



Testing Instrument





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KI-3020A Semiconductor Curve Tracer



● Features

1. A quick checking tool for semiconductor devices
2. Display characteristic curves for all semiconductor devices on your scope

MODEL KI-3020A is designed for testing :
Transistors-NPN, PNP, FET & MOSFET, SCR'S (thyristors), UJT, DIAC & TRIAC'S, Diodes-rectifier, zener, detector & tunnel.

● Description

Curve tracing on a scope could be made easily by KI-3020A. However, only a Sync. Oscilloscope is required. Characteristic curves of all types of semiconductor-transistor such as FET, diodes, zener diode, SCR, TRIAC, DIAC, UJT etc, are accurately displayed. By examining these curves you can determine all of the operating characteristics of the device you are testing including gain (β), cutoff current, leakage current, output admittance and any other measurable specifications. It is far superior to the general transistor tester for checking quality. Uniquely, it is intended for testing semiconductors in production line and lab as well as making troubleshooting by technicians.

● Specifications

1. Collector Drain Sweep Voltage
 - (1) Frequency 120Hz or 100Hz
(2 line frequency)
 - (2) Voltage 11 steps, 5V, 10V, 20V, 30V, 40V, 50V, 60V, 80V, 100V, 150V and 200V
accuracy $\pm 10\%$
(or continuously variable)
 - (3) Sweep waveform full wave rectified
 - (4) Current 500mA Max.
2. Step Generator
 - (1) Number of steps 7
 - (2) Current per step $10\mu\text{A}$, $20\mu\text{A}$, $50\mu\text{A}$; 0.1mA, 0.2mA, 0.5mA, 1.0mA, 2.0mA; accuracy $\pm 5\%$
 - (3) Voltage per step 0.1V, 0.2V, 0.5V; accuracy $\pm 5\%$
 - (4) External bias one curve display
3. Polarity Switch
Three modes of operation - NPN, PNP, DIODE.



KI-3020D

Digitized Semiconductor Curve Tracer



KI-3020D is designed to create a digital curve for testing 2-pin / 3-pin semiconductor devices, such as Diodes, NPN/PNP Transistors, FET, IGBT, UJT, SCR, TRIAC, etc... All results are displayed on built-in TFT LCD screen without additional oscilloscope or PC. It also provides the touchscreen for intuitive manipulation—simply touchscreen buttons to set up desired measuring conditions, including device type, voltage bias, or current steps, etc...

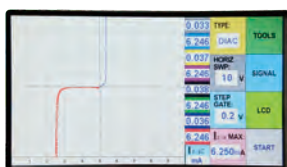
Two sets of the testing socket are available for users to switch between two devices for rapidly test and comparison. All captured curve data can be displayed on LCD screen and saved in PC.

● Features

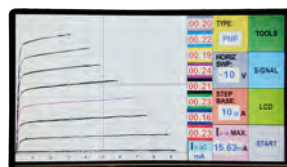
1. Built-in TFT LCD screen, no PC required.
2. Generate 8 sets of digital curves on LCD screen in 1 second.
3. Alternatively connect to external scope for real-time measurement.
4. Save and reload Max. 8 sets of previous curves for revision and comparison.
5. Provide two sets of test socket for quick measurement and curve comparison.
6. Reserve USB port to load data into PC.

● Specifications

1. Collector (Drain) Sweep Voltage
 - (1) Frequency : 200Hz
 - (2) Voltage : 8 sets-10V/ 20V/ 30V/ 40V/ 50V/ 100V/ 150V/ 200V
 - (3) Current : 10V/ 20V/ 30V/ 40V ; 1.5A Max.
50V/ 100V/ 150V/ 200V ; 300mA Max.
 - (4) Control : touch screen and trace encoder
 - (5) Vertical scale : external adjust
2. Step Generator
 - (1) Number of steps : 8
 - (2) Current per step (I_b) : 5 μ A / 10 μ A / 50 μ A ;
0.1mA / 0.2mA / 0.5mA / 1.0mA / 2.0mA
 - (3) Voltage per step (V_b) : 0.2V / 0.7V / 1.4V
 - (4) Control : touch screen and trace encoder
3. Display
 - (1) Type : 7" color TFT-LCD display
 - (2) Interface : touch screen
 - (3) Resolution : 800 x 480 pixels



