

Test Report No.: SHAEC24003061401 **Date**: Mar 01, 2024 Page 1 of 9

Client Name: Microdiode Semiconductor (Shenzhen) Co., Ltd./Microdiode Semiconductor (Anhui) Co.,

Ltd.

Client Address: 13th Floor, Building B, Hongrongyuan Tianjun Digital Innovation Center, No. 328 Mintang

Road, Minzhi Street, Longhua District, Shenzhen/No. 790 Shuangying Road, Wuyi Town,

Nangiao District, Chuzhou City, Anhui Province

Sample Name: SEMICONDUCTOR, SEMICONDUCTOR

Model No.: SMA

Client Ref. Information: DO-214AC/SMA, DO-214AA/SMB, DO-214AB/SMC, SMAF, SMBF,

SMCF, SOD-123, SOD-123FL, SOD-123SL, SOD-323, SOD-323FL, SOD-523, SOD-723, SOD-923, SOD-882, DFN1006, DFN1006-3L, DFN1610-6L, DFN2510-10L, DFN0603, QFN, SOT-23, SOT23-5, SOT23-6, SOT-143,SOT-223, SOT-323, SOT-523, SOT-343,SOT-353, SOT-363, SOT-563, SOT-553, SOT-723, SOT-923, SOT23-5, SOT-23-6L, SOT-89, WBFBP-03E, MELF, MINI-MELF, DO-213AA, DO-213AB, TO-252/D-PAK, TO-263/D2PAK, DO-218AB, R-1, A-405, DO-34, DO-35, DO-41, DO-15, R-3, DO-27/DO-201AD, R-6, TO-220AC, TO-220AB, ITO-220AC, ITO-220AB, TO-277A, TO-277B, TO-247, TO-3P, TO-264, TO-126, TO-251/IPAK, TO-92, DIP, UMB, MB-S, MBF, DBS, ABF, CDS, ABS, TBS, LBF, UMSB, TMBF, MB-M, DB-1, WOM, KBP, KBP-K, D3K, KBL, KBU, RS, GBP, GBL, GBU, KBJ, GBJ,

KBPC, KBPC-W, GBPC, GBPC-W, TTF

The above sample(s) and information were provided by the client.

SGS Job No.: SHP24-004295 Sample Receiving Date: Feb 22, 2024

Testing Period: Feb 22, 2024 ~ Mar 01, 2024

Test Requested: Select test(s) as requested by the client.

Test Method(s): Please refer to next page(s).

Test Result(s): Please refer to next page(s).

Signed for and on behalf of

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Jenny Lan

Approved Signatory







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Test Requirement	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU	
- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls	
(PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate	Pass
(DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl	
phthalate (DIBP)	

Test Result(s):

Test Part Description:

- COLL SALE DOCUMENT					
SN ID	Sample No.	SGS Sample ID	Description		
SN1	A1	SHA24-0030614-0001.C001	Black body with yellow lettering		
SN2	A2	SHA24-0030614-0001.C002	Silver metal pins		

Remarks:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) "-" = Not Regulated

EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU - Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017,

IEC 62321-6:2015 and IEC 62321-8:2017, analysis was performed by ICP-OES/AAS, UV-

Vis and GC-MS.

Test Item(s)	Limit	Unit(s)	MDL	A1
Lead (Pb)	1000	mg/kg	2	15467▲
Mercury (Hg)	1000	mg/kg	2	ND
Cadmium (Cd)	100	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND
Polybromobiphenyl (PBB)	1000	mg/kg	-	ND
Monobrominated biphenyl (MonoBB)	-	mg/kg	5	ND
Dibrominated biphenyl (DiBB)	-	mg/kg	5	ND
Tribrominated biphenyl (TriBB)	-	mg/kg	5	ND
Tetrabrominated biphenyl (TetraBB)	-	mg/kg	5	ND
Pentabrominated biphenyl (PentaBB)	-	mg/kg	5	ND
Hexabrominated biphenyl (HexaBB)	-	mg/kg	5	ND
Heptabrominated biphenyl (HeptaBB)	-	mg/kg	5	ND
Octabrominated biphenyl (OctaBB)	-	mg/kg	5	ND
Nonabrominated biphenyl (NonaBB)	-	mg/kg	5	ND
Decabrominated biphenyl (DecaBB)	-	mg/kg	5	ND
Polybromodiphenyl ether(PBDE)	1000	mg/kg	•	ND
Monobrominated diphenyl ether	_	mg/kg	5	ND
(MonoBDE)	-	ilig/kg		IND
Dibrominated diphenyl ether (DiBDE)	-	mg/kg	5	ND
Tribrominated diphenyl ether (TriBDE)	-	mg/kg	5	ND



