

0.28inch (7.0mm)

### Dual digit surface mount LED display



## Data Sheet

### Description

This is 0.28 inch (7.0mm) height dual digit display. This device utilizes InGaN/SiC blue LED chips. This device comes with gray top surface and white segments.

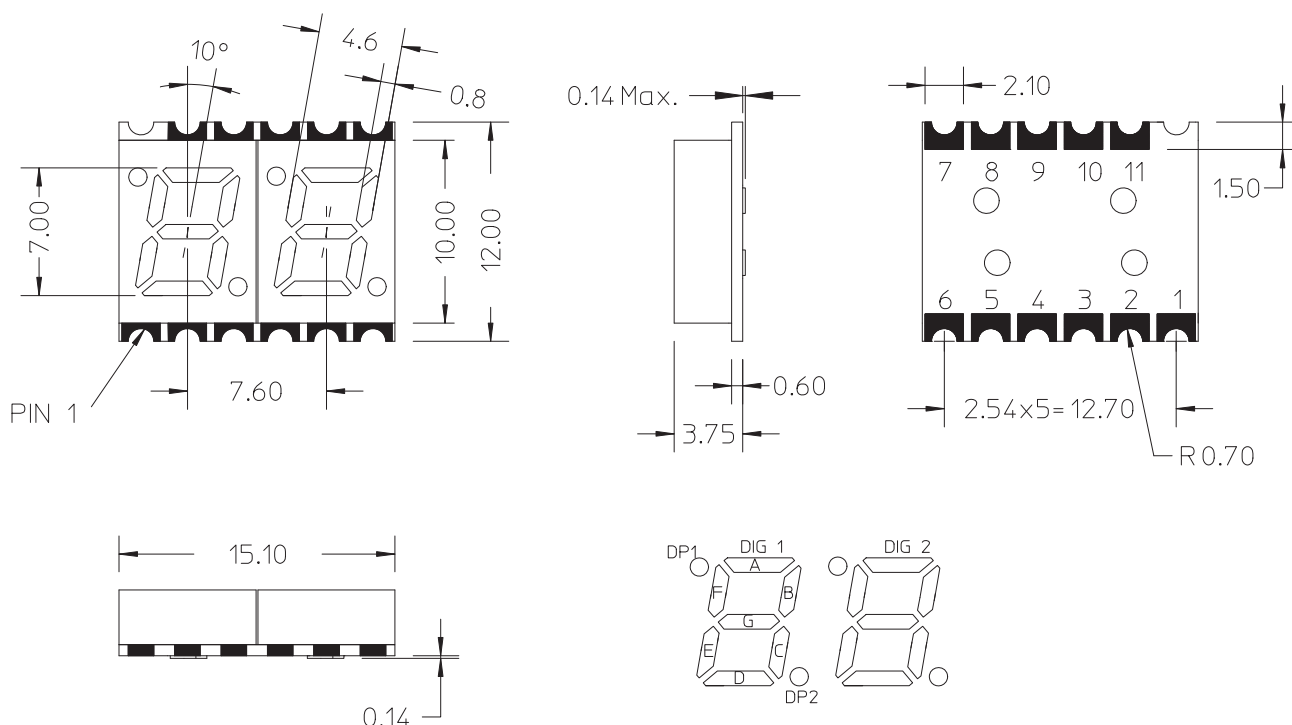
## Ordering Information

Blue	Description
HDSM-291B	Common Anode, Upper and Lower Decimal
HDSM-293B	Common Cathode, Upper and Lower Decimal

## Features

- 0.28" digit height
- Low current operation
- Excellent characters appearance
- Available in CA and CC
- 1000 pieces per reel
- Moisture Sensitivity Level: Level 3
- RoHS compliant

## Package Dimensions



Notes:

All dimensions are in millimeters (inches).

Tolerance:  $\pm 0.25\text{mm}$  (0.01") unless otherwise noted.

