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# HDSM-431W/433W

0.39 inch (10.0 mm)

Single-Digit Surface Mount LED Display



## Data Sheet

### Description

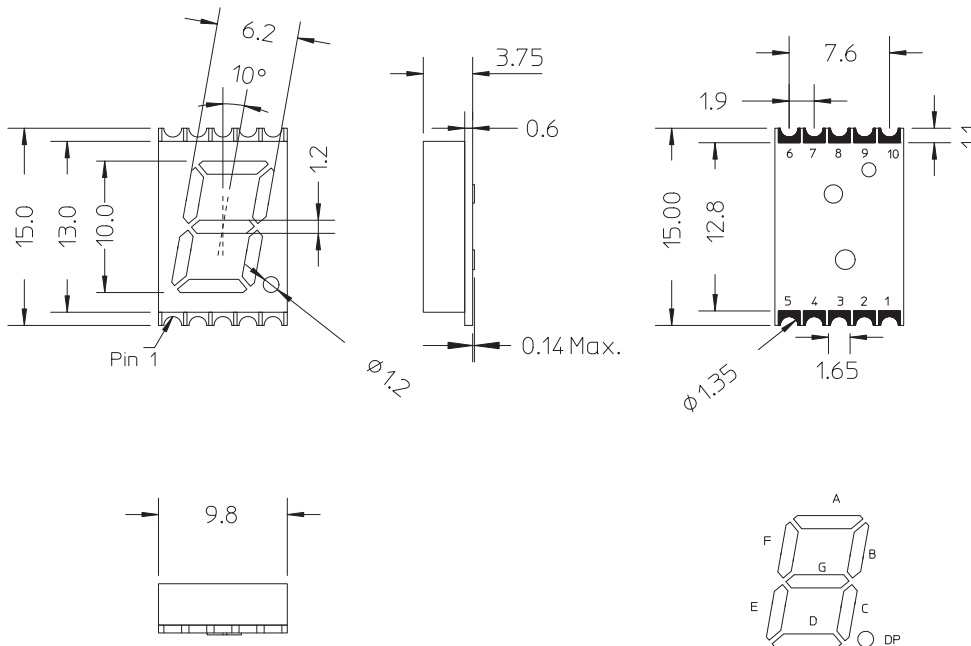
This is 0.39" (10.0 mm) height single-digit display. This device utilizes white ChipLED. This device comes with top surface gray and white segments.

White	Description
HDSM-431W	Common Anode, Right Hand Decimal
HDSM-433W	Common Cathode, Right Hand Decimal

### Features

- 0.39" 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



Note:

1. All dimensions are in millimeters.
2. Tolerance is  $\pm 0.25$  mm (0.01"), unless otherwise specified.

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

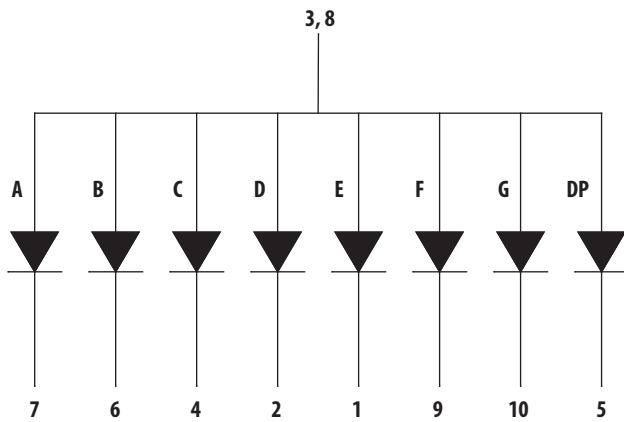
### Pin Connection (Common Anode)

Pin No.	Connection
1	CATHODE E
2	CATHODE D
3	COMMON ANODE
4	CATHODE C
5	CATHODE DP
6	CATHODE B
7	CATHODE A
8	COMMON ANODE
9	CATHODE F
10	CATHODE G

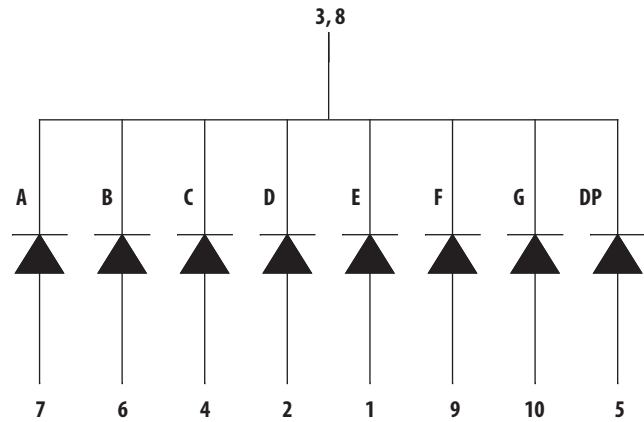
### Pin Connection (Common Cathode)

