

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.

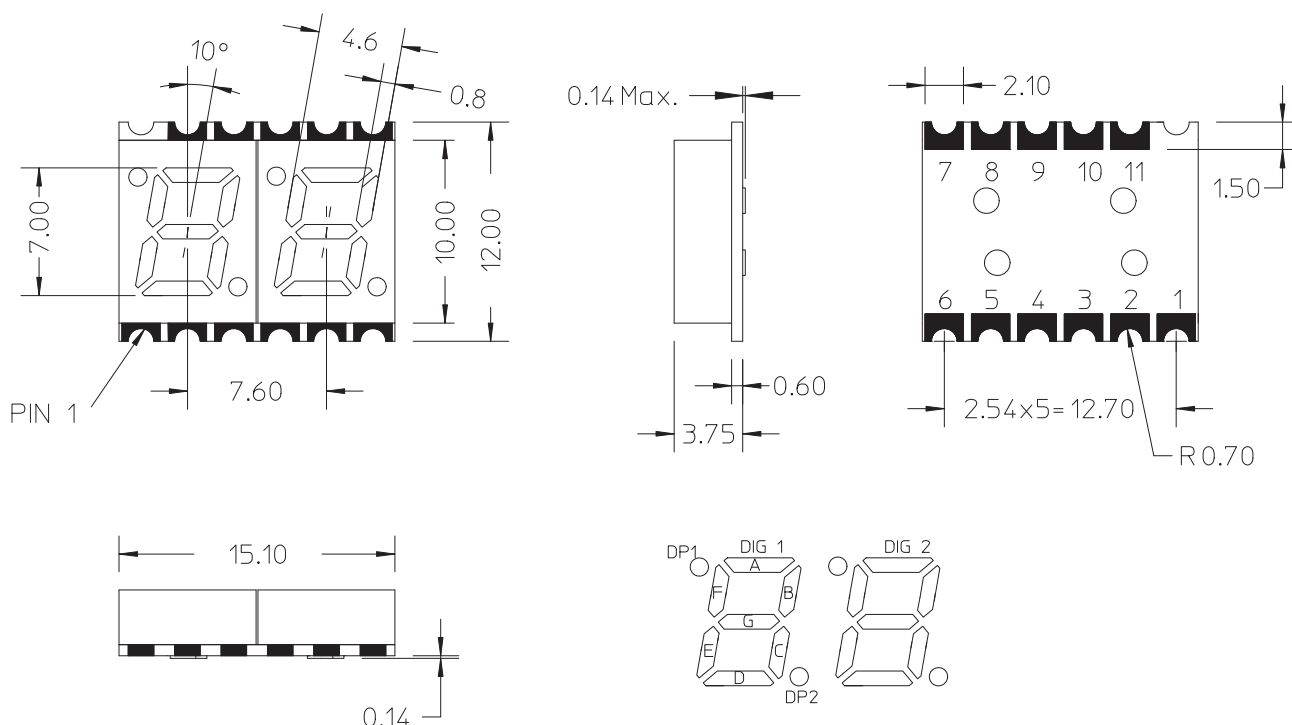
Ordering Information

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.

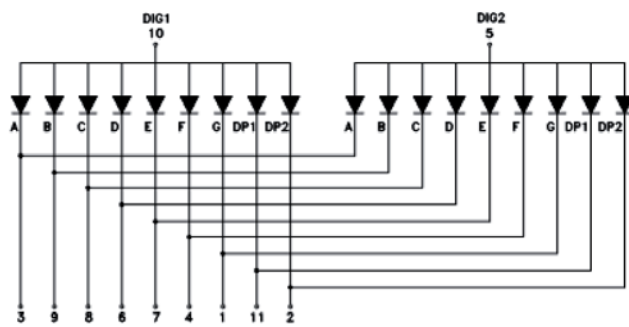
Pin Connection (Common Anode)

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

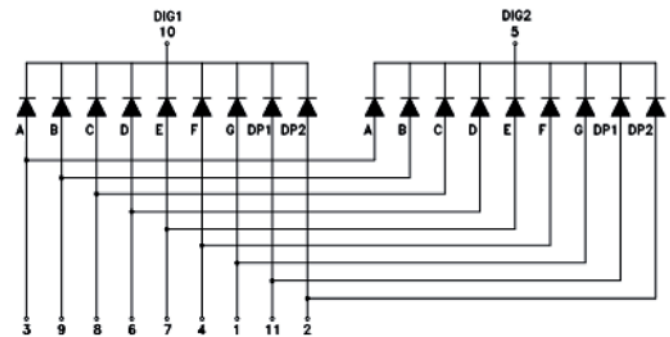
Pin Connection (Common Cathode)

