

CONFIDENTIAL

Independent partner laboratory

检测报告

Test Report

器件型号 Part Number: 2DA1971-7

Report No. — confidential

Laboratory details removed

2DA1971-7

Test Report

Part Number : 2DA1971-7
Manufacturer : Diodes Incorporated
Date Code : 23+
Package : SOT-89
Quantity Submitted : [REDACTED]
Quantity Tested : 50 pieces
Date of Received : 07/07/2026
Date of Tested : 09/07/2026

General Conclusion

[REDACTED] of 2DA1971-7 (manufactured by Diodes Incorporated) were received for testing and analysis.

1. Visual Inspection

A visual inspection was performed on a sample lot of 50 units. The top markings were observed to be clear and legible. The sample was found to comply with the marking permanency specification. Scratches on terminals were found on 8 pcs, scratches on package were found on 3 pcs, and contamination on package was found on 2 pcs. Such surface defects generally do not affect electrical functionality. Furthermore, the examination revealed no evidence of solder residue or any form of surface damage on the packages.

2. Dimensional Measurement

The physical dimensions (A, B, B1, C, D, D1, E, H, H1, L, e) were measured and were found to conform to the manufacturer's specifications. The external configuration of the samples is consistent with the datasheet.

The parts are classified as unused and show no signs of previous use.

3. Functional Test

Functional testing was conducted on 50 samples. all samples passed tests for collector-emitter breakdown voltage, collector-emitter cut-off current, collector cut-off current, hfe, and base-emitter saturation voltage. in addition, 10 samples passed the same set of tests at -55 °C and 150 °C.

4. Solderability Test

Solderability testing was performed on a sample according to the J-STD-002E standard, with the sample undergoing preconditioning prior to testing and exhibiting excellent solderability, meeting the acceptance criterion of a minimum of 95% solder coverage on the inspected area of its lead.

SAMPLE

Approval signatures and laboratory stamp removed

Laboratory details removed

I. Test Purpose

To inspect and analyze the devices in accordance with the client's specifications.

II. Test Environment

Environment Temperature: $(25\pm 2)^{\circ}\text{C}$.

Environment Humidity: $(55\pm 5)\%$ RH.

III. Test Equipment

In the testing process.

IV. Test Standard

《[REDACTED] STANDARD》 & 《JEDEC-STANDARD&AS6171》 & 《IEC-STANDARD》 & 《IDEA-STD-1010》 & 《AS5553A》 and the specifications provided by the customer.

V. Test Basis

《Diodes Incorporated 2DA1971-7》.

VI. Test Procedure and Analysis

1. Documentation and Packaging

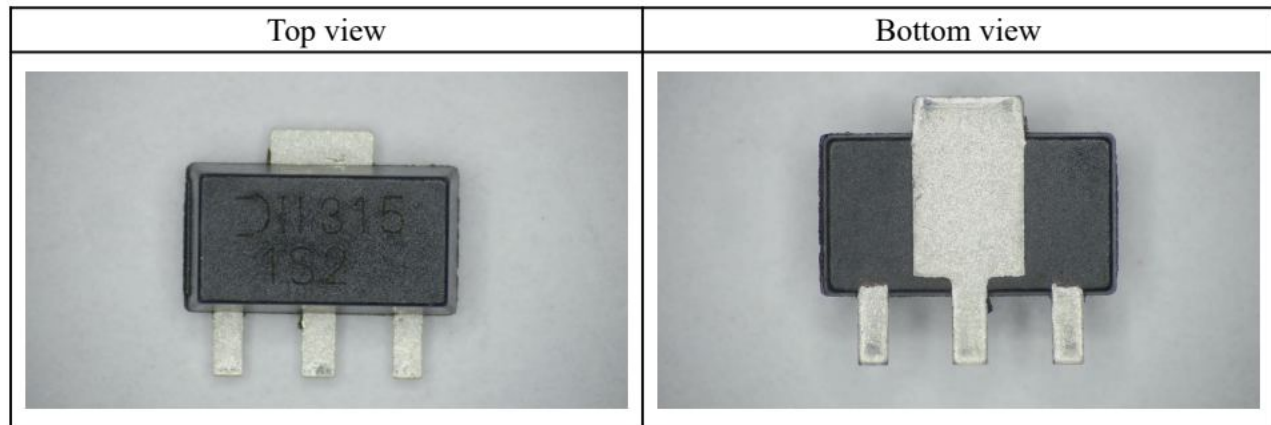
Package:	☐ PVC Tube ☐ Tray ☒ Reel ☐ Anti-static bags ☐ Plastic bags ☐ Vacuum-sealed ☐ Others
Complete labeling:	Yes
Humidity indicator cards (HIC):	No
Moisture barrier bag and desiccant pouches:	No

