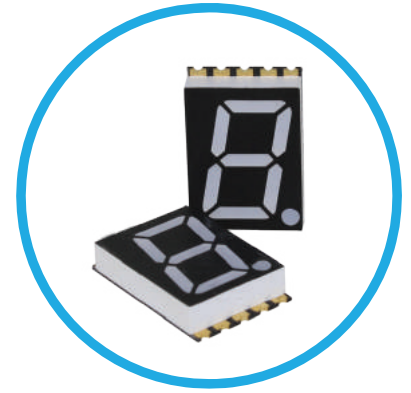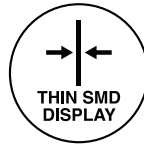# DSM7T Series
Thin Surface Mount Single Digit
7-Segment LED Numeric Display

DSM7TA39106T - 0.39" (9.91mm) Digit Height
Emitting Color: Blue (InGaN)

SINGLE DIGIT • **LED COLOR OPTIONS** • **3 SIZES** • **THIN SMD DISPLAY** • **IP50** • **REVERSE MOUNT**
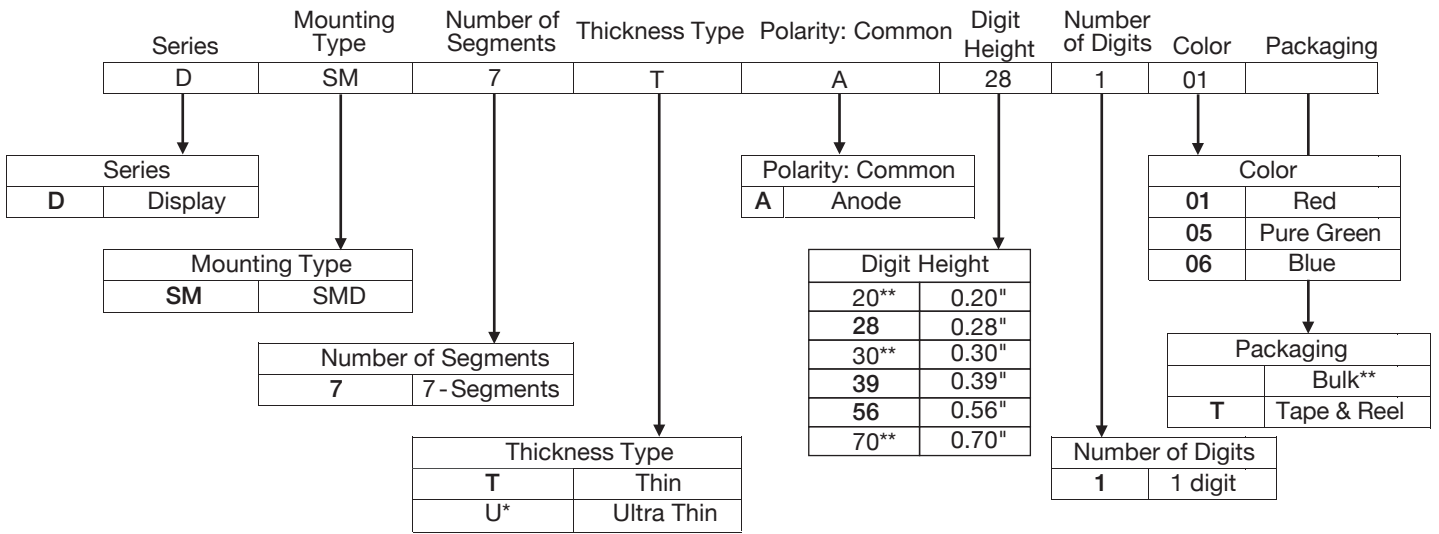
Application

