

# Test Report

Report No. ECL01H067689001

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**Applicant** SHANGHAI SEEFULL ELECTRONIC CO., LTD  
LITE-ON SEMICONDUCTOR CORP.

**Address** 6 ZHENYE RD. DONGJING INDUSTRIAL AREA SONGJIANG DISTRICT,  
SHANGHAI, CHINA  
9F,NO.233-2 PAO-CHIAO ROAD, HSIN-TIEN DISTRICT, NEW TAIPEI CITY 23145,  
TAIWAN, R.O.C

Sample Received Date Jan. 4, 2016

Testing Period Jan. 4, 2016 to Jan. 8, 2016

**Test Requested** As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg),  
Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyl(PBBs),  
Polybrominated Diphenyl Ethers(PBDEs), Fluorine(F), Chlorine(Cl),  
Bromine(Br), Iodine(I), Antimony(Sb), Hexabromocyclododecane (HBCDD),  
Phthalates in the submitted sample(s).

**Test Method** Please refer to the following page(s).

**Test Result(s)** Please refer to the following page(s).

Tested by

*Su Hongwei*

Reviewed by

*Gou Cui li*

Approved by

*Su Hongwei*

Date

Jan.8,2016

Su Hongwei

Senior Laboratory Manager

No. R153068532

Centre Testing International Pinbiao(Shanghai) Co., Ltd.

No.1996,Xinjinqiao Road, Pudong New District,Shanghai,China

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The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

No.	Sample Name	The sample description
1	AXIAL DIODE:	MIXED ALL PARTS OF BODY
2	GREEN MOLDING	SILVER COLORED METAL PIN
3	COMPOUND	BLACK PLASTIC BODY WITHOUT SOLDER WAFER&DIE

Part No. DO-41\_HF PACKAGE FAMILY (SD09AXXXE\_HF,P4KEXXA\_HF,P4KEXXA\_HF, 1N5819\_HF,SB1XX\_HF,SB1100\_HF,UF10XX\_HF,UF15XXS\_HF,UG10XX,SF10XG\_HF, MUR1XX\_HF,1N49XX\_HF,PR10XX\_HF,PR15XXS\_HF,1N49XXG\_HF,PR10XXG\_HF, PR10XXR\_HF,PR15XXGS\_HF,1N40XX\_HF,1N40XXT\_HF,1N53XXS\_HF,1N40XXG\_HF ETC) DO-15\_HF PACKAGE FAMILY (SD1A240GW\_HF,SAXXA\_HF,SAXXA\_HF, P6KEXXA\_HF,P6KEXXA\_HF,SB2XX\_HF,SB2100\_HF,UF15XX\_HF,UF20XX\_HF, UG20XX\_HF,SF20XG\_HF,PR15XX\_HF,PR20XX\_HF,PR15XXG\_HF,PR20XXG\_HF, 1N53XX\_HF,LT15XX\_HF,LT2AXX\_HF,LT15XXG\_HF,LT15XXG\_HF ETC) R6\_HF PACKAGE FAMILY (3KPXX\_H F, 3KPXXA\_HF, 3KPXXX\_HF, 3KPXXXA\_HF, 5KPXX\_HF, 5KPXXA\_HF, 5KPXXX\_HF, 15KPXX\_HF, 15KPXXA\_HF, 15KPXXX\_HF, PR60XX\_HF, LT6AXX\_HF, LT10AXX\_HF, SL1515E\_HF, 15SQ045\_HF,ETC) DO-201\_HF PACKAGE FAMILY (1.5KEXXA\_HF, 1.5KEXXA\_HF, UG5402\_HF ECT) DO-201AD\_HF PACKAGE FAMILY (1N5822\_HF,SB3XX\_HF,SB3100\_HF, SB5XX\_HF,SB5XXX\_HF,SB8XX\_HF,UF30XX\_HF,UG30XX\_HF,SF3XXG\_HF,SF40XG\_HF, SF50XG\_HF,PR30XX\_HF,PR30XXG\_HF,1N54XX\_HF,1N54XXG\_HF ETC) T1\_HF PACKAGE FAMILY (SD09AXXXD\_HF, SDXG\_HF, UDXG\_HF, DXG\_HF, ETC) R6 PACKAGE FAMILY (3KPXX,3KPXXA,3KPXXX,3KPXXXA, 5KPXX,5KPXXA,5KPXXX,15KPXXA,15KPXX,15KPXXX,PR6XXX,LT6A0X,LT10A0X , SL1515E,15SQ045,15MQ045,20SQ045, ETC) DO-201AD PACKAGE FAMILY (1N5822, SB3XX, SB3100, SB5XX, SB5XXX, SB8XX, UF30XX, UG30XX, SF3XXG, SF40XG, SF50XG, PR30XX, PR30XXG, 1N54XX, 1N54XXG,S48C10100, ETC) DO-201 PACKAGE FAMILY (1.5KEXXA, 1.5KEXXA, UG 5402 ETC) T1 PACKAGE FAMILY (SD09AXXXD, SDXG, UDXG, DXG, ETC)

