



# **AE1715 PCAP Control Board Datasheet**

Version 1.2  
2022/08/12

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## Revision History

| Rev. | Date       | Summary   | Remark      |
|------|------------|---|-------------|
| 1.0  | 2021/11/30 | First Edition   | Carol       |
| 1.1  | 2022/05/13 | Control Board L0 changed to L1 version:<br>Added RSTN pin(JL6) and GPIO pin (JP9)   | William_Tai |
| 1.2  | 2022/08/12 | Corrected Part Numbers for Accessory Cables<br>2.0 Specifications Delete RS232 data | Carol       |
|      |            |   |             |
|      |            |   |             |
|      |            |   |             |
|      |            |   |             |

## 1.0 Introduction

This controller board is a high specification Projective Capacitive input (PCAP) touch panel controller product. It is developed based on the EETI MCU EXC80H84 ASIC. It can be applied in the consumer, commercial, and industrial fields.

The controller provides USB, I2C interfaces. It can support up to 24-inch PCAP touch screens. It also supports wide range of operating systems, such as Windows and Linux.

There are 4 connectors on this board: 80 Pins (JL1) & 50 Pins (JL2) ZIF connectors for PCAP touch screen FPC cables, 4 Pins USB (JL3) and 7 Pins I2C (JL6) connectors for host interface.

## 2.0 Specifications

| Parameters                 | Features  |
|----------------------------|---|
| Controller Part Number     | AE1715-L1   |
| Number of sensing line     | 78 (include shielding lines)  |
| Number of driving Line     | 48 (include shielding lines)  |
| Support touch panel size   | Up to 24" (base on 7mm sensor channel pitch)                                    |
| Input Voltage              | 5V +/-5%  |
| Interface                  | USB: 1.1 Full Speed<br>I2C: up to 400KHz, Voltage Level 3.3V                    |
| Linearity <sup>1</sup>     | <= +/- 1mm (outside 3.5mm from edges)<br><= +/- 2mm (within 3.5mm of all edges) |
| Resolution                 | 16384x16384   |
| Sampling rate <sup>2</sup> | >100 Hz   |
| Reaction time              | <25 ms  |
| Operating Voltage          | 5.0 V (Typical)   |
| Operating current          | <100 mA   |
| Operation Temperature      | -40°C ~ +85°C   |
| Storage Temperature        | -40°C ~ +90°C   |
| Operation humidity         | 95% at 60°C, RH Non-condensing  |
| Operation systems support  | Windows/Linux/Android   |
| Utility Support            | eGalaxTouchManager+   |
| RoHS compliant             | Yes   |
| Water resistance           | Yes   |