Zener test

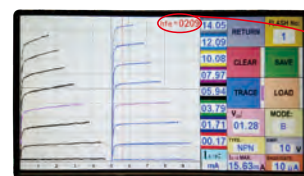


PNP test

7" color TFT-LCD display

4. Human Machine Interface

- (1) Testing mode : digital mode (one time test)
scope mode (real time continue test)
- (2) Testing power : power mode (high power component)
signal mode (low power component)
- (3) Number of curves : 8 curves with tracing values
- (4) Display mode : single / double display mode
- (5) Data points per curve : 512
- (6) Sample rate : < 1sec / 8 curves
- (7) Curve trace : touch screen (rough trace)
encoder (fine trace)
- (8) h_{fe} : display h_{fe} automatically measure between 3rd and 5th curve at corresponding bias



$h_{fe} = 209$

NPN/PNP double display mode

5. Component : diode, zener, MOS-FET, J-FET, NPN/PNP transistors, IGBT, UJT, SCR, PUT, DIAC, TRIAC
6. Interface
 - (1) Scope : vertical, horizontal, ground
 - (2) USB port, type B : transfer curve data to PC for save & display.

● General

1. Power Supply : 100V / 110V / 220V
50Hz / 60Hz
2. Dimension : (150(H) x 300 (W) x 260(D))mm
3. Weight : 7.4kg

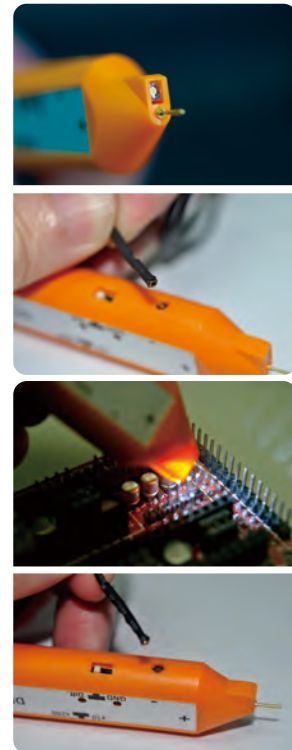
DF-600 Differential Active Probe



DF-600 Differential Active Probe is a high input impedance and low input capacitance probe that is compatible with any 50Ω input oscilloscope and provides both Differential and Single-Ended measurement modes. The user can use attenuator switch to select the desired attenuation upon measurement needs.

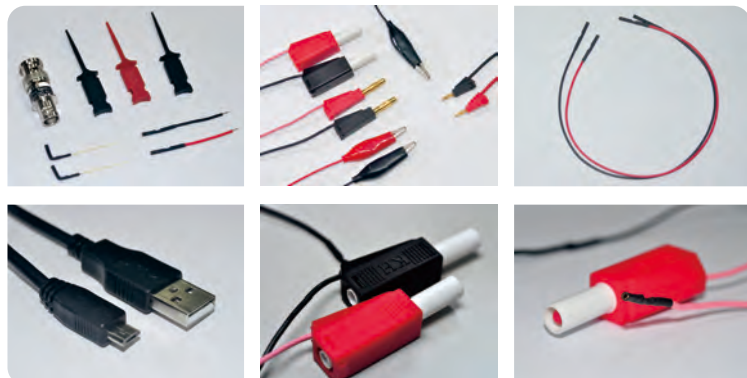
● Characteristics

Parameter	With 10:1 attenuator	With 200:1 attenuator	Remarks
Bandwidth	600MHz (differential) 400MHz (single-Ended)		50Ω input impedance oscilloscope
DC Gain Accuracy	1.0%		
Voltage Input Range (Differential)	≤ 30 V	≤ 620 V	(DC+AC peak to peak)
Voltage Input Range (Single-Ended)	≤ 15 V	≤ 310 V	(DC+AC peak to peak)
Rising Time	≤ 300ps		
Input Impedance Resistance Capacitance	2.06 MΩ // 1.5pF (between terminals and ground) 4.12 MΩ // 0.9 pF (differential)		
Output Termination Impedance	50Ω		
Power Requirement	USB support 5V		
Weight	approximately 110 grams		
Cable Length	1.2m		



● Accessories

1. Earth Tip x 2
2. Micro USB Power Line x 1 (1M)
3. BNC 50Ω Impedance-Thru Terminator x 1
4. Signal Line with Alligator Clip x 2 (15cm)
5. Long Signal Line with Alligator Clip x 1 (40cm)
6. Signal Line with Wire Strip x 2 (4.5cm)
7. Signal Line with Terminal x 2 (27cm)
8. Signal Line with 4mm Terminal x 2 (40cm)
9. Signal Line with 4mm Terminal and Safety Plug x 2 (40cm)
10. Signal Line with 2mm Terminal x 2 (15cm)
11. Easy Hook x 3





KH-LPT80

Portable Interactive Device

Leading Projecting Technology



Compatible with a projector, KH-LPT80 makes a display interactive and brings smooth writing and drawing experience to the new display area.