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## Test Method

Tested Item(s)	Test Method	Measured Equipment(s)
Lead (Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Mercury (Hg)	IEC 62321-4:2013 Ed.1.0	ICP-OES
Hexavalent Chromium (Cr(VI))	IEC 62321:2008 Ed.1 Annex B	UV-Vis
	IEC 62321:2008 Ed.1 Annex C	
Polybrominated Biphenyls (PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS
Phthalates	Refer to EN 14372:2004(E)	GC-MS
Hexabromocyclododecane (HBCDD)	Refer to US EPA 3550C:2007 & US EPA 8270D:2007	GC-MS
Antimony (Sb)	Refer to US EPA 3052:1996 & US EPA 6010C:2007	ICP-OES
Fluorine (F)	Refer to BS EN 14582:2007	IC
Chlorine (Cl)	Refer to BS EN 14582:2007	IC
Bromine (Br)	Refer to BS EN 14582:2007	IC
Iodine (I)	Refer to BS EN 14582:2007	IC

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**Test Result(s)**

Tested Item(s)	Result(Unit: mg/kg)			MDL
	1	2	3	
Lead (Pb)	13540	6	N.D.	2 mg/kg
Cadmium (Cd)	N.D.	N.D.	—	2 mg/kg
Mercury (Hg)	N.D.	N.D.	—	2 mg/kg
Hexavalent Chromium (Cr(VI))	N.D.	—	—	2 mg/kg
	—	Negative	—	/
<b>Polybrominated Biphenyls(PBBs)</b>				
Monobromobiphenyl	N.D.	—	—	5 mg/kg
Dibromobiphenyl	N.D.	—	—	5 mg/kg
Tribromobiphenyl	N.D.	—	—	5 mg/kg
Tetrabromobiphenyl	N.D.	—	—	5 mg/kg
Pentabromobiphenyl	N.D.	—	—	5 mg/kg
Hexabromobiphenyl	N.D.	—	—	5 mg/kg
Heptabromobiphenyl	N.D.	—	—	5 mg/kg
Octabromobiphenyl	N.D.	—	—	5 mg/kg
Nonabromobiphenyl	N.D.	—	—	5 mg/kg
Decabromobiphenyl	N.D.	—	—	5 mg/kg
<b>Polybrominated Diphenyl Ethers(PBDEs)</b>				
Monobromodiphenyl ether	N.D.	—	—	5 mg/kg
Dibromodiphenyl ether	N.D.	—	—	5 mg/kg
Tribromodiphenyl ether	N.D.	—	—	5 mg/kg
Tetrabromodiphenyl ether	N.D.	—	—	5 mg/kg
Pentabromodiphenyl ether	N.D.	—	—	5 mg/kg
Hexabromodiphenyl ether	N.D.	—	—	5 mg/kg
Heptabromodiphenyl ether	N.D.	—	—	5 mg/kg
Octabromodiphenyl ether	N.D.	—	—	5 mg/kg
Nonabromodiphenyl ether	N.D.	—	—	5 mg/kg
Decabromodiphenyl ether	N.D.	—	—	5 mg/kg

