

SURGE TESTER

(Model : KT-200SG)



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SPECIFICATIONS

DESCRIPTION

INSPECTION

WAVEFORM

EQUIPMENT SPECIFICATIONS

PRODUCT OVERVIEW

This device tests electrical, electronic components(finished products) or circuits for Surge Immunity capability.

APPLICABLE STANDARDS

The WAVE 1 waveform of this equipment is designed based on the Combination Waveform defined in IEC 61000-4-5.

PERFORMANCE & SPECIFICATIONS

1. Output Voltage Range : Min. 5.0 V to Max. 200.0 V
2. Output Polarity : Positive & Negative Selectable
3. Output Waveform Specifications
 - 1.2 / 50 μ s Open Circuit Voltage Waveform and 8/20 μ s Short Circuit Current Waveform
 - 5 / 50 μ s Open Circuit Voltage Waveform
 - 10 / 100 μ s Open Circuit Voltage Waveform
 - 10 / 200 μ s Open Circuit Voltage Waveform
4. Open Circuit Voltage Waveform Accuracy
 - ± 30 % of Front Time Value (Front Time Value)
 - ± 20 % of Half Time Value (Half Time Value)
5. Short Circuit Current Waveform Accuracy
 - ± 20 % of Front Time Value (Front Time Value)
 - ± 20 % of Half Time Value (Half Time Value)
6. Output Impedance
 - 1.2 / 50 μ s Combination Waveform : 2 Ω
 - Other Waveforms : 40 Ω

7. Indicating Voltmeter Specifications
 - Indicating Range : F.S 200.0 V
 - Indicating Resolution : 0.1 V
8. Output Control Specifications
 - Output Speed(Period) : 2 ~ 30 sec. adjustable
 - Output Count : 1 ~ 99 times adjustable
9. Operation Mode
 - Auto Mode : Output Speed(Period) and count to perform automatic testing
 - Manual Mode : One Shot Test
10. Operation Input Switch (3 Mode)
 - Start : Auto Test & One_shot Test Input
 - Reset : Reset Input
 - Pause : Run / Stop Input
11. Function Selection Switch
 - POS / NEG Toggle Switch : Select output voltage polarity
 - S-T / D-T Toggle Switch : Surge Test on D.U.T (S-T : Surge Test) or external Device Test (D-T : Device Test) connection selection
12. Power Supply : 220 VAC 50/60 Hz, $\pm 5\%$
13. Power Consumption : Approx. 300 VA

DIMENSIONS

420 (W) × 210 (H) × 580 (D)

WEIGHT

Approx. 24 kg

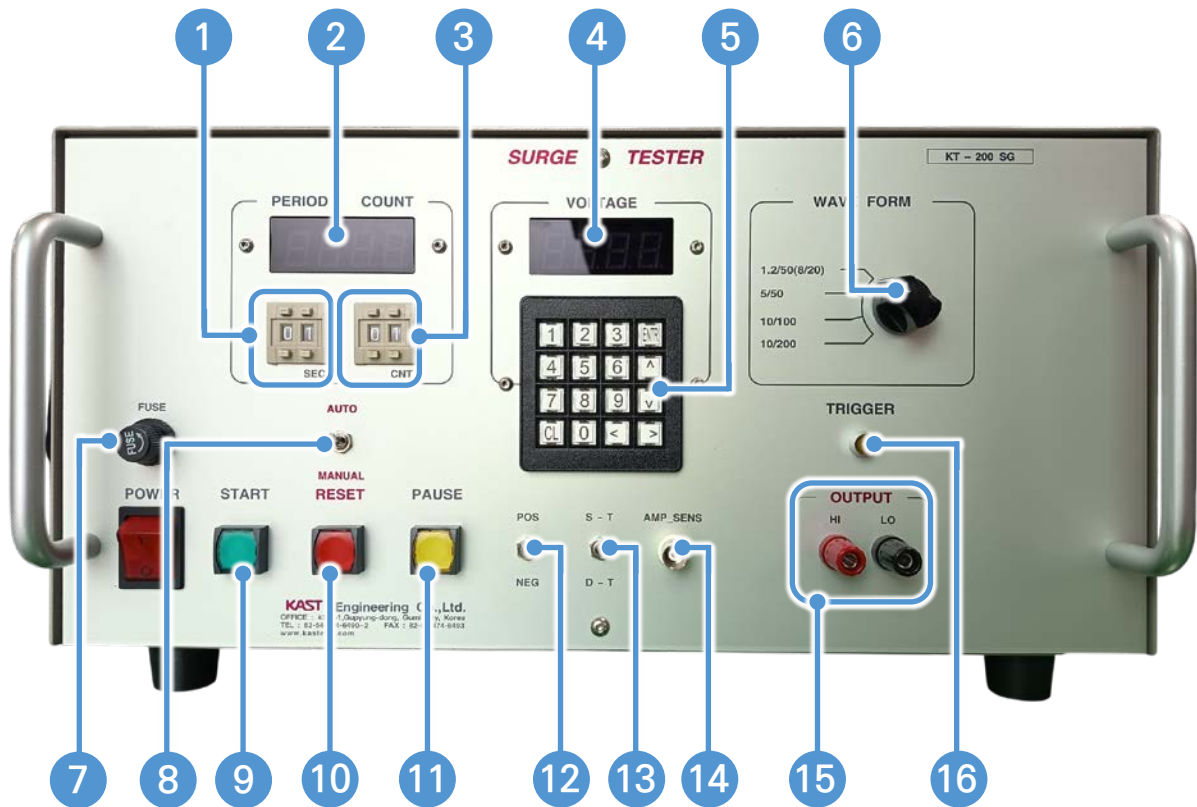
COMPONENTS

Item Name	Photo	Qty.	Tag
Power Cable		1 EA	
Test Output Cable	 ※ Length: Approx. 120 cm	1 EA	
External Line Input Cable	 ※ Length: Approx. 120 cm	1 EA	LINE + LINE -
Output Terminal Short Cable	 ※ Length: Approx. 12 cm	1 EA	
BNC Adapter		1 EA	

