

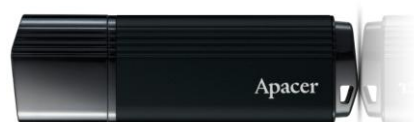
***RoHS Compliant***

# **USB Flash Drive**

***EH353 Product Specifications***

**December 21, 2015**

*Version 1.2*



**Apacer**  
*Access the best*

***Apacer Technology Inc.***

1F, No.32, Zhongcheng Rd., Tucheng Dist., New Taipei City, Taiwan, R.O.C

Tel: +886-2-2267-8000 Fax: +886-2-2267-2261

[www.apacer.com](http://www.apacer.com)

## FEATURES:

- **USB3.0 Super Speed compatible, and backward compatible with USB2.0 & USB1.1 interfaces**
  - USB3.0 max. transfer rate: 5.0 Gbps
  - Backward compatible with 480Mbps & 12 Mbps
- **Capacity**
  - SLC: 256, 512 MB  
1, 2, 4, 8, 16, 32 GB
  - MLC: 8, 16, 32, 64 GB
- **Performance\***
  - SLC**
    - Sustained read: up to 80 MB/s
    - Sustained write: up to 70 MB/s
  - MLC**
    - Sustained read: up to 195 MB/s
    - Sustained write: up to 95 MB/s
- **Flash Management**
  - Built-in hardware ECC
  - Power saving implemented
- **Temperature Ranges**
  - Operating:
    - Standard: 0°C to 70°C
    - Extended: -40°C to 85°C C
  - Storage: -40°C to 85°C
- **Power Consumption (typical)\***
  - Operating voltage: 5V
  - SLC**
    - Active mode: 225 mA
    - Idle mode: 65 mA
  - MLC**
    - Active mode: 275 mA
    - Idle mode: 80 mA
- **RoHS Compliant**
- **USB Bus-Powered Capability**
- **NAND Flash Type: SLC/MLC**
- **Dimensions: 59.0 x 18.4 x 9.1, unit: mm**

\*Performance and power consumption addressed here vary from configurations and platforms.

---

## Table of Contents

<b>1. General Description.....</b>	<b>3</b>
1.1 Performance-Optimized USB Controller .....	3
1.1.1 Power Saving Implemented.....	3
1.1.2 Program RAM Architect .....	3
1.1.3 Error Correction Code (ECC).....	3
<b>2. General Specifications .....</b>	<b>4</b>
2.1 SLC.....	4
2.2 MLC .....	4
<b>3. Absolute Maximum Rating .....</b>	<b>5</b>
<b>4. Physical Dimensions .....</b>	<b>6</b>
<b>5. Product Ordering Information .....</b>	<b>7</b>
5.1 Product Code Designations.....	7
5.2 Valid Combinations.....	8

---

## 1. General Description

Apacer USB3.0 Handy FLASH Drive EH353 is ultra high-performance flash disk drive designed offering portable storage solutions or external memory expansion. This new generation USB flash drive is compatible with the latest USB specification – USB3.0 Super Speed, with a maximum transfer rate of 5.0 Gbps. The connector is backward employable with USB2.0 and USB1.1 interfaces as well. With compliance with USB3.0 specification, this USB drive can deliver up to 195 MB/s outstanding performance. Reliability wise, the USB comes with built-in hardware ECC to ensure data integrity. This product is well suited for portable flash storage applications while operating at minimal power consumption.

### 1.1 Performance-Optimized USB Controller

---

#### 1.1.1 Power Saving Implemented

The internal controller of the USB model is designed with power saving implementations, allowing the device to operate at low power consumption.

#### 1.1.2 Program RAM Architect

The internal Program RAM implementation allows the host to upgrade firmware codes anytime when needed.

#### 1.1.3 Error Correction Code (ECC)

The UFD utilizes 1-bit Error Detection Code (EDC) and Error Correction Code (ECC)

## 2. General Specifications

### 2.1 SLC

<b>Interface</b>	Super-speed USB3.0 compliant; backward compatible with USB 2.0 and USB 1.1								
<b>Performance* (MB/s)</b>		<b>256MB</b>	<b>512MB</b>	<b>1GB</b>	<b>2GB</b>	<b>4GB</b>	<b>8GB</b>	<b>16GB</b>	<b>32GB</b>
	<b>Read</b>	60	60	65	65	65	80	80	80
	<b>Write</b>	10	21	40	40	50	65	70	70
<b>Temperature</b>	-40°C to 85°C								
<b>Power consumption*</b>	Active: 225 mA Idle: 65 mA								
<b>MTBF</b>	1,000,000 hours								

\*Results may vary from flash configurations or host system settings.

