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HDSM-291x/293x

0.28" (7.0mm)
Dual digit surface mount LED display

Data Sheet

Description

The HDSM-291x/293x is a dual digit display of 0.28" (7.0mm) height. This device utilizes AlInGaP / GaAs chips and has a grey surface with white segments.

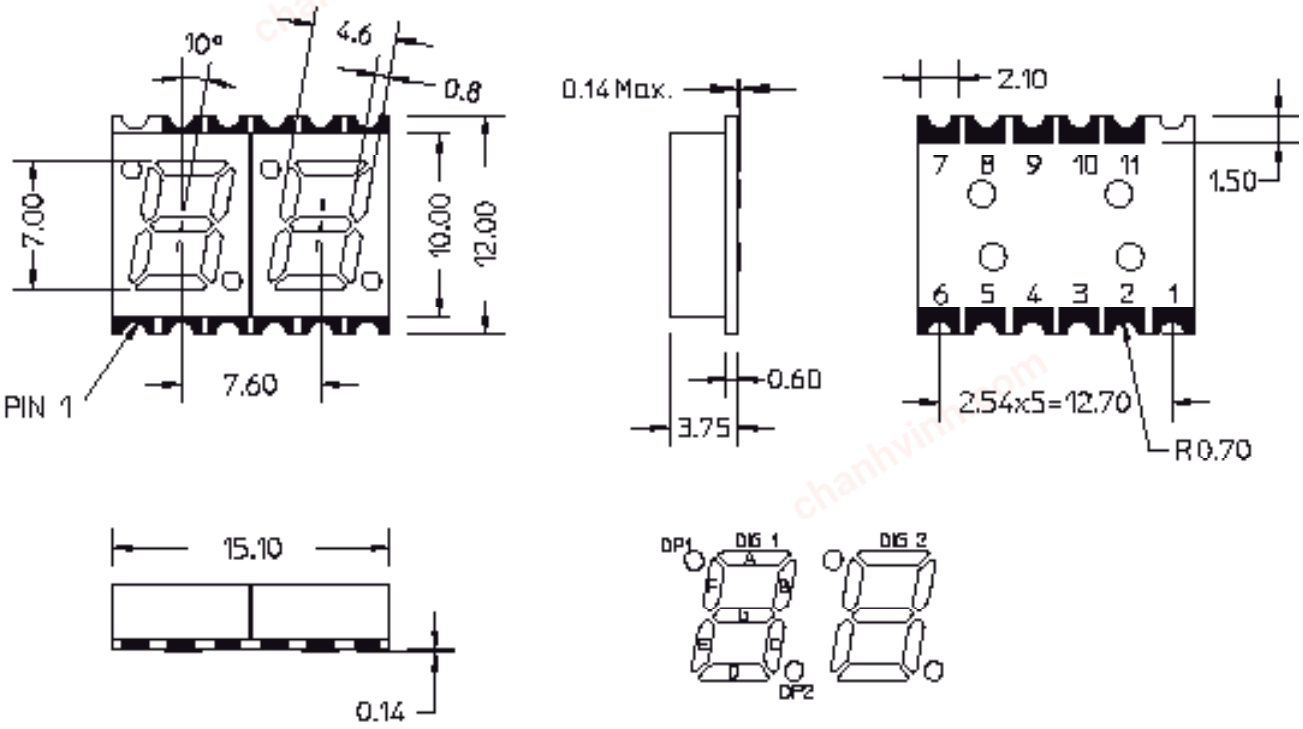
Features

- 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

Ordering Information

Red	Green	Yellow	Orange	Description
HDSM-291C	HDSM-291H	HDSM-291F	HDSM-291L	Common Anode, Upper and Lower Decimal
HDSM-293C	HDSM-293H	HDSM-293F	HDSM-293L	Common Cathode, Upper and Lower Decimal

Package Dimensions



Notes:
All dimensions are in millimeters (inches).
Tolerance: ± 0.25mm (0.01") unless otherwise noted.