1 Requires a corresponding touch sensor design. (Sensor pitch<=5.5mm)

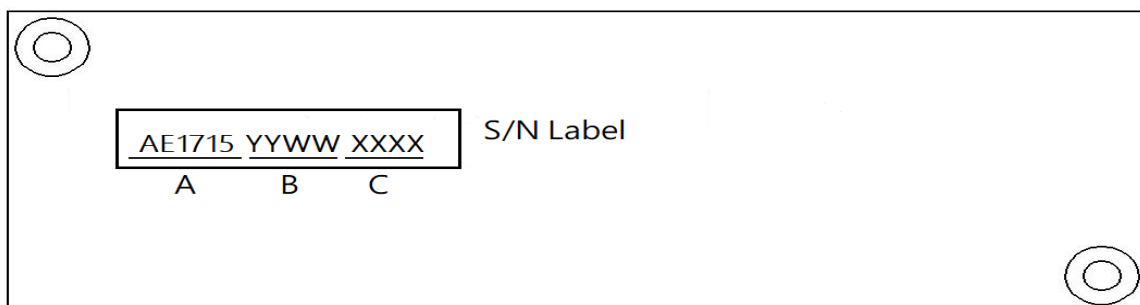
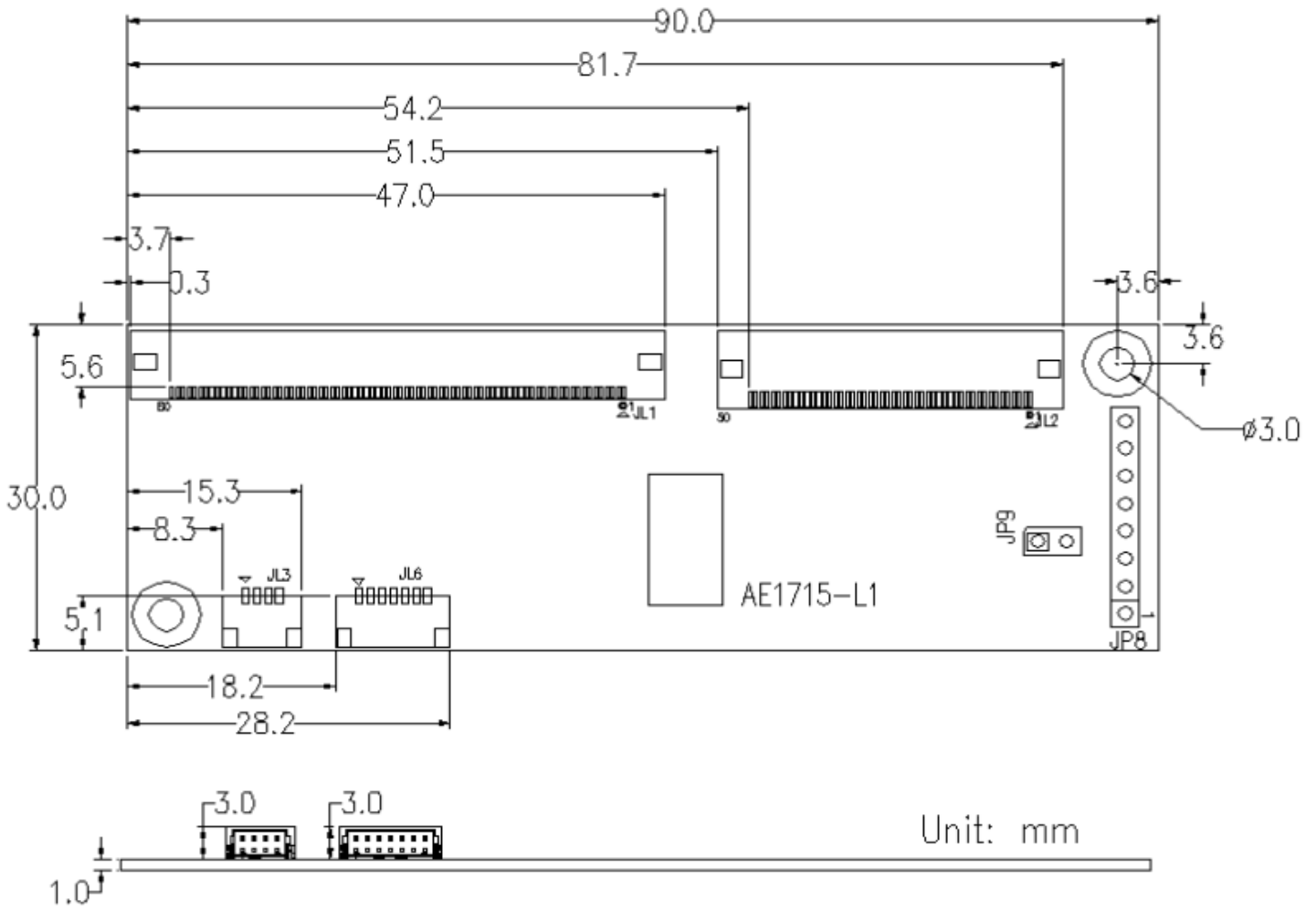
2 Report rate is varied by touch sensor channel number, cover thickness, system condition, and other parameters

## Disclaimer

- Performance specification, such as report rate may be varied depends on touch sensor channel numbers, cover thickness, system condition and other parameters.
- Reference sensor channel pitch should be ranged from 5.0mm (Win10) to 8mm (Non-Win10).
- Special input performance may be influenced depends on module condition, contact material , and other operating environments, subjects including through thick glass touch, gloved-hand input, water resistance and noise immunity etc.
- Special features are required to pre-define and pre-tune during project development.