### 2.2 MLC

<b>Interface</b>	Super-speed USB3.0 compliant; backward compatible with USB 2.0 and USB 1.1				
<b>Performance*</b>		<b>8GB</b>	<b>16GB</b>	<b>32GB</b>	<b>64GB</b>
	<b>Read</b>	95	195	190	195
	<b>Write</b>	28	55	49	95
<b>Temperature</b>	-40°C to 85°C				
<b>Power consumption*</b>		<b>8GB</b>	<b>16GB</b>	<b>32GB</b>	<b>64GB</b>
	<b>Active</b>	165	270	265	275
	<b>Idle</b>	75	85	80	80
<b>MTBF</b>	1,000,000 hours				

\*Results may vary from flash configurations or host system settings.

---

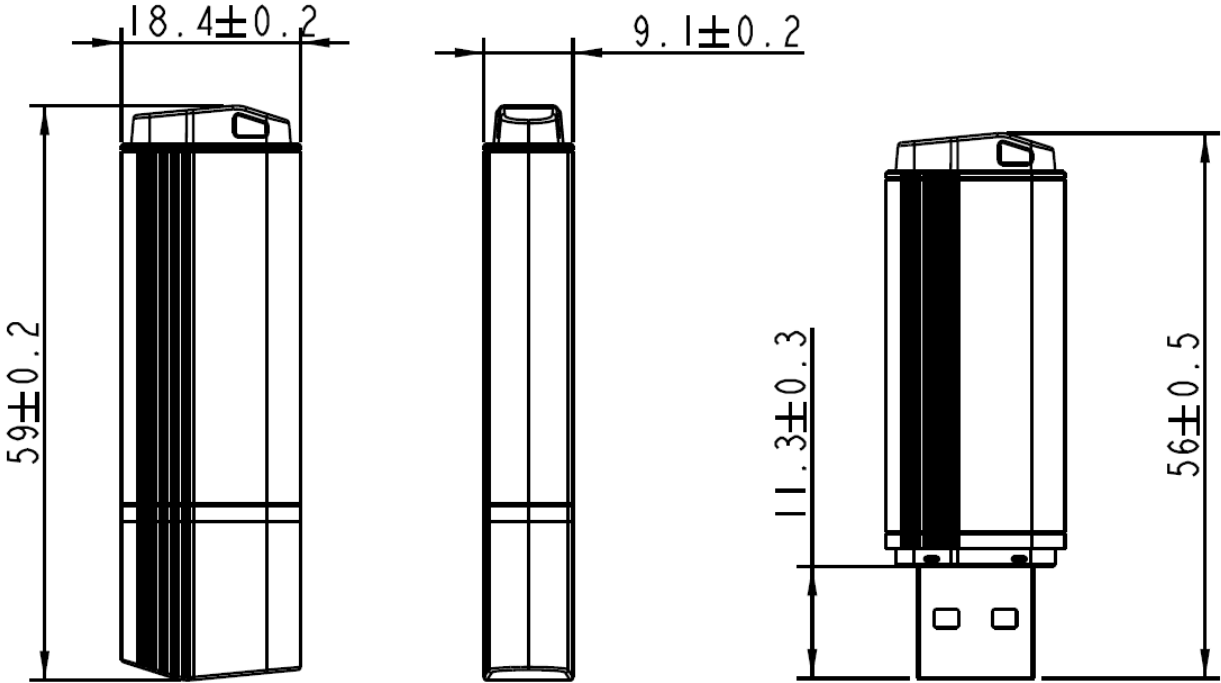
### 3. Absolute Maximum Rating

**Caution: Absolute Maximum Stress Ratings** – Applied conditions greater than those listed under “Absolute Maximum Stress Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these conditions or conditions greater than those defined in the operational sections of this data sheet is not implied. Exposure to absolute maximum stress rating conditions may affect device reliability.