**CAUTION:** LEDs are Class 1A ESD sensitive per JESD22-A114C.01. Please observe appropriate precautions during handling and processing.

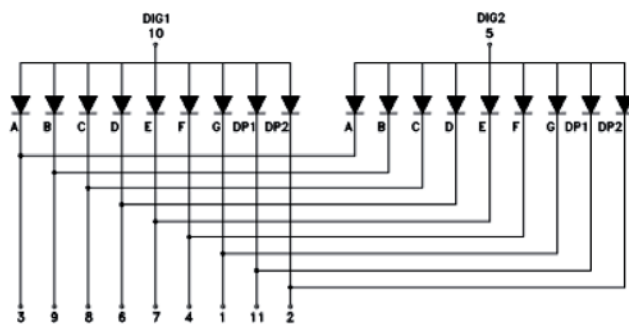
### Pin Connection (Common Anode)

Pin No.	Connection
1	CATHODE G
2	CATHODE DP2, DP4
3	CATHODE A
4	CATHODE F
5	COMMON ANODE DIG2
6	CATHODE D
7	CATHODE E
8	CATHODE C
9	CATHODE B
10	COMMON ANODE DIG1
11	CATHODE DP1, DP3

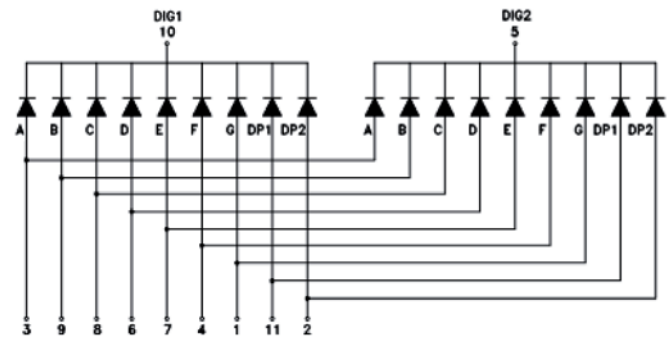
### Pin Connection (Common Cathode)

Pin No.	Connection
1	ANODE G
2	ANODE DP2, DP4
3	ANODE A
4	ANODE F
5	COMMON CATHODE DIG2
6	ANODE D
7	ANODE E
8	ANODE C
9	ANODE B
10	COMMON CATHODE DIG1
11	ANODE DP1, DP3

### Internal Circuit Diagram (Common Anode)



### Internal Circuit Diagram (Common Cathode)



**Absolute Maximum Ratings @ T<sub>A</sub>=25°C**

Parameter	Blue	Unit
Power Dissipation Per Segment	100	mW
Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1ms pulse width)	80	mA
Continuous Forward Current Per Segment Derating Linearly From 25°C Per Segment	25 0.25	mA mA/°C
Reverse Voltage Per Segment	5	V
Operating Temperature Range	-40°C to +105°C	
Storage Temperature Range	-40°C to +105°C	

Note: Human Body Model (HBM), supplier gives no other assurances regarding the ability of product to withstand ESD.

Caution in ESD: Static Electricity and surge damages the LED. It is recommended to use a wrist strap or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.

**Electrical / Optical Characteristics @ T<sub>A</sub>=25°C****Blue**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I <sub>V</sub>	3.4	6	–	mcd	I <sub>F</sub> = 10 mA
Emission Wavelength	λ <sub>p</sub> /λ <sub>d</sub>	–	462/470	–	nm	I <sub>F</sub> = 20 mA
Spectral Line Half-Width	Δλ	–	26	–	nm	I <sub>F</sub> = 20 mA
Forward Voltage, Per Segment	V <sub>F</sub>	–	3.3	4.0	V	I <sub>F</sub> = 20 mA
Reverse Current, Per Segment	I <sub>R</sub>	–	–	100	μA	V <sub>R</sub> = 5 V
Luminous Intensity Matching Ratio	I <sub>V-m</sub>	–	–	2:1	–	I <sub>F</sub> = 10 mA

