Semiconductor Curve tracer

CS-10000 Series
10kV～15kV ～8,000A

CS-5000 Series
5kV ～1,500A

CS-3000 Series
3kV ～1,000A

Multipurpose even fits leakage current, and high current.
Auto measurement Supported!

The best solution to property measurement of semiconductors such as IGBTs, MOSFETs, TRANSISTORs and DIODEs from small to large capacities.
The applied voltage and current are monitored in signal waveforms on WAVE mode.
- Actual pulse signal waveforms applied on a device at the measurement point can be monitored on the time axis as with oscilloscope (WAVE) mode without extra probing.
- By confirming the waveform, appropriate pulse width and measurement timing can be decided.
- This function also helps confirming the abnormality caused by heat such as a oscillation, etc.

Full automation by high affinity with PC

- Semiconductor parameter measurement software CS-810 (optional)
  This is a software performing auto measurement through remote controlling with curve tracer main unit.
  This software can execute stress test; which was hard to do using traditional curve tracers, and can measure temperature characteristics of devices, while controlling a hotplate or a thermostatic chamber.

- USB memory:
  Graphic Images: Data, and Setup conditions
  Formats: TIFF,BMP,PNG. (Black or White color of background, color or monochrome)
  Waveform data: Text (CSV) and in Binary

- Remote Control tool (free download)
  In case that security policy restricts use of USB, the remote control tool for PC is provided.

- Ethernet:
  Provided as a standard function (on the back side of Main unit)

Automatic measurement connecting with PC, Scanner, Thermostatic chamber, etc. are available.
**Sweep**
Number of points to, sweeping speed, resolution, and the DOWN/UP sweep can be set at your needs. As the CUSTOM sweep performs sweeping in high speed and high resolution measurement.

**Limit-SWEEP function** (CS-800 option)
This function puts limits on current and voltage through usual sweep measurement for device protection purpose and stopping the sweep at the target.

**Vth-hFE auto search function** (CS-800 option)
This function automatically finds the Vth-hFE with the setting of conditions. There will be no need for complicated operations anymore.

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**CONSTANT function with CS-800 (optional)**
Bias constant voltage or constant current. With combination of semiconductor parameter measurement software CS-810, the curve tracer supports Auto stress test.
5kV CS-5000 Series

Best suited for measuring the breakdown of a power device having 3,300V withstand voltage

- Max. Peak Voltage: 5,000V (High-Voltage mode)
- Max. Peak Current: 1,500A (CS-5400 High-Current mode)
- All models support the LEAKAGE mode (Cursor resolution: 1pA)

CS-5400

Max. Peak Voltage: 5,000V (High-Voltage mode)
Max. Peak Current: 1,500A (CS-5400 High-Current mode)
All models support the LEAKAGE mode (Cursor resolution: 1pA)

CS-5400 1,500A (HC mode pulse)

CS-5200/5300

Max. Peak Voltage: 5,000V (High-Voltage mode)
Max. Peak Current: 1,000A (CS-5300 High-Current mode)
All models support the LEAKAGE mode (Cursor resolution: 1pA)

CS-5300 1,000A (HC mode pulse)
CS-5200 400A (HC mode pulse)

CS-5100

Max. Peak Voltage: 5,000V (High-Voltage mode)
Max. Peak Current: 400A (CS-5100 High-Current mode)
All models support the LEAKAGE mode (Cursor resolution: 1pA)

CS-5100 (HC mode not equipped)

Collector supply HV mode

<table>
<thead>
<tr>
<th>Model</th>
<th>CS-5000 series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode/Polarity</td>
<td>Rectified SINE +/-, DC +/-, LEAKAGE +/-, AC</td>
</tr>
<tr>
<td>Max. Peak Voltage/Current</td>
<td>Max. Peak Voltage, Max. Peak Current (Max. Peak Pulse Current)</td>
</tr>
<tr>
<td>5kV</td>
<td>25mA (25mA)</td>
</tr>
<tr>
<td>300V</td>
<td>750mA (1.5A)</td>
</tr>
<tr>
<td>30V</td>
<td>7.5A (15A)</td>
</tr>
</tbody>
</table>