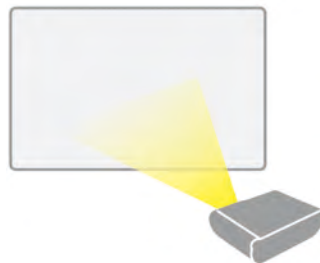
- Adjustable and portable
 - For 46" ~ 80" display
 - Easy installation and quick calibration
- ※ Best solution is supported by a short throw projector.
※ The whiteboard and projector are not included.

● Product Lineup



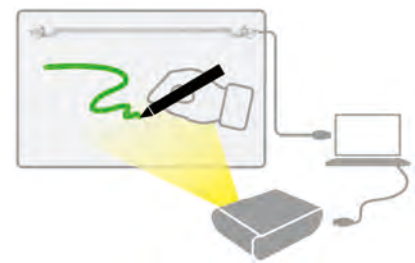
KH-LPT80

+



46"~80" Projecting Screen

=



Interactive Screen

● Product Features



Interactive & Collaborate

Quickly transform traditional flat panel/whiteboard into interactive display.



Flexible

Stepless adjustable to fit 46" ~ 80"



Portable

Portable size
Easy installation



Quick 7-point calibration

Quick calibration tool



Non-electronic Reflective Stylus

No battery required for stylus



USB Power

No AC power cord required



● Product Features

	KH-LPT80	Interactive Flat Panel/Whiteboard
Price	Low	High
Flexibility	High	No
Compatibility	Compatible with existing whiteboard in conference room or classroom..etc.	No
Inventory Control	Handling simple SKU 1. Low stock cost & risk 2. Minimize handling fee	Complicated
Maintenance	Simple & cost reduced	Complicated

● Product Specification

Model Name	KH-LPT80
Fixed Mode	Sucker and magnet
Adjustable Mode	Stepless
Dimensions (L x H x D mm)	Max. : 2080 x 81 x 39 mm Min. : 1230 x 81 x 39 mm
Weight	~ 1.3kg
Active Area	46"~ 80" (aspect ratio 16:10/16:9/4:3)
Touch Technology	Optical sensor
Touch Input	Non-electronic reflective pen
Multi-Touch	2 points (1 point for writing / 2 points for clicking)
Touch Accuracy	46"~ 65" ±5mm, 65"~ 80" ±10mm (over 90% of touchable area)
Touch Response Time	< 10 ms
Operating Temperature/Humidity	0~40 °C / 20%~80% (non-condensation)
Connect Interface	USB type A cable 3m (USB 1.1, 2.0 compatible)
USB Power Supply	5V DC, 500mA
Support Operating System	Windows7/8/10 (32bit/64bit)
Certification	CE / FCC / VCCI / BSMI

● Quick Installation





TB-1000 Training Bench



● BTC-11001 BENCH TOP CONSOLE (BTC-10001+10002+10003)



1. BTC-10001 Three-phase Power Supply
 - (1) Overcurrent / leakage protection switch
 - (2) Start and emergency button
 - (3) Input voltage : 3Ø 220V
 - (4) Rating output : 3Ø 220V/10A
 - (5) Fuse protection set
 - (6) Output : 4mm safety sockets
2. BTC-10002 Variable AC Power Supply
 - (1) Input voltage : 1Ø 220V
 - (2) Output voltage : 1Ø 0~260V/2A
 - (3) Fuse protection set
 - (4) Output : 4mm safety sockets
3. BTC-10003 DDS Function Generator & DC Power Supply
Direct Digital Synthesizer (DDS) Function Generator
 - (1) Waveform : sine, triangle, square, ramp, ramn, noise, Arb, SEQ
Frequency : sine, square, ramp, Arb : 10mHz~5MHz
Triangle : 10mHz~2MHz
 - (2) Setting : keyboard & encoder
 - (3) Display : 8-digit 7-segment
 - (4) Amplitude : 10mHz~100KHz (20Vpp)
100KHz~1MHz (15Vpp)
1MHz~5MHz (12Vpp)
 - (5) Square duty cycle : 10% ~ 90%
 - (6) Modulation mode : AM, FM
Source : EXT / INT