- People Movers
- Home Appliances
- Medical Devices

- Industrial Devices
- Automation and Controls
- Light Control

- IoT
- Transportation
- Food Service Appliances

Key features

- 1-digit seven segment led numeric display
- Includes a decimal point (DP), useful when two or more seven-segment displays are connected to each other to display decimals
- White segments and grey surface
- Substrate: InGaN
- Outer dimensions: 13.0 x 9.80 x 4.00mm
- High light output
- Excellent character appearance
- Quality tested with the highest industry standard
- Side by side mounting allows space saving
- Provides the ability to reduce overall thickness of PCB, with major cost savings
- Display surface color: black surface and white segments

- Available in 3 different digit heights and widths
- Automation-friendly tape and reel
- Technically and mechanically rugged
- Small and light, easy assembly
- Life expectancy: up to 50,000 hours
- Lower power consumption
- Allow top mount and reverse mount design
- Mechanically rugged
- Moisture Sensitive Level (MSL): 2a
- Available in blue, red and pure green
- Polarity: common anode
- Easy mounting on PC boards or sockets
- Low current operation
- Degree of protection IP50 (Dust-Protected)

Ordering Data

	Series	Mounting Type	Number of Segments	Thickness Type	Polarity: Common	Digit Height	Number of Digits	Color	Packaging
	D	SM	7	T	A	28	1	01	

Series	
D	Display

Mounting Type	
SM	SMD

Number of Segments	
7	7 - Segments

Thickness Type	
T	Thin
U*	Ultra Thin

Polarity: Common	
A	Anode

Digit Height	
20**	0.20"
28	0.28"
30**	0.30"
39	0.39"
56	0.56"
70**	0.70"

Number of Digits	
1	1 digit

Color	
01	Red
05	Pure Green
06	Blue

Packaging	
	Bulk**
T	Tape & Reel

*Please refer to DSM7U product datasheet for Ultra Thin Version
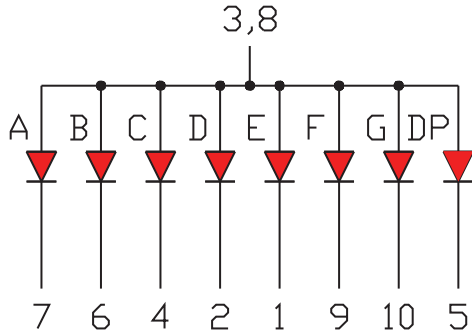**Only available for DSM7U Version