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Test Item(s)	Limit	Unit(s)	MDL	A1
Tetrabrominated diphenyl ether (TetraBDE)	-	mg/kg	5	ND
Pentabrominated diphenyl ether (PentaBDE)	-	mg/kg	5	ND
Hexabrominated diphenyl ether (HexaBDE)	-	mg/kg	5	ND
Heptabrominated diphenyl ether (HeptaBDE)	-	mg/kg	5	ND
Octabrominated diphenyl ether (OctaBDE)	-	mg/kg	5	ND
Nonabrominated diphenyl ether (NonaBDE)	-	mg/kg	5	ND
Decabrominated diphenyl ether (DecaBDE)	-	mg/kg	5	ND
Bis(2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Dibutyl phthalate (DBP)	1000	mg/kg	50	ND
Diisobutyl phthalate (DIBP)	1000	mg/kg	50	ND

Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series.
- (3) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.
- (4) ▲ According to the declaration from the client, Lead (Pb) is exempted by EU RoHS directive 2011/65/EU based on |ANNEX III 7(a)|: Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead).

More information about exemption can be found via the following link:

https://rohs.sqsonline.com.cn/PDFLinks/en/RSTS-TP-037%20RoHS%20Exemption%20%28EN%29.pdf

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015,

IEC 62321-6:2015 and IEC62321-8:2017, analysis was performed by ICP-OES/AAS, UV-

Vis and GC-MS.

Test Item(s)	Limit	Unit(s)	MDL	A2
Lead (Pb)	1000	mg/kg	2	7
Mercury (Hg)	1000	mg/kg	2	ND
Cadmium (Cd)	100	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	μg/cm²	0.10	ND
Polybromobiphenyl (PBB)	1000	mg/kg	1	ND
Monobrominated biphenyl (MonoBB)	-	mg/kg	5	ND
Dibrominated biphenyl (DiBB)	-	mg/kg	5	ND
Tribrominated biphenyl (TriBB)	-	mg/kg	5	ND
Tetrabrominated biphenyl (TetraBB)	-	mg/kg	5	ND
Pentabrominated biphenyl (PentaBB)	-	mg/kg	5	ND
Hexabrominated biphenyl (HexaBB)	-	mg/kg	5	ND
Heptabrominated biphenyl (HeptaBB)	-	mg/kg	5	ND
Octabrominated biphenyl (OctaBB)	-	mg/kg	5	ND
Nonabrominated biphenyl (NonaBB)	-	mg/kg	5	ND



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Test Item(s)	Limit	Unit(s)	MDL	A2
Decabrominated biphenyl (DecaBB)	-	mg/kg	5	ND
Polybromodiphenyl ether(PBDE)	1000	mg/kg	1	ND
Monobrominated diphenyl ether (MonoBDE)	-	mg/kg	5	ND
Dibrominated diphenyl ether (DiBDE)	-	mg/kg	5	ND
Tribrominated diphenyl ether (TriBDE)	-	mg/kg	5	ND
Tetrabrominated diphenyl ether (TetraBDE)	-	mg/kg	5	ND
Pentabrominated diphenyl ether (PentaBDE)	-	mg/kg	5	ND
Hexabrominated diphenyl ether (HexaBDE)	-	mg/kg	5	ND
Heptabrominated diphenyl ether (HeptaBDE)	-	mg/kg	5	ND
Octabrominated diphenyl ether (OctaBDE)	-	mg/kg	5	ND
Nonabrominated diphenyl ether (NonaBDE)	-	mg/kg	5	ND
Decabrominated diphenyl ether (DecaBDE)	-	mg/kg	5	ND
Bis(2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Dibutyl phthalate (DBP)	1000	mg/kg	50	ND
Diisobutyl phthalate (DIBP)	1000	mg/kg	50	ND

Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series.
- (3) ▼ = a. The sample is positive for Cr(VI) if the Cr(VI)concentration is greater than 0.13 µg/cm². The sample coating is considered to contain Cr(VI).
 - b. The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 μg/cm²). The coating is considered a non-Cr(VI) based coating.
 - c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive-unavoidable coating variations may influence the determination.

Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019.



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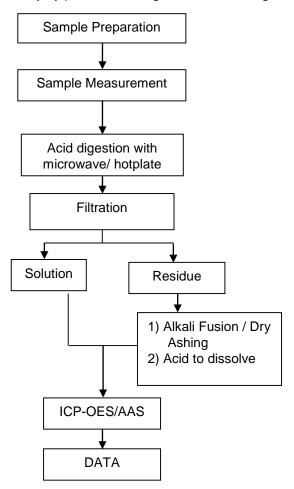
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Elements Testing Flow Chart

These samples were dissolved totally by pre-conditioning method according to below flow chart.





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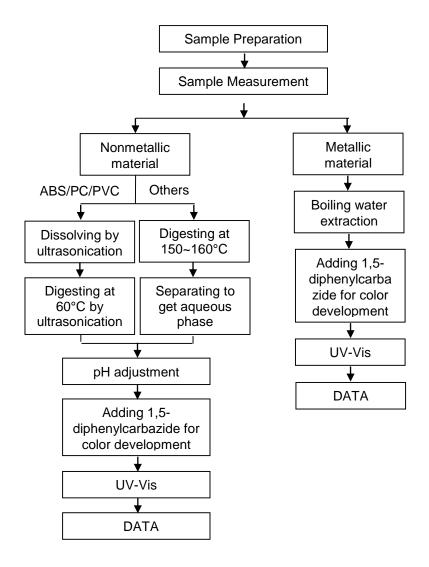
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Hexavalent Chromium (Cr(VI)) Testing Flow Chart





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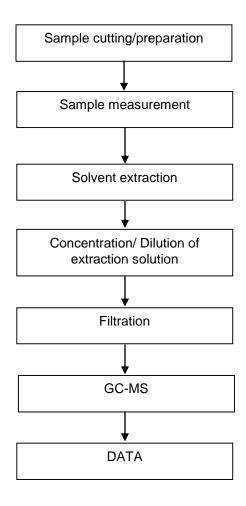
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PBB/PBDE Testing Flow Chart





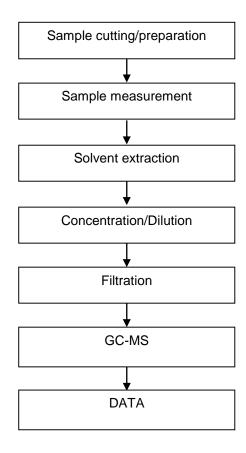
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Phthalates Testing Flow Chart





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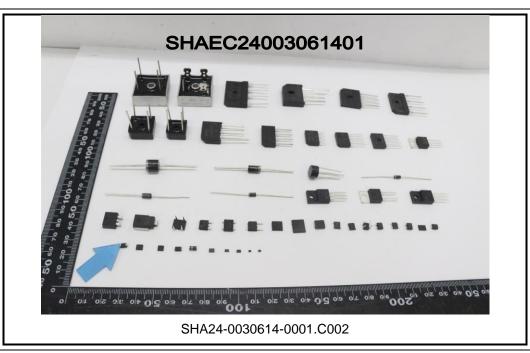
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Sample Photo:





SGS authenticate the photo on original report only *** End of Report ***



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