Parts as arrived





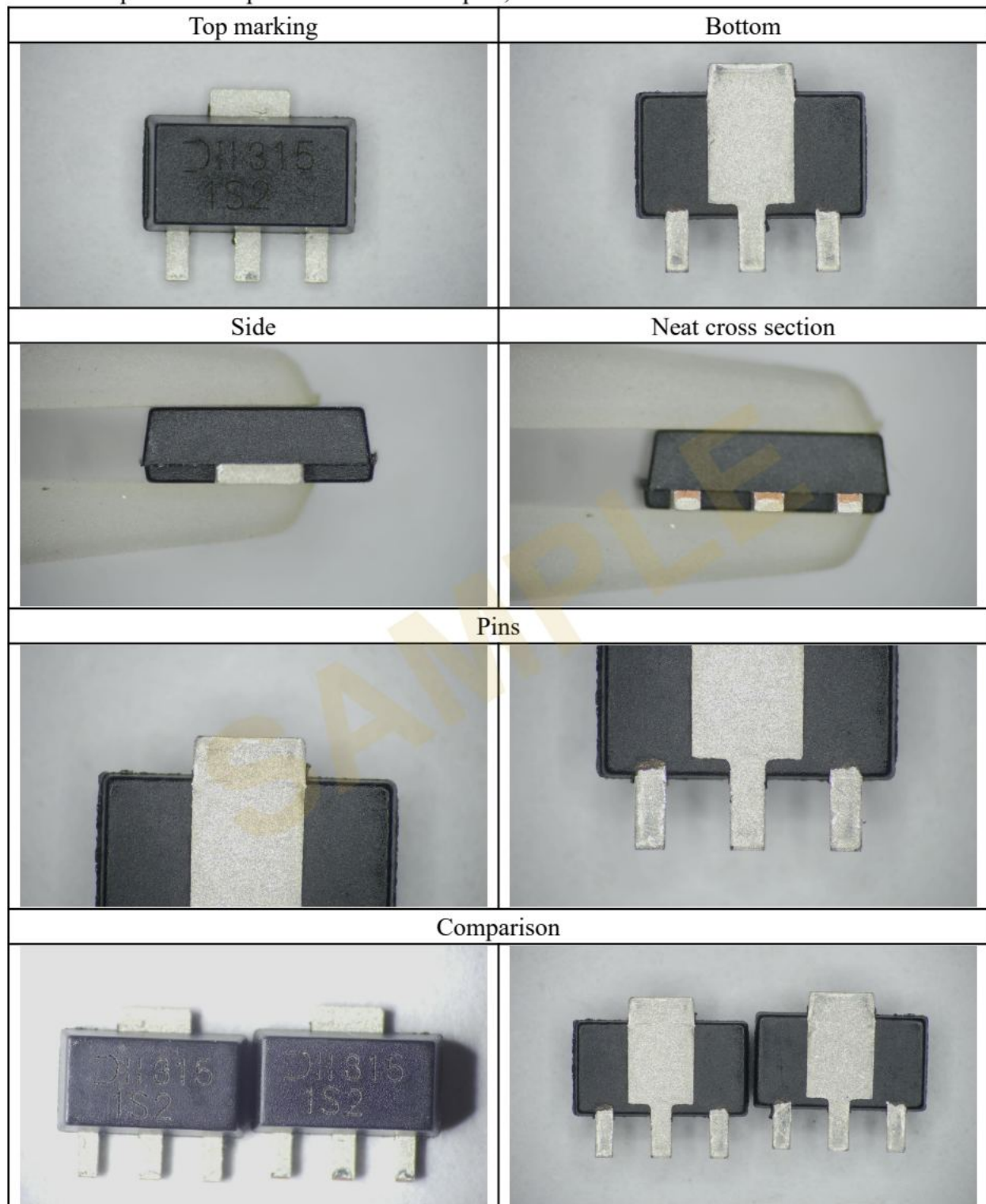
2. Sample Appearance

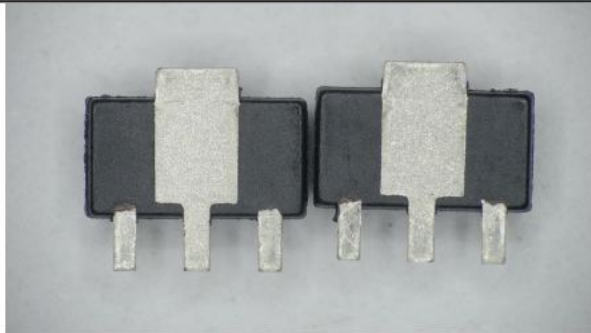
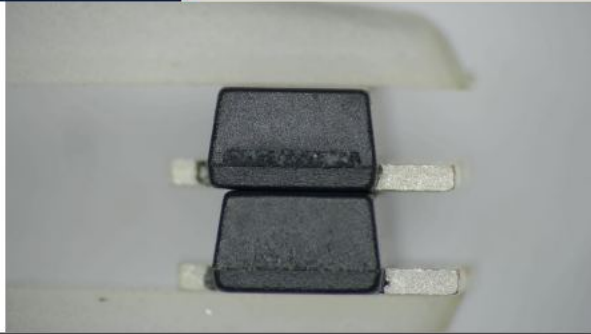


SAMPLE

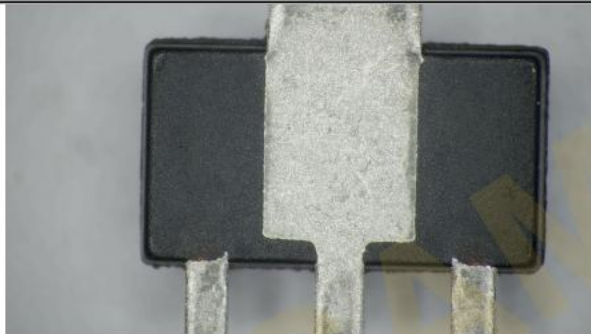
3. Visual Inspection

Visual inspection was performed on 50 samples, as detailed below:

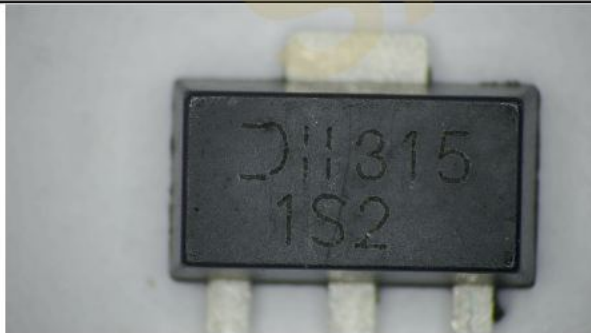




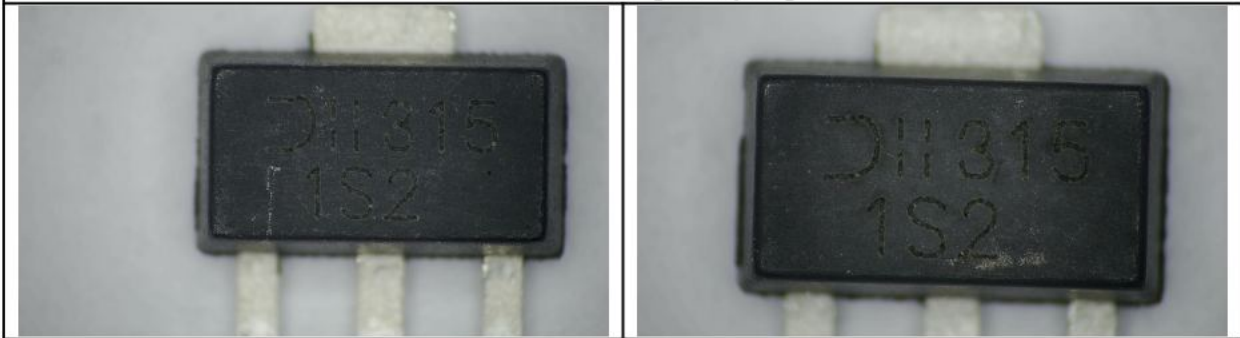
Scratches on pins-8pcs



Scratches on package-3pcs

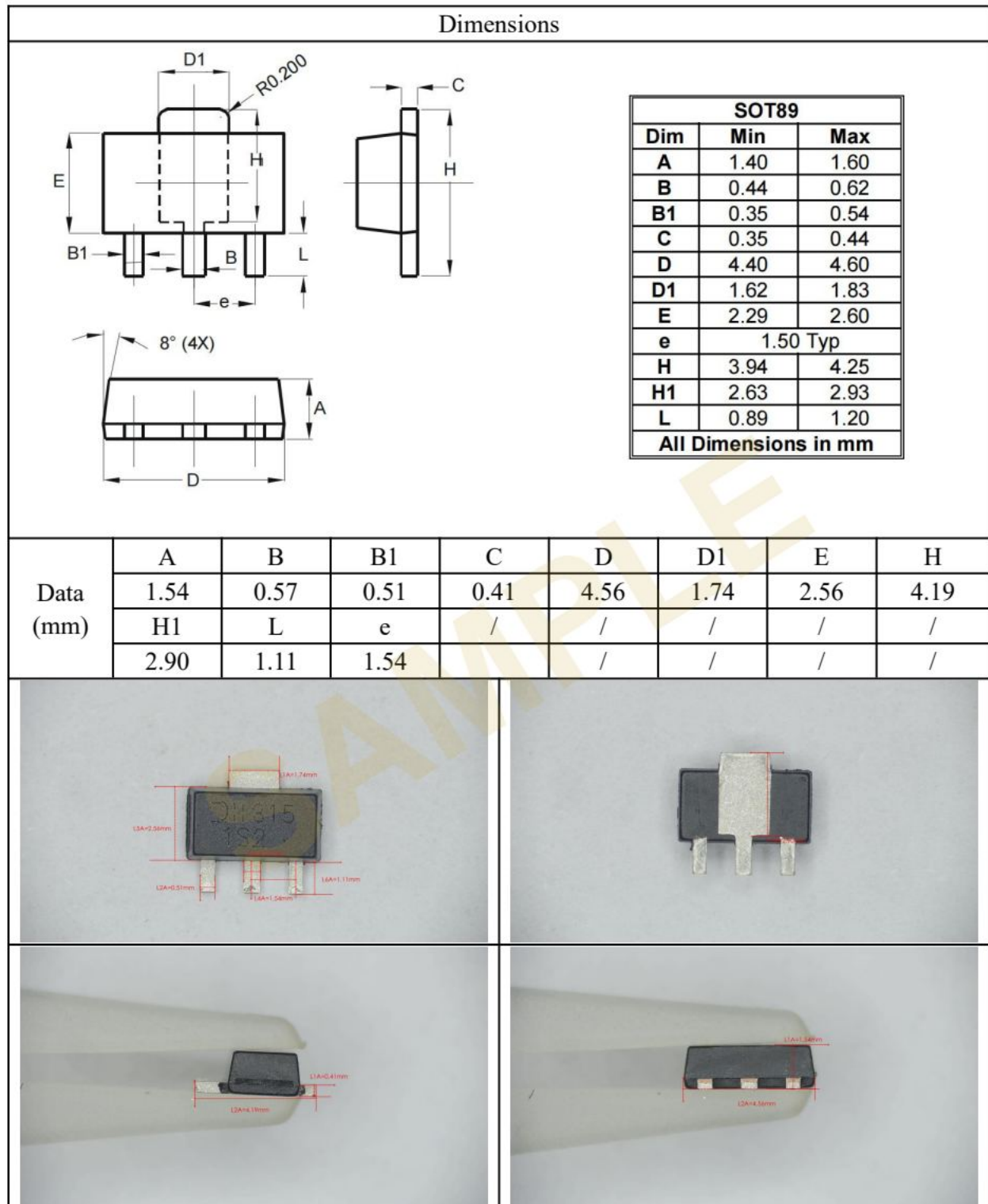


Contamination on package-2pcs



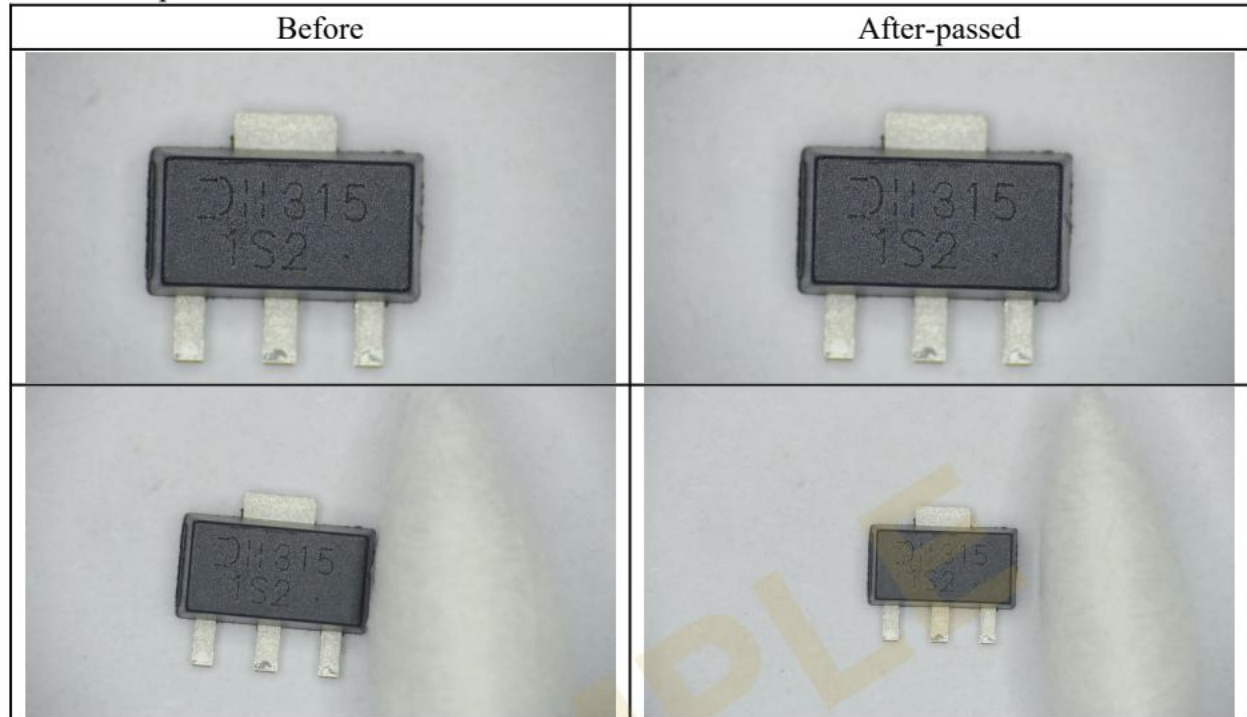
SAMPLE

4. Dimensional Measurement



5. Marking Permanency Test

Marking permanency testing was performed on 1 sample, and no defects were visible on the tested sample.