Dimensions and Internal Circuit Diagram
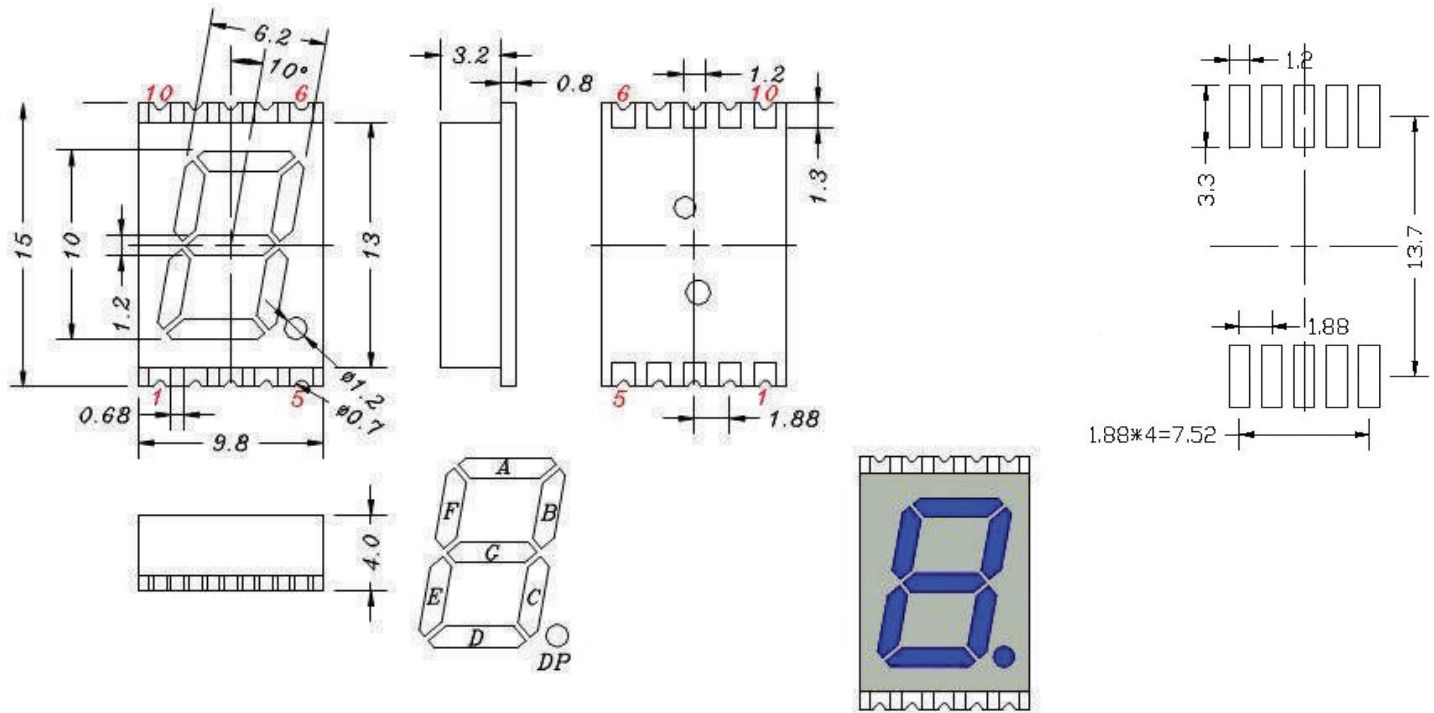
Dimensions in millimeters
Tolerance is ±0.25mm unless otherwise noted

Internal Circuit Diagram

Pin Connections (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

Product Specifications

Absolute Maximum Ratings while Ta=25°C

Parameter	Minimum (m)	Maximum (M)	Unit
Forward Current I_F/Seg	--	20	mA
Reverse Voltage V_R/Seg	--	5	V
Operating Temperature T_{OPR}	-30	+85	°C
Storage Temperature T_{STG}	-40	+100	°C
Peak Current I_{FM}/Seg	--	60	mA

(Notice: 1/10th duty cycle, 0.1ms pulse width)

Electrical-Optical Characteristics while Ta=25°C

Parameter	Condition	Unit	Minimum	Typical	Maximum
Forward Voltage V_F/Seg	IF=20mA	V	2.6	3.1	3.6
Reverse Current I_R/Seg	VR=5V	µA	--	--	50
Wavelength λP	IF=20mA	nm	460	465	470
Full Width at Half Maximum Δλ	IF=20mA	nm	--	15	--
Luminosity I_V/Seg	IF=20mA	mcd	95	135	195
Viewing angle	wide viewing angle				

Product Specifications

Relative Spectral

Relative Luminous Intensity @ 20mA (y-axis): 0, 0.5, 1.0

Wavelength (nm) (x-axis): 350, 400, 450, 500, 550, 600
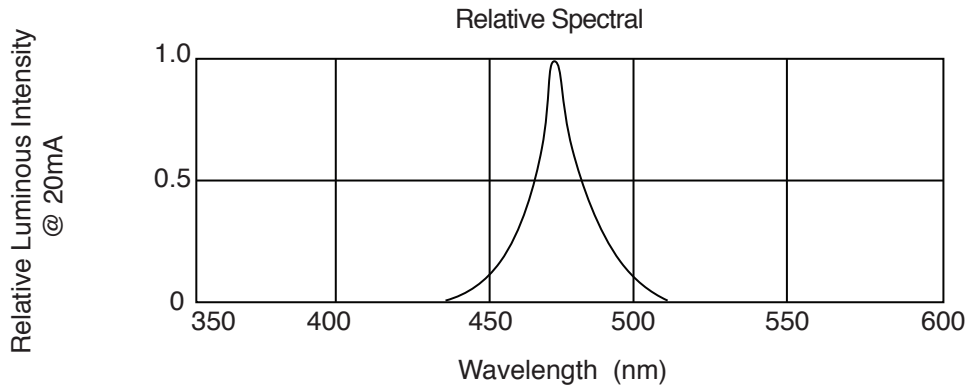
Forward Current vs. Forward Voltage

