MOSFET and BJT.

General

1. The VERTICAL output terminals provide access to the output current of the device under test. Inside the curve tracer, the output current is passed through either a 100 Ω resistor (current limit set to SIGNAL) or a 10 Ω resistor (current limit set to POWER) to produce an output voltage which is easily displayed on an oscilloscope.
2. The POLARITY switch determines the polarity of the sweep voltage (and base current / gate voltage) which are applied to the device-under-test.
3. The CURRENT LIMIT switch sets the value of an internal current limiting resistor – 1000 Ω for signal transistors and 100 Ω for power transistors.
4. The HORIZONTAL output terminals provide access to the collector / drain sweep voltage.
5. The H-LENGTH adjusts the amplitude of the horizontal sweep voltage that is brought out to the HORIZONTAL output terminals.
6. The BASE CURRENT / GATE VOLTAGE setting determines the step size of the step generator. There are 8 steps which are repeated over and over.
7. The COLLECTOR / DRAIN SWEEP VOLTAGE setting determines the maximum sweep voltage to apply to the device-under-test.
8. Slide the POWER switch to turn the CT on.
9. The TRANS / FET switch determines the polarity of the applied base current or gate voltage. BJTs and Enhancement-type MOSFETs need the TRANS setting, the FET setting is for depletion-type MOSFETs and JFETs.
10. The SELECTOR switch is used to select the device-under-test – either the left-hand side, A, the right-hand side, B, or no device, OFF.
11. There are two areas, A and B, for test lead or device connections:

The CT converts a current to a voltage by passing it through a resistor (Ohm's Law)

Color	Diode	BJT	MOSFET
Green	E – Cathode	E – Emitter	S – Source
Yellow		B – Base	G – Gate
Red	C – Anode	C – Collector	D – Drain