※ Surge Coupler (KT 200SG-CPL) is sold separately.

EQUIPMENT DESCRIPTION

FRONT PANEL



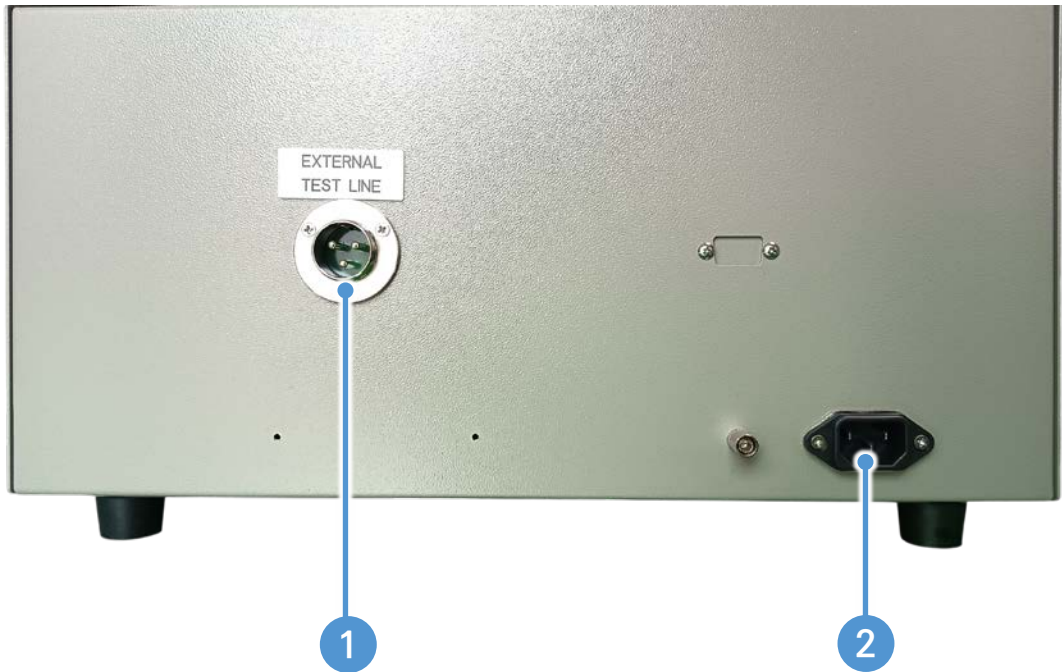
1. Numeric Switch for Output Period Setting (Auto Mode only) :
This function allows setting the output period (time interval) from 2 to 30 seconds.
2. Output Control Status Display : Displays the state of output control.
 - Output Voltage Period : 2 ~ 30 sec.
 - Test Output Count : 1 ~ 99 times
3. Numeric Switch for Output Test Count Setting(Auto Mode only) :
This function allows setting the output count from 1 ~ 99 times.
4. Digital Meter for Output Voltage Indication : Indicates the magnitude of the test output voltage.
 - Indicating Range (Full Scale) : 200.0 V
 - Resolution : 0.1 V

5. Keypad for Output Voltage Setting : Sets test output voltage by numeric input (0 ~ 200.0 V), or adjusted in step-up / step-down increments using the Up/Down or Left/Right cursor keys.
 - While operating the input keys, the display will blink. Press the Enter key to apply the entered value to the output voltage.
 - To set the output voltage to zero, press the numeric key [0] followed by [ENTER].
6. Output Waveform Selection Switch : This function allows 4 waveform types for testing.
 - 1.2 / 50 (8 / 20) Waveform : The open-circuit voltage waveform has a rise time of 1.2 μ s and a half-value time of 50 μ s, while the short-circuit current waveform has a rise time of 8 μ s and a half-value time of 20 μ s. These are simultaneously generated as a Combination Wave.
 - 5 / 50 : Open Circuit Voltage Waveform Output
 - 10 / 100 : Open Circuit Voltage Waveform Output
 - 10 / 200 : Open Circuit Voltage Waveform Output
7. Power Switch and Fuse (2A)
8. Toggle Switch for Operation Mode Selection (Auto / Manual)
 - Auto Mode : Automatically performs and ends test per preset period and count.
 - Manual Mode : The test is performed in One Shot Test mode by pressing the START switch.
9. Test Start Switch (Start)
10. Test Stop Switch (Reset)
11. Test Pause Switch (Pause)