Forward Current If(mA) (y-axis): 0, 10, 20, 30, 40, 50

Forward Voltage (V) (x-axis): 2.0, 2.4, 2.8, 3.2, 3.6, 4.0
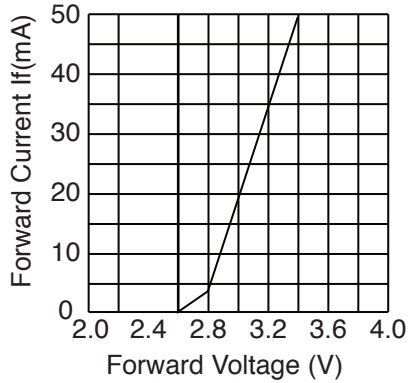
Relative Luminous Intensity vs. Forward current

Relative Luminous Intensity (y-axis): 0, 1.0, 2.0, 3.0, 4.0, 5.0

Forward Current (mA) (x-axis): 0, 10, 20, 30, 40, 50
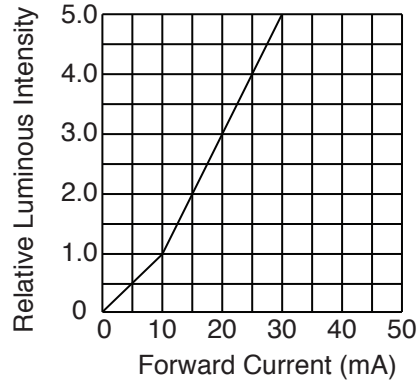
Forward Current Vs. Temperature

Forward Current (mA) (y-axis): 0, 10, 20, 30, 40, 50

Temperature °C (x-axis): 20, 40, 60, 80, 100
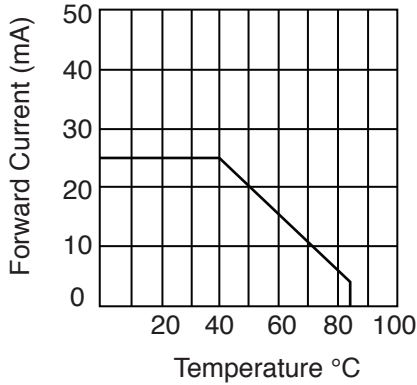
Luminous Intensity vs. Temperature

Relative Luminous Intensity (y-axis): 0.1, 0.2, 0.5, 1, 2

Temperature °C (x-axis): -30, -10, 0, 10, 30, 50, 70
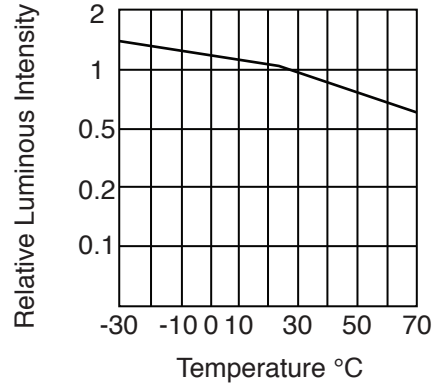
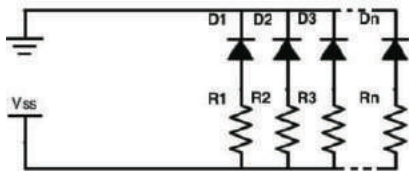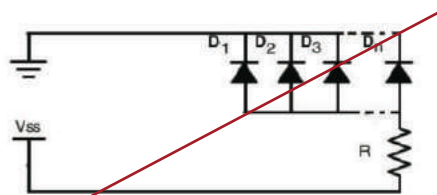## Circuit Design Notes

