



**TEST REPORT**

NUMBER: SHAH00170075

APPLICANT: LITEON SEMICONDUCTOR CORP.  
28-1, WU SHIN STREET, TA WU LUNG,  
KEELUNG 204, TAIWAN, R.O.C

DATE: JAN 06, 2010

SHANGHAI SEEFULL ELECTRONIC CO.,LTD.  
6 ZHENGYE RD., DONGJING, SONGJIANG  
DISTRICT, SHANGHAI, CHINA.  
ATTN: CLORIS WEI

SAMPLE DESCRIPTION:

ONE (1) SUBMITTED SAMPLE SAID TO BE :

ITEM NAME : TO BRIDGE: LEAD FREE PLATING  
(1) MIXED ALL PARTS OF BODY  
(2) SILVER COLORED METAL PIN  
(3) BLACK PLASTIC BODY WITHOUT SOLDER PASTE  
& DIE

ITEM NO. : TO-220  
(SBLXXX, SBLXXXX, SBLXXXXCT,  
SBLXXXXXCT, MBRXXX, MBRXXXX,  
MBRXXXXX, MBRXXXXL, MBRXXXXCT, MBRXXXXXCT, MBRXX  
XXCTL, MBRXXXXXCTL, MBRXXH100CT, STPRXXXD, STPRX  
XXXD, STPRXXXCT, STPRXXXD, STPRXXXD, STPRAXX  
XXCT, LTTHXXXD, LTTHXXXD, LTTHXXXL, LXPXXNXX, L  
VPXXX, SXXMXX-600B, TXXMXXF-XXXB, TXXMXXT-XXXB  
ECT)

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TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

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TO BE CONTINUED

PREPARED AND CHECKED BY:  
FOR INTERTEK TESTING SERVICES  
LTD., SHANGHAI

AUTHORIZED BY:  
FOR INTERTEK TESTING SERVICES  
LTD., SHANGHAI

MYRA LV  
CHEMICAL DIVISION MANAGER

STEPHEN TSANG  
GENERAL MANAGER



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1 (A) TEST RESULT SUMMARY:

<u>TESTING ITEM</u>	<u>RESULT</u>
	(1)
CADMIUM (Cd) CONTENT (mg/kg)	ND
LEAD (Pb) CONTENT (mg/kg)	2600#1
MERCURY (Hg) CONTENT (mg/kg)	ND
CHROMIUM (VI) (Cr <sup>6+</sup> ) CONTENT (mg/kg) (FOR NON-METAL)	ND
POLYBROMINATED BIPHENYLS (PBBs) (mg/kg)	
MONOBROMO BIPHENYLS (MonoBB)	ND
DIBROMO BIPHENYLS (DiBB)	ND
TRIBROMO BIPHENYLS (TriBB)	ND
TETRABROMO BIPHENYLS (TetraBB)	ND
PENTABROMO BIPHENYLS (PentaBB)	ND
HEXABROMO BIPHENYLS (HexaBB)	ND
HEPTABROMO BIPHENYLS (HeptaBB)	ND
OCTABROMO BIPHENYLS (OctaBB)	ND
NONABROMO BIPHENYLS (NonaBB)	ND
DECABROMO BIPHENYL (DecaBB)	ND
POLYBROMINATED DIPHENYL ETHERS (PBDEs) (mg/kg)	
MONOBROMO DIPHENYL ETHERS (MonoBDE)	ND
DIBROMO DIPHENYL ETHERS (DiBDE)	ND
TRIBROMO DIPHENYL ETHERS (TriBDE)	ND
TETRABROMO DIPHENYL ETHERS (TetraBDE)	ND
PENTABROMO DIPHENYL ETHERS (PentaBDE)	ND
HEXABROMO DIPHENYL ETHERS (HexaBDE)	ND
HEPTABROMO DIPHENYL ETHERS (HeptaBDE)	ND
OCTABROMO DIPHENYL ETHERS (OctaBDE)	ND
NONABROMO DIPHENYL ETHERS (NonaBDE)	ND
DECABROMO DIPHENYL ETHER (DecaBDE)	ND

