

Component Level ESD Simulator

ESS-6002 / 6008

Simulator to reproduce electrostatic discharges (ESD) which are caused by a charged human body or machine designed with capacitor type and discharge the ESD to electronic devices for evaluating the resistibility against ESD.

In case the discharger is a human body, the test is called as Human Body Model (HBM) and in case it is a metallic object, the test is called as Machine Model (MM). This simulator is available to perform the both tests.



Semi-Automatic Precision Type Probe Stand

- Available both for Human Body Model (HBM) test and Machine Model (MM) test
- Optimal for testing sensitive devices because of the output voltage from 10V (1V step)(ESS-6002).
- Enables to evaluate the robustness against the breakdown voltage with the output voltage up to 8kV (10V step).(ESS-6008)
- The direct discharge to the IC clip is available with the free board equipment
- Constant qualitative discharge is available with the semi-automatic operation (in Semi-Automatic Precision Type).
- Characteristics variation of DUT can be verified with measurement terminal (The measurement equipment is necessary besides)

Test Standard

Human Body Model	
AEC-Q100-002-Rev.D Jul.2003	
ESDA ANSI/EOS/ESD-STM5.1-2001	
IEC 61340-3-1Ed.1.0 2002	
IEC 60749-26 Ed.1.0 2003	
JEDEC JESD22-A114E Jan.2007	
JEITA EIAJ ED-4701/300 Aug.2001 Test Method304	
MIL-STD-883F 3015.7 Mar.1989	

Machine Model	
AEC-Q100-003-REV-E Jul.2003	
ESDA ANSI/ESD STM5.2-1999	
IEC 61340-3-2 Ed.1.0-2002	
IEC 60749-27 Ed.1.0 2003	
JEDEC JESD22-A115A Oct.1997	
JEITA EIAJ ED-4701/300 Aug.2001 Reference Test Method	

Specification

Main unit	
Parameter	Specification
Output voltage	High voltage model(ESS-6008):100V-8.0 kV±10%(10V step) Low voltage model(ESS-6002):10V-2.0kV±10%(1V step)
Polarity	Positive and negative
Repetition period	0.3~99s (0.1s step to 10s, 1s step over 10s)
No. of times of discharge	1~99 / continuation

Human Body Model(HBM) probe	
Parameter	Specification
Energy storage & discharge capacity value	100pF±10%
Discharge resistor value	1500Ω±1%

Output waveform at short					
Voltage	Peak current Ips	Rise time Trs	Fall down time Tds	Ringing Irs	
250V	0.17A±10%				
500V	0.33A±10%				
1000V	0.67A±10%	min : 2ns	min : 130ns		<15% of Ips
2000V	1.33A±10%	max : 10ns	max : 170ns		
4000V	2.67A±10%				
8000V	5.33A±10%				

Machine Model (MM) Probe	
Parameter	Specification
Energy storage & discharge capacity value	200pF±10%
Discharge resistor value	0Ω

Output waveform at short				
Voltage	1st peak current Ip1	2nd peak current Ip2	Cycle	Ringing Irs
100V	1.75A±10%			
200V	min : 3.50A-10% max : 3.80A	min : 67% of Ip1	min : 66ns	≤30% of Ip1
400V	7.0A±10%	max : 90% of Ip1	max : 90ns	
800V	14.0A±10%			

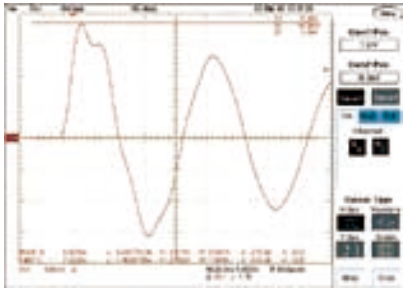
Parameter	Specification
Sweep mode	Available
Power supply	AC100~240V±10% 50/60Hz
Operating temperature & humidity ranges	15~35°C 25~75% (Without dew)
Dimension / Mass	(W)340x(H)199x(D)300mm (Projection excluded) Approx. 8kg.
Energy storage resistor	≤10MΩ