12. Toggle switch for selecting the polarity of the test output voltage :
Sets the polarity of the test output voltage.
- POS- Mode : Positive polarity test mode
 - NEG- Mode : Negative polarity test mode
13. Toggle switch for selecting external equipment : This function allows another pre-connected external device to be connected to the D.U.T while the D.U.T is connected to this equipment.
(Example: semiconductor device characteristic curve tracer, etc.)
- S-T Mode : This device's test mode (Surge Test)
 - D-T Mode : External device's test mode (Device Test)
14. Current Monitoring Terminal : This terminal is used to observe the current waveform by connecting an oscilloscope. Since it is connected to a $0.1\ \Omega$ shunt resistor inside the internal circuit, it is useful when a high-performance current probe is not available.
(However, noise may occur during low-current measurement due to the non-isolated configuration.)
- Output Ratio : $0.1\ \text{V} / \text{A}$
15. Output Terminal (Hi_Volt) : Connect D.U.T for testing or measuring output waveform.
16. Output Trigger Lamp : Blinks whenever the voltage is output.

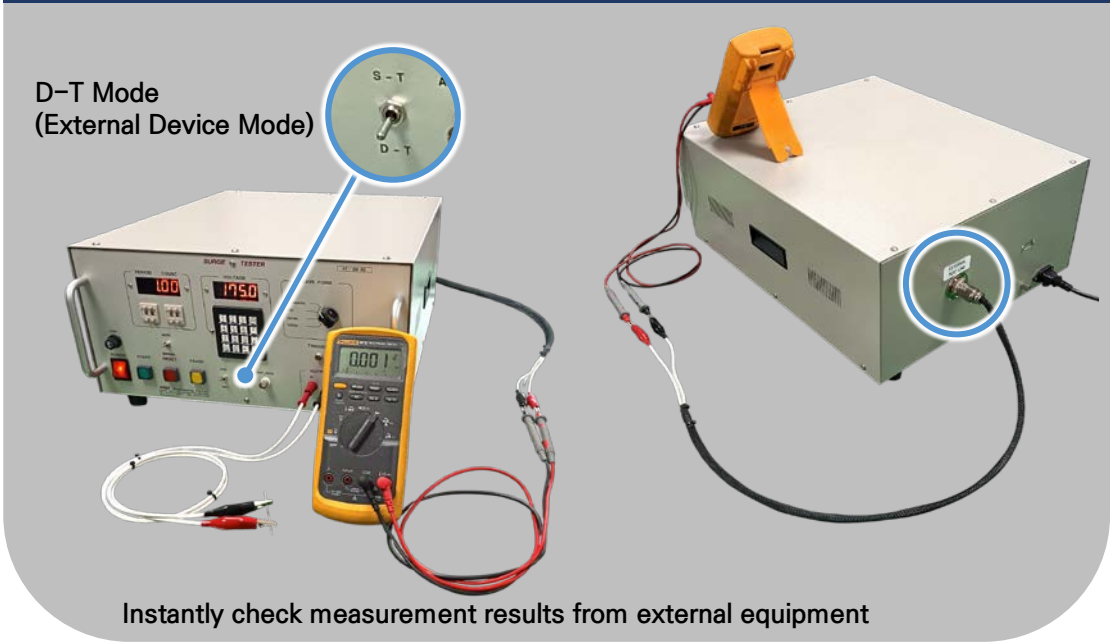
EQUIPMENT DESCRIPTION

REAR PANEL



- 1. External Device Connector
- 2. Operating Power Input : 220 VAC, 50/60 Hz

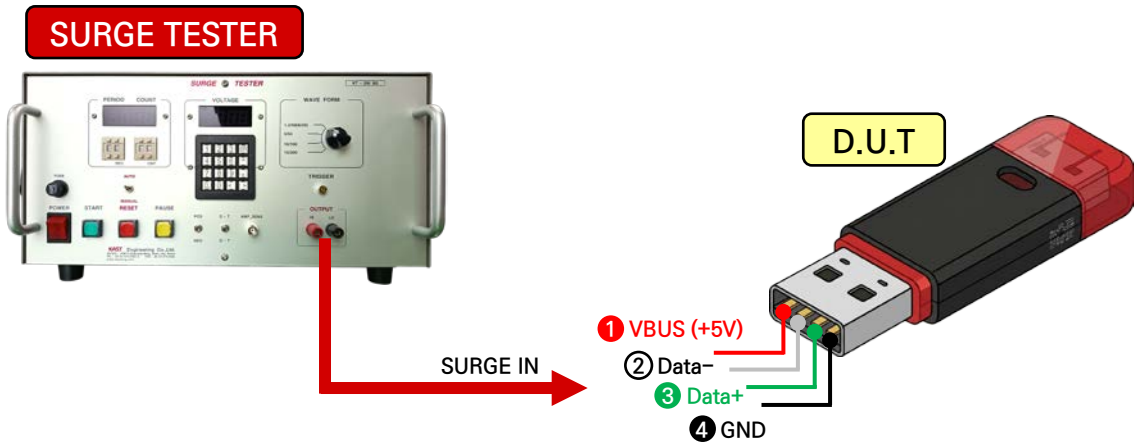
※ D-T Mode How to Use (External Device Connection)