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<b><u>TESTING ITEM</u></b>	<b><u>RESULT</u></b>
	(2)
CADMIUM (Cd) CONTENT (mg/kg)	ND
LEAD (Pb) CONTENT (mg/kg)	23
MERCURY (Hg) CONTENT (mg/kg)	ND
CHROMIUM (VI) (Cr <sup>6+</sup> ) RESULT (BY BOILING WATER EXTRACTION ON METAL) (mg/kg WITH 50cm <sup>2</sup> )	ND

<b><u>TESTING ITEM</u></b>	<b><u>RESULT</u></b>
	(3)
LEAD (Pb) CONTENT (mg/kg)	ND

REMARK:

mg/kg = MILLIGRAM PER KILOGRAM = ppm  
mg/kg WITH 50cm<sup>2</sup> = MILLIGRAM PER KILOGRAM WITH 50 SQUARE CENTIMETER  
ND = NOT DETECTED

THE SUBMITTED SAMPLE (1) WAS NOT HOMOGENEOUS MATERIAL, SAMPLING RANDOMLY.

#1 = THE RESULT IS FOR REFERENCE ONLY.

TESTED COMPONENTS:

- (1) MIXED ALL PARTS OF BODY.
- (2) SILVER COLORED METAL PIN.
- (3) BLACK PLASTIC BODY WITHOUT SOLDER PASTE & DIE.

(B) RoHS REQUIREMENT:

<b>RESTRICTED SUBSTANCES</b>	<b>LIMITS</b>
CADMIUM (Cd)	0.01% (100 mg/kg)
LEAD (Pb)	0.1% (1000 mg/kg)
MERCURY (Hg)	0.1% (1000 mg/kg)
CHROMIUM (VI) (Cr <sup>6+</sup> )	0.1% (1000 mg/kg)
POLYBROMINATED BIPHENYLS (PBBs)	0.1% (1000 mg/kg)
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	0.1% (1000 mg/kg)

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THE ABOVE LIMITS WERE QUOTED FROM 2002/95/EC AND AMENDMENT  
2005/618/EC FOR HOMOGENEOUS MATERIAL.

(C) TEST METHOD:

<u>TESTING ITEM</u>	<u>TESTING METHOD</u>	<u>REPORTING LIMIT</u>
CADMIUM (Cd) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0: 2008, BY ACID DIGESTION UNTIL THE TESTED SAMPLE WAS TOTALLY DISSOLVED AND DETERMINED BY ICP-OES	2 mg/kg
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0: 2008, BY ACID DIGESTION UNTIL THE TESTED SAMPLE WAS TOTALLY DISSOLVED AND DETERMINED BY ICP-OES	2 mg/kg
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0: 2008, BY ACID DIGESTION UNTIL THE TESTED SAMPLE WAS TOTALLY DISSOLVED AND DETERMINED BY ICP-OES	2 mg/kg
CHROMIUM (VI) (Cr <sup>6+</sup> ) CONTENT (FOR NON-METAL)	WITH REFERENCE TO IEC 62321 EDITION 1.0: 2008, BY ALKALINE DIGESTION AND DETERMINED BY UV- VIS SPECTROPHOTOMETER	1 mg/kg
CHROMIUM (VI) (Cr <sup>6+</sup> ) CONTENT (FOR METAL)	WITH REFERENCE TO IEC 62321 EDITION 1.0: 2008, BY BOILING WATER EXTRACTION AND DETERMINED BY UV-VIS SPECTROPHOTOMETER	0.02mg/kg WITH 50cm <sup>2</sup> (IN TESTING SOLUTION)
POLYBROMINATED BIPHENYLS (PBBs) & POLYBROMINATED DIPHENYL ETHERS (PBDEs)	WITH REFERENCE TO IEC IEC 62321 EDITION 1.0: 2008, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS AND FURTHER HPLC CONFIRMATION WHEN NECESSARY.	5 mg/kg