Max. Peak Power
- 5kV: At 5kV: 320mW/3.2W/32W
- 300V: At 30V, 300V: 120mW/1.2W/120W/390W

Horizontal axis range
- 50mV~500V/div

Collector supply HC mode (CS-5100 does not equip with HC mode)

<table>
<thead>
<tr>
<th>Model</th>
<th>CS-5100</th>
<th>CS-5200</th>
<th>CS-5300</th>
<th>CS-5400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode/Polarity</td>
<td>Pulse +/-</td>
<td>Pulse +/-</td>
<td>Pulse +/-</td>
<td>Pulse +/-</td>
</tr>
<tr>
<td>400A / 4kW</td>
<td>40V</td>
<td>1,000A / 10kW</td>
<td>40V</td>
<td>1,500A / 12kW</td>
</tr>
<tr>
<td>40A / 400W</td>
<td>40V</td>
<td>400A / 4kW</td>
<td>40V</td>
<td>600A / 4.5kW</td>
</tr>
</tbody>
</table>

Pulse width: Pulse width: variable between 50μs and 400μs (Resolution: 10μs)
Measurement point: Measurement point can be specified. (Resolution: 10μs)
Vertical range: 100mA~50A/div, 100mA~100A/div, 100mA~200A/div
Fixture: CS-303, CS-304
CS-3000 Series

3kV

Standard models suitable for property measurement of various semiconductor such as IGBTs, MOSFETs, transistors and diode, etc.

- Max. Peak Voltage 3,000V (High-Voltage mode)
- Max. Peak Current 1,000A (CS-3300 High-Current mode)
- All models support the LEAKAGE mode (Cursor resolution: 1pA)

**CS-3200/3300**

Max. Peak Voltage/Current

<table>
<thead>
<tr>
<th>Mode/Polarity</th>
<th>Rectified SINE +/-, DC +/-, LEAKAGE +/-, AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>3kV</td>
<td>Max. Peak Voltage 75mA (150mA)</td>
</tr>
<tr>
<td></td>
<td>300V Max. Peak Current 750mA (1.5A)</td>
</tr>
<tr>
<td></td>
<td>30V Max. Peak Power 7.5A (15A)</td>
</tr>
</tbody>
</table>

Max. Peak Power

<table>
<thead>
<tr>
<th>Mode/Polarity</th>
<th>120mW / 1.2W / 120W / 390W* (*Setup is not available when Max. Peak Voltage 3kV is used.)</th>
</tr>
</thead>
</table>

Horizontal axis Range

500mV ~ 500V/div

**CS-3100**

Collector Supply HV mode

<table>
<thead>
<tr>
<th>Mode/Polarity</th>
<th>All CS-3000 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode/Polarity</td>
<td>Rectified SINE +/-, DC +/-, LEAKAGE +/-, AC</td>
</tr>
</tbody>
</table>

**Collector Supply HC mode (CS-3100 does not equip with HC mode)**

<table>
<thead>
<tr>
<th>Model</th>
<th>CS-3100</th>
<th>CS-3200</th>
<th>CS-3300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode/Polarity</td>
<td>Pulse +/-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Peak Power</td>
<td>No HC mode equipped</td>
<td>Max. Peak Current (Max. Peak Pulse Current)</td>
<td>Max. Peak Voltage</td>
</tr>
<tr>
<td>Max. Peak Voltage</td>
<td>400A / 4kW 40V</td>
<td>Max. Peak Current (Max. Peak Pulse Current)</td>
<td>Max. Peak Voltage</td>
</tr>
<tr>
<td></td>
<td>40A / 400W 40V</td>
<td>Max. Peak Voltage</td>
<td>Max. Peak Voltage</td>
</tr>
</tbody>
</table>

Pulse width: Changeable between 50μs to 400μs (Resolution: 10μs)

Measurement point: Measurement point can be specified. (Resolution: 10μs)

Vertical axis range: 100mA ~ 50A/div

Fixtures: CS-301

**Analog Curve Tracer**

10kV~

Best suited for the measurement of high voltage diodes and thyristors

Output:

- Voltage: Commercial Power supply half-wave rectification waveform
- Max. Voltage: 10kV Peak (when no loading)
- Max. Current: 100mA Peak or 400mA

Display:

- Voltage range: 50V/div ~ 1,000V/div (1-2-5 steps)
- Current range: 0.1mA/div ~ 10mA/div or 50mA/div

Customers' special specifications are welcome. Please contact us.
CS-10000 Series 10kV, 12kV and 15kV

Best suited for the chips with very high voltage and very high current, CS-3100 + UHV + HC

Collector Supply HV mode

<table>
<thead>
<tr>
<th>Model</th>
<th>CS-10000 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model/Polarity</td>
<td>Rectified SINE +/-, DC +/-, LEAKAGE +/-, AC</td>
</tr>
<tr>
<td>Max. Peak Voltage / Current</td>
<td>Max. Peak Voltage</td>
</tr>
<tr>
<td>3kV</td>
<td>75mA (150mA)</td>
</tr>
<tr>
<td>300V</td>
<td>750mA (1.5A)</td>
</tr>
<tr>
<td>30V</td>
<td>7.5A (15A)</td>
</tr>
<tr>
<td>Max. Peak Power</td>
<td>120mW / 1.2W / 120W / 390W* (*Setup is not available when Max. Peak Voltage 3kV is used.)</td>
</tr>
</tbody>
</table>

Collector Supply UHV mode

<table>
<thead>
<tr>
<th>Model</th>
<th>CS-10400/CS-10800</th>
<th>CS-12800</th>
<th>CS-15800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode/Polarity</td>
<td>DC +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Peak Voltage / Current</td>
<td>Max. Peak Voltage</td>
<td>Max. Peak Current</td>
<td></td>
</tr>
<tr>
<td>10kV</td>
<td>400mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12kV</td>
<td>266mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15kV</td>
<td>266mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Peak Power</td>
<td>40W / 400W / 4kW</td>
<td>32W / 320W / 3.2kW</td>
<td>40W /400W / 4kW</td>
</tr>
</tbody>
</table>

Collector Supply HC mode

<table>
<thead>
<tr>
<th>Model</th>
<th>CS-10400</th>
<th>CS-10800/12800/15800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode/Polarity</td>
<td>Pulse +/-</td>
<td></td>
</tr>
<tr>
<td>Max. Peak Current / Max. Peak Power / Max. Peak Voltage</td>
<td>Max. Peak Current / Power</td>
<td>Max. Peak Voltage</td>
</tr>
<tr>
<td>4,000A / 60kW</td>
<td>60V</td>
<td></td>
</tr>
<tr>
<td>400A / 6kW</td>
<td>60V</td>
<td></td>
</tr>
<tr>
<td>40A / 600W</td>
<td>60V</td>
<td></td>
</tr>
<tr>
<td>8,000A / 80kW</td>
<td>40V</td>
<td></td>
</tr>
<tr>
<td>4,000A / 60kW</td>
<td>60V</td>
<td></td>
</tr>
<tr>
<td>400A / 6kW</td>
<td>60V</td>
<td></td>
</tr>
<tr>
<td>40A / 600W</td>
<td>60V</td>
<td></td>
</tr>
<tr>
<td>Pulse width</td>
<td>50µs<del>900µs, 50µs</del>120µs (at 8,000A) (Resolution:10µs)</td>
<td></td>
</tr>
<tr>
<td>Measurement point</td>
<td>Measurement point can be specified. (Resolution :10µs)</td>
<td></td>
</tr>
<tr>
<td>Horizontal axis range</td>
<td>100mA~1,000A/div</td>
<td></td>
</tr>
</tbody>
</table>

Optional Pulse Unit

This is an optional unit prevents the characteristic change and the breakdown from getting heat. We can configure the rising time of the pulse from 1/3/5ms, pulse width within the range of 1ms to 20ms, interval time within the range of 100ms to 2s. (This unit will be attached inside the curve tracer, so please order this unit when you order the curve tracer, or we will ask you to send your tracer to our factory.)
Test adaptors

- Test adaptors for discrete packages

CS-500 (Standard)
Test adaptor:
Used to connect your tool to Fixture.