- (7) SWEEP :
 - Waveform : sine, square, triangle, ramp
 - Frequency : 10mHz~2MHz
 - Mode : linear / log
 - Source : EXT / INT
 - Internal sweep period : 1µs~500s (10 Section)
- (8) Arbitrary :
 - Vertical resolution : 10Bit
 - Wave length : 1024 points
 - Range : start / end point setting
 - Sample rate : 10mHz~100MHz (10 Section)
- (9) Sequencer setting mode :
 - waveform, frequency, amplitude, duration
 - Max sets : 128
- (10) Output impedance : 50Ω (Typical)
- (11) Counter
 - Function : frequency, period, positive / negative pulse width, encoder
 - Frequency counter : 1Hz~100MHz (8DIG) ECL level
 - Period, pulse counter : 10nS~100Sec (Hi/Low/Period) ECL level
 - Encoder counter : A/B phase : Max rate 1MHz (8DIG) TTL level
 - DC Power Supply
 - a. Dual output : 0~±30V / 3A
 - b. Constant voltage
 - c. Constant current
 - d. Tracking operation
tracking error, ≤0.3% +5mV @maximum rating
 - e. Protection
current limits, for outputs overrate or outputs shortage
 - f. Digital meter
3 digits display, each one can be selected to monitor output voltage and output current

● WORKING TABLE



WTA-36

1. Size : about (1800(W) x 900(D) x 780(H))mm
2. Tabletop uses 30m/m plywood, top with laminated board
3. 4 wooden drawer with hand-bar
4. Main construction uses aluminum alloy material, construction combination, table foot & across pole fixed with 3m/m hide terminal plate & 3m/m iron plate uses screw fixed, iron plate plugin aluminum strip to enhance construction, between aluminum strip uses 3m/m iron plate plugin with the screw fixed.
5. Bench foot base with the rubber
6. Aluminum material with positive pole process cover protection paint
7. Surround 4 sides of the tabletop with an aluminum strip.
8. Table pad : Size same as tabletop; 5m/m rubber pad



EM-3380-1B

1. Dimension : (1800(W) x 900(D) x 740(H))mm $\pm 5\%$
2. Table pad : size same as tabletop; 5m/m rubber pad

● Order Information

TB-1101

(BTC-11001 & WTA-36)



TB-1102

(BTC-11001 *2 & WTA-36)



TB-1103

(BTC-11001 & EM-3380-1B)



TB-1104

(BTC-11001 *2 & EM-3380-1B)



● Optional

EM-3340-3B

System Transformer

- (1) Rated power : 1.5KVA
- (2) Primary : depend on the local line voltage
- (3) Secondary : 3 ϕ 220V AC
- (4) Frequency : 50Hz / 60Hz

※ 3 ϕ power (source) is required when operating this system.

※ The System Transformer EM-3340-3B must be included if 3 ϕ 220V is not available.





DPS-1000 Series Dual DC Power Supply



● Specifications

Performance

1. Constant Voltage

- (1) Line regulation $\leq 0.01\% + 3\text{mV}$
- (2) Load regulation $\leq 0.01\% + 3\text{mV}$
- (3) Ripple & noise $\leq 1\text{mV r.m.s.}$
- (4) Recovery time $\leq 100\mu\text{s}$

2. Constant Current

- (1) Line regulation $\leq 0.2\% + 3\text{mV}$
- (2) Load regulation $\leq 0.2\% + 3\text{mV}$
- (3) Ripple & noise $\leq 3\text{mV r.m.s.}$

3. Tracking Operation

- (1) Tracking error $\leq 0.3\% + 5\text{mV @ maximum rating}$
- (2) Load regulation @ series mode $\leq 300\text{mV}$
- (3) Load regulation @ parallel mode $\leq 0.01\% + 5\text{mV}$

4. Protection

- (1) Current limits for outputs overrate or outputs shortage
- (2) Reverse diode for reverse polarity applied

5. Analog Meter

- (1) Voltmeter two voltmeters in class 2.5
- (2) Ammeter two ammeters in class 2.5

6. Digital Meter

Each one can be selected to monitor output voltage and output current.