Tested Item(s)	Result(Unit: mg/kg)	MDL
	1	
Hexabromocyclododecane (HBCDD)	N.D.	5 mg/kg
Antimony(Sb)	N.D.	5 mg/kg

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Tested Item(s)	Result(Unit: mg/kg)	MDL
	1	
<b>Halogen</b>		
Fluorine (F)	N.D.	10mg/kg
Chlorine (Cl)	156	10mg/kg
Bromine (Br)	N.D.	10mg/kg
Iodine (I)	N.D.	10mg/kg

Tested Item(s)	Result(Unit: mg/kg)	MDL
	1	
<b>Phthalates</b>		
Diisobutyl phthalate (DIBP) CAS#:84-69-5	N.D.	50mg/kg
Dibutyl phthalate (DBP) CAS #:84-74-2	N.D.	50mg/kg
Benzylbutyl phthalate (BBP) CAS #:85-68-7	N.D.	50mg/kg
Bis(2-ethyl(hexyl)) phthalate (DEHP) CAS #:117-81-7	N.D.	50mg/kg
Di-n-octyl phthalate (DNOP) CAS#:117-84-0	N.D.	50mg/kg
Diisononyl phthalate (DINP) CAS#:28553-12-0,68515-48-0	N.D.	50mg/kg
Diisodecyl phthalate (DIDP) CAS#:26761-40-0,68515-49-1	N.D.	50mg/kg
Di-n-hexyl phthalate (DNHP) CAS#:84-75-3	N.D.	50mg/kg

### Tested Sample/Part Description

1. Black body (Tested as a whole)
2. Silvery metal pin
3. Black body (Tested as a whole)

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**Remark:** The sample had been dissolved totally tested for Lead, Cadmium, Mercury, Antimony. The sample(s) was tested as a whole, because it's impossible to disassemble or separate it by current equipment and technology. The result(s) shown on this report may be different from the content of any homogeneous material.

-MDL= Method Detection Limit

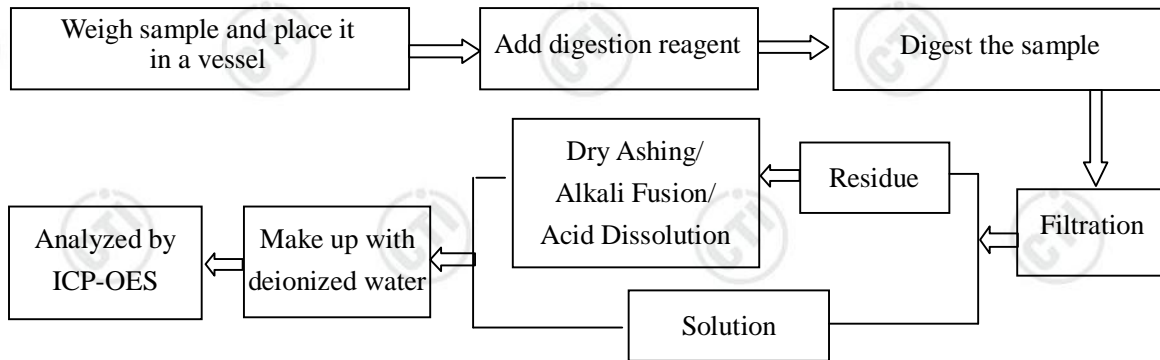
-N.D. = Not Detected (<MDL)

-mg/kg = ppm = parts per million

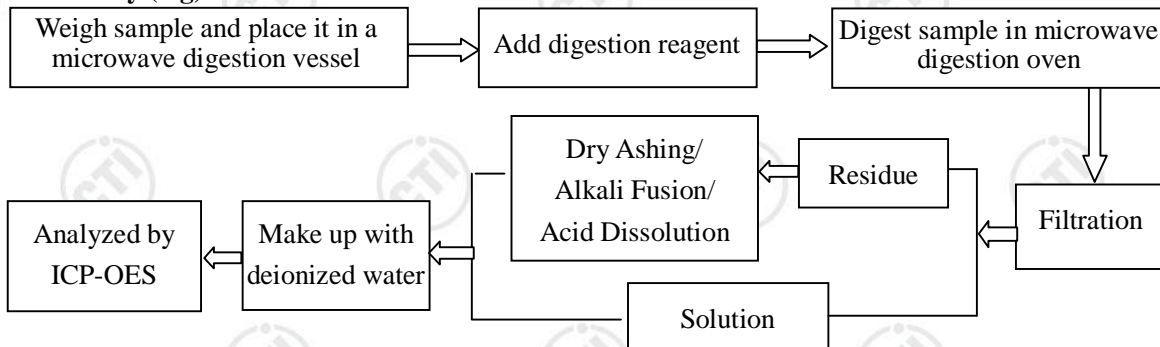
-Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm<sup>2</sup> sample surface area used.

