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0.39" (10.0 mm)

Dual-Digit Surface Mount LED Display

## Data Sheet

### Description

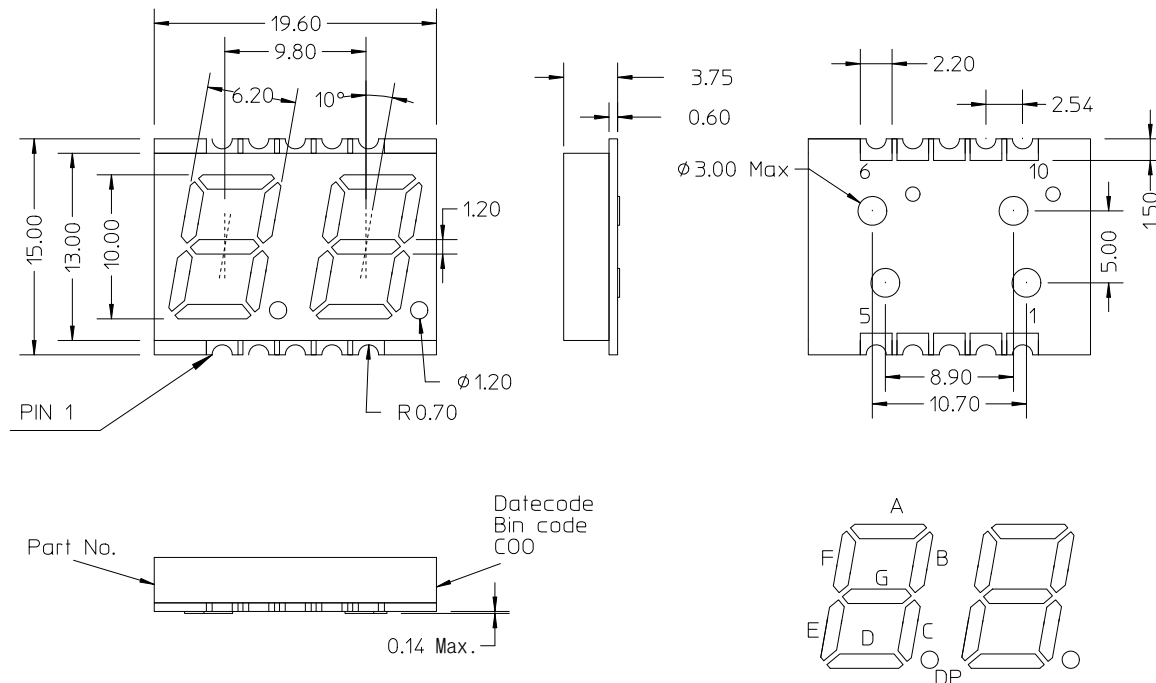
This is 0.39" (10.0 mm) height dual digit display. This device utilizes white ChipLED. This device comes with top surface gray and white segments.

White	Description
HDSM-441W	Common Anode, Right Hand Decimal
HDSM-443W	Common Cathode, Right Hand Decimal

### Features

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

### Package Dimensions



#### Notes:

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.

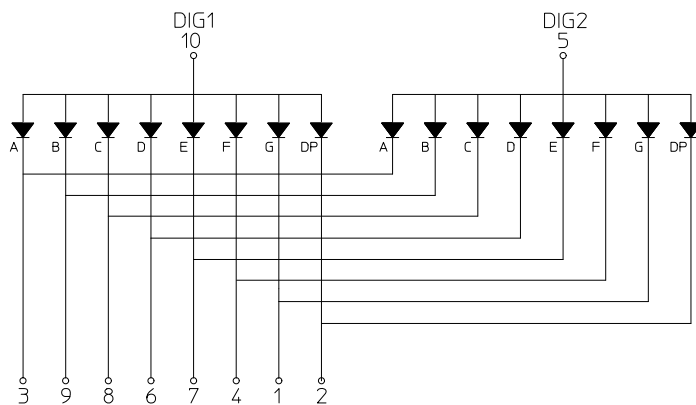
### Pin Connection (Common Anode)

Pin No.	Connection
1	CATHODE G
2	CATHODE DP
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

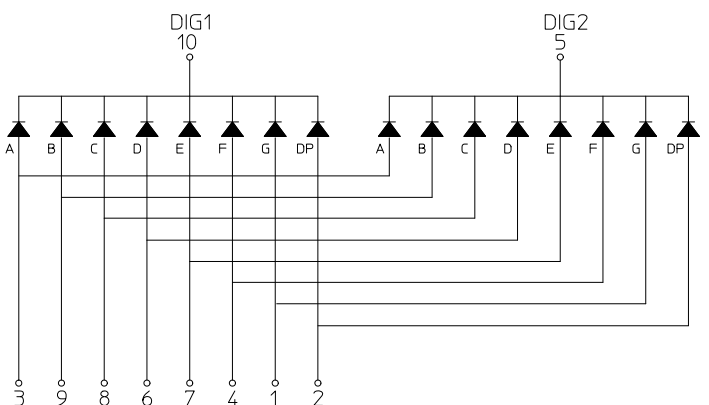
### Pin Connection (Common Cathode)