Heat resistant
TO Socket
200℃, 350A (500μs)

Fixture for TSSOP 14
※Fixture Not for CS-301

CS-508
Adaptor for SMD type
※Fixture Not for CS-301

Example:
Connector pins on the bottom of Socket

CS-501A
TO-220/247
CS-502
AXIAL
CS-503
TO-263-3/
D2PAK
CS-504
TO-252-3
CS-505
TO-263-7
CS-506
TO-252-5
CS-507
SC-70-3/
SOT-323-3
CS-509
SC-59A/
SOT-23-3
CS-510
SC-62/
SOT-89

CS-508
Adaptor for SMD type
※Fixture Not for CS-301

Contact us if other types of sockets are needed.

Standard accessories

Use test adaptors on measurements of devices. Fixtures equips the safety mechanism in which the measurement stops when the cover opens.

Fixture S

CS-301
(comes with CS-3100)

Fixture M

CS-302
(comes with CS-3200/3300)
CS-303
(comes with CS-5100/5200/5300)

CS-304
(comes with CS-5400)

(Note: Test adaptor is optional and does not come with the unit.)

Patch-panel for Fixture M
(comes with all units except for CS-3100)

Fixture M

Cable for High Current (a set of two)
CS-006
(comes with CS-5400) 20cm
CS-007
(comes with CS-10400/10800/12800/15800) 30cm

Contact us for custom-made cables. We can change clips, lengths, withstand voltages, etc.

Standard set of leads
CS-005
(comes with all units except for CS-3100)
Banana cables (2 red for HV, 2 green, 2 black, 1 yellow)
Alligator clip (2 Red, 2 green, 2 black, 1 yellow)
A software application, CS-810, will automate reconnection of terminals of 6 in 1, 2 in 1 or multiple devices clips. CS-810 even controls relay units, thermostatic chambers and hot plates, so it can measure the temperature characteristics of each chips in 6 in 1 modules.

Switch Controlling Unit

**CS-701**
SC-701 is a must unit in order that the software CS810 can controls each CS-700 scanner unit up to 8 units, by connecting a PC through Ethernet. Multiple CS-701 (Max.10 units) can operate in parallel if given IP addresses.

**Relay Unit**

**LV Relay Unit**
CS-702
300V/7.5A/30A (Pulse)
10CH

**HV Relay Unit**
CS-703
5kV/0.5A
10CH

**HC Relay Unit**
CS-704
2kV/7.5A/1,000A (Pulse)
10CH

**Gate/Short Unit**
CS-707
Curve racer side:
300V/7.5A/15A (Pulse)
Device side:
5kV/7.5A/15A (Pulse)
10CH

**HV-HC Relay Unit**
CS-708
5kV/7.5A/1,500A (Pulse)
2CH

**HV-HC Relay Unit**
CS-709
5kV/7.5A/1,500A (Pulse)
4CH

**Extension Unit**

**Extension Unit**
CS-706
5kV/1,000A (Pulse)
In case CS-5400 is used, modifications are required.

**HV/HC Switch Unit**
CS-705
5kV/1,000A (Pulse)
HV/HC switching (Auto/Manual) supported
- For CS-3200/3300/5200/5300

**HV/HC Switch Unit**
CS-710
5kV/1,500A (Pulse)
HV/HC switching (Auto/Manual) supported
- For CS-5400

Example: connecting the unit to IGBT 2 in 1 module.
Temperature characteristics measurement
CS-810 automatically measures temperature characteristics, controlling the scanner system and hotplates, etc.

The picture on the right is a hotplate controllable combination of curve tracers, hotplates, and scanners. It will let us perform automatic measurement of multiple devices, 6 in 1 module, etc.

Fixtures with hotplate functions
CT1050
Maker: CATS Inc.
Max. Temperature: 200°C
Max. Voltage on devices 5kV
(Insulating surface of heater 5kV)
Max. Current: 1,000A
Interlocking (when you open the cover, curve tracer stops outputting.)

Hot-Plate
PA3020/PA3040
Maker: MSA Factory Co., Ltd.
Max. Temperature: 300°C
Hot plate measurement:
PA3020: 200×200
PA3040: 200×400
Monitor Temperature by External temperature sensor.