## Test Process

### 1. Lead(Pb), Cadmium(Cd)

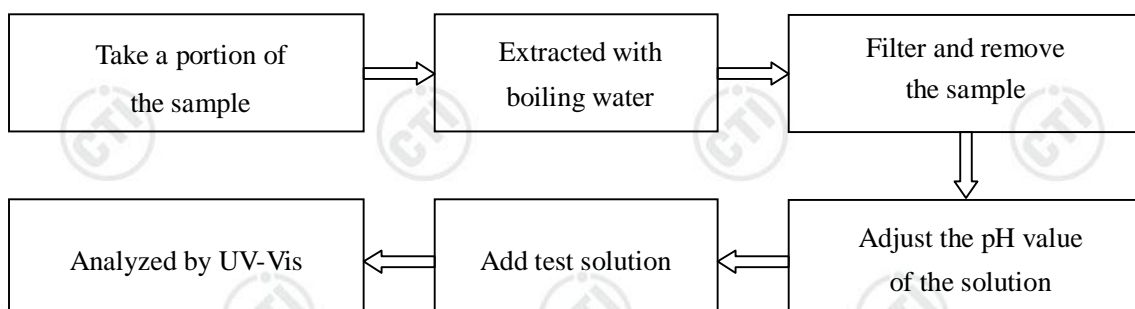


### 2. Mercury (Hg)



### 3. Hexavalent Chromium (Cr(VI))

(1) IEC 62321:2008 Ed.1 Annex B

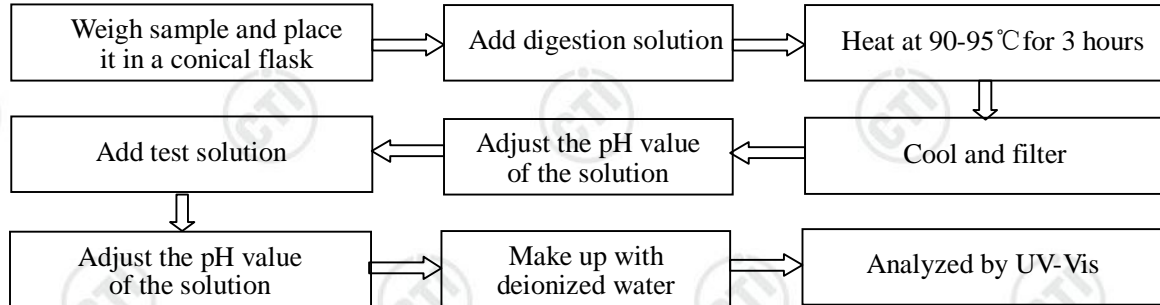


# Test Report

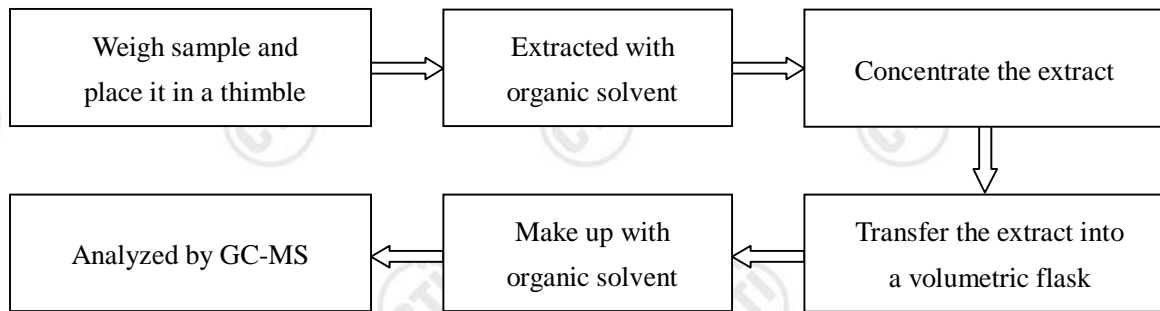
