

Sensortek Corporation Eye Safety Report for STK3310-SA / STK3311-SA

Dec. 2014

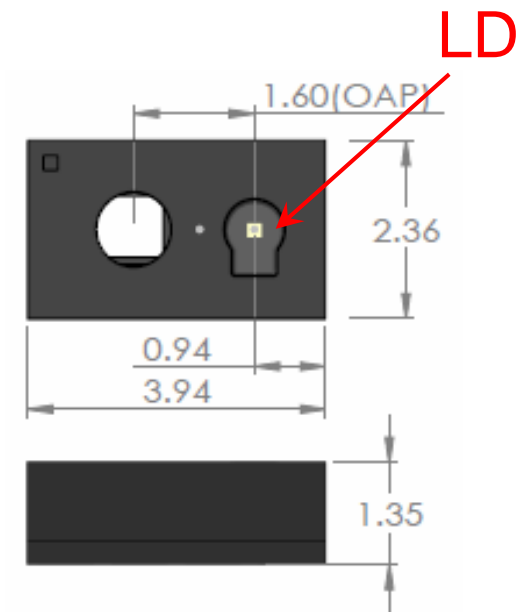


STK3310-SA Feature

- Highly integrated PS and ALS in one chip and build-in LD in one package
- Small IR Ink Design : 2.4 x 1.2 mm
- ALS View Angle : $\pm 27^\circ$
- Work with 850nm VCSEL
- Package Size : 3.94 x 2.36 x 1.35 mm

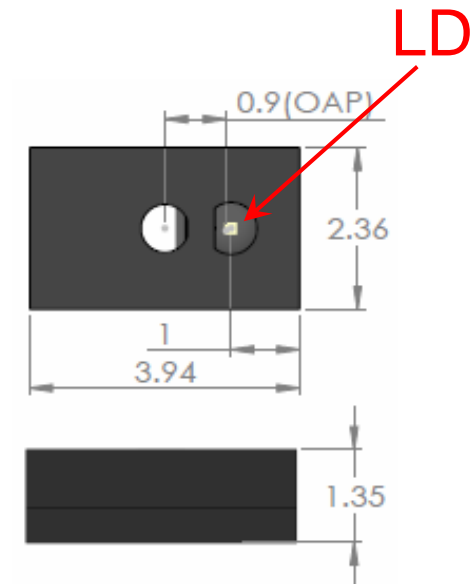
Pin to pin with

- STK3310 / STK3311
- TAOS TMD2772



STK3311-SA Feature

- Highly integrated PS and ALS in one chip and build-in LD in one package
- Smallest IR Ink Design : $\varnothing 1.5$ mm
- ALS View Angle : $\pm 35^\circ$ @ TP IR Ink $\varnothing 1.5$ mm, Gap 0.3mm
- Work with 850nm VCSEL
- Package Size : 3.94 x 2.36 x 1.35 mm
Pin to pin with
 - STK3310 / STK3311
 - TAOS TMD2772




Passed the Eye Safety Standard

STK3310-SA complies with
Class 1 Laser Product.

STK3311-SA is fully
compatible with STK3310-SA.

Only package design is
different.

STK3311-SA passed this
standard also.

TEST REPORT IEC 60825-1: 2007 2nd Edition Safety of laser products -- Part 1: Equipment classification and requirements	
Report Reference No.....	OM-2014-B0005
Date of issue	Nov. 27, 2014
Applicant's name	Sensortek Technology Corp.
Address	6F-1, No. 5, Taiyuan 1st St., Jhubei City, Hsinchu County 302, Taiwan
Testing Laboratory	SGS Taiwan Ltd., Optics Laboratory
Address	No. 33, Wu Chyuan Road, New Taipei Industrial Park, Wu Ku District, New Taipei City 24886, Taiwan (R.O.C.)
Test specification:	
Standard	IEC 60825-1 : 2007 (2nd Edition)
Test procedure	Same as above
Non-standard test method	N/A
Tested equipment	Ambient Light Sensor and Proximity Sensor with IR VCSEL
Model number / Type	STK3310-SA
Conclusion:	In the opinion of SGS, the submitted Device Under Test (DUT) complies with Class 1 Laser Product of the above test specification.
	Approved by: Calvin Tzou Technical Manager Nov. 27, 2014
	 _____ Signature

Test Conditions and Results

Measured Laser radiation, calculations, judgements and comparison with AEL limits:

Conditions

1. Tests were proceeded on the tested product supplied with DC 12.5 mA.
2. Ambient temperature: $(25 \pm 2) ^\circ\text{C}$. Humidity: $(60 \pm 10)\%$
3. Aperture diameter: 7 mm
4. Measure distance: 70 mm to 100 mm
5. 100 s time based
6. Wavelength: 840 nm to 860 nm single wavelength, $\lambda_p=843.9$ nm

IEC / EN 60825-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.8	Radiation output and standards information		P
	-max output of radiation	3.82E+00 μJ	P
	-pulse duration	on 0.39 ms, off 50 ms	P
	-emitted wavelength	Single	P
	-the name and publication date of the standard	IEC / EN 60825-1	P

Measurements and Results for Laser

	AEL	
	700 nm to 1050 nm	
Class 1 AEL	3.82E+00	μJ
Client's Results	1.06E+00	μJ
Comparison	Client's results < AEL 1	
Remark		

Conclusion

The tested products were **Class 1 Laser Product** with normal condition.