INSPECTION METHOD

CASE 1. Unpowered Surge Test

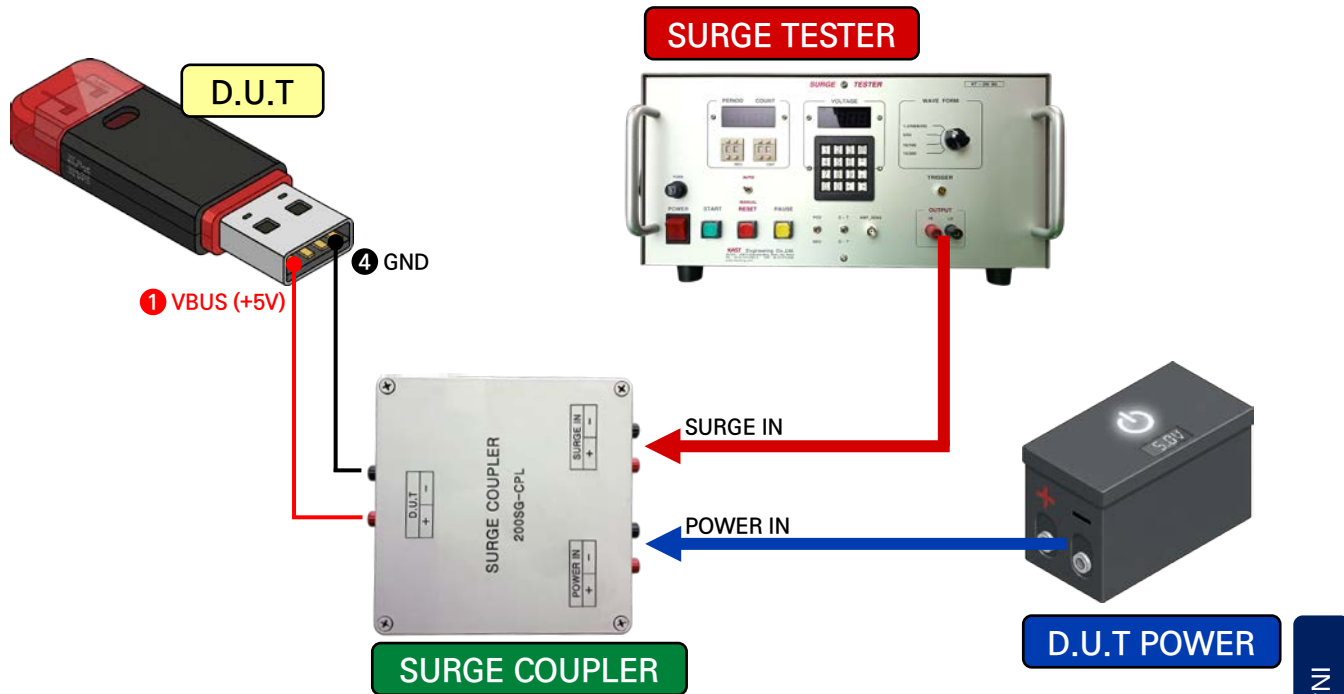
(USB device test example)



- D.U.T surge test – **When power supply to D.U.T is not required.**
- Without a surge coupler, Connect the Surge Tester's HI/LO output terminals to the D.U.T (component / circuit / device etc.) directly and perform surge application test.
- ✓ If the surge tester is directly connected to the DUT while power is being supplied to the DUT, damage to the surge tester may occur.

CASE 2. Live Line Test (Power Line Test)

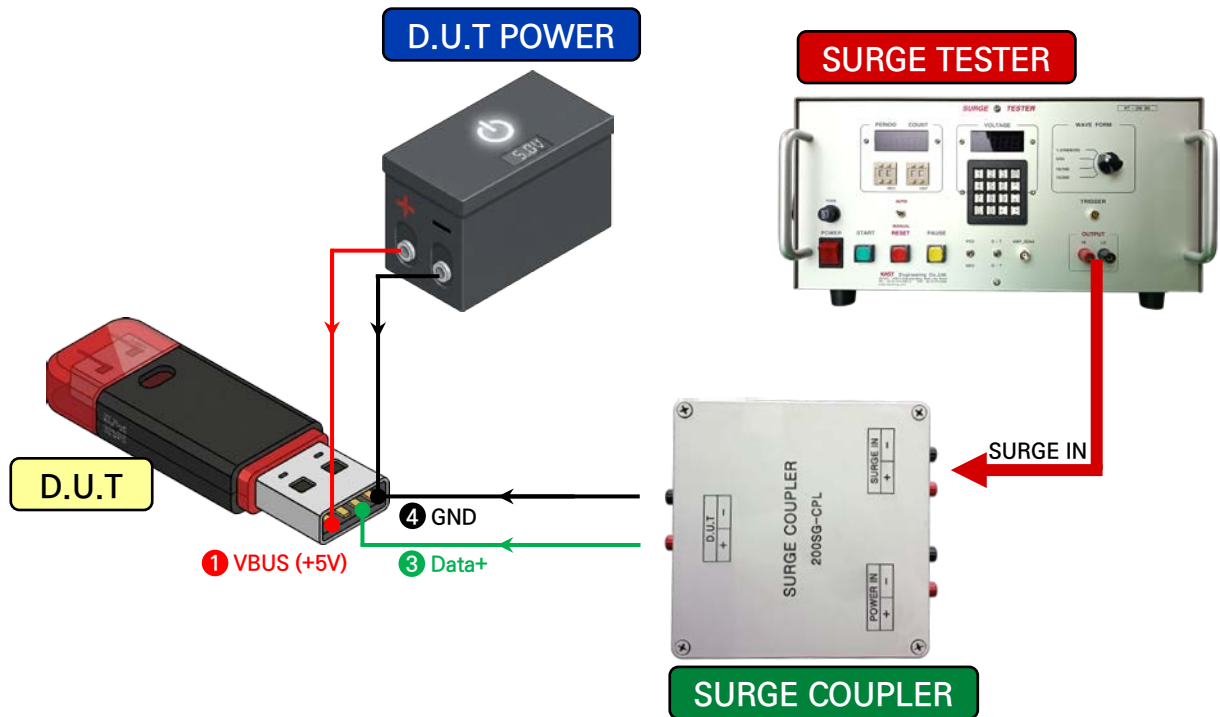
(USB device test example)