Table: Absolute Stress Rating

Parameters	Conditions
Required power supply	4.5-5.5V
Operating temperature	0°C to 70°C (standard) -40°C to 85°C (extended)
Storage temperature	-40°C to 85°C

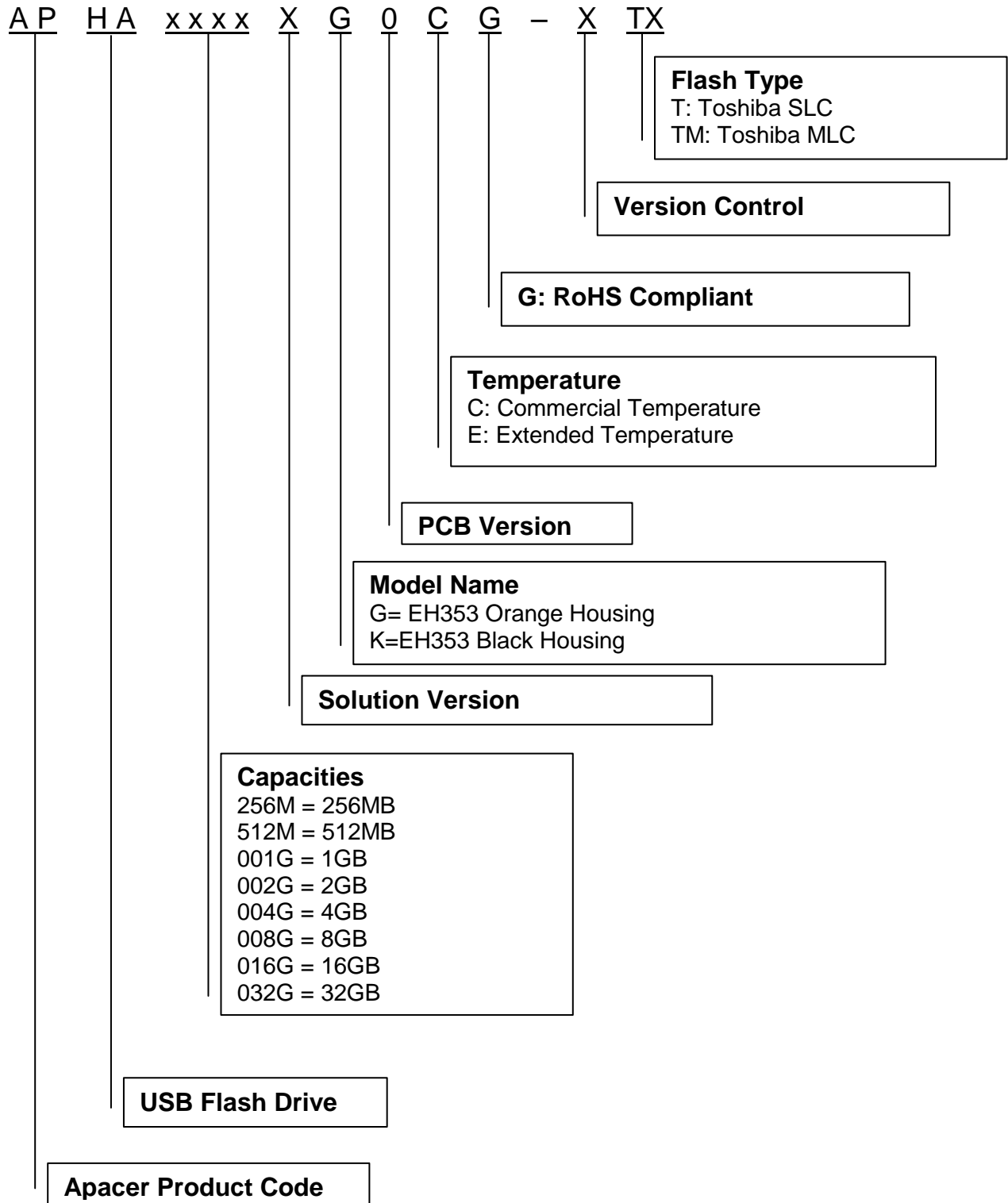
### 4. Physical Dimensions



Unit: mm

## 5. Product Ordering Information

### 5.1 Product Code Designations





---

## 5.2 Valid Combinations

---

### 5.2.1 EH353 (SLC)

- Orange Housing

Capacity	Standard	Extended
256MB	APHA256MAG0CG-2T	APHA256MAG0EG-2T
512MB	APHA512MAG0CG-2T	APHA512MAG0EG-2T
1GB	APHA001GAG0CG-2T	APHA001GAG0EG-2T
2GB	APHA002GAG0CG-2T	APHA002GAG0EG-2T
4GB	APHA004GAG0CG-2T	APHA004GAG0EG-2T
8GB	APHA008GAG0CG-2T	APHA008GAG0EG-2T
16GB	APHA016GAG0CG-2T	APHA016GAG0EG-2T
32GB	APHA032GAG0CG-2T	APHA032GAG0EG-2T