- (1) Display 3 digits
- (2) Accuracy voltage $\pm(0.25\% \text{ of rdg} + 3 \text{ counts})$
current $\pm(0.5\% \text{ of rdg} + 2 \text{ counts})$

7. Insulation

- (1) Case & output terminals $\geq 20\text{M}\Omega @ 500\text{V DC}$
- (2) Case & receptacle $\geq 300\text{M}\Omega @ 500\text{V DC}$

8. Cooling Line Source

For 1306/1603 series forced DC fan cooling

9. Power Consumption

- (1) 1303 Approx. 350EA
- (2) 1306 & 1603 Approx. 700EA

10. Ambient

- (1) Humidity $\leq 70\% \text{ relative}$
- (2) Operation temp. $0 \sim +40^\circ\text{C}$
- (3) Storage temp. $-10^\circ\text{C} \sim +70^\circ\text{C}$

11. Power Requirements

A.C. 110V, 220V $\pm 10\%$
50Hz/60Hz

12. Accessories

- (1) Test lead x 1 set
- (2) Operation manual x 1
- (3) Line fuse x 1

● DPS Series

Dual Output

Model	Output Voltage	Out Current	N.W(kg)
DPS-1303A	0~ $\pm 30\text{V}$	3A	11.6kg
DPS-1306A	0~ $\pm 30\text{V}$	6A	13.6kg
DPS-1603A	0~ $\pm 60\text{V}$	3A	13.6kg
DPS-1303D	0~ $\pm 30\text{V}$	3A	12kg
DPS-1306D	0~ $\pm 30\text{V}$	6A	14kg
DPS-1603D	0~ $\pm 60\text{V}$	3A	14kg

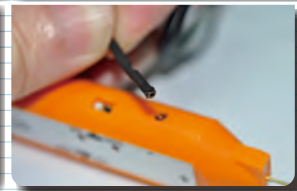
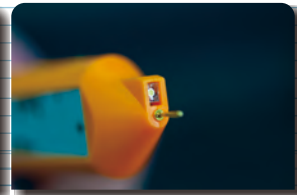
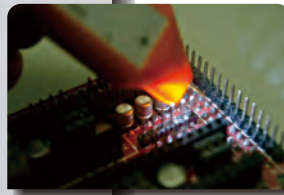
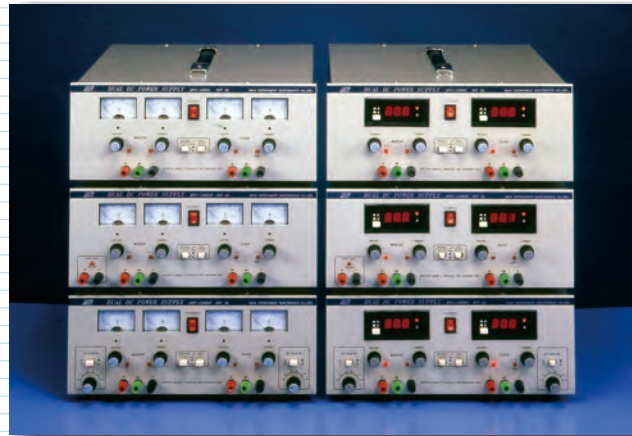
Dual Output With Six Pre-set Voltage(3,5,6,9,12,24V)

Model	Output Voltage	Out Current	N.W(kg)
DPS-1303AP	0~ $\pm 30\text{V}$	3A	11.8kg
DPS-1306AP	0~ $\pm 30\text{V}$	6A	13.8kg
DPS-1603AP	0~ $\pm 60\text{V}$	3A	13.8kg
DPS-1303DP	0~ $\pm 30\text{V}$	3A	12kg
DPS-1306DP	0~ $\pm 30\text{V}$	6A	14kg
DPS-1603DP	0~ $\pm 60\text{V}$	3A	14kg

Triple Output With One 5V/3A Fixed Output

Model	Output Voltage	Out Current	N.W(kg)
DPS-1303AF	0~ $\pm 30\text{V}$	3A	13kg
DPS-1306AF	0~ $\pm 30\text{V}$	6A	15kg
DPS-1603AF	0~ $\pm 60\text{V}$	3A	15kg
DPS-1303DF	0~ $\pm 30\text{V}$	3A	13.2kg
DPS-1306DF	0~ $\pm 30\text{V}$	6A	15.2kg
DPS-1603DF	0~ $\pm 60\text{V}$	3A	15.2kg

Dimension : (133(H)x300(W)x345(L))mm

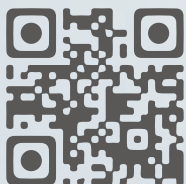


Testing Instrument

KNOWLEDGE AND HOPE



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