Thermostatic chambers are available.
Contact us for the details.

Prober cable:
This is used to equip terminals of curve tracers inside Probers and large fixture.

CS-305
Cooling fan, LED light, Warning light, Power supply outlet and Interlock are equipped.
External dimensions: 630Wx520Hx530D

Large Fixture CS-307
Interlock equipped
External dimensions: 500Wx520Hx520D
CS-810 is an optional Software application that controls curve tracers, scanners, hotplates performing measurement and thereby automates the measurement. This makes improvement great in work efficiency.

**Easy to transfer the configuration measured to PC**

By transferring the configuration measured manually on curve tracer to PC, you can set up the sequence. The programming knowledge is not required and anyone can set up it easily.

**Measurement of static characteristics (Leakage current, Saturation voltage, VF, Vth, etc.)**

Measurement type: **Sweep**
- Point with the larger data than the specified value.
- Point with the smaller data than the specified value.
- Point with the data closer to the specified value.
- Point with data equal to the specified value under interpolation.

Trial Measurement:
This is a function for debugging and the sequence can be confirmed.

Measurement type: **Stress**
Logging of voltage or current is available by biasing constant voltage or constant current for a long time. This is used for Stress test and reliability test.

Measurement type: **Vth**
Makes measurement with the curve tracer’s Vth Search function.

**Output Window**

A selection of export formats For the log file.

Shows the worst data for Item in each test

Details for selected test suite.

Configurations for selected item.
Comparison 10 traces and currently measured curve

**Comparison** between the waveforms and Judgment functions with reference curve.

**Waveforms save/recall** from PC data up to 10 waveforms which stored at CSV file basis.

**Rescaling** storing CSV data at an arbitrary interval in voltage axis.

**Cursor function** displaying values at cursor position shown in a list. Between the two sampling points, this function interpolates the measured data.

**Annotations** can be attached to the curves respectively.

**Saving the images** choosing image format (PNG/BMP/JPG/TIFF) with a set of cursor values.

**A selection of Graph styles**
- **Settable items** -
  Chart title, background color, cursor color, line style (solid, dotted, broken)
  For X and Y axes: Title, what data to be assigned, Scale (Log, linear) For Y axis only, intervals, min value, max value and grids.

**The measuring function for the transfer characteristics (Vge-Ic/Vge-Vce)**

It was difficult for a curve tracer to measure the transfer characteristics, however we can measure it now.

**Various formats to save curves for characteristics**
(CSV and image as PNG/BMP/JPG/TIFF)

**Cursor function** displaying in X axis and Y axis interpolated values

**Customizable chart area**
Chart title, axis label, background-color, and the axis ranges are all customizable.

**Load/Save function of Configurations**
for characteristics measurement and the customize done to the chart area.
Measurement of devices

Multiple devices measurement and recordings can be performed in a short time.

Operators just need to input sample name according to the device replacements and connection changes to repeat the same measurements. Judgments (Pass/Fail) at conditions given will be shown for each measurement, and images and waveforms data also will be stored automatically.

1. Input sample name and set it to Fixture.
2. Displays the measured value and the judgment results during measurement.
3. Popup stops the measurement or gives instructions based on the measurement results.
4. Popup stops the measurement or gives Instructions based on measured items.
5. Logs on the measurement can be exported to CSV file or Excel file afterwards. Logs on Stress test will be saved on separate files. Re-measurement of the selected item can be performed.

Measurement function of circuit modules

This software controls scanner system as well as The curve tracer. As it even controls open/short and HV/VC, all the measurement for a module can be fully automatically performed without a need for unplugging.

Configuration on one-circuit can be applied to the other circuit as the application supports copy & paste.

Unused Gates and Emitters can be short-circuited.
Evaluation of Semiconductor Temperature characteristics measurement

CS-810 controls hotplates too. Even measurement that takes a long time such as per temperature can also be performed automatically.

Currently, we just offer fixtures with hotplates, but we are trying our best to offer a unit simply provides hotplates or fixed-temperature chamber. For details on supported units, feel free to ask us.