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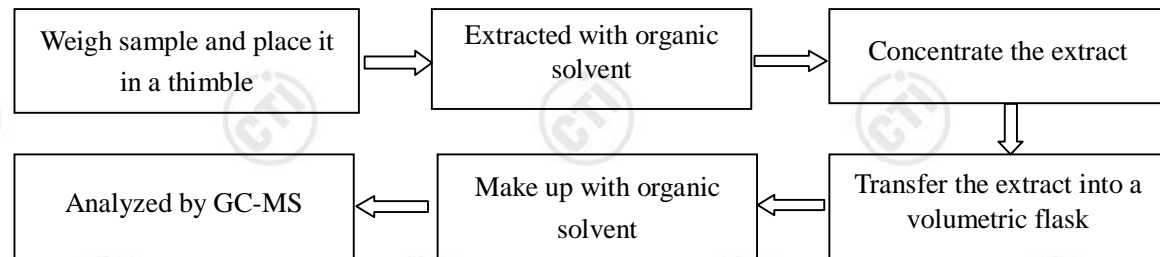
## (2)IEC 62321:2008 Ed.1 Annex C



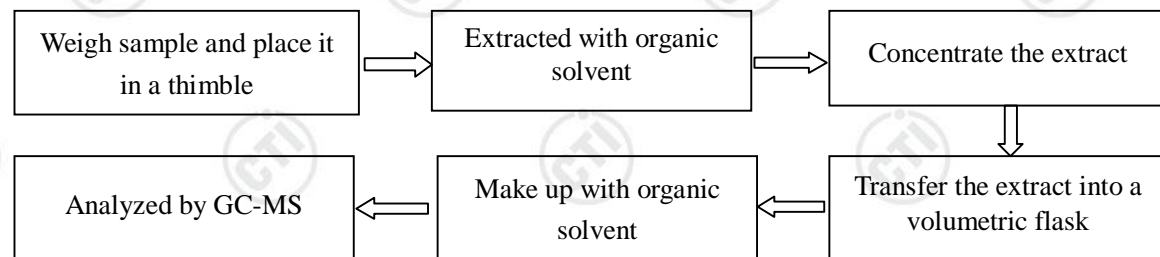
## 4. Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs)