### 3.0 Mechanical Specification

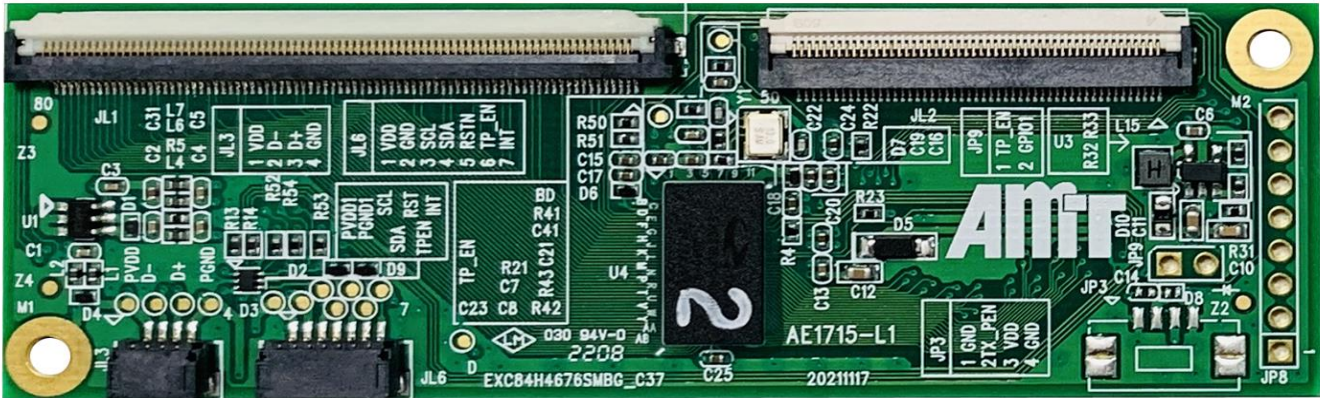
#### 3.1 Mechanical size



#### S/N Label:

- A : Product name.
- B : Last two digits of the year + week number.
- C : Serial number.

## 3.2 Connector information



JL1: 0.5mm\*80P, Sensing Channel, ACES 50520-08001-001

JL2: 0.5mm\*50P, Driving Channel, ACES 51619-05001-001

JL3: 1.25mm\*4P, USB Connector, ACES 50224-00401-001

JL6: 1.25mm\*7P, I2C Connector, ACES 50224-00701-001

JP8: 2.54mm\*8P, Engineering test pin, Pin Header (No connect)

JP9: 2.54mm\*2P, GPIO pin, Pin Header (No connect)

| Connector name | Connector function        | On-board Connector                                      | Mating connector ( JST )   |
|----------------|---------------------------|---|--|
| JL1            | touch screen<br>RX Signal | 1 x 80 FFC / FPC conn<br>ACES P/N: 50520-08001-001      | FPC 80 Pin/0.5mm Pitch/0.3 t                                       |
| JL2            | touch screen<br>TX Signal | 1 x 50 FFC / FPC conn<br>ACES P/N: 51619-05001-001      | FPC 50 Pin/0.5mm Pitch/0.3 t                                       |
| JL3            | USB                       | 1 x 4 locking M pin header<br>ACES P/N: 50224-00401-001 | JST P/N: SHR-04V-S-B housing<br>JST P/N: SSH-003T-P0.2-H crimp pin |
| JL6            | I2C                       | 1 x 7 locking M pin header<br>ACES P/N: 50224-00701-001 | JST P/N: SHR-07V-S-B housing<br>JST P/N: SSH-003T-P0.2-H crimp pin |
| JP8            | Debug Port                | 1x 8 Pin Header(No connect)                             | TBD  |
| JP9            | GPIO                      | 1x 2 Pin Header(No connect)                             | TBD  |