- Surge Testing Under **DUT Power Supply Condition**
 - Surge Testing on the **Same Line** as the DUT Power Line
 - Input the surge voltage and DUT power supply to the surge coupler, and connect the output of the surge coupler to the DUT.
- ✓ **Surge Testing of a Powered DUT : Surge Coupler Required! (To Prevent Damage to the Surge Tester)**

CASE 3. Live Line Test (Non-Power Line Test)

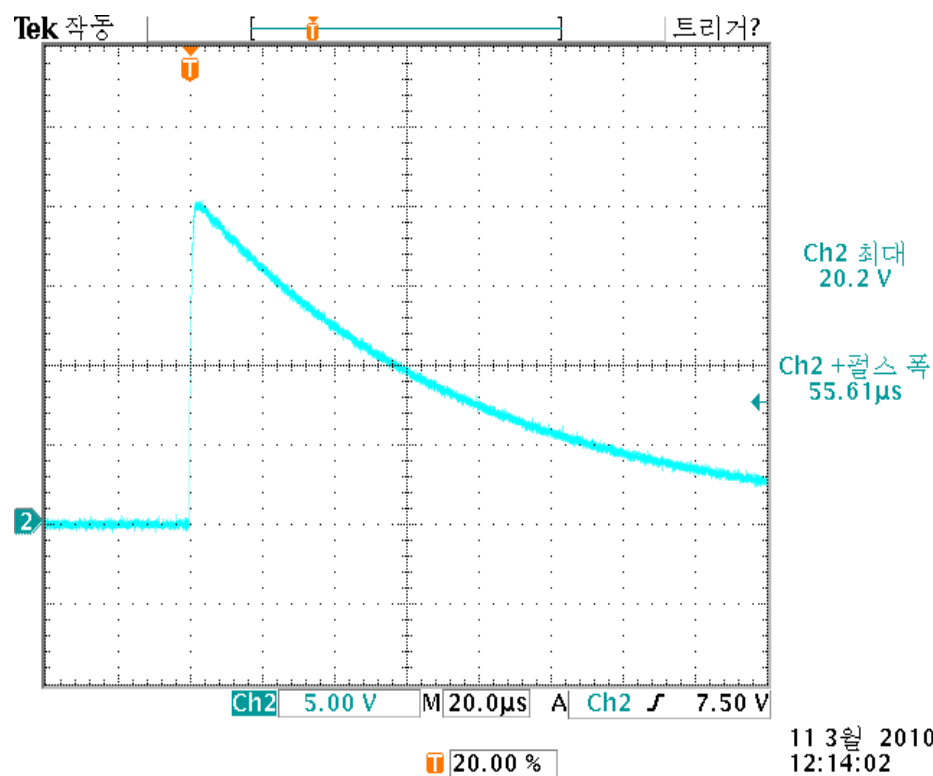
(USB device test example)



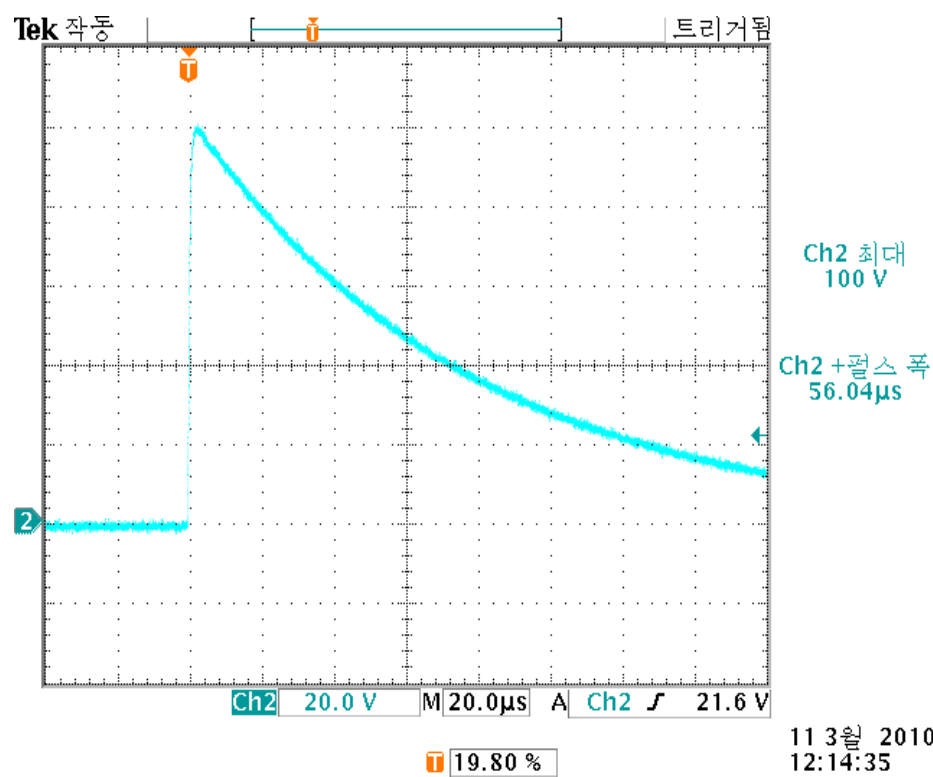
- Surge Testing Under **DUT Power Supply Condition**
 - Surge Testing on a **Different Line from the DUT Power Line**
 - Input the surge voltage to the surge coupler, and connect the output of the surge coupler to the DUT.
 - Connect the DUT power supply separately to the DUT power line.
- ✓ **Surge Testing of a Powered DUT : Surge Coupler Required! (To Prevent Damage to the Surge Tester)**