## 5. Phthalates



## 6. Hexabromocyclododecane (HBCDD)

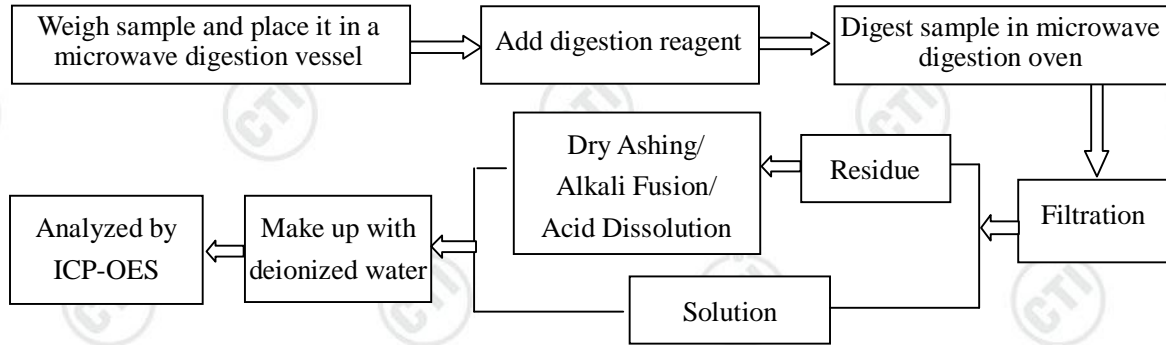


# Test Report

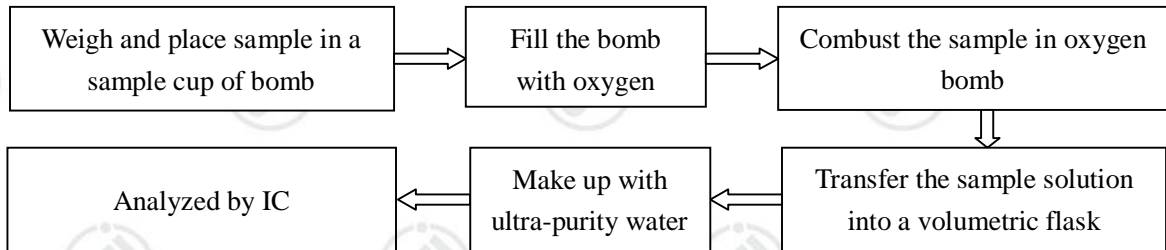
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## 7. Antimony(Sb)



## 8. Fluorine(F), Chlorine(Cl), Bromine(Br), Iodine(I)



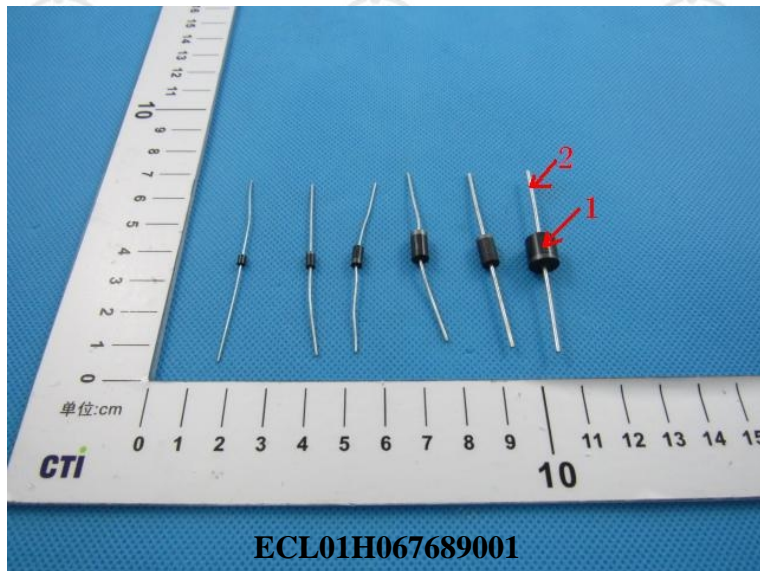


# Test Report

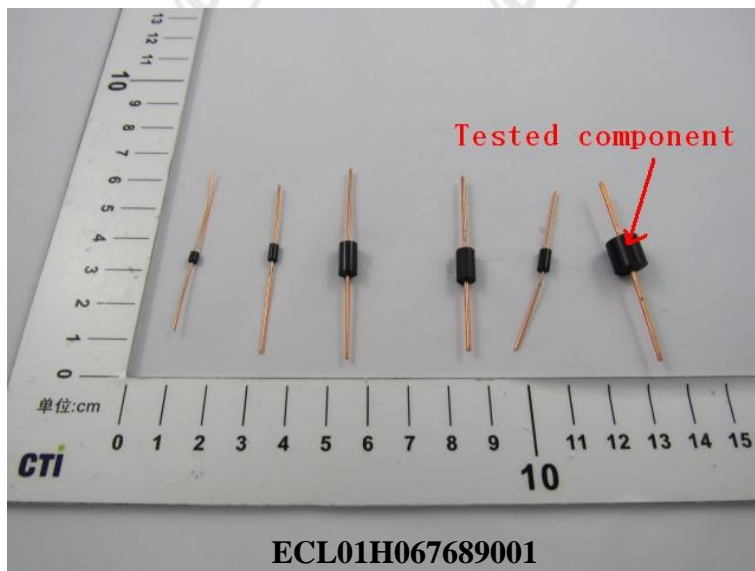
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## Photo(s) of the sample(s)



1,2



3

\*\*\* End of Report \*\*\*

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.