Pin No.	Connection
1	ANODE E
2	ANODE D
3	COMMON CATHODE
4	ANODE C
5	ANODE DP
6	ANODE B
7	ANODE A
8	COMMON CATHODE
9	ANODE F
10	ANODE G

### Internal Circuit Diagram (Common Anode)



### Internal Circuit Diagram (Common Cathode)



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

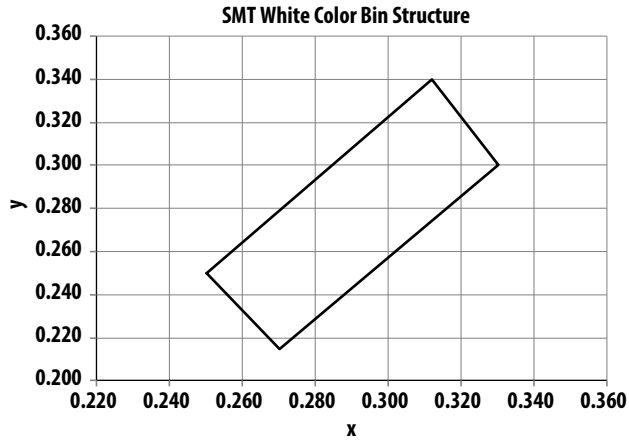
Parameter	White	Unit
Power Dissipation Per Segment	39	mW
Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1 ms pulse width)	80	mA
Continuous Forward Current Per Segment Derating Linearly From 25 °C Per Segment	10 0.083	mA Z
Reverse Voltage Per Segment	Not designed for reverse bias	V
Operating Temperature Range	-40 °C to +85 °C	°C
Storage Temperature Range	-40 °C to +85 °C	°C

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I <sub>V</sub>	24	40	–	mcd	I <sub>F</sub> = 5 mA
Chromaticity Coordinates	(x,y)		See Figure 1			I <sub>F</sub> = 5 mA
Forward Voltage, Per Segment	V <sub>F</sub>	–	2.95	3.8	V	I <sub>F</sub> = 5 mA
Reverse Current, Per Segment <sup>[1]</sup>	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> = 5 mA

Note 1. Indicates production final test condition only. Long term reverse biasing is not recommended.

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



Chromaticity Coordinates				
x	0.250	0.270	0.330	0.312
y	0.250	0.215	0.300	0.340

Figure 1. Color bin limit (CIE 1931 Chromaticity Diagram) [Tolerance:  $\pm 0.02$ ]