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TO BE CONTINUED

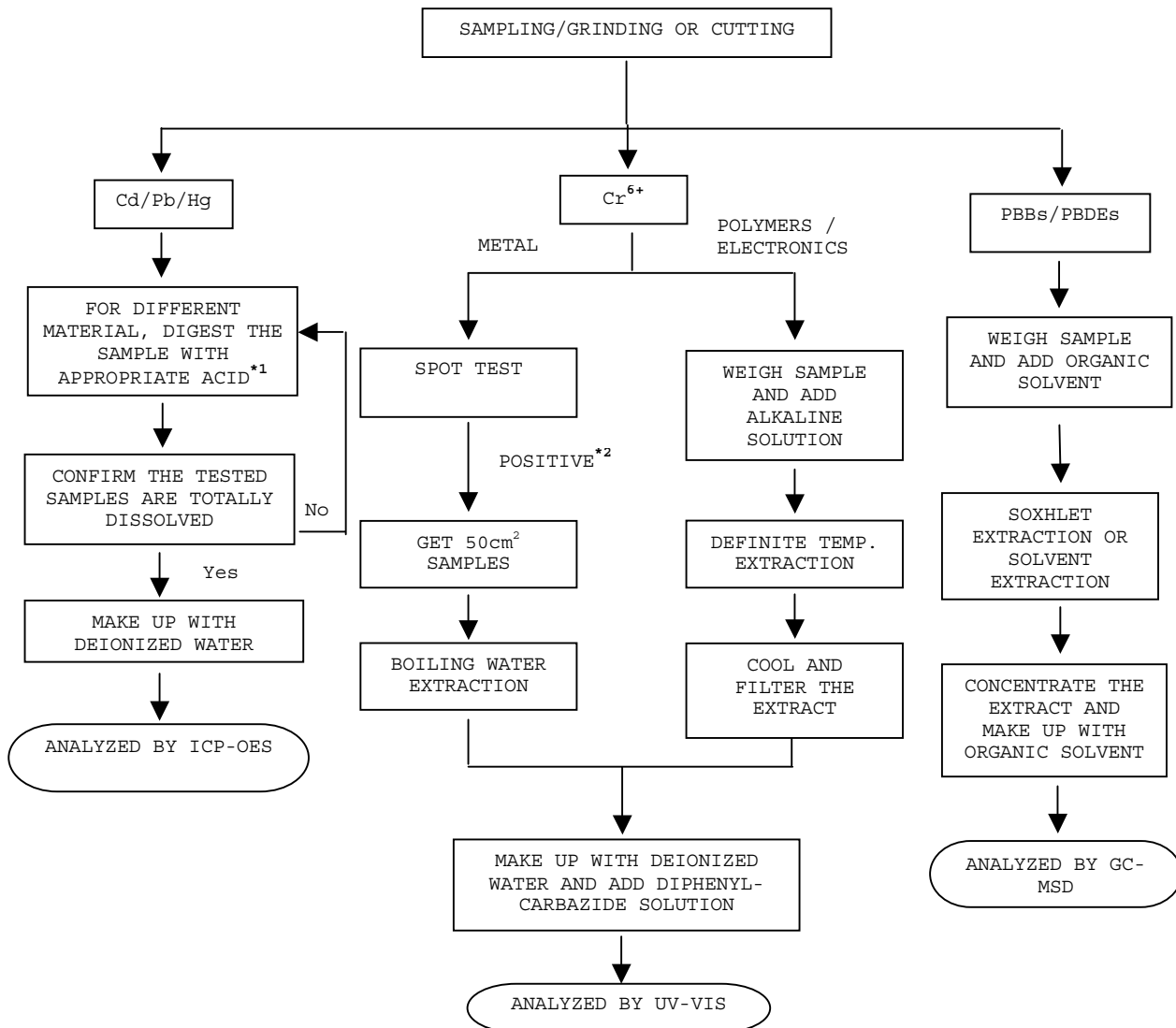
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(D) MEASUREMENT FLOWCHART:

TEST FOR Cd/Pb/Hg/Cr (VI)/PBBs/PBDEs CONTENTS  
REFERENCE STANDARD: IEC 62321 EDITION 1.0: 2008



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REMARKS:

\*1: LIST OF APPROPRIATE ACID:

<u>MATERIAL</u>	<u>ACID ADDED FOR DIGESTION</u>
POLYMERS	HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub> , H <sub>3</sub> BO <sub>3</sub>
METALS	HNO <sub>3</sub> , HCl, HF
ELECTRONICS	HNO <sub>3</sub> , HCl, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>

\*2: IF THE RESULT OF SPOT TEST IS POSITIVE, CHROMIUM VI WOULD BE DETERMINED AS DETECTED.

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TESTS CONDUCTED

2 POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) FOR GS CERTIFICATION

AS PER THE DOCUMENT ZEK 01.2-08 ISSUED BY THE CENTRAL EXPERIENCE EXCHANGE OFFICE (ZEK), BY SOLVENT EXTRACTION AND DETERMINED BY GC-MSD.

(I) TEST RESULT

<u>TESTING ITEM</u>	<u>RESULT (ppm)</u>
	(1)
NAPHTHALENE	ND
ACENAPHTHYLENE	ND
ACENAPHTHENE	ND
FLUORENE	ND
PHENANTHRENE	ND
ANTHRACENE	ND
FLUORANTHENE	ND
PYRENE	ND
CHRYSENE	ND
BENZO [a] ANTHRACENE	ND
BENZO [b] FLUORANTHENE	ND
BENZO [k] FLUORANTHENE	ND
<b>BENZO [a] PYRENE</b>	ND
DIBENZO [a, h] ANTHRACENE	ND
INDENO [1, 2, 3 -cd] PYRENE	ND
BENZO [g, h, i] PERYLENE	ND
<b>SUM OF PAHs</b>	ND
<b>CLASSIFICATION OF SAMPLE: CATEGORY</b>	II
<b>CONCLUSION</b>	P

REMARKS: ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

P = PASS

DETECTION LIMIT = 0.2 ppm

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(II) LIMITS FOR PAHs IN PRODUCTS

PARAMETER	PRODUCT	BENZO [a] PYRENE	SUM 16 PAHs (EPA)
CATEGORY I	MATERIALS INTENDED TO BE PUT IN THE MOUTH, OR MATERIALS OF TOYS FOR CHILDREN AGED < 36 MONTHS WITH INTENDED SKIN CONTACT <sup>2)</sup>	NOT DETECTED (<0.2 mg/kg) <sup>1)</sup>	NOT DETECTED (<0.2 mg/kg) <sup>1)</sup>
CATEGORY II	MATERIALS NOT COVERED BY CATEGORY I, WITH FORESEEABLE SKIN CONTACT FOR LONGER THAN 30 SECONDS (LONG-TERM SKIN CONTACT)	1 mg/kg	10 mg/kg
CATEGORY III	MATERIALS NOT COVERED BY CATEGORY I OR II, WITH FORESEEABLE SKIN CONTACT UP TO 30 SECONDS (SHORT TERM SKIN CONTACT)	20 mg/kg	200 mg/kg

REMARK:

1) IF THE LIMITS OF CATEGORY I ARE SURPASSED BUT THE LIMITS OF CATEGORY II STILL MET, THE CONFIRMATION OF SUITABILITY OF CONTACT WITH FOODSTUFF OR THE ORAL MUCOSA CAN BE VERIFIED BY AN ADDITIONAL MIGRATION TEST OF THE PAHs COMPONENTS ACCORDING TO EN 1186 AND §64 LFGB B80.30-1. THE RESULTS OF THE MIGRATION TEST SHALL BE EVALUATED ACCORDING TO LAW CRITERIA FOR FOODSTUFF.