Stress test

A wide variety of parameters can be incorporated in stress test.

This software supports long-time reliability tests. While the software watches the voltage and the current via curve tracers, diffs of those are logged. Auto measurement of parameters is available in the track or around of the stress test. The biasing will stop in excess of the limit value which is set for current or voltage as a lower and a upper limits.

The software measures Ic or Vce (Interval: 10s to 2h) keeping a certain voltage or current (10s to 1,000h)
Software Application for parameter measurement of semiconductors : CS-810

- Test of Discrete devices
  Measurement of multiple devices with one touch operation after cable connection

CS-810 will let us copy the configuration for one circuits to the others up to 10CH*, making it easier to iterate the circuits and perform measurement for each Circuit.

* Up to 10 systems operate in parallel on CS-700 Series.

Measurement of wafers

Devices on wafers can be measured by connecting a prober system.

We have cables for connections to probers. Some terminal has interlocking feature. So you can use it safely.

Contact us for the customized semiconductor parameter measurement software.
## Loop Correction

Software Simulated loop procedure by software thinning process

### Step Generator

- Offset Setup
  - Range: -10 times ~ +10 times of SETTING UP of STEP AMPLITUDE
  - Resolution: 1% of SETTING UP of STEP AMPLITUDE

### Current mode Amplitude range

- Max. Current: 21 steps/50nA to 200mA, switchable
- Max. Voltage: 2A, More than 10V

### Voltage mode Amplitude range

- Max. Current: 6 steps/50mV to 2V, switchable
- Max. Voltage: 500mA, 30V, 500mA, 3kV, 10mA, 40V

### Step rate

- Twice of 50Hz or 60Hz (the same rate when AC mode), Pulse interval when HC mode

### Pulse step

- Pulse width: 50μs ~ 400μs (10μs step)
- When HC mode set, approx. 100μs wider-pulse width against collector supply pulse

### Number of steps

- 0 ~ 20 steps

### AUX Output

- Range: OFF, -40V ~ 40V (Switchable at 100mV step)

## Measurement Mode

- REPEAT, STOP/SINGLE, SWEEP

## Vertical axis (Full scale: 10div)

### Collector current

- Range: HV Mode: 1μA/div ~ 2A/div, 20 steps 1-2-5 switchable (HC mode written separately)
- Accuracy: +2% of Readout + 0.05×VERT/div to the loop correction error of the following max. peak voltage
  - 0.5μA (30V), 1μA (300V), 6μA (3kV), 12μA (5kV)
  - 30V, 300V, 3kV More than 10% of Max. peak voltage, More than 30% (5kV)

### Emitter current (LEAKAGE)

- Range: 1nA/div ~ 2mA/div, 20 steps 1-2-5 switchable (Collector Supply mode: LEAKAGE)
- Accuracy: +2% of Readout + 0.05×VERT/div + less than 1nA

## Horizontal axis (Full scale: 10div)

### Collector voltage

- Range: HV mode: 50mV/div ~ 5V/div, 7 steps 1-2-5 switchable (HV mode written separately)
- Accuracy: 2% of Readout less than +0.05×HORIZ/div

### Base/Emitter voltage

- Range: 50mV/div ~ 5V/div, 7 steps 1-2-5 switchable
- Accuracy: 2% of Readout less than +0.05×HORIZ/div

## Screen

- Display: 8.4 inch TFT LCD
- Number of Data: 1,000 points/trace (AC, Full-wave rectification)
- Trace display: Interpolation display between points, Dot display
- Average: OFF, 2 ~ 255 times
- Persistence: OFF, SHORT, LONG, unlimited length
- Internal waveform storage (REF): 4 screens

### Cursor measurement

- DOT: Vert, Horiz, β or gm
- LINE: Vert, Horiz, 1/grad, intercept
- FREE: Vert, Horiz, β or gm
- WINDOW: Vert in WINDOW area, Horiz, β or gm

## Data recording/Readout

- Internal memory: Setup: 256, REF: 4 screens
- External memory: USB1.1: Setup, Waveform, Screen hardcopy (BMP, TIFF, PNG)