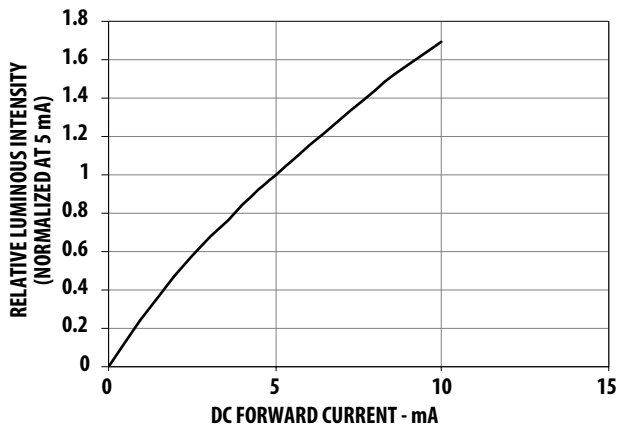


Figure 2. Relative luminous intensity versus forward current

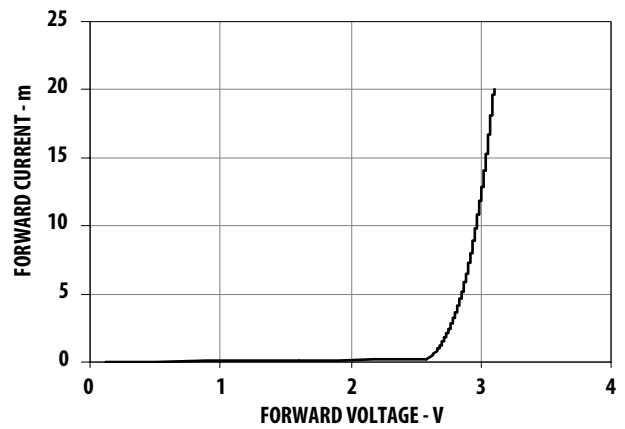


Figure 3. Forward current versus forward voltage

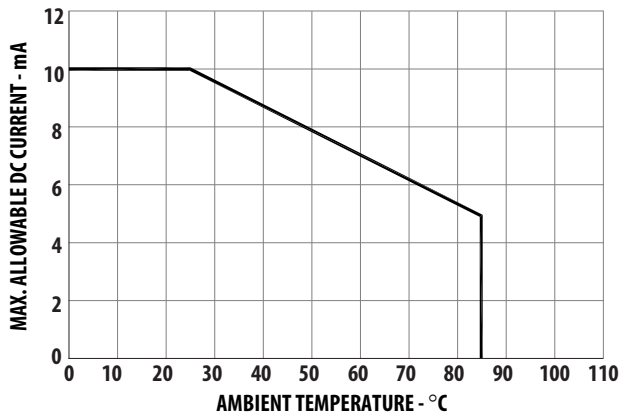
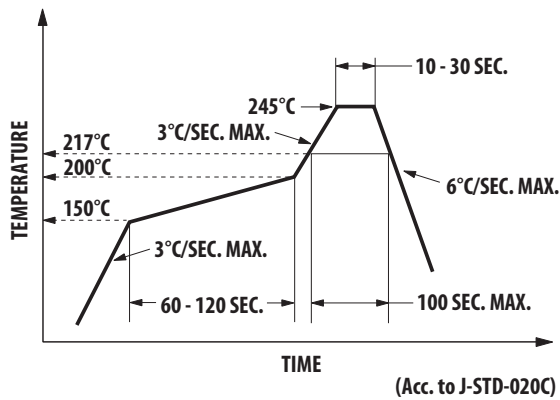


Figure 4. Allowable DC Current Versus Ambient Temperature

## SMT Soldering Profile

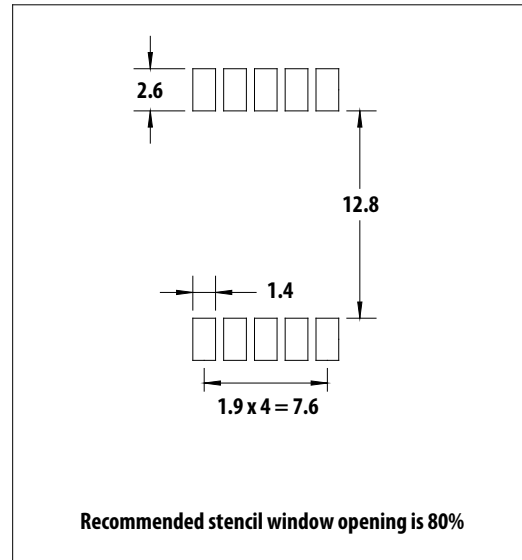
### Pb free reflow soldering Profile



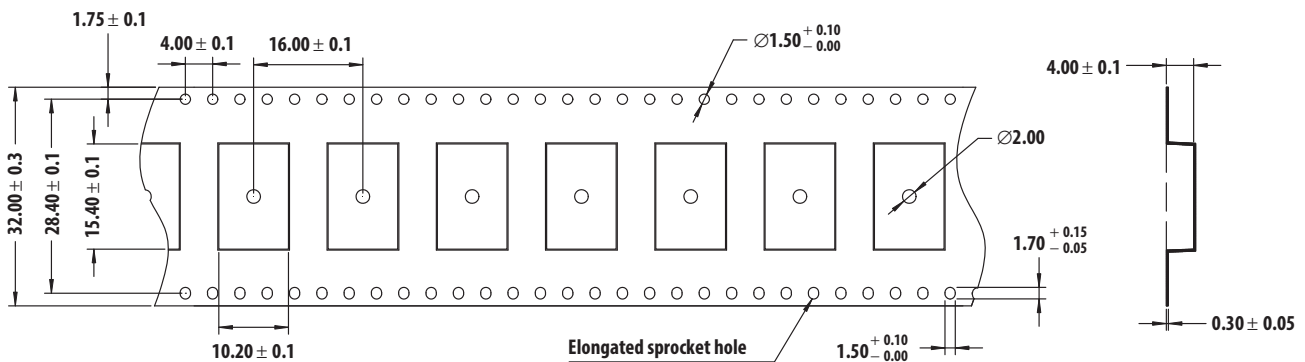
#### Notes:

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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