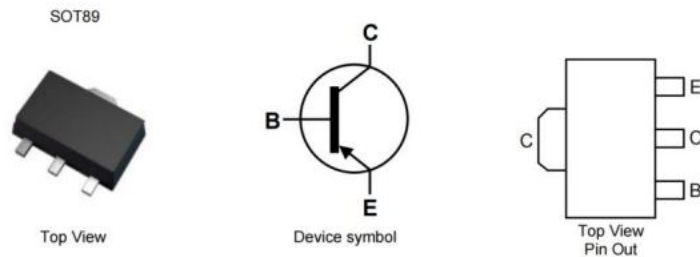
6. Functional Test

Functional testing was performed on 50 samples, as detailed below:

6.1. Description

400V PNP HIGH VOLTAGE SWITCHING TRANSISTOR IN SOT89.

6.2. Pin Configurations



6.3. Test Item

Characteristic	Symbol	Value			Unit
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150			°C

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	-400	-	-	V	$I_C = -1mA$
Collector-Emitter Cut-off Current	I_{CES}	-	-	-100	nA	$V_{CE} = -320V$
Collector Cut-off Current	I_{CBO}	-	-	-100	nA	$V_{CB} = -320V$

Static Forward Current Transfer Ratio (Note 8)	h_{FE}	140 140	-	450 400	-	$I_C = -20mA, V_{CE} = -5V$ $I_C = -100mA, V_{CE} = -5V$
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Base-Emitter saturation Voltage (Note 8)	$V_{BE(sat)}$	-	-0.75	-0.9	V	$I_C = -100mA, I_B = -10mA$
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(1) Collector-Emitter Breakdown Voltage(BV_{CEO})

Test condition: $I_C = -1mA$

Pass condition: $BV_{CEO} \geq -400V$

(2) Collector-Emitter Cut-off Current(I_{CES})

Test condition: $V_{CE} = -320V$

Pass condition: $I_{CES} \leq -100nA$

(3) Collector Cut-off Current(I_{CBO})

Test condition: $V_{CB} = -320V$

Pass condition: $I_{CBO} \leq -100nA$

(4) h_{FE}

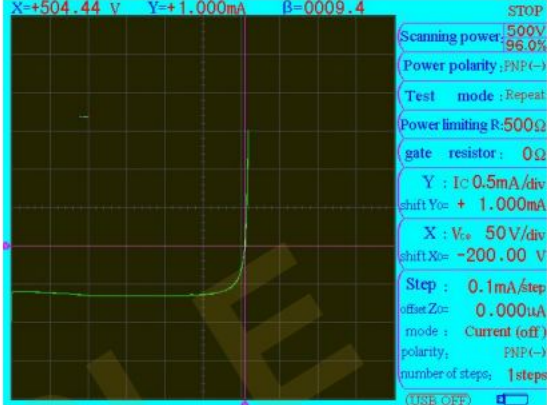
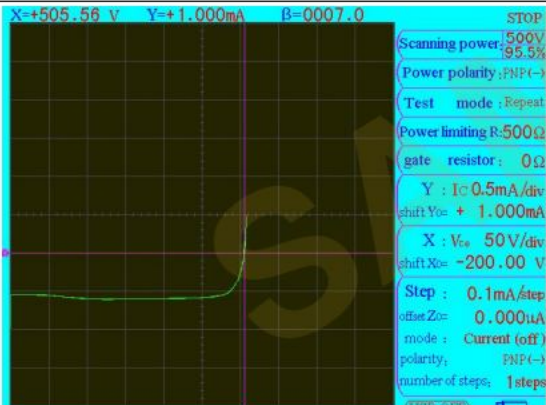
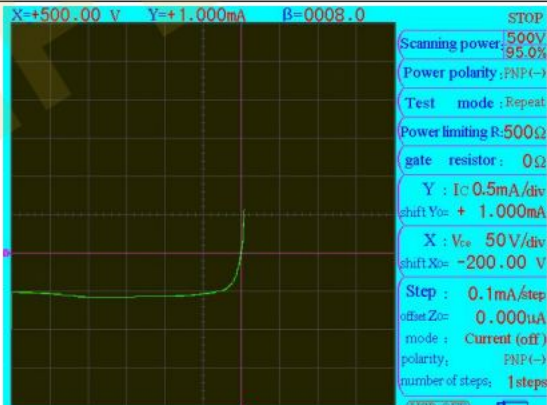
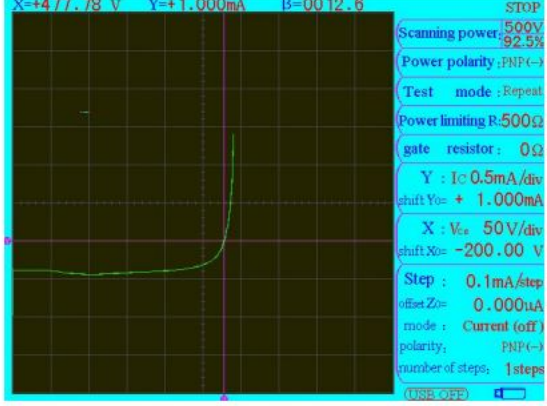
Test condition: $I_C = -100mA, V_{CE} = -5V$

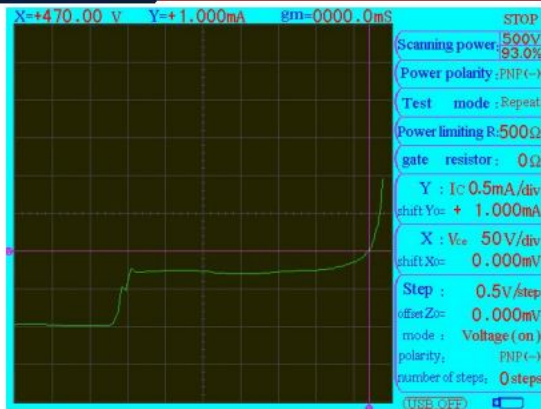
Pass condition: $140 \leq h_{FE} \leq 400$