### Accessory Cables

- 94-53018-000, External USB cable
- 94-56002-000, Internal I2C cable

### 3.3 Pin Description

| JL1 80 Pin ZIF , PH 0.5mm ; ACES 50520-08001-001 |             |     |             |     |             |     |             |     |             |
|--|-------------|-----|-------------|-----|-------------|-----|-------------|-----|-------------|
| PIN  | Description | PIN | Description | PIN | Description | PIN | Description | PIN | Description |
| 1  | GND_E       | 18  | RX16        | 35  | RX33        | 52  | RX50        | 69  | RX67        |
| 2  | RX0         | 19  | RX17        | 36  | RX34        | 53  | RX51        | 70  | RX68        |
| 3  | RX1         | 20  | RX18        | 37  | RX35        | 54  | RX52        | 71  | RX69        |
| 4  | RX2         | 21  | RX19        | 38  | RX36        | 55  | RX53        | 72  | RX70        |
| 5  | RX3         | 22  | RX20        | 39  | RX37        | 56  | RX54        | 73  | RX71        |
| 6  | RX4         | 23  | RX21        | 40  | RX38        | 57  | RX55        | 74  | RX72        |
| 7  | RX5         | 24  | RX22        | 41  | RX39        | 58  | RX56        | 75  | RX73        |
| 8  | RX6         | 25  | RX23        | 42  | RX40        | 59  | RX57        | 76  | RX74        |
| 9  | RX7         | 26  | RX24        | 43  | RX41        | 60  | RX58        | 77  | RX75        |
| 10   | RX8         | 27  | RX25        | 44  | RX42        | 61  | RX59        | 78  | RX76        |
| 11   | RX9         | 28  | RX26        | 45  | RX43        | 62  | RX60        | 79  | RX77        |
| 12   | RX10        | 29  | RX27        | 46  | RX44        | 63  | RX61        | 80  | GND_E       |
| 13   | RX11        | 30  | RX28        | 47  | RX45        | 64  | RX62        |     |             |
| 14   | RX12        | 31  | RX29        | 48  | RX46        | 65  | RX63        |     |             |
| 15   | RX13        | 32  | RX30        | 49  | RX47        | 66  | RX64        |     |             |
| 16   | RX14        | 33  | RX31        | 50  | RX48        | 67  | RX65        |     |             |
| 17   | RX15        | 34  | RX32        | 51  | RX49        | 68  | RX66        |     |             |

| JL2 50 Pin ZIF , PH 0.5mm ; ACES 51619-05001-001 |             |     |             |     |             |     |             |     |             |
|--|-------------|-----|-------------|-----|-------------|-----|-------------|-----|-------------|
| PIN  | Description | PIN | Description | PIN | Description | PIN | Description | PIN | Description |
| 1  | GND_E       | 11  | TX9         | 21  | TX19        | 31  | TX29        | 41  | TX39        |
| 2  | TX0         | 12  | TX10        | 22  | TX20        | 32  | TX30        | 42  | TX40        |
| 3  | TX1         | 13  | TX11        | 23  | TX21        | 33  | TX31        | 43  | TX41        |
| 4  | TX2         | 14  | TX12        | 24  | TX22        | 34  | TX32        | 44  | TX42        |
| 5  | TX3         | 15  | TX13        | 25  | TX23        | 35  | TX33        | 45  | TX43        |
| 6  | TX4         | 16  | TX14        | 26  | TX24        | 36  | TX34        | 46  | TX44        |
| 7  | TX5         | 17  | TX15        | 27  | TX25        | 37  | TX35        | 47  | TX45        |
| 8  | TX6         | 18  | TX16        | 28  | TX26        | 38  | TX36        | 48  | TX46        |
| 9  | TX7         | 19  | TX17        | 29  | TX27        | 39  | TX37        | 49  | TX47        |
| 10   | TX8         | 20  | TX18        | 30  | TX28        | 40  | TX38        | 50  | GND_E       |

| <b>JL3 / 4PIN / ACES 50224-00401-001</b> |            |                                    |
|--|------------|------------------------------------|
| <b>PIN</b>                               | <b>USB</b> | <b>Description</b>                 |
| 1  | VDD        | Input Voltage (5V).                |
| 2  | D-         | D- pin of internal USB transceiver |
| 3  | D+         | D+ pin of internal USB transceiver |
| 4  | GND_E      | Ground                             |

| <b>JL6 / 7PIN / ACES 50224-00701-001</b> |            |   |
|--|------------|---|
| <b>PIN</b>                               | <b>I2C</b> | <b>Description</b>  |
| 1  | VDD        | Positive power supply (5V).   |
| 2  | GND_E      | Ground  |
| 3  | I2C_SCL    | Serial clock line for I <sup>2</sup> C. Open drain requires an external pull-up to 3.3V.  |
| 4  | I2C_SDA    | Serial data line for I <sup>2</sup> C. Open drain, requires an external pull-up to 3.3V   |
| 5  | RSTN       | Open-drain and active low to reset EXC80H84 and must be driven low for 1ms (min.) to be valid. Leave the pin unconnected if not used. |
| 6  | TP_EN      | Pull low for disable touch function, release this pin will back to enable touch function, Leave the pin unconnected if not used.      |
| 7  | I2C_INT    | Processor Interrupt. This pin is active low, open drain requires an external pull-up to 3.3V.   |