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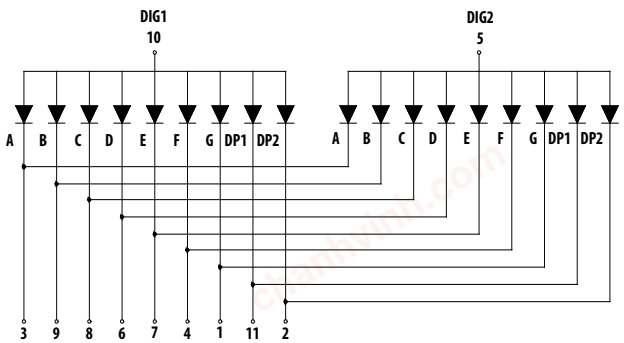
Pin Connection (Common Anode)

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

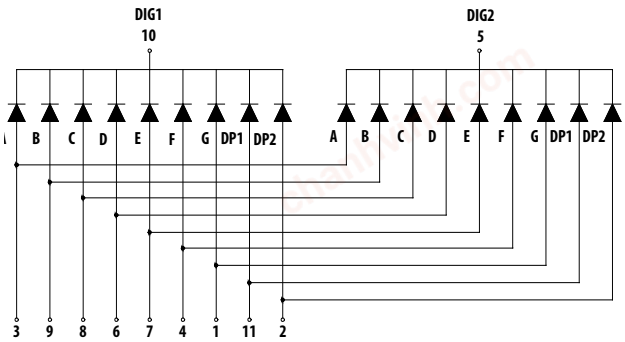
Pin Connection (Common Cathode)

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 DIG 1
11	ANODE DP1,DP3

Internal Circuit Diagram (Common Anode)



Internal Circuit Diagram (Common Cathode)



Absolute Maximum Ratings @ T_A=25°

Parameter	Green/Yellow/Red/Orange	Unit
Power Dissipation Per Segment	65	mW
Peak Forward Current Per Segment (1/10 Duty Cycle. ,0.1ms pulse width)	100	mA
Continuous Forward Current Per Segment	25	mA
Derating Linearly From 25°C Per Segment	0.25	mA/ °C
Reverse Voltage Per Segment	5	V
Operating Temperature Range	-40°C to +105°C	
Storage Temperature Range	-40°C to +105°C	

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Electrical / Optical Characteristics @ T_A=25°C

Green

Parameters	Symbol	Min	Typ	Max	Unit	Test Condition
Average Luminous Intensity	I_V	3.4	6	-	mcd	I_F = 10mA
Emissions Wavelength	λ_p/λ_d	-	572/571	-	nm	I_F = 20mA
Spectral Line Half-Width	$\Delta\lambda$	-	20	-	nm	I_F = 20mA
Forward Voltage, Per Segment	V_F	-	2.1	2.6	V	I_F = 20mA
Reverse Current, Per Segment	I_R	-		100	μA	V_R = 5V
Luminous Intensity Matching Ratio	I_{V-M}	-	-	2:1	-	I_F = 10mA

Yellow

Parameters	Symbol	Min	Typ	Max	Unit	Test Condition
Average Luminous Intensity	I_V	3.4	8.0	-	mcd	I_F = 10mA
Emissions Wavelength	λ_p/λ_d	-	591/589	-	nm	I_F = 20mA
Spectral Line Half-Width	$\Delta\lambda$	-	15	-	nm	I_F = 20mA
Forward Voltage, Per Segment	V_F	-	2.1	2.6	V	I_F = 20mA
Reverse Current, Per Segment	I_R	-		100	μA	V_R = 5V
Luminous Intensity Matching Ratio	I_{V-M}	-	-	2:1	-	I_F = 10mA