## Remote

- Remote on LAN 10BASE-T/100BASE-TX 1 port

## Power supply

- CS-3xxx, 5xxx: AC100V-AC240V 50/60Hz, Max Power: 500VA (operation)
- CS-1xxx: AC200V single phase 50/60Hz, Max Power: 10kVA (operation)

## External dimensions (mm)

### CS-3xxx, 5xxx

- CS-3100, 5100: 424W x 220H x 555D, approx. 28kg
- CS-3200, 3300, 5200, 5300, 5400: 424W x 354H x 555D, approx. 43kg

### CS-1xxx, 2xxx, 3xxx, 5xxx

- CS-10400, 10800, 12800, 15800: 1,110W x 1,216H x 1,150D, approx. 370kg

## Common Specifications

### Output range for each model

#### HV mode Max. Peak Voltage/Max. Peak Current (Pulse current)

<table>
<thead>
<tr>
<th>Model</th>
<th>CS-3300</th>
<th>CS-3200</th>
<th>CS-3100</th>
<th>CS-5400</th>
<th>CS-5300</th>
<th>CS-5200</th>
<th>CS-5100</th>
<th>CS-10800</th>
<th>CS-10400</th>
<th>CS-12800</th>
<th>CS-15800</th>
</tr>
</thead>
<tbody>
<tr>
<td>+DC</td>
<td>-</td>
<td>-</td>
<td>10kV/400mA</td>
<td>12kV/266mA</td>
<td>15kV/266mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEAKAGE/DC</td>
<td>3kV/75mA (150mA)</td>
<td>5kV/25mA (25mA)</td>
<td>3kV/75mA (150mA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectified SINE/AC</td>
<td>300V/750mA (1.5A)</td>
<td>30V/7.5A (15A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### HC mode Max. Peak Current/Max. Peak Power/Max. Peak Voltage

<table>
<thead>
<tr>
<th>Model</th>
<th>CS-5100</th>
<th>CS-5200</th>
<th>CS-5300</th>
<th>CS-5400</th>
<th>CS-10400</th>
<th>CS-10800</th>
<th>CS-12800</th>
<th>CS-15800</th>
</tr>
</thead>
<tbody>
<tr>
<td>+Pulse</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,000A/10kW/40V</td>
<td>1,500A/12kW/30V</td>
<td>-</td>
<td>4,000A/60kW/60V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(HC mode not equipped)</td>
<td>-</td>
<td>1,000A/10kW/40V</td>
<td>1,500A/12kW/30V</td>
<td>-</td>
<td>4,000A/60kW/60V</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>400A/4kW/40V</td>
<td>600A/4.5kW/30V</td>
<td>400A/6kW/50V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>400A/40kW/40V</td>
<td>600A/450W/30V</td>
<td>400A/600W/60V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Accuracy

Add 2% of Readout + 0.05×VERT/div to the loop correction error of the following Max. peak voltage

- 0.5μA (30V), 1μA (300V), 6μA (3kV), 12μA (5kV)
- 30V, 300V, 3kV More than 10% of Max. peak voltage, More than 30% (5kV)
<table>
<thead>
<tr>
<th>Model Name</th>
<th>Model Number</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main unit</td>
<td>CS-3100</td>
<td>3kV</td>
</tr>
<tr>
<td></td>
<td>CS-3200</td>
<td>3kV, 400A</td>
</tr>
<tr>
<td></td>
<td>CS-3300</td>
<td>3kV, 1,000A</td>
</tr>
<tr>
<td></td>
<td>CS-3100</td>
<td>1kV</td>
</tr>
<tr>
<td>CS-3200</td>
<td>1kV, 400A</td>
<td></td>
</tr>
<tr>
<td>CS-3300</td>
<td>1kV, 1,000A</td>
<td></td>
</tr>
<tr>
<td>CS-5100</td>
<td>5kV</td>
<td></td>
</tr>
<tr>
<td>CS-5200</td>
<td>5kV, 400A</td>
<td></td>
</tr>
<tr>
<td>CS-5300</td>
<td>5kV, 1,000A</td>
<td></td>
</tr>
<tr>
<td>CS-5400</td>
<td>5kV, 1,500A</td>
<td></td>
</tr>
<tr>
<td>CS-10400</td>
<td>10kV, 4,000A</td>
<td></td>
</tr>
<tr>
<td>CS-10800</td>
<td>10kV, 8,000A</td>
<td></td>
</tr>
<tr>
<td>CS-12800</td>
<td>12kV, 8,000A</td>
<td></td>
</tr>
<tr>
<td>CS-15800</td>
<td>15kV, 8,000A</td>
<td></td>
</tr>
</tbody>
</table>