(5) Base-Emitter saturation Voltage($V_{BE(sat)}$)Test condition: $I_C = -100\text{mA}$, $I_B = -10\text{mA}$ Pass condition: $V_{BE(sat)} \leq -0.9\text{V}$

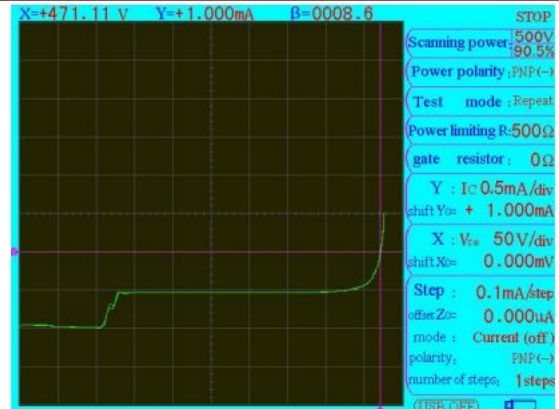
Test result: all samples passed the test.

6.4. Test Photos(1) Collector-Emitter Breakdown Voltage(BV_{CEO})

25°C 	#1 
#2 	#3 
-55°C 	#1 
#2	#3



150°C



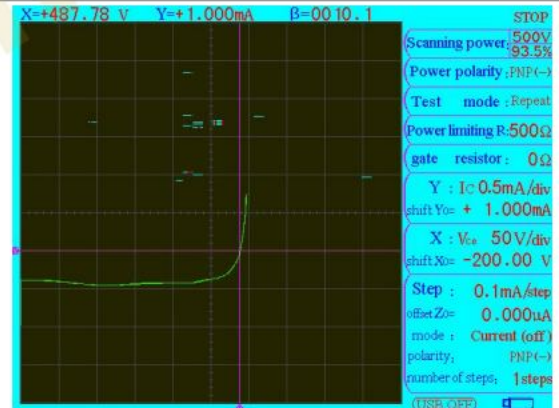
#1



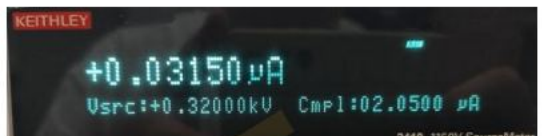
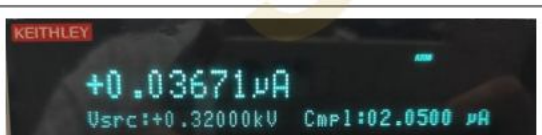
#2