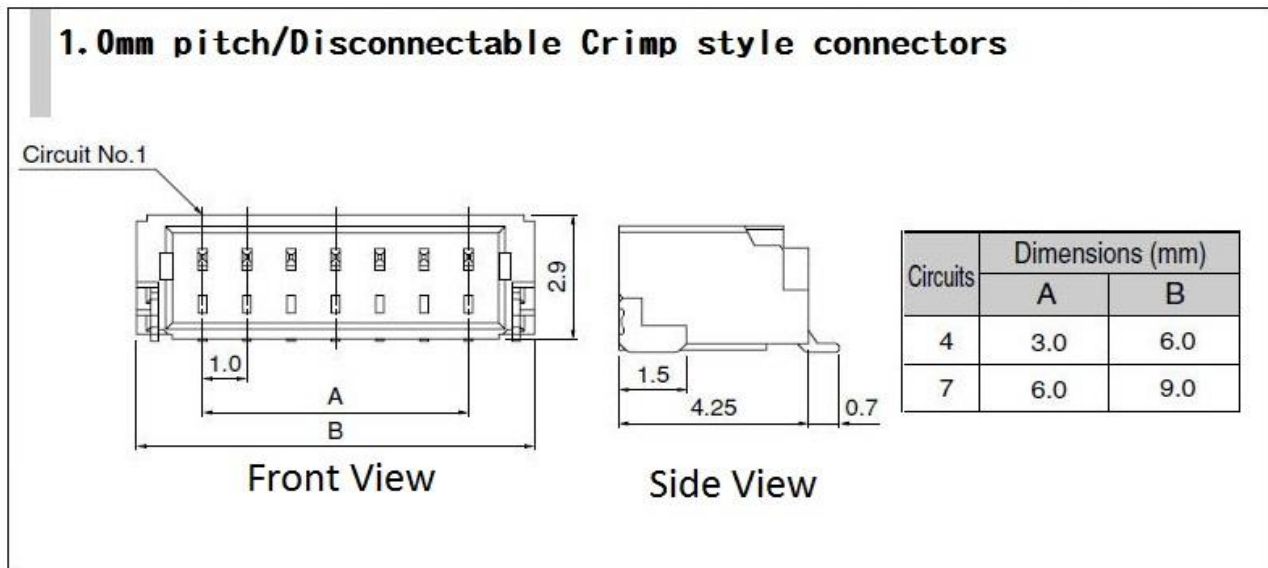
| <b>JP8 / 8PIN (2.54mm*8P, Engineering test pin)</b> |                 |   |
|---|-----------------|---|
| <b>PIN</b>  | <b>Test pin</b> | <b>Description</b>  |
| 1   | VDD_D           | VDD_Digital   |
| 2   | TP1             | Test pin 1  |
| 3   | TP2             | Test pin 2  |
| 4   | TP3             | Test pin 3  |
| 5   | TP4             | Test pin 4  |
| 6   | TP5             | Test pin 5  |
| 7   | RSTN            | Open-drain and active low to reset EXC80H84 and must be driven low for 1ms (min.) to be valid. Leave the pin unconnected if not used. |
| 8   | GND             | Ground-Digital  |

| <b>JP9 / 2PIN (2.54mm*2P, GPIO pin)</b> |                   |  |
|---|-------------------|--|
| <b>PIN</b>                              | <b>GPIO</b>       | <b>Description</b>   |
| 1                                       | GPIO_0<br>(TP_EN) | Pull low for disable touch function, release this pin will back to enable touch function, Leave the pin unconnected if not used. |
| 2                                       | GPIO_1<br>(TBD)   | With AP configurable function  |



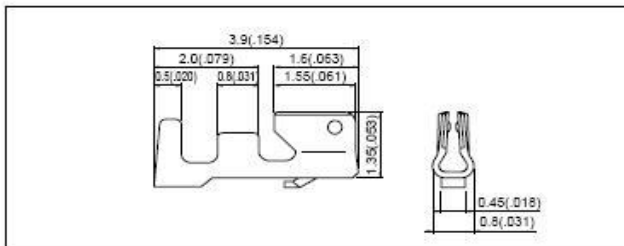
### 3.4 Remark

(1) JL3、JL6 Connector Specifications :



(2) JL3、JL6 Mating Connector ( JST ) Specification :