Red

Parameters	Symbol	Min	Typ	Max	Unit	Test Condition
Average Luminous Intensity	I_V	3.4	7.5	-	mcd	I_F = 10mA
Emissions Wavelength	λ_p/λ_d	-	632/624	-	nm	I_F = 20mA
Spectral Line Half-Width	$\Delta\lambda$	-	20	-	nm	I_F = 20mA
Forward Voltage, Per Segment	V_F	-	2.0	2.6	V	I_F = 20mA
Reverse Current, Per Segment	I_R	-		100	μA	V_R = 5V
Luminous Intensity Matching Ratio	I_{V-M}	-	-	2:1	-	I_F = 10mA

Orange

Parameters	Symbol	Min	Typ	Max	Unit	Test Condition
Average Luminous Intensity	I_V	3.4	8.5	-	mcd	I_F = 10mA
Emissions Wavelength	λ_p/λ_d	-	611/605	-	nm	I_F = 20mA
Spectral Line Half-Width	$\Delta\lambda$	-	20	-	nm	I_F = 20mA
Forward Voltage, Per Segment	V_F	-	2.1	2.6	V	I_F = 20mA
Reverse Current, Per Segment	I_R	-		100	μA	V_R = 5V
Luminous Intensity Matching Ratio	I_{V-M}	-	-	2:1	-	I_F = 10mA

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Typical Electrical / Optical characteristic curves @ T_A=25°C