2) ACCORDING TO THE STIPULATIONS OF THE EK2.

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TO BE CONTINUED

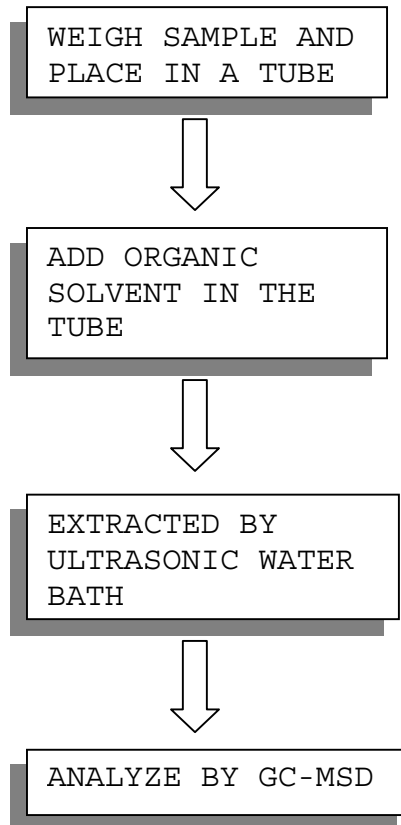
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MEASUREMENT FLOWCHART:

TEST FOR **PAHs** CONTENT



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TO BE CONTINUED



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3 PERFLUOROOCTANE SULFONATES (PFOS) AND PERFLUOROOCTANOIC ACID (PFOA) CONTENT:

BY SOLVENT EXTRACTION AND FOLLOWED BY LIQUID CHROMATOGRAPHY-MASS SPECTROMETRIC (LC-MS) ANALYSIS.

<u>COMPOUND</u>	<u>RESULT</u>	
	(1)	(2)
PERFLUOROOCTANE SULFONATES	<1.0 ppm	<1.0 ug/m <sup>2</sup>
PERFLUOROOCTANOIC ACID	<1.0 ppm	<1.0 ug/m <sup>2</sup>

REMARK : < = LESS THAN  
ppm = PARTS PER MILLION = mg/kg  
DETECTION LIMIT = 1.0 ppm / ug/m<sup>2</sup>

DATE SAMPLE RECEIVED : DEC.24, 2009  
TESTING PERIOD : DEC.24, 2009 TO DEC.31, 2009

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TO BE CONTINUED

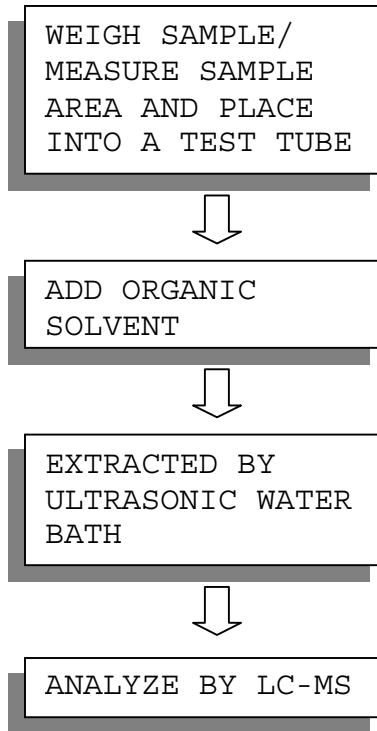
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MEASUREMENT FLOWCHART:

TEST FOR **PERFLUOROCTANE SULFONATES (PFOS) AND  
PERFLUOROCTANOIC ACID (PFOA) CONTENT:**



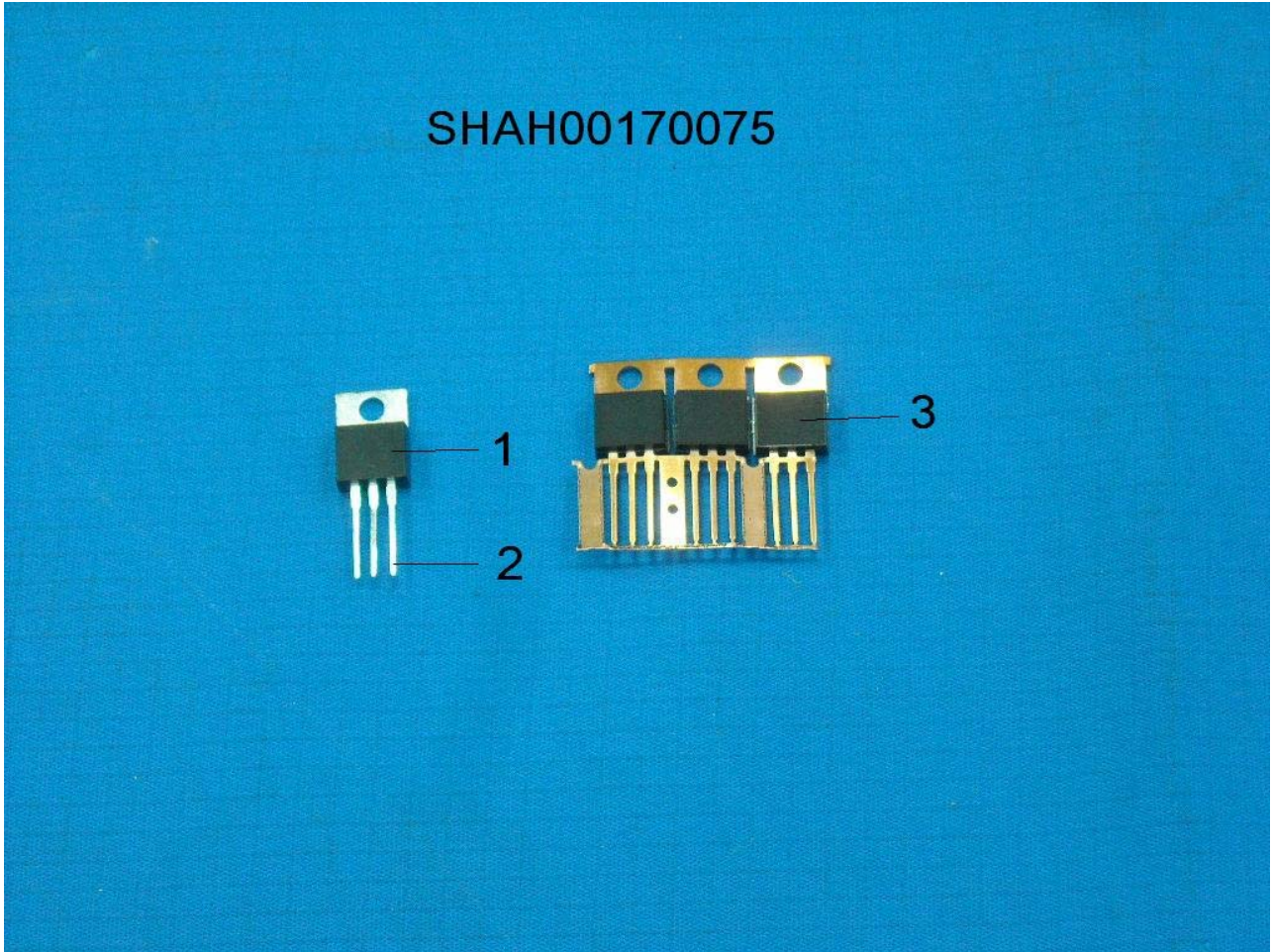
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END OF REPORT