STK3310-SA test result is lower than Class 1 Criteria a lot.

STK3310-SA / STK3311-SA LD driving current is 12.5mA (pulse).

Class 1 is the best level for Eye Safety criteria.

Verification of Compliance

SGS

No.: OM-2014-B0005C

VERIFICATION OF COMPLIANCE

The following tested products have been verified to comply with the essential requirements of the specifications/standards when the applicable tests with judgments were carried out.

Applicant : Sensortek Technology Corp.
Address of Applicant : 6F-1, No. 5, Taiyuan 1st St., Jhubei City, Hsinchu County 302, Taiwan
Product Name : Ambient Light Sensor and Proximity Sensor with IR VCSEL
Model Number / Type : STK3310-SA
Product Rating / Specs : DC 12.5 mA
Manufacturer : Sensortek Technology Corp.
Applicable Specifications / Standards : IEC 60825-1:2007 2nd Edition, SAFETY OF LASER PRODUCTS – Part 1: Equipment classification and requirements
Test Report No. : OM-2014-B0005
Date of Issue : Nov. 27, 2014

Conclusion

Based upon the results of the test report as above, the tested product was in compliance with the requirements of Class 1 Laser Product of Part 1: Equipment classification and requirements, Safety of laser product, IEC 60825-1:2007, 2nd Edition.

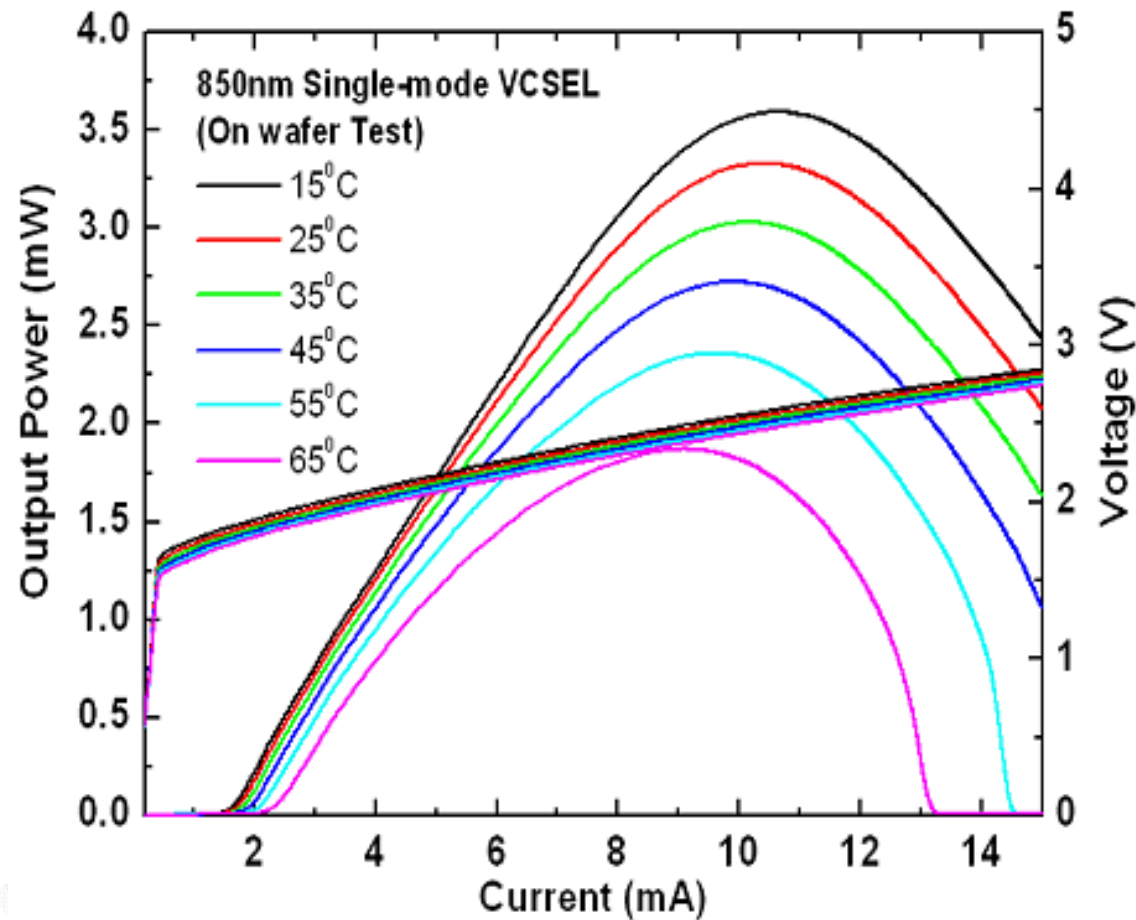
Note: This V.O.C. is only valid for the equipment and configuration described and in conjunction with the test report detailed above.

Signed for and on behalf of
SGS TAIWAN Ltd.



Calvin Tzou
Technical Manager

VCSEL I vs. Power & Voltage



The VCSEL output power will be reduced when the current over our LD driving current.

Summary

- Under the normal operation mode, the LD output power of STK3310-SA / STK3311-SA would be within Eye Safety standard criteria.
- Even the IC damaged by ESD or others issue to provide the LD huge current, the LD output power will be reduced.
- It is safe for human eye to adopt STK3310-SA and STK3311-SA.