Output waveform at 500Ω(±1%) load					
Voltage	Peak current Ipr	Ipr/Ips	Rise time Trs	Fall down time Tds	Ringing Irs
250V	-	-	-	-	-
500V	min : 63% of Ips max : 0.25A-25%	≥63%	5~25ns	200ns±40ns	≤15%
1000V	min : 63% of Ips max : 0.5A-25%	≥63%	5~25ns	200ns±40ns	≤15%
2000V	min : 63% of Ips max : 1.0A-25%	≥63%	5~25ns	200ns±40ns	≤15%
4000V	min : 63% of Ips max : 2.0A-25%	≥63%	5~25ns	200ns±40ns	≤15%
8000V	-	-	-	-	-

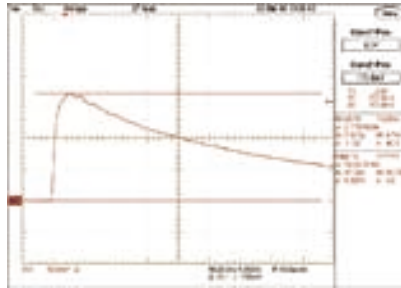
Output waveform at 500Ω(±1%) load			
Voltage	Peak current Ipr	Current at 100ns I100ns	Current at 200ns I200ns
100V	-	-	-
200V	-	-	-
400V	min:0.85A max:1.1745A	0.29A±10%	min:35% of I 100ns max:45% of I 100ns
800V	-	-	-

For Automotive Electronics
 High Frequency Surge Simulator
 Transient Surge Simulator
 Electrostatic Discharge (ESD) Simulator
 DC Power Supply Voltage Fluctuation Simulator

Output waveform



MM PROBE



HBM PROBE

Free Type Probe Stand 18-00075A

Free Type Probe Stand 18-00075A

Parameter	Specification
Dimension / Mass (probes stand unit)	(W)200 × (H)330 × (D)290 mm Approx. 1.5kg
Dimension / Mass (free board)	(W)100 × (H)27 × (D)180 mm(Projection excluded) / Approx. 200g
Vise gap	110 mm
Others	V-shape block included



When free type probe stand 18-00075A is used

Noise is discharged from the IC clip attached with the probe stand to devices which are fixed using the free board or the V-shape block.



Semi-Automatic Precision Type Probe Stand 18-00076A

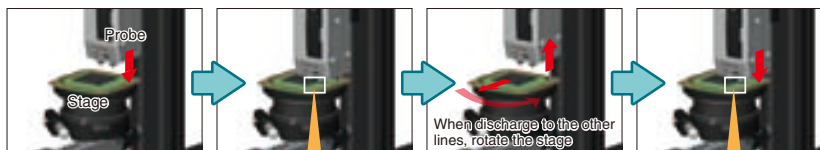


Easy test to semiconductors whose pitches are mm or inch since the minimum resolution accuracy is 0.01mm.

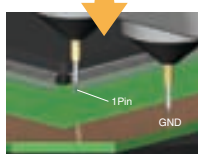
- The stage moves automatically accompanied by the discharge.
- Easy removal and attachment of the probe.
- Available for easy measurement with a measurement equipment after the discharge since the probe can be fixed at the discharge.

Semi-Automatic Precision Type Probe Stand 18-00076A

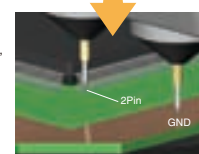
Parameter	Specification
Dimension / Mass	(W)250 × (H)400 × (D)300 mm / Approx. 7 kg
Applicable IC size	Maximum size : 40 mm × 40mm Minimum lead pitch : 0.4 mm
X-Y-θ table	
X axis	Manual movement : 20mm with dovetail groove feed screw mechanism
Y axis	Motor drive (Maximum velocity : 13 mm/s) Movement : 40 mm (Y resolution : 0.01mm) * Stepping motor & ball screw
θ axis	Manual movement: 360°
Z axis	Manual movement : 20mm (A spring built-in)
Origin adjustment	Manual



The discharge pin contacts in between 1-pin, and GND and ESD is applied there when lower the probe down.



The stage moves 1 pitch distance of the DUT accompanied with rising the probe up. Lower the probe down again. Then, the discharge pin contacts in between 2-pin and GND, and ESD is applied there.



Afterwards, repeat the same so that ESD can be applied to each pin of DUT by turns. When discharge to the other lines, rotate the stage.