Green

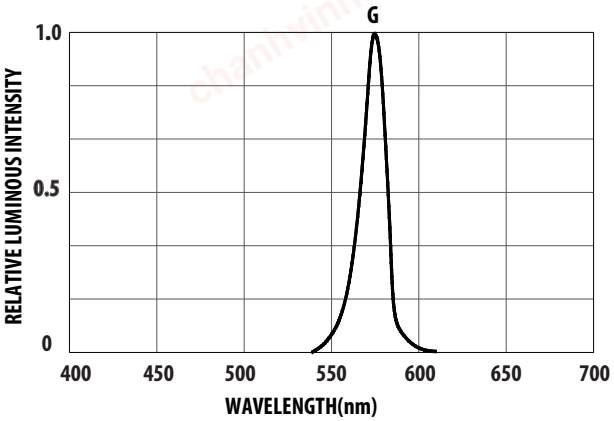


Figure 1. Relative Luminous Intensity vs. Wavelength

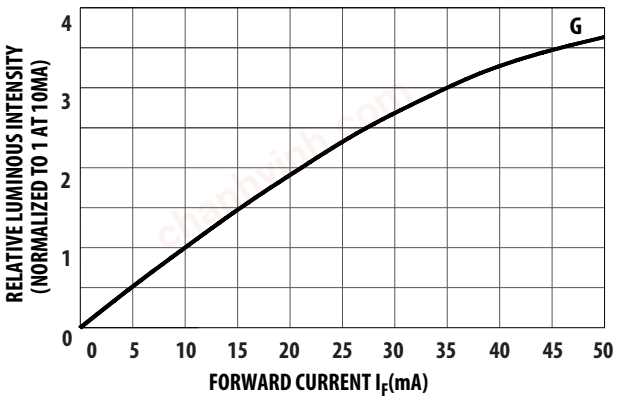


Figure 2. Relative Luminous Intensity vs. Forward Current

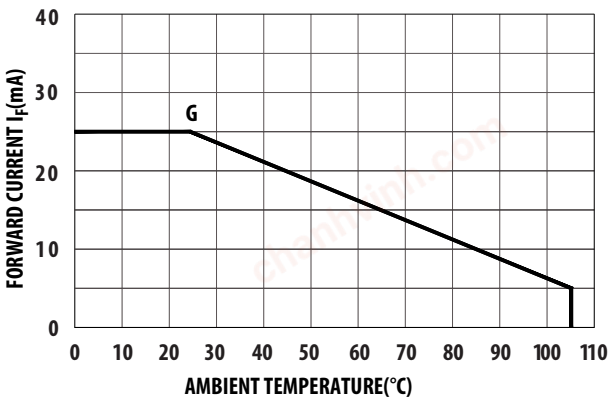


Figure 3. Allowable DC Current vs. Ambient Temperature

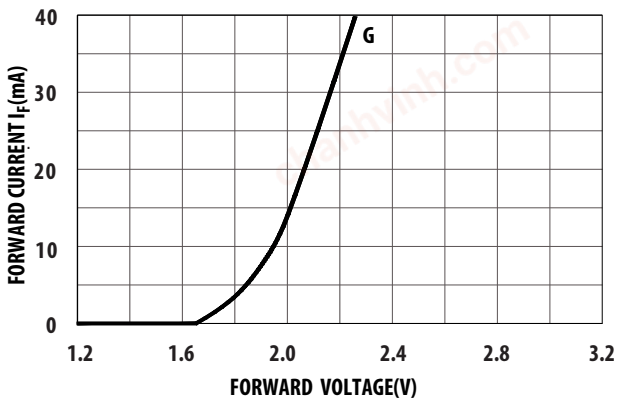


Figure 4. Forward Current vs. Forward Voltage

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Yellow

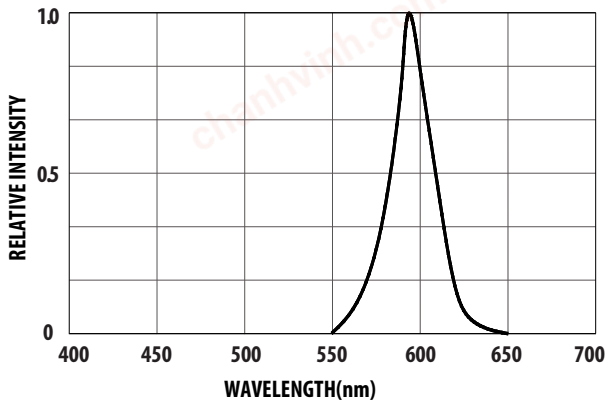


Figure 1. Relative Intensity vs. Wavelength

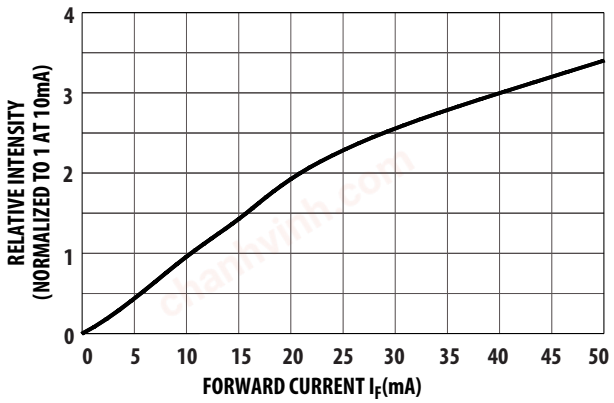


Figure 2. Relative Intensity vs. Forward Current

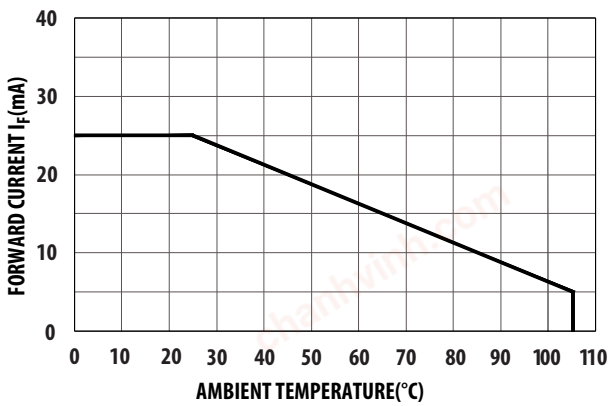


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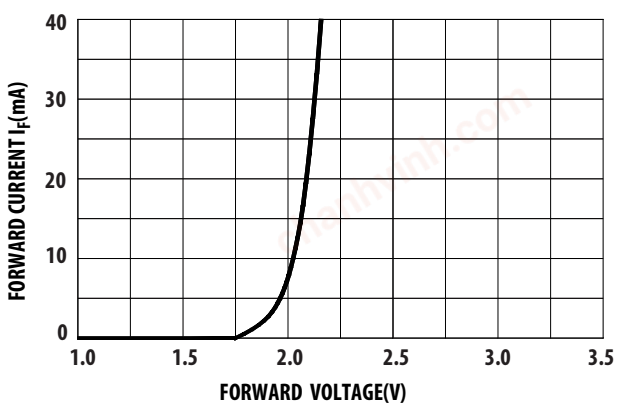