- Black Housing

Capacity	Standard	Extended
256MB	APHA256MAK0CG-2T	APHA256MAK0EG-2T
512MB	APHA512MAK0CG-2T	APHA512MAK0EG-2T
1GB	APHA001GAK0CG-2T	APHA001GAK0EG-2T
2GB	APHA002GAK0CG-2T	APHA002GAK0EG-2T
4GB	APHA004GAK0CG-2T	APHA004GAK0EG-2T
8GB	APHA008GAK0CG-2T	APHA008GAK0EG-2T
16GB	APHA016GAK0CG-2T	APHA016GAK0EG-2T
32GB	APHA032GAK0CG-2T	APHA032GAK0EG-2T

---

### 5.2.2 EH353 (MLC)

- **Orange Housing**

<b>Capacity</b>	<b>Standard</b>	<b>Extended</b>
8GB	APHA008GAG0CG-2TM	APHA008GAG0EG-2TM
16GB	APHA016GAG0CG-2TM	APHA016GAG0EG-2TM
32GB	APHA032GAG0CG-2TM	APHA032GAG0EG-2TM
64GB	APHA064GAG0CG-2TM	APHA064GAG0EG-2TM

- **Black Housing**

<b>Capacity</b>	<b>Standard</b>	<b>Extended</b>
8GB	APHA008GAK0CG-2TM	APHA008GAK0EG-2TM
16GB	APHA016GAK0CG-2TM	APHA016GAK0EG-2TM
32GB	APHA032GAK0CG-2TM	APHA032GAK0EG-2TM
64GB	APHA064GAK0CG-2TM	APHA064GAK0EG-2TM

---

## Revision History

Revision	Description	Date
1.0	Official release	07/24/2015
1.1	<ul style="list-style-type: none"><li>● Modified performance and power consumption data for MLC models.</li><li>● Updated valid combinations for SLC and MLC models.</li></ul>	09/17/2015
1.2	<ul style="list-style-type: none"><li>● Revised mechanical specifications</li></ul>	12/21/2015

---

## Global Presence

<b>Taiwan (Headquarters)</b>	<b>Apacer Technology Inc.</b> 1F., No.32, Zhongcheng Rd., Tucheng Dist., New Taipei City 236, Taiwan R.O.C. Tel: 886-2-2267-8000 Fax: 886-2-2267-2261 <a href="mailto:amtsales@apacer.com">amtsales@apacer.com</a>
<b>U.S.A.</b>	<b>Apacer Memory America, Inc.</b> 46732 Lakeview Blvd., Fremont, CA 94538 Tel: 1-408-518-8699 Fax: 1-510-249-9568 <a href="mailto:sa@apacerus.com">sa@apacerus.com</a>
<b>Japan</b>	<b>Apacer Technology Corp.</b> 5F, Matsura Bldg., Shiba, Minato-Ku Tokyo, 105-0014, Japan Tel: 81-3-5419-2668 Fax: 81-3-5419-0018 <a href="mailto:jpservices@apacer.com">jpservices@apacer.com</a>
<b>Europe</b>	<b>Apacer Technology B.V.</b> Science Park Eindhoven 5051 5692 EB Son, The Netherlands Tel: 31-40-267-0000 Fax: 31-40-267-0000#6199 <a href="mailto:sales@apacer.nl">sales@apacer.nl</a>
<b>China</b>	<b>Apacer Electronic (Shanghai) Co., Ltd</b> Room D, 22/FL, No.2, Lane 600, JieyunPlaza, Tianshan RD, Shanghai, 200051, China Tel: 86-21-6228-9939 Fax: 86-21-6228-9936 <a href="mailto:sales@apacer.com.cn">sales@apacer.com.cn</a>
<b>India</b>	<b>Apacer Technologies Pvt Ltd,</b> Unit No.201, "Brigade Corner", 7 <sup>th</sup> Block Jayanagar, Yediyur Circle, Bangalore – 560082, India Tel: 91-80-4152-9061 Fax: 91-80-4170-0215 <a href="mailto:sales_india@apacer.com">sales_india@apacer.com</a>