- Always use current limit resistors when necessary
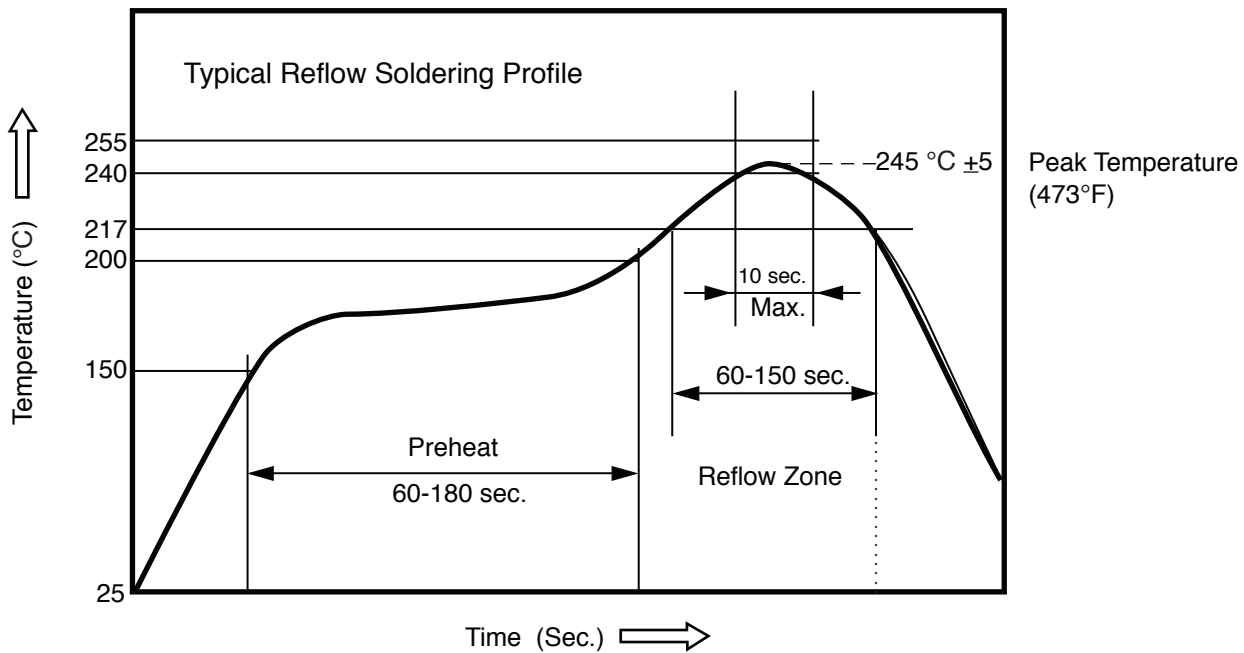- LEDs could be electrically connected in parallel, with each current limiting resistor