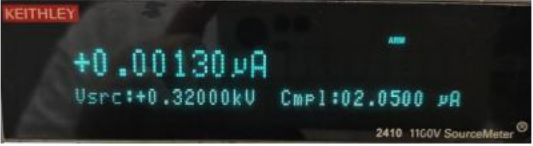
#3

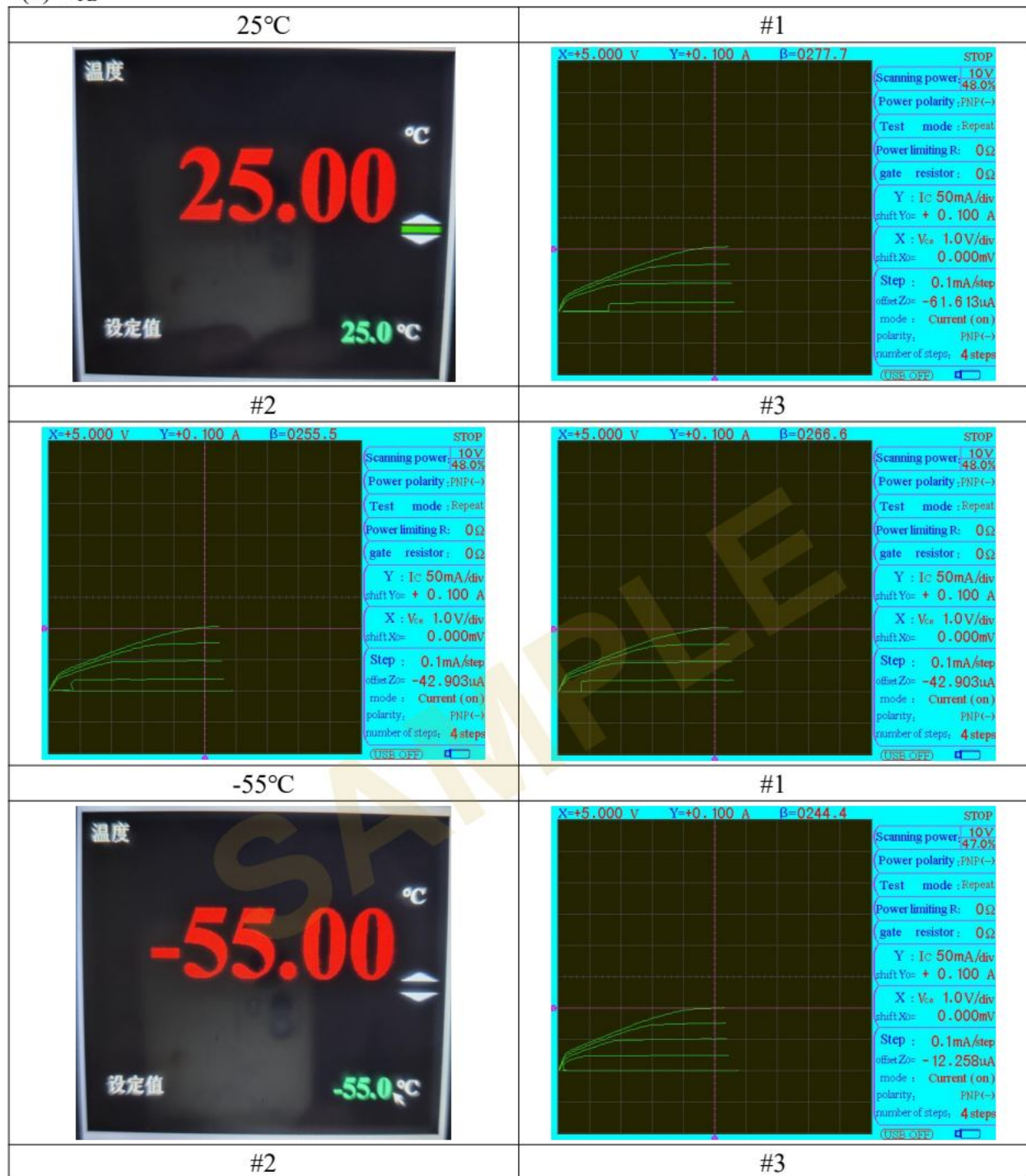


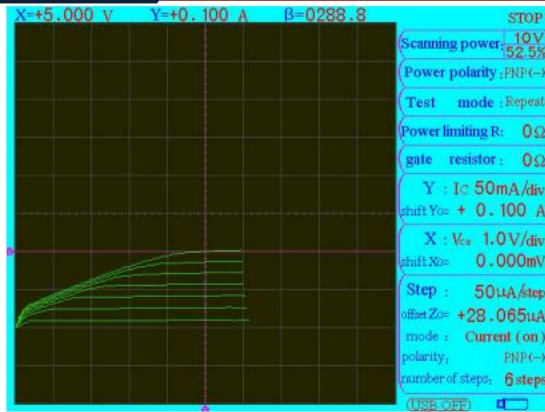
(2) Collector-Emitter Cut-off Current(I_{CES})

25°C	#1
	
#2	#3
	
-55°C	#1
	
#2	#3
	
150°C	#1
	
#2	#3
	

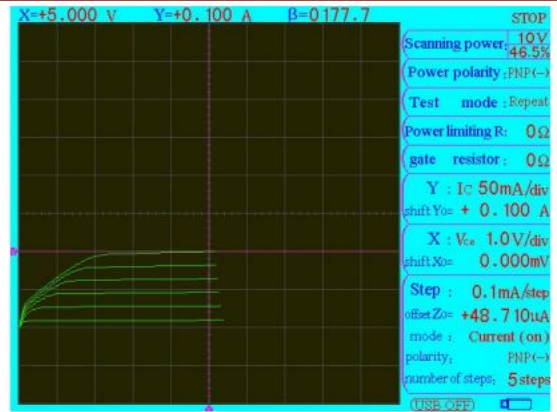
(3) Collector Cut-off Current(I_{CBO})

25°C	#1
	
#2	#3
	
-55°C	#1
	
#2	#3
	
150°C	#1
	
#2	#3
	

(4) h_{FE} 



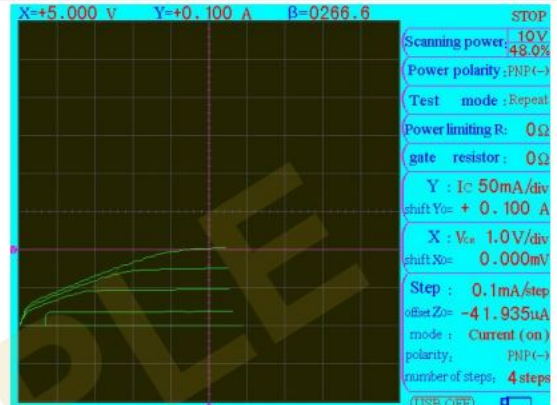
150°C



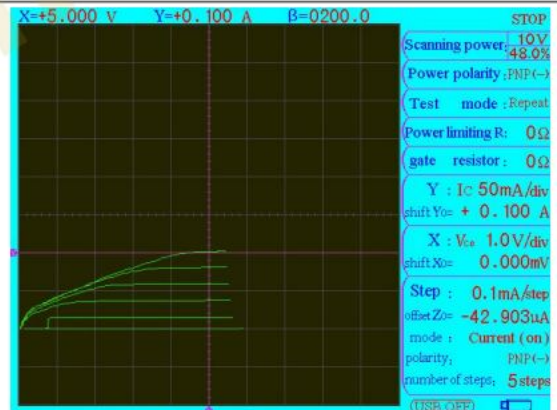
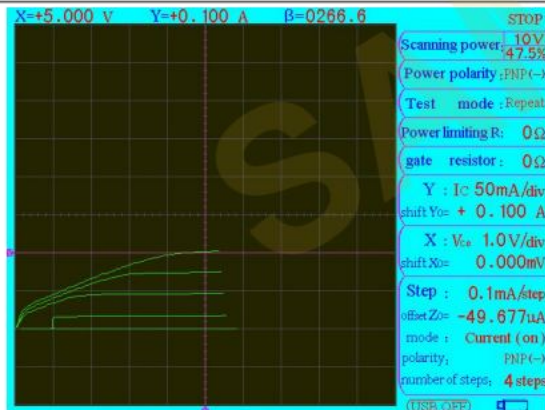
#1



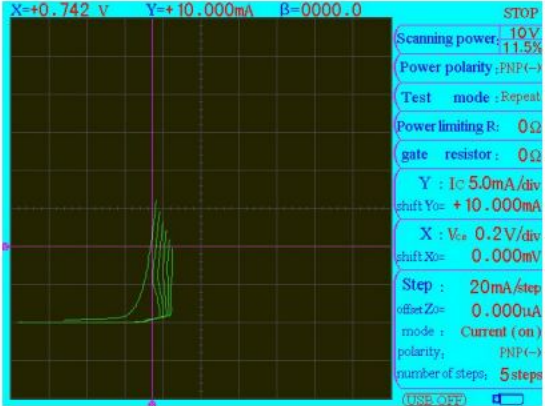
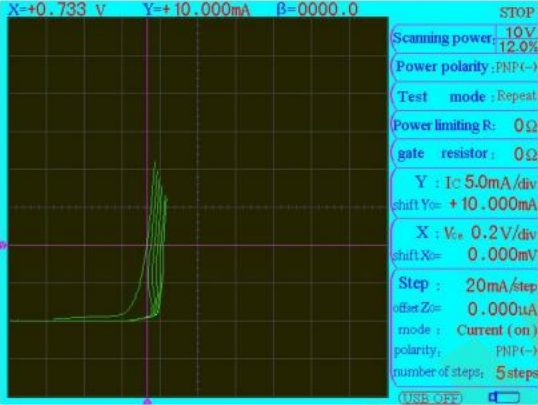
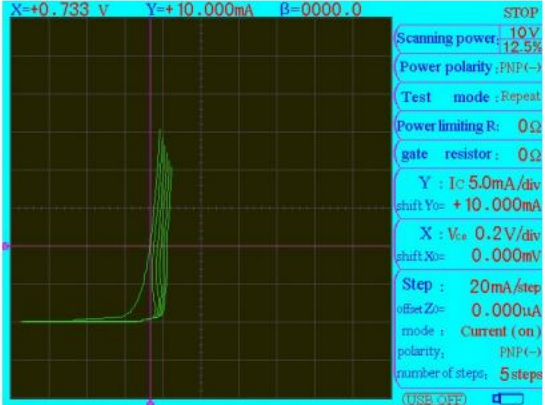
#2