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 @ $T_A=25^{\circ}\text{C}$

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 @ $T_A=25^{\circ}\text{C}$ **Blue**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I_V	3.4	6	–	mcd	$I_F = 10\text{ mA}$
Emission Wavelength	λ_p/λ_d	–	462/470	–	nm	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$	–	26	–	nm	$I_F = 20\text{ mA}$
Forward Voltage, Per Segment	V_F	–	3.3	4.0	V	$I_F = 20\text{ mA}$
Reverse Current, Per Segment	I_R	–	–	100	μA	$V_R = 5\text{ V}$
Luminous Intensity Matching Ratio	I_{V-m}	–	–	2:1	–	$I_F = 10\text{ mA}$

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

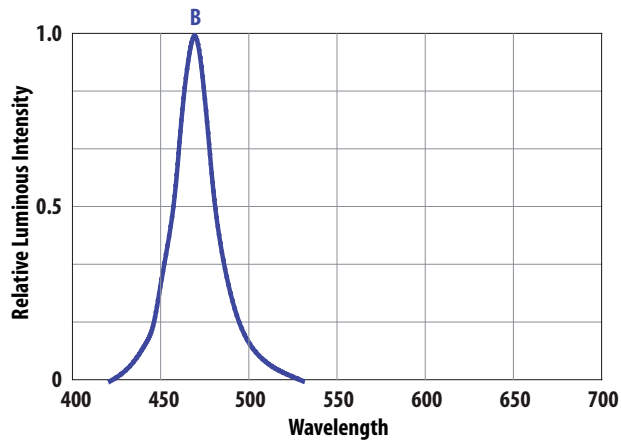


Figure 1. Relative luminous intensity vs. wavelength

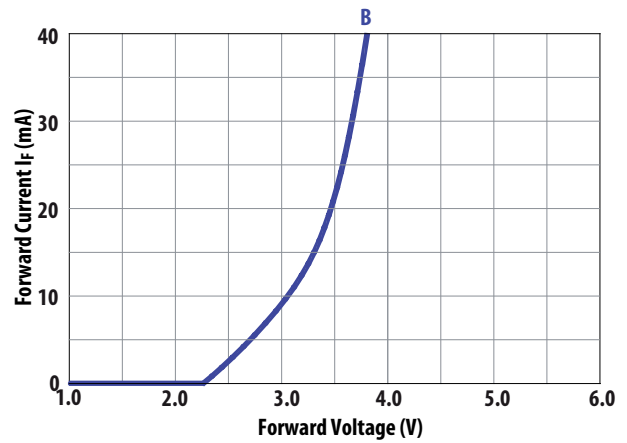


Figure 2. Forward current vs. forward voltage

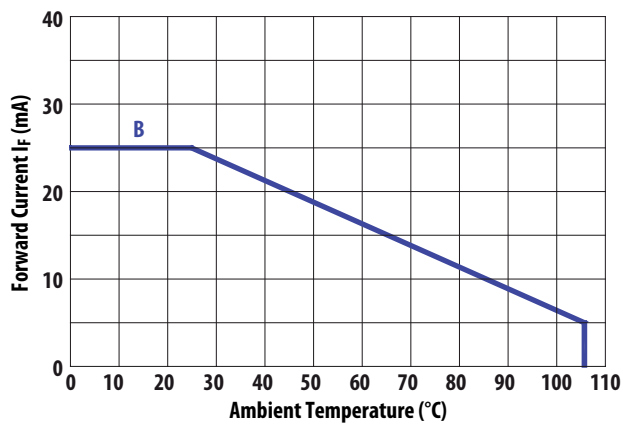