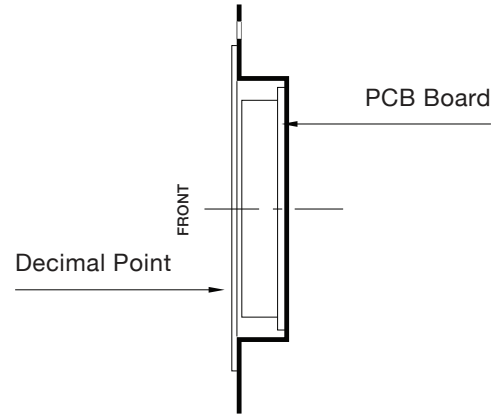Correct

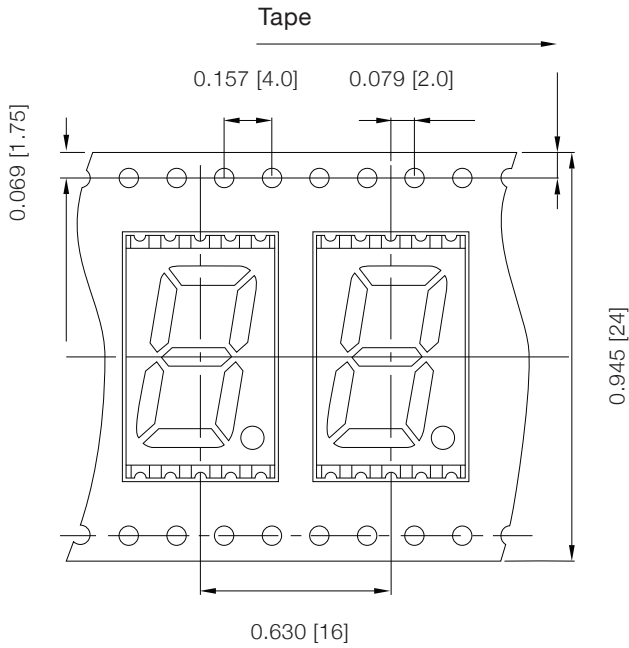INCORRECT

Recommended Reflow Soldering Profile

Typical Reflow Soldering Profile

Temperature (°C)

255
240 — – – –245 °C ±5   Peak Temperature (473°F)
217
200
10 sec.
Max.
150
60-150 sec.
Preheat
60-180 sec.   Reflow Zone
25

Time (Sec.) ⟹

Profile Feature	Typical Parameters	
Preheat Temperature Min	150 °C	(302°F)
Preheat Temperature Max	200 °C	(392°F)
Preheat Time	60 -180 sec.	
Reflow Starting Temperature	217 °C	(423°F)
Time Spent During Reflow	60 -150 sec.	
Reflow Peak Temperature	245 °C	(473°F)

- Manual soldering is suggested

  - Use soldering irons of which power is less than 30 Watt.
  - Keep the temperature of soldering irons below 360 °C
  - Only one soldering is allowed on each bonding pad.
  - The maximum time from when a soldering iron comes into contact with the parts that are to be connected until the joint is finished should not exceed three seconds.
  - Perform other procedures after the soldered pad cools down.

- Suggested storage conditions: 25°C +/-10°C (77°F +/-50°F), relative humidity 65% RH +/- 20% RH.
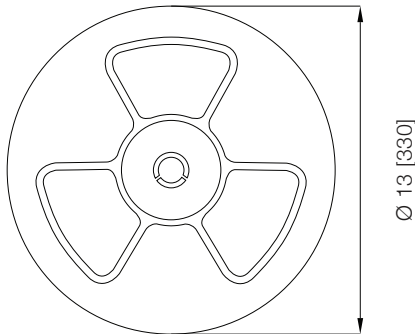
Tape and Reel Dimensions

Carrier band

Electrostatic Discharge (ESD) Package
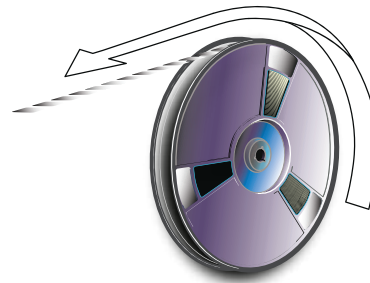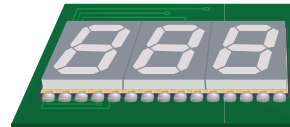Anti Static Bags Aluminium Moisture Barrier Bag.

Tape

0.157 [4.0] 0.079 [2.0]

0.069 [1.75]

0.945 [24]

0.630 [16]

PCB Board

FRONT

Decimal Point

Reel Dimensions

Ø 13 [330]

1200PCS/Reel

Direction of the feed

Allow top mount or reverse mount design

Top Mount

Reverse Mount

Dimensions in inches [millimeters]

Compliances and Approvals

REACH COMPLIANCE

RoHS COMPLIANT

Pb Pb-Free

ESD SAFE