VOLTAGE WAVEFORM (POS. Voltage)

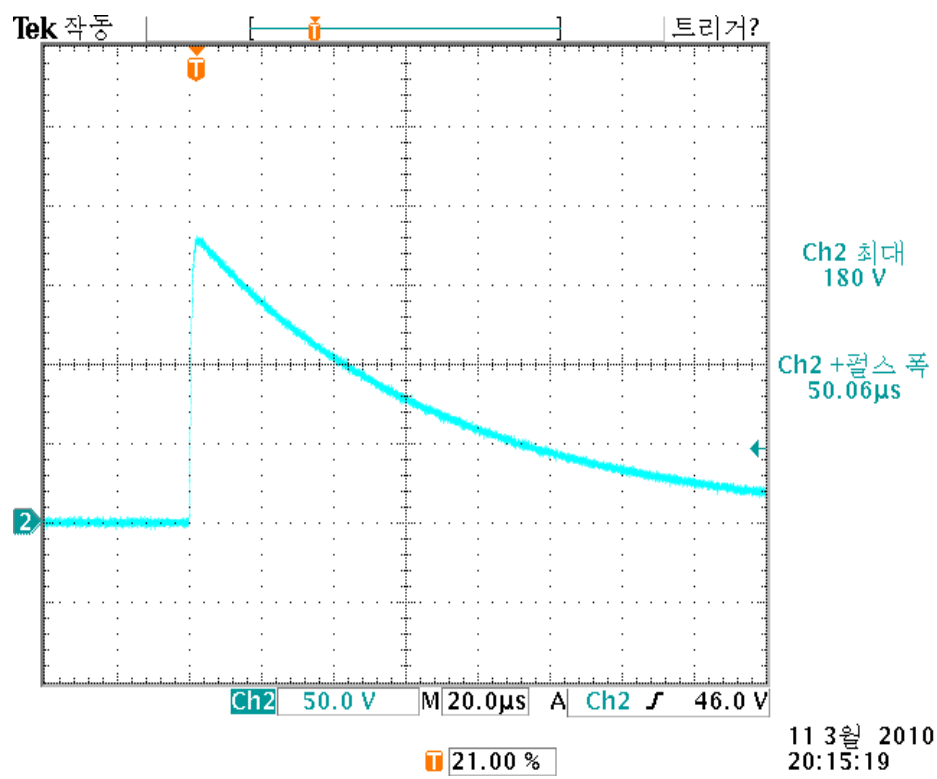
20 V



100 V