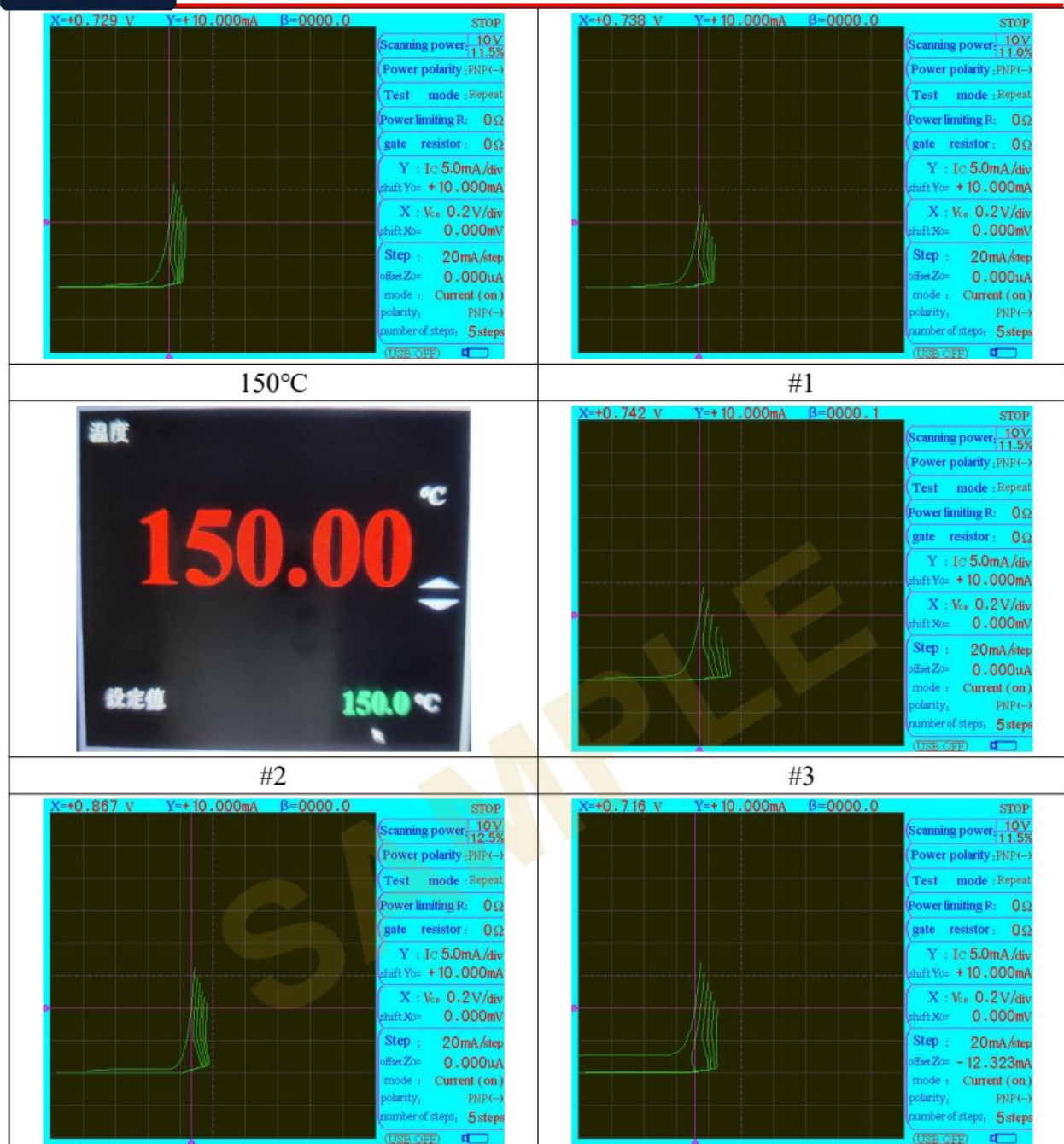


#3



(5) Base-Emitter saturation Voltage($V_{BE(sat)}$)

25°C 	#1 
#2 	#3 
-55°C 	#1 
#2	#3



6.5. Test Data

25°C					
Sample	BV_{CEO}	I_{CES}	I_{CBO}	h_{FE}	$V_{BE(sat)}$
	Unit:V	Unit:nA	Unit:nA	\	Unit:V
#1	504.44	44.93	1.48	277.7	0.742
#2	505.56	44.62	1.30	255.5	0.733
#3	500.00	39.59	1.78	266.6	0.724
#4	503.45	43.56	1.45	255.5	0.745
#5	508.76	45.78	1.63	311.1	0.721