Pin No.	Connection
1	ANODE G
2	ANODE DP
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

### Internal Circuit Diagram (Common Anode)



### Internal Circuit Diagram (Common Cathode)



## Absolute Maximum Ratings at $T_A = 25^\circ\text{C}$

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	mA
	0.083	mA/°C
Reverse Voltage Per Segment	Not designed for reverse bias	V
Operating Temperature Range	-40°C to +85°C	
Storage Temperature Range	-40°C to +85°C	

## Electrical/Optical Characteristics at $T_A = 25^\circ\text{C}$

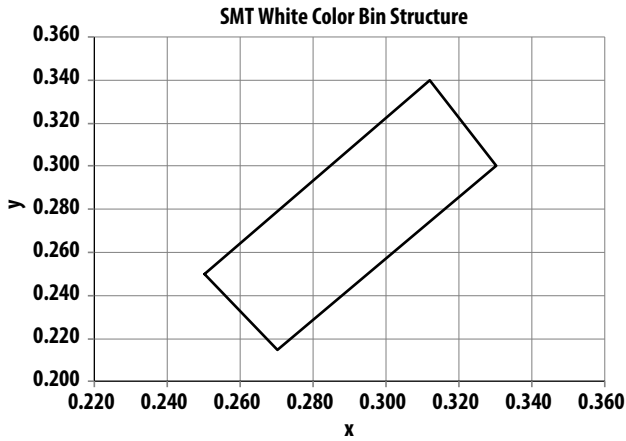
### White

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Average Luminous Intensity	$I_V$	24	40	—	mcd	$I_F = 5\text{ mA}$
Chromaticity Coordinates	(x,y)	See Figure 1				$I_F = 5\text{ mA}$
Forward Voltage, Per Segment	$V_F$	—	2.95	3.8	V	$I_F = 5\text{ mA}$
Reverse Current, Per Segment <sup>[1]</sup>	$I_R$	—	—	100	$\mu\text{A}$	$V_R = 5\text{ V}$
Luminous Intensity Matching Ratio	$I_{V-m}$	—	—	2:1	—	$I_F = 5\text{ mA}$

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

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

Figure 1: Color Bin Limit (CIE 1931 Chromaticity Diagram) [Tolerance:  $\pm 0.02$ ]



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

Figure 2: Relative Luminous Intensity vs. Forward Current

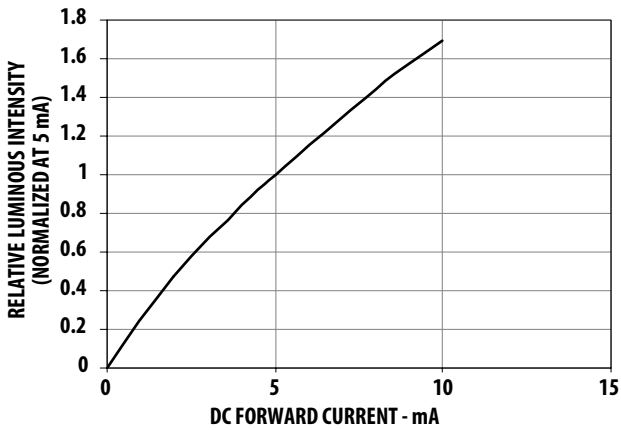


Figure 3: Forward Current vs. Forward Voltage

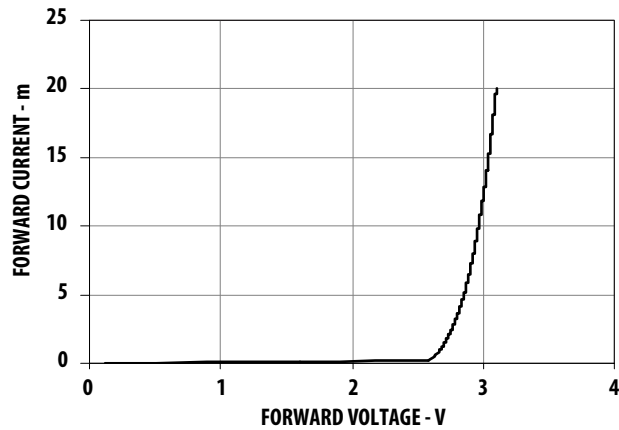
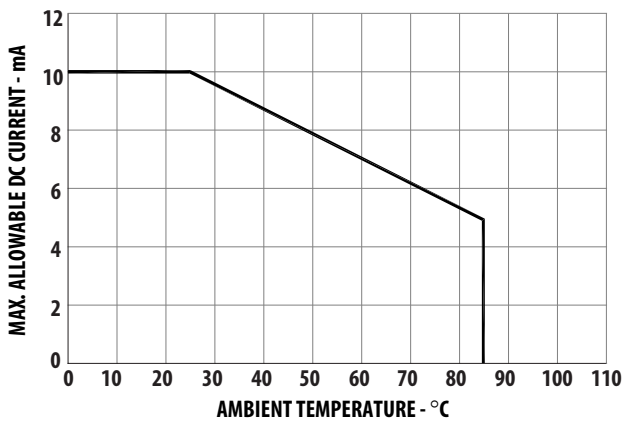
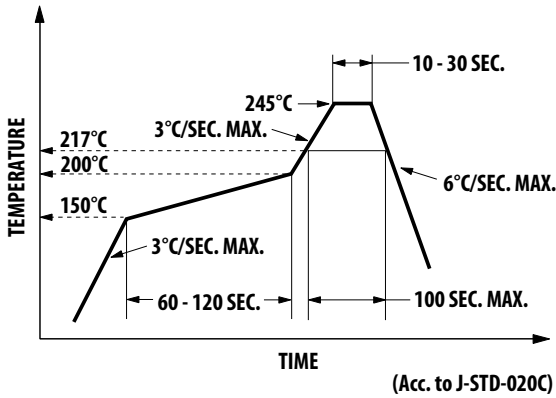