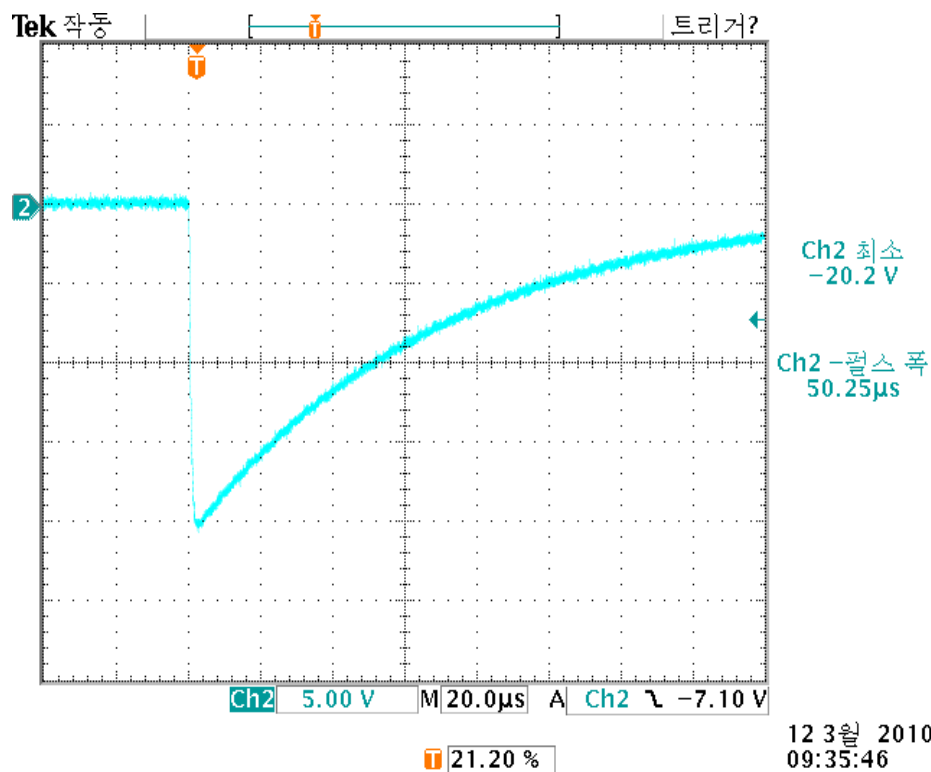


180 V

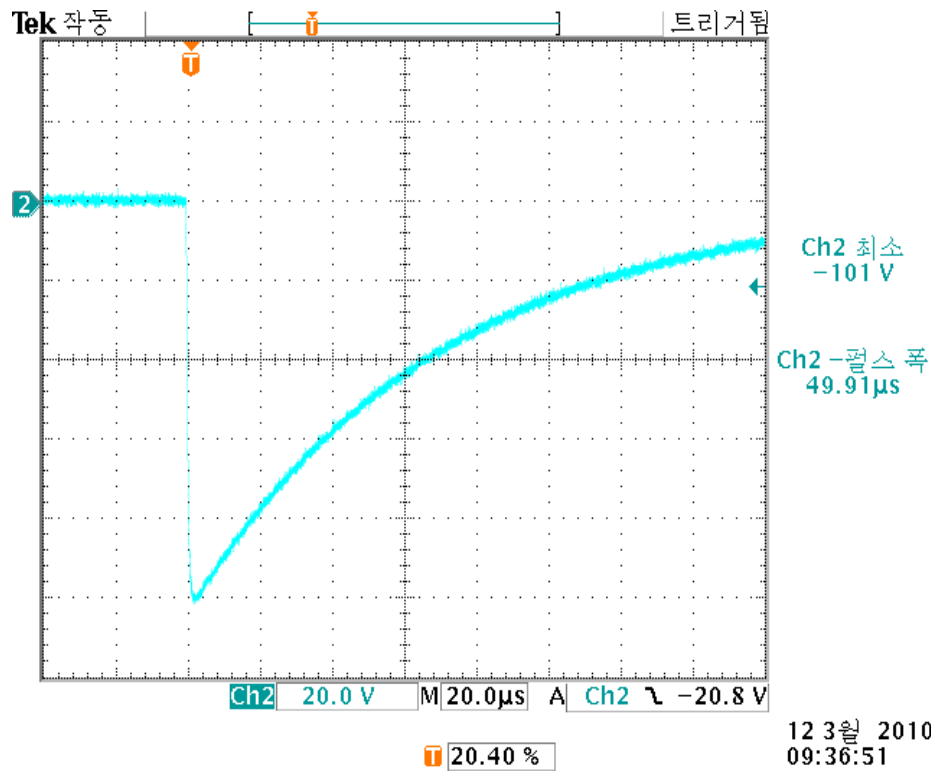


VOLTAGE WAVEFORM (NEG. Voltage)