#6	501.23	42.78	1.71	222.2	0.754
#7	509.67	47.23	1.52	211.1	0.727
#8	502.67	46.34	1.36	233.3	0.758
#9	508.12	47.12	1.87	355.5	0.732
#10	502.34	40.45	1.46	222.2	0.736
#11	506.78	45.12	1.77	211.1	0.743
#12	504.89	43.45	1.82	344.4	0.728
#13	507.12	42.45	1.27	255.5	0.737
#14	501.78	41.89	1.38	222.2	0.729
#15	506.91	43.21	1.88	200.0	0.743
#16	509.45	41.56	1.79	244.4	0.723
#17	502.15	40.67	1.33	288.8	0.744
#18	506.34	47.78	1.98	277.7	0.754
#19	501.45	45.34	1.53	244.4	0.727
#20	503.67	46.89	1.23	233.3	0.739
#21	507.43	47.67	1.94	255.5	0.749
#22	509.34	45.89	1.54	244.4	0.738
#23	509.21	41.23	1.31	266.6	0.756
#24	509.87	40.78	1.48	299.9	0.734
#25	508.34	42.56	1.68	266.6	0.757
#26	501.78	43.89	1.37	333.3	0.748
#27	501.56	42.12	1.89	255.5	0.756
#28	502.56	45.56	1.67	222.2	0.723
#29	503.28	46.45	1.41	211.1	0.733
#30	502.89	41.34	1.97	244.4	0.722
#31	506.56	40.23	1.74	288.8	0.731
#32	506.23	46.56	1.62	244.4	0.741
#33	507.89	43.67	1.51	255.5	0.738
#34	507.15	42.23	1.73	255.5	0.725
#35	507.56	47.45	1.91	233.3	0.731
#36	503.91	46.12	1.75	244.4	0.757
#37	503.78	41.78	1.26	222.2	0.758
#38	504.67	40.89	1.43	233.3	0.746
#39	504.52	44.67	1.93	255.5	0.748
#40	504.12	44.12	1.95	177.7	0.728
#41	508.24	44.45	1.59	222.2	0.721
#42	508.56	44.89	1.64	344.4	0.740
#43	500.15	44.23	1.34	288.8	0.749
#44	500.69	41.12	1.58	266.6	0.731
#45	500.45	46.23	1.83	255.5	0.725
#46	500.87	42.89	1.96	311.1	0.759

#47	500.34	43.12	1.25	222.2	0.724
#48	505.43	47.89	1.42	355.5	0.755
#49	505.81	40.89	1.24	233.3	0.747
#50	505.23	41.67	1.48	211.1	0.759
-55°C					
Sample	BV _{CEO}	I _{CES}	I _{CBO}	h _{FE}	V _{BE(sat)}
	Unit:V	Unit:nA	Unit:nA	\	Unit:V
#1	477.78	31.50	1.12	244.4	0.733
#2	470.00	32.22	1.26	288.8	0.729
#3	471.11	30.94	1.27	177.7	0.738
#4	475.34	34.56	1.78	244.4	0.751
#5	472.48	36.78	1.32	199.9	0.755
#6	480.52	33.78	1.47	244.4	0.747
#7	482.17	38.12	1.65	188.8	0.735
#8	486.73	30.45	1.81	244.4	0.746
#9	475.89	36.12	1.76	255.5	0.753
#10	489.38	31.89	1.82	233.3	0.729
150°C					
Sample	BV _{CEO}	I _{CES}	I _{CBO}	h _{FE}	V _{BE(sat)}
	Unit:V	Unit:nA	Unit:nA	\	Unit:V
#1	472.22	31.04	1.08	266.6	0.742
#2	486.67	36.71	1.11	266.6	0.867
#3	487.78	38.14	1.28	200.0	0.716
#4	471.56	36.34	1.56	244.4	0.734
#5	479.31	37.89	1.86	233.3	0.742
#6	484.67	38.67	1.69	222.2	0.736
#7	488.92	37.45	1.21	188.8	0.751
#8	485.56	32.34	1.55	199.9	0.739
#9	472.14	31.23	1.29	244.4	0.726
#10	484.21	32.23	1.66	288.8	0.742

7. Solderability Test

Solderability testing was performed on 1 sample, as detailed below:

7.1. Parameter enactment

- 1) Flux Immersion Time: 5-10 s
- 2) Solder Temperature: $245 \pm 5^{\circ}\text{C}$
- 3) Solder Immersion Time: 5 ± 0.5 Seconds
- 4) Immersion and withdrawal speed: 25 ± 6.0 mm/s
- 5) Flux type: 2#
- 6) Solder alloy: Sn96.5%\Ag3.0%\Cu0.5%\

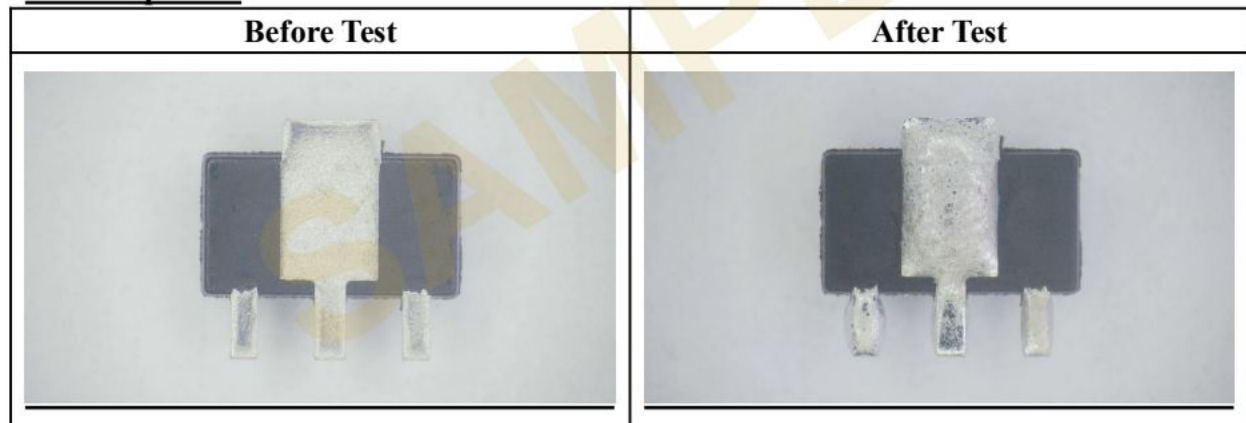
7.2. Test Method

The Solderability test method conforms to J-STD-002E.

7.3. Judge Procedure

The inspected area of each lead must have 95% solder coverage minimum.

7.4. Test picture



Appendix

Optional items:

- ☒ Visual Inspection
- ☒ Dimensional Measurement
- ☒ Marking Permanency Test
- ☐ X-Ray Inspection
- ☐ Chemical Decapsulation Analysis
- ☐ Failure Analysis
- ☐ Reliability Analysis
- ☒ Solderability Test
- ☐ I/V Curve Analysis
- ☐ C-SAM Analysis
- ☐ Baking Analysis
- ☐ Heated Solvent Analysis
- ☐ Cross-section Analysis
- ☐ ROHS Analysis
- ☐ Level I Authenticity Inspection and Verification
- ☐ Level II Electrical Test
- ☒ Level III Key Functional Test
- ☐ Level IV Full Functional Characteristics Analysis
- ☐ Level V Alternating Current Characteristics Analysis
- ☐ Other Items