#### Contact

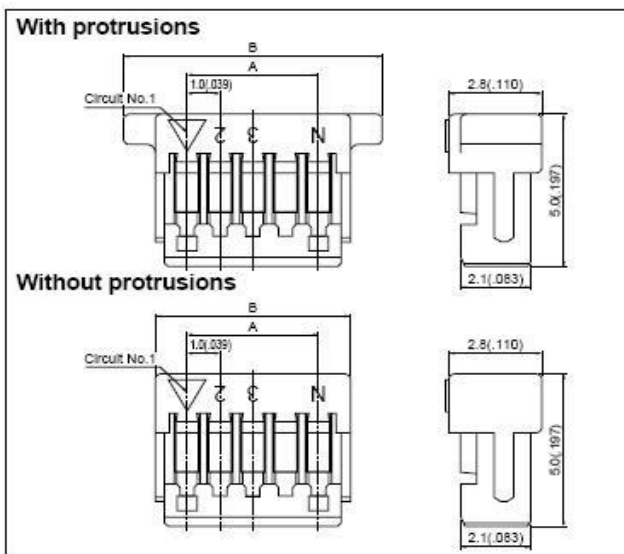


| Model No.       | Applicable wire |          |                          | Q'ty / reel |
|-----------------|-----------------|----------|--------------------------|-------------|
|                 | mm <sup>2</sup> | AWG#     | Insulation O.D. mm(in.)  |             |
| SSH-003T-P0.2-H | 0.032 to 0.08   | 32 to 28 | 0.4 to 0.8(.016 to .031) | 23,000      |

Material and Finish  
Phosphor bronze, tin-plated

Note: Contact JST for gold-plated contacts.

#### Housing



| Circuits | Model No.        |                     | Dimensions mm(in.) |                     |                  |                     | Q'ty / box |
|----------|------------------|---------------------|--------------------|---------------------|------------------|---------------------|------------|
|          |                  |                     | A                  |                     | B                |                     |            |
|          | With protrusions | Without protrusions | With protrusions   | Without protrusions | With protrusions | Without protrusions |            |
| 2        | SHR-02V-S-B      | SHR-02V-S           | 1.0(.039)          | 5.0(.197)           | 3.0(.118)        | 2,000               |            |
| 3        | SHR-03V-S-B      | SHR-03V-S           | 2.0(.079)          | 6.0(.236)           | 4.0(.157)        | 2,000               |            |
| 4        | SHR-04V-S-B      | SHR-04V-S           | 3.0(.118)          | 7.0(.276)           | 5.0(.197)        | 2,000               |            |
| 5        | SHR-05V-S-B      | SHR-05V-S           | 4.0(.157)          | 8.0(.315)           | 6.0(.236)        | 2,000               |            |
| 6        | SHR-06V-S-B      | SHR-06V-S           | 5.0(.197)          | 9.0(.354)           | 7.0(.276)        | 2,000               |            |
| 7        | SHR-07V-S-B      | SHR-07V-S           | 6.0(.236)          | 10.0(.394)          | 8.0(.315)        | 2,000               |            |
| 8        | SHR-08V-S-B      | SHR-08V-S           | 7.0(.276)          | 11.0(.433)          | 9.0(.354)        | 2,000               |            |
| 9        | SHR-09V-S-B      | SHR-09V-S           | 8.0(.315)          | 12.0(.472)          | 10.0(.394)       | 2,000               |            |
| 10       | SHR-10V-S-B      | SHR-10V-S           | 9.0(.354)          | 13.0(.512)          | 11.0(.433)       | 2,000               |            |
| 11       | SHR-11V-S-B      | SHR-11V-S           | 10.0(.394)         | 14.0(.551)          | 12.0(.472)       | 2,000               |            |
| 12       | SHR-12V-S-B      | SHR-12V-S           | 11.0(.433)         | 15.0(.591)          | 13.0(.512)       | 2,000               |            |
| 13       | SHR-13V-S-B      | SHR-13V-S           | 12.0(.472)         | 16.0(.630)          | 14.0(.551)       | 2,000               |            |
| 14       | SHR-14V-S-B      | SHR-14V-S           | 13.0(.512)         | 17.0(.669)          | 15.0(.591)       | 2,000               |            |
| 15       | SHR-15V-S-B      | SHR-15V-S           | 14.0(.551)         | 18.0(.709)          | 16.0(.630)       | 2,000               |            |
| 20       | SHR-20V-S-B      | -                   | 19.0(.748)         | 23.0(.906)          | 21.0(.827)       | 2,000               |            |

Material  
PBT, UL94V-0, natural (white)

Note: SHR-20V-S-B is not CSA approved.