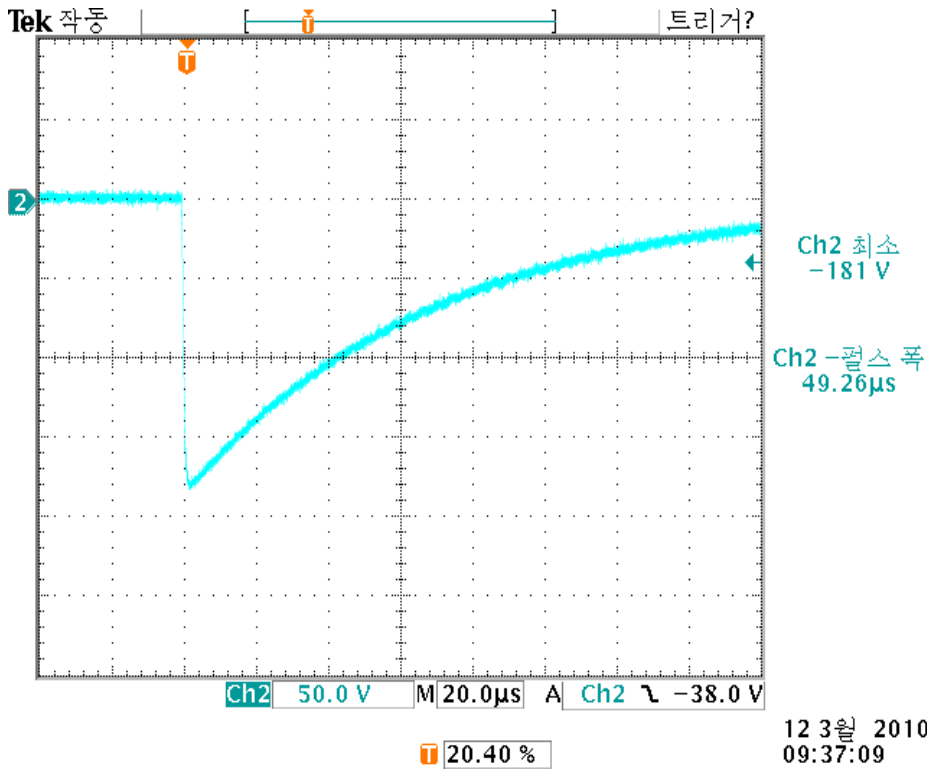
-20 V



-100 V

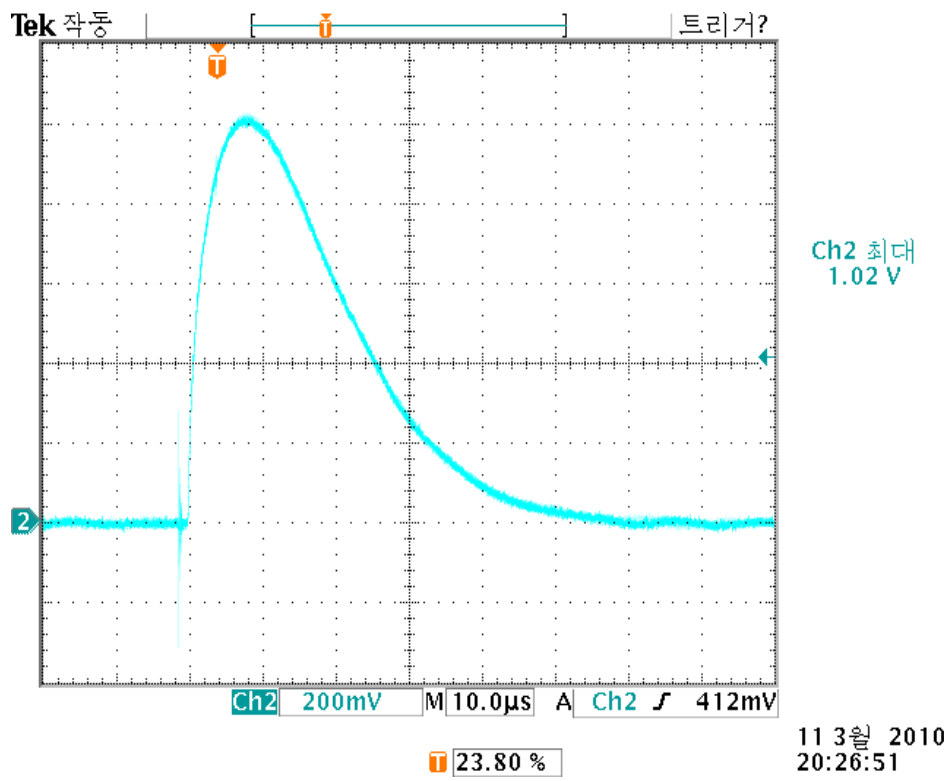


-180 V

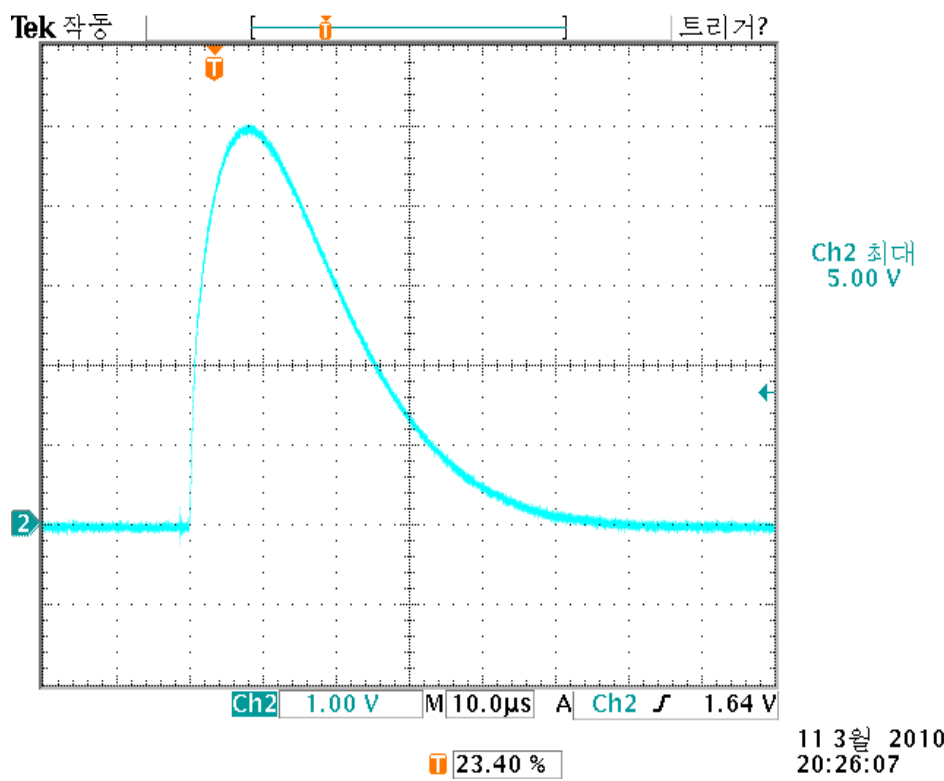


CURRENT WAVEFORM

10A (@ 20V)



50A (@ 100V)



90A (@ 180V)