Typical Electrical / Optical characteristic Curves @  $T_A=25^{\circ}\text{C}$   
Blue

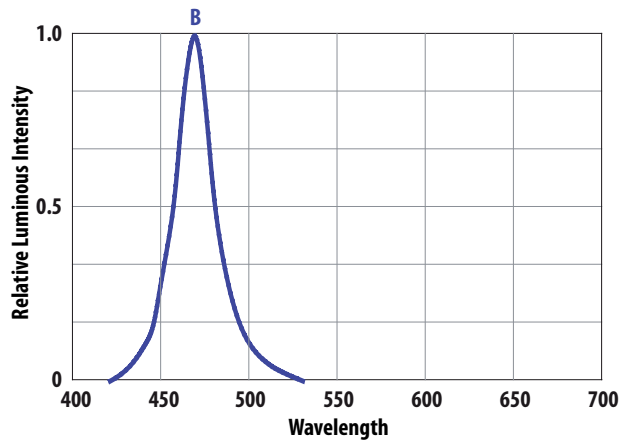


Figure 1. Relative luminous intensity vs. wavelength

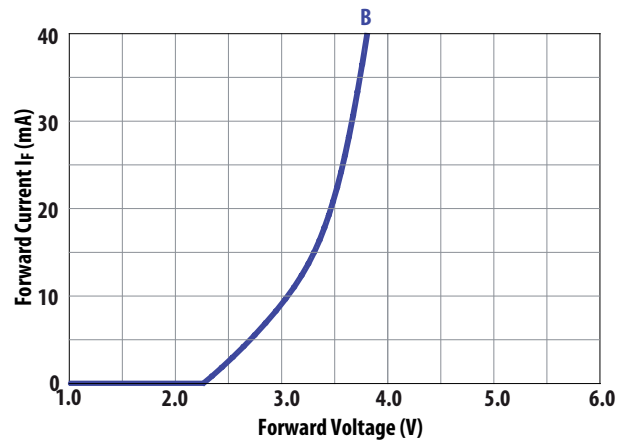


Figure 2. Forward current vs. forward voltage

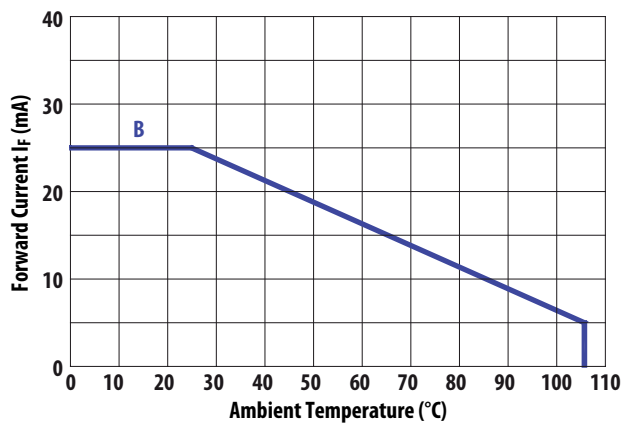


Figure 3. Allowable DC current vs. ambient temperature

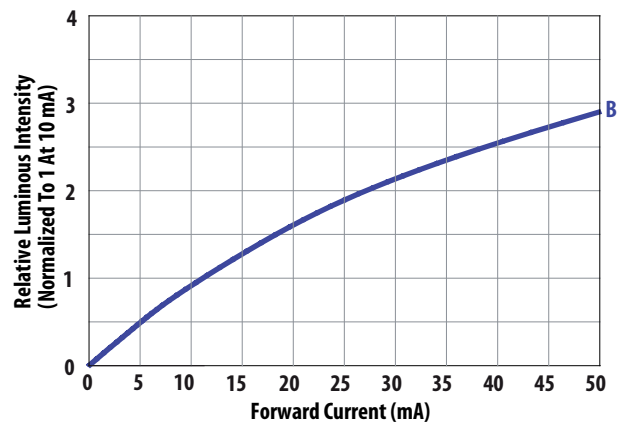


Figure 4. Relative intensity vs. forward current

## Intensity Bin Limit (mcd)

### Blue

Iv Bin Category	Min	Max
L	3.401	5.400
M	5.401	8.600
N	8.601	13.700

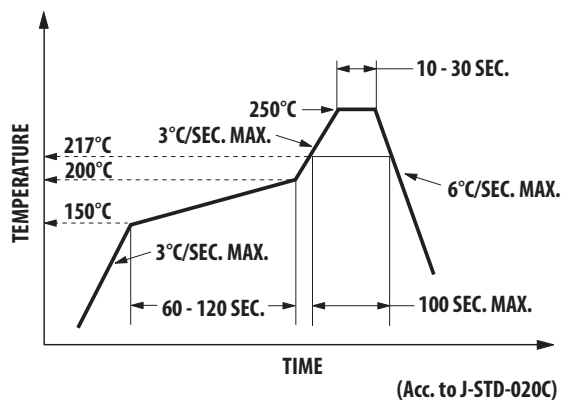
Tolerance +/-15%

Note:

1. Bin categories are established for classification of products. Products may not be available in all categories. Please contact your Avago representative for information on currently available bins.

## SMT Soldering Profile

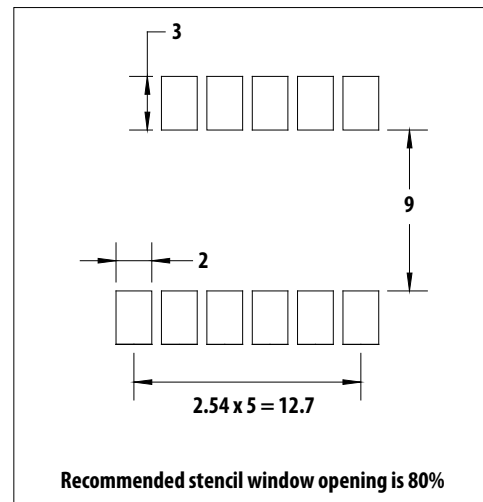
### Pb free reflow soldering Profile



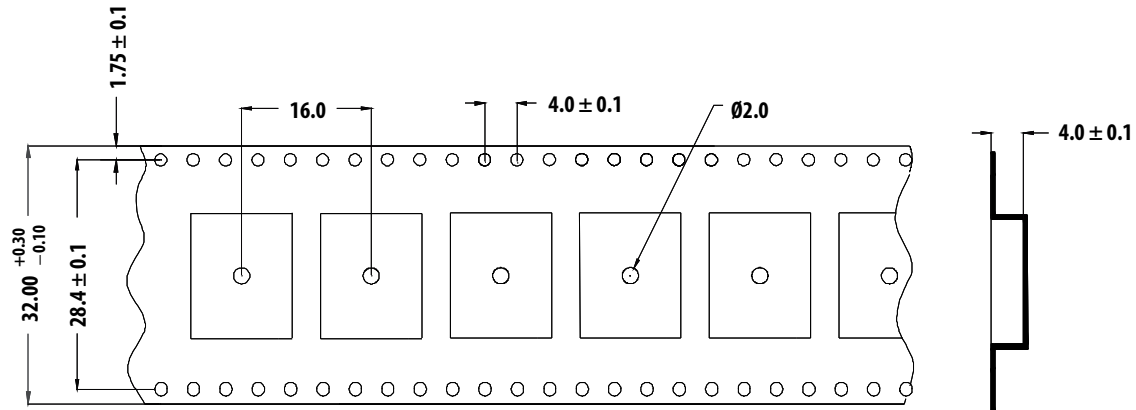
Notes:

1. The peak temperature refers to the peak package body temperature.
2. Number of reflow process shall be limited to maximum 2 times only. Cooling process to normal temperature is required between first and second soldering process.

## Recommended soldering pattern (unit: mm)



## Tape Specification (unit: mm)



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AV02-1646EN - March 17, 2011

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