Figure 3. Allowable DC current vs. ambient temperature

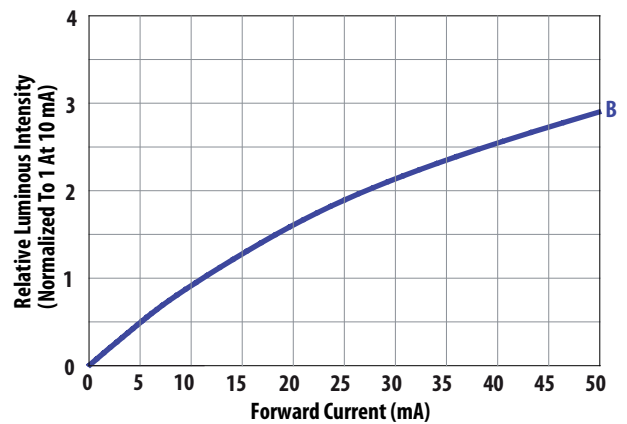


Figure 4. Relative intensity vs. forward current

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

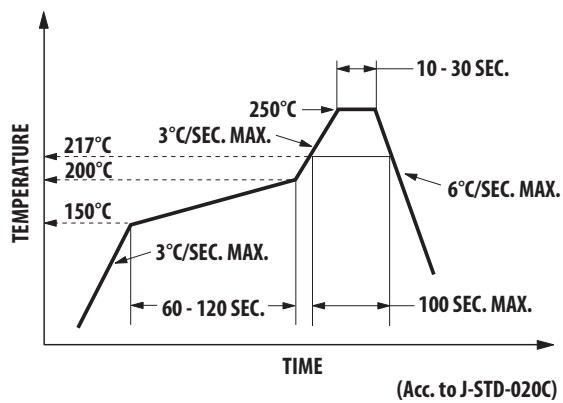
Tolerance +/-15%

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

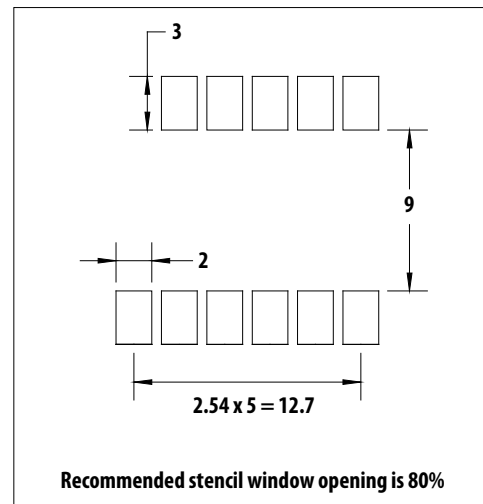
Pb free reflow soldering Profile



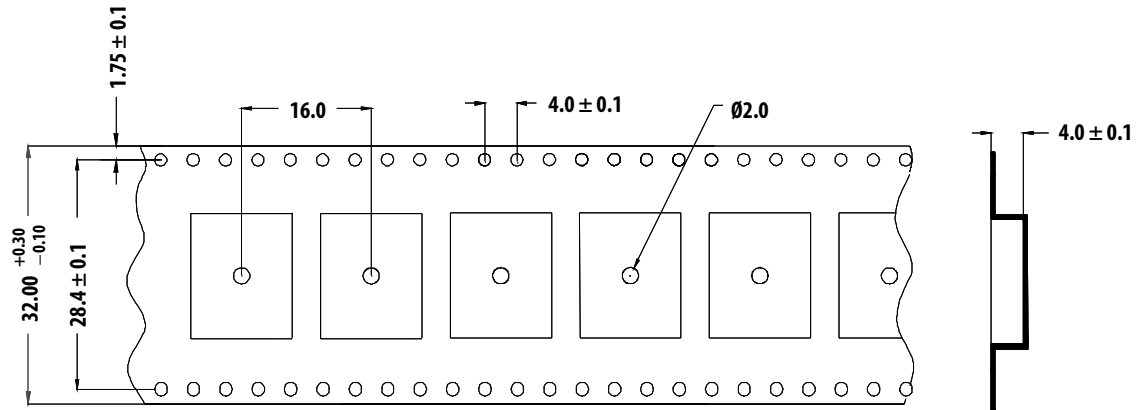
Notes:

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)



For product information and a complete list of distributors, please go to our web site: www.avagotech.com

Avago, Avago Technologies, and the A logo are trademarks of Avago Technologies in the United States and other countries.
Data subject to change. Copyright © 2005-2011 Avago Technologies. All rights reserved.
AV02-1646EN - March 17, 2011

Avago
TECHNOLOGIES