Figure 4. Forward Current vs. Forward Voltage

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Red

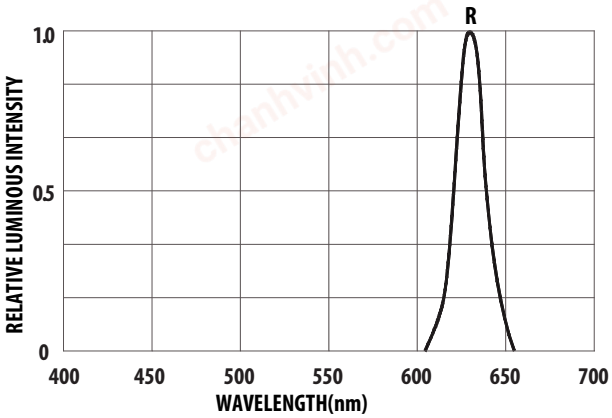


Figure 1. Relative Luminous Intensity vs. Wavelength

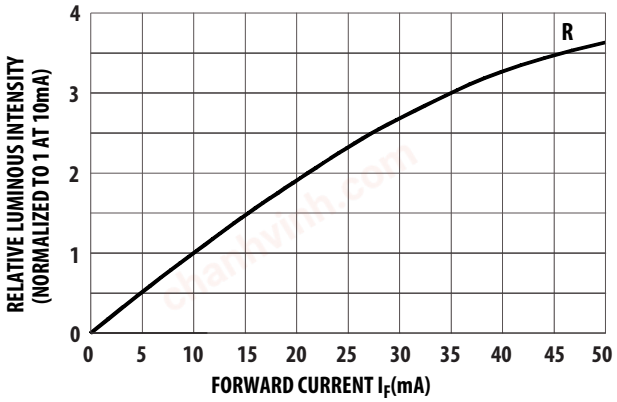


Figure 2. Relative Luminous Intensity vs. Forward Current

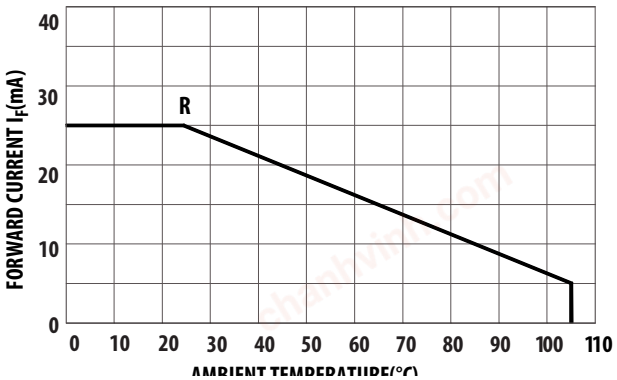


Figure 3. Allowable DC Current vs. Ambient Temperature

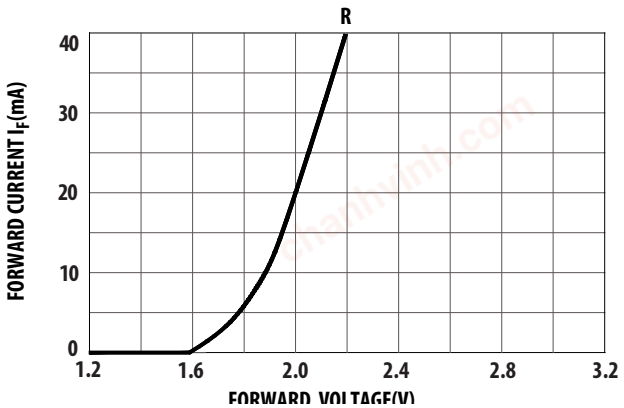


Figure 4. Forward Current vs. Forward Voltage