| Fixture S  | CS-301       | Come with CS-3100 |
|           | CS-302       | Come with CS-3200/3300 |
|           | CS-303       | Come with CS-5100/5200/5300 |
|           | CS-304       | Come with CS-5400 |
| Large Fixture | CS-307     |
|             | CS-308       |                       |

| Prober cable | Fixure cable for CS-5400 | Custom-made (Contact us) |
|              | Prober cable            | Custom-made (Contact us)  |

| Alligator Clip | Small alligator clip Red 10pcs | CS-001 |
|                | Small alligator clip Black 10pcs | CS-002 |

| Cable | High voltage wire Red 5pcs | CS-003 | Banana clip, 5kV, 30cm |
|       | Wire Black 5pcs            | CS-004 | Banana clip, 30cm |
|       | Standard Lead Set          | CS-005 | Come with Main unit except CS-3100, Banana cable 30cm (Red 2pcs for HV, Black 2pcs, Green 2pcs, and Yellow 1pc. Alligator Clip (Red 2pcs, Green 2pcs, Black 2pcs, and Yellow 1pc) |
|       | Cable for High Current     | CS-006 | 20cm, 2pcs come with CS-5400 |
|       | Cable for High Current     | CS-007 | 30cm, 2pcs come with CS-10400/10800 |

| Software | Semi-conductor parameter search | CS-800 | Built in Main unit |
|          | Semi-conductor parameter measurement | CS-810 | Install in PC |

| Test Adapter | Test adapter | CS-500 | Come with Main unit |
|             | TD type test adapter | CS-501A |
|             | AVIL type adapter    | CS-502 |
|             | TD-262-3(D2PAK) type adapter | CS-503 |
|             | TD-252-3 type adapter | CS-504 |
|             | TD-252-5 type adapter | CS-505 |
|             | SC-994/SOT-23-3 type adapter | CS-506 |
|             | SC-62/SOT-89 type adapter | CS-507 |

| Scanner unit | Switch control unit | CS-701 | Integrated controller for each unit |
|             | LV Relay unit        | CS-702 | 300V/30A 10CH |
|             | HV Relay unit        | CS-703 | 5kV/3A 10CH |
|             | HC Relay unit        | CS-704 | 25kV/1,000A 10CH |
|             | HV-HC Switch unit    | CS-705 | 5kV/1,000A, Extension unit with HV/HC switch function |
|             | Extension unit       | CS-706 | 5kV/15A |
|             | Gate/Short unit      | CS-707 | Curve tracer side:300V/8A Device side:5kV/8A 10CH |
|             | HV-HC Relay unit 2CH | CS-708 | 5kV/1,500A 2CH |
|             | HV-HC Relay unit 4CH | CS-709 | 5kV/1,500A 4CH |
|             | HV-HC Switch unit (for CS-5400) | CS-710 | 5kV/1,500A, Extension unit with HV/HC switch function |

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Model Number</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Name</td>
<td>Model Number</td>
<td>Remarks</td>
</tr>
<tr>
<td>Fixture with hotplate function</td>
<td>CTJ1050</td>
<td>Heater surface 5kV insulating, Max. Temperature:200°C, Interlock function</td>
</tr>
<tr>
<td>Hotplate</td>
<td>PA3020</td>
<td>Dimension of Plate portion:200x200mm</td>
</tr>
<tr>
<td></td>
<td>PA3040</td>
<td>Dimension of Plate portion:200x400mm</td>
</tr>
</tbody>
</table>

*The products shown in this catalogue are current models at the date of publication.
Designs and specifications are subject to change without notice.*

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September 31, 2022