



SL1640 Silicon Product Qualification Report

PN: 527-002831-01 Rev C

Downloaded by Anonymous () on 1 Nov 2025 16:13:13 UTC

Contents

| | | |
|------|---------------------------------------|---|
| 1. | Introduction..... | 3 |
| 1.1. | Full Device Qualification Report..... | 4 |
| 2. | Revision History | 5 |

Downloaded by Anonymous () on 1 Nov 2025 16:13:15 UTC

1. Introduction

The purpose of this document is to outline the qualification plans and results for the SL1640 consumer and industrial product, manufactured by TSMC using 12nm FFC process. This report confirms that the product qualification results for Synaptics part number SL1640 meets all necessary requirements and that the product is approved for production as both consumer and industrial grade.

The 12nm FFC process has been qualified by TSMC.

[Table 1](#) provides the qualification results based on the JEDEC standards.

Downloaded by Anonymous () on 1 Nov 2025 16:13:15 UTC

1.1. Full Device Qualification Report

Table 1. Qualification Report Summary

| Stress | Reference | Abbreviation | Conditions | Requirements | |
|--|------------------------|--------------|---|------------------------------|--------------------------------------|
| | | | | # of Lots/ SS per Lot | Duration/Accept |
| Human Body Model ESD | JESD22-A114 | ESD HBM | +/- 2KV; Ta= 25°C | 3 units | Classification 2/Passed |
| Charged Device Model ESD | JESD22-C101 | ESD CDM | +/- 250V; Ta= 25°C | 3 units | Classification 1/Passed |
| Latch -Up | JESD78 | LU | I-Test @ +/- 100mA; OVT @ 1.5xV;Ta = 125°C | 3 units | 0 Failed |
| High Temperature Operating Life | JESD22-A108, JESD85 | HTOL | Tj = 125°C Operating VCORE: VDD= 1.19V VDD_IO = 2.16 | 3 lots/77 units | 2000 hrs / 0 Failed |
| Low Temperature Operating Life | JESD22-A108, JESD85 | LTOL | Tj = -40°C Operating VCORE: VDD= 1.19V VDD_IO = 2.16 | 1 lot/77 units per lot | 1000 hrs / 0 Failed |
| Biased HAST | JESD22-A110 | BHAST | 110°C/85%RH | 3 lots/ 25 units per lot | 264 hrs / 0 Fail Electrical Test |
| High Temperature Storage | JESD22-A103 | HTSL | 150°C + Preconditioning if required | 3 lots/ 77 units per lot | 1000 hrs / 0 Fail Electrical Test |
| MSL3 Preconditioning <i>must</i> be performed prior to THB, HAST, TC, AC & UHAST | JESD22-A113 | PC | Per Appropriate MSL level of the test vehicle per J-STD-020 | 3 lots/ 154 units per lot | 0 Fail Electrical Test |
| Temperature Cycling | JESD22-A104 | TC | Cond C.: -65°C to 150°C | 3 lots/ 77 units per lot | 500 cycles/0 Fail Electrical Test |
| Unbiased Temperature/Humidity (Unbiased HAST) | JESD22-A118 | UHAST | 130°C /85%RH | 3 lots/ 77 units per lot | 96 hrs / 0 Fail Electrical Test |

2. Revision History

| Revision | Description |
|----------|---|
| A | Initial release. |
| B | Updated to include Industrial grade information. |
| C | Updated JESD22-A113 (Stress details) in Table 1. Qualification Report Summary . |

Downloaded by Anonymous () on 1 Nov 2025 16:13:15 UTC



Copyright

Copyright © 2024–2025 Synaptics Incorporated. All Rights Reserved.

Trademarks

VideoSmart, Astra, Astra Machina, Synaptics and the Synaptics logo are trademarks or registered trademarks of Synaptics Incorporated in the United States and/or other countries.

TSMC is the property of Taiwan Semiconductor Manufacturing Company. All other brand names or trademarks are the property of their respective owners. All other trademarks are the properties of their respective owners.

Contact Us

Visit our website at www.synaptics.com to locate the Synaptics office nearest you.

PN: 527-002831-01 Rev C

Notice

Use of the materials may require a license of intellectual property from a third party or from Synaptics. This document conveys no express or implied licenses to any intellectual property rights belonging to Synaptics or any other party. Synaptics may, from time to time and at its sole option, update the information contained in this document without notice.

INFORMATION CONTAINED IN THIS DOCUMENT IS PROVIDED "AS-IS," AND SYNAPTICS HEREBY DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES OF NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS. IN NO EVENT SHALL SYNAPTICS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE OF THE INFORMATION CONTAINED IN THIS DOCUMENT, HOWEVER CAUSED AND BASED ON ANY THEORY OF LIABILITY, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, AND EVEN IF SYNAPTICS WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. IF A TRIBUNAL OF COMPETENT JURISDICTION DOES NOT PERMIT THE DISCLAIMER OF DIRECT DAMAGES OR ANY OTHER DAMAGES, SYNAPTICS' TOTAL CUMULATIVE LIABILITY TO ANY PARTY SHALL NOT EXCEED ONE HUNDRED U.S. DOLLARS.