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Orange

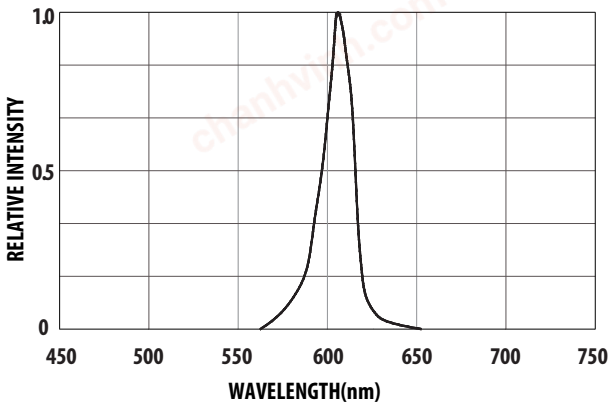


Figure 1. Relative Intensity vs. Wavelength

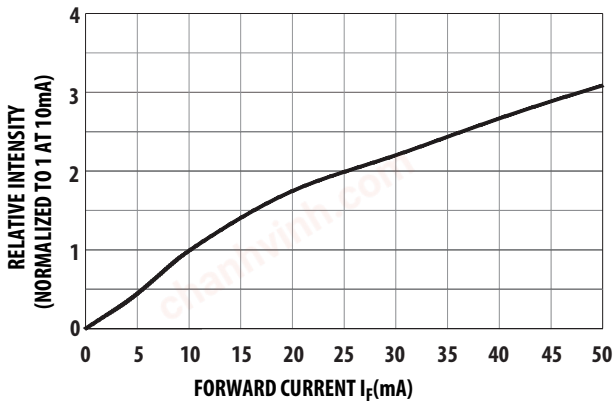


Figure 2. Relative Intensity vs. Forward Current

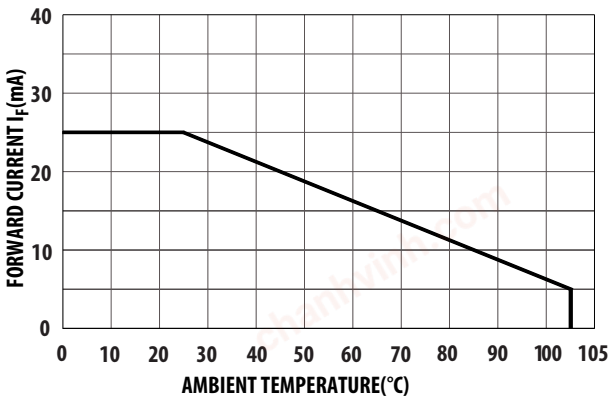


Figure 3. Allowable DC Current vs. Ambient Temperature

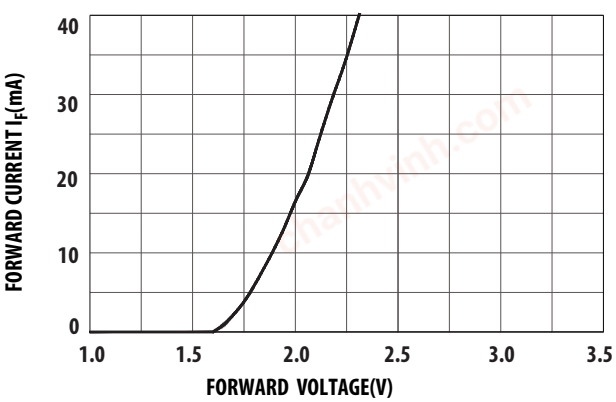


Figure 4. Forward Current vs. Forward Voltage

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Intensity Bin Limits (mcd)