Figure 4: Allowable DC Current vs. Ambient Temperature



## SMT Soldering Profile

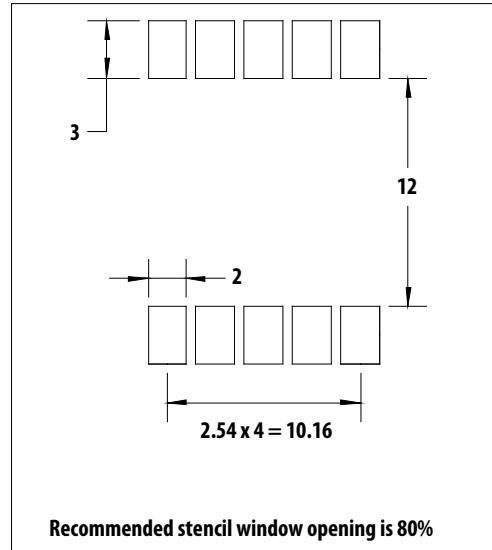
### Pb-Free Reflow Soldering Profile



Notes:

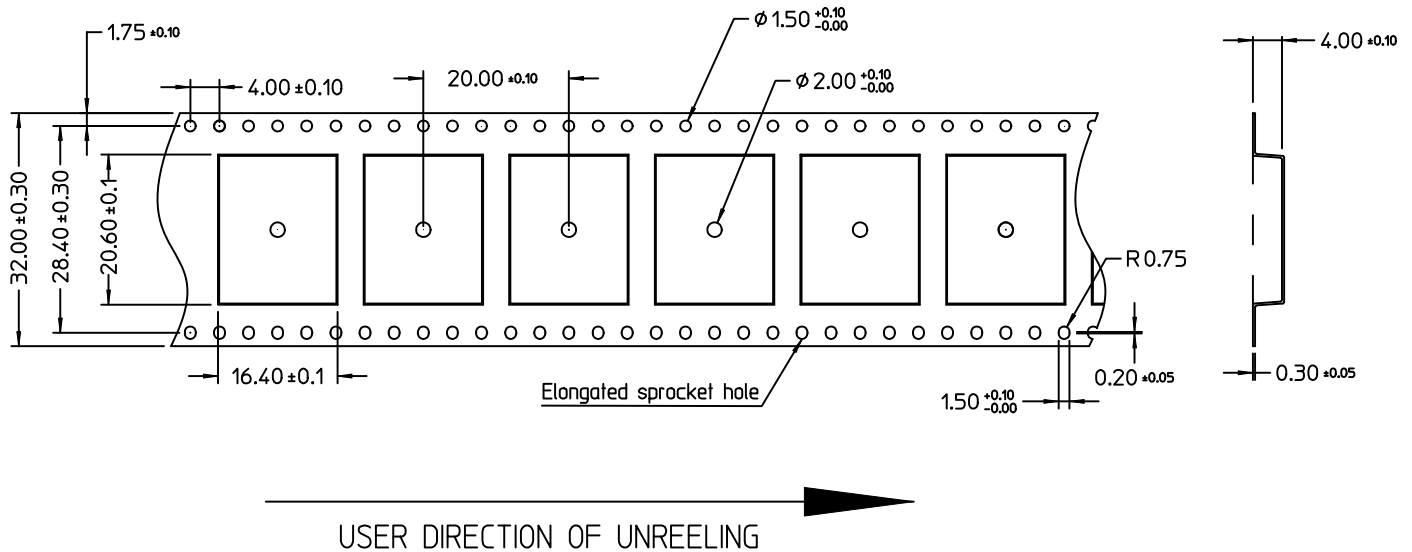
1. The peak temperature refers to the peak package body temperature.
2. Number of reflow process shall be limited to maximum 2 times only. Cooling process to normal temperature is required between first and second soldering process.

## Recommended Soldering Pattern



Note: Units in mm.

## Tape Specification



Note: Units in mm.

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