Yellow / Red / Orange / Green

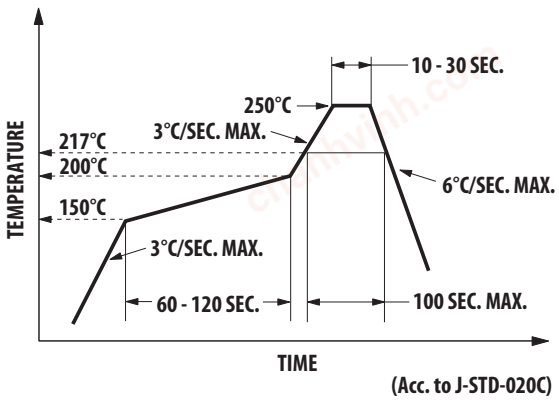
IV Bin Category	Min.	Max
L	3.401	5.400
M	5.401	8.600
N	8.601	13.700
P	13.701	21.800

Tolerance: ±15%

Notes:
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.

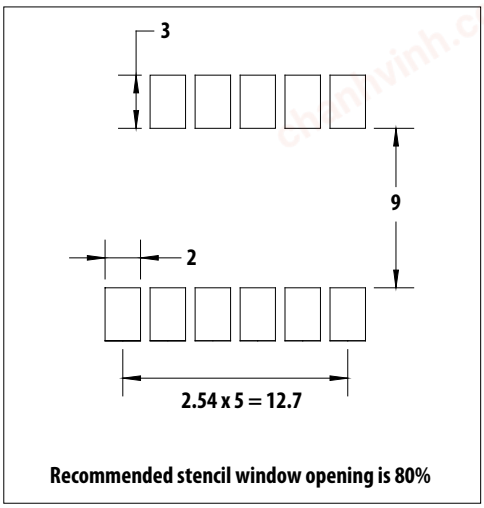
SMT Soldering Profile

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.

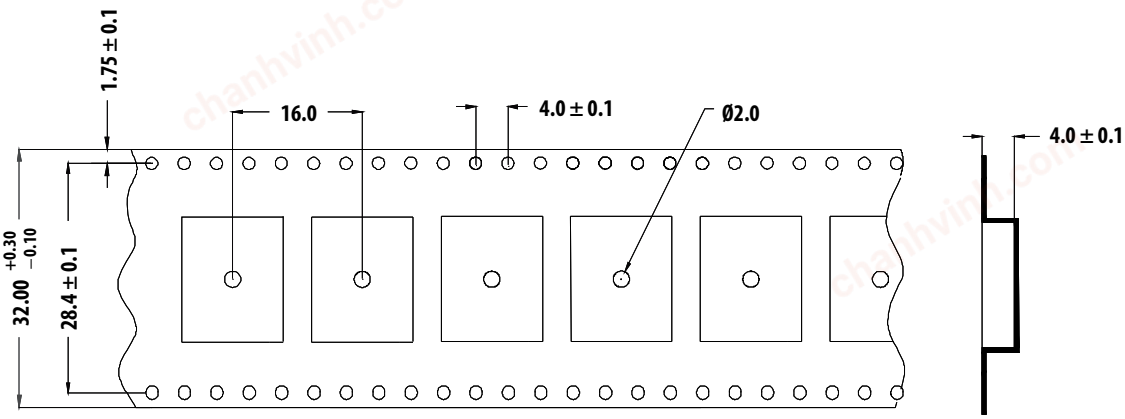
Recommended soldering pattern (unit: mm)



Recommended stencil window opening is 80%

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Tape specification (unit: mm)



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