

# microSD™ Card Connectors

## DM3 Series



### ■ Features

#### ◆ Common to the entire Series

##### 1. Extremely small size

Small external dimensions and the above-the-board height make the connectors the smallest on the market.

##### 2. Reverse card insertion protection

Unique card slot design (patented) protects the connector from damage when the card is attempted to be inserted in reverse, allowing it to re-inserted correctly.

##### 3. Effective ground and shield configuration

4-connection points of the metal cover to the printed circuit board assures secure connection of the ground circuit and provides EMI protection.

##### 4. Rigid and strong construction

Despite its small size, high-strength materials used in the connectors produced a strong and rigid structure.

##### 5. Card detection switch

The card detection switch is Normally Open

#### ◆ DM3AT and DM3BT (Push - Push, with ejection mechanism)

##### • Card fall-out prevention

Built-in card tray and the unique push insertion-push ejection mechanism (patented) prevent accidental card ejection or fall-out.

Despite its small size the connectors will eject the card to a distance of 4.0 mm, allowing easy hold and removal of the card.

##### • Exposed termination leads

Easy inspection and rework of the solder termination joints.

#### ◆ DM3CS (Hinge, Push-Pull, manual, without ejection mechanism)

##### • Simple and reliable card insertion

Hinged metal cover provides location and guides the card during the insertion / removal. Closing of the cover confirms the electrical and mechanical connection with a tactile click sensation.

##### • Reliable contact with the card contact pads

Unique contact design and card slide action will clean the contact areas of the card.

##### • Accessible termination areas

Contact solder terminations may be inspected and reworked.



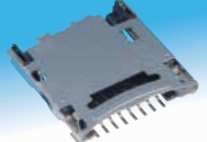
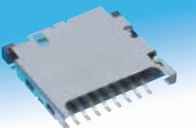
#### ◆ DM3D (Push -Pull, manual, without ejection mechanism)

##### • Partial card insertion hold

Card will not fall-out even when it is not fully inserted. Full insertion and electrical / mechanical connection is confirmed with a distinct tactile feel.

##### • Accessible termination areas

An inner lead system that can be reworked is used in this design. Contact solder terminations may be inspected and reworked.

Card insertion-ejection	Series	Image	Page
Push-Push	DM3AT		2~4
	DM3BT		5~6
Hinge-manual insertion/ejection	DM3CS		7~8
Push-Pull manual insertion/ejection	DM3D		9~10

■Specifications(DM3 Series)

Ratings	Current rating: 0.5A Voltage rating: 125V AC	Operating temperature range: -25℃ to +85℃ (Note 1) Storage temperature range : -40℃ to +85℃ (Note 2)	Operating humidity range: RH 95% max. (No condensation)
Item	Specification	Conditions	
1. Insulation resistance	1000 MΩ min. (Initial value)	Measure at 500 V DC	
2. Withstanding voltage	No flashover or insulation breakdown	500 V AC / 1 minute	
3. Contact resistance	100mΩ max. (Initial value)	1mA	
4. Vibration	No electrical discontinuity of 100 ns or longer No damage, cracks or parts dislocation.	Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 3 directions for 2 hours	
5. Humidity	Contact resistance: 40 mΩ max. (change from initial value) Insulation resistance: 100 MΩ min. No damage, cracks or parts dislocation.	96 hours at of 40 ± 2℃, and humidity of 90 to 95%	
6. Temperature cycle	Contact resistance: 40 mΩ max. (change from initial value) Insulation resistance: 100 MΩ min. No damage, cracks or parts dislocation.	-55℃ → 5 to 35℃ →85℃ → 5 to 35℃ Times: 30 min. → 5 min. → 30 min. → 5 min. 5 cycles	
7. Durability	Contact resistance: 40 mΩ max. (change from initial value)	10,000 cycles, 400 to 600 cycles per hour (DM3AT, DM3B) 5,000 cycles, 400 to 600 cycles per hour (DM3C, DM3D)	
8. Resistance to soldering heat	No deformation of components affecting performance.	Reflow : At the recommended temperature profile Manual soldering : 350℃ for 3 seconds	

Note 1: Includes temperature rise caused by current flow.  
Note 2. The term "storage" refers to products stored for long period prior to mounting and use.

■Materials and Finishes

DM3AT, DM3BT

Part	Material	Finish	Remarks
Insulator	LCP	Color: Black	UL94V-0
Contacts	Copper alloy	Contact area: Gold plated Lead area: Gold plated	_____
Guide cover	Stainless steel (DM3AT) Copper alloy (DM3BT)	Lead area: Gold plated	_____
Other components	Stainless steel (DM3AT, DM3BT) Piano wire (DM3BT)	_____ Nickel plated	_____

DM3CS, DM3D

Part	Material	Finish	Remarks
Insulator	LCP	Color: Black	UL94V-0
Contacts	Copper alloy	Contact area: Gold plated Lead area: Gold plated	_____
Guide cover	Stainless steel	Tin plated	_____

■Ordering information

DM3 AT – SF – PEJM5

①②③④

① Series name: DM3	③ Termination type : SF Right-angle SMT(Standard) DSF Right-angle SMT(Reverse)
② Connector type : AT Push-Push (ejection mechanism), Top board mounting (Standard) BT Push-Push (ejection mechanism), Bottom board mounting (Reverse) CS Hinge, Push-Pull (no ejection mechanism), Top board mounting (Standard) D Push-Pull (no ejection mechanism), Top board mounting (Standard) Number of contacts : 8	④ Card ejection code : PEJM5, PEJS (Push insert/push eject) None : Manual card insertion/ejection

Technical drawing of the HS5 card reader showing top, side, and front views with dimensions and pin labels.

**Pin Labels (Top View):**

- #1(DAT2)
- #2(CD/DAT3)
- #3(CMD)
- #4(VDD)
- #5(CLK)
- #6(VSS)
- #7(DAT0)
- #8(DAT1)

**Dimensions (mm):**

- Overall width: 13.85
- Width of pin header: 7.35
- Pin pitch: 3.2
- Overall height: 1.68
- Height of main body: 15.95
- Height of card slot: 15
- Height of card over stroke position: 16.75
- Height of card lock position: 17.55
- Height of card eject position: 21.55
- Width of card slot: 5.5
- Width of main body: 11
- Radius:  $\phi < 1$
- Width of bottom flange: 0.8
- Bottom flange thickness:  $2.9 \pm 0.15$

**Labels:**

- CARD DETECTION SWITCH(B)
- CARD DETECTION SWITCH(A)
- microSD CARD
- HS5

All dimensions: mm

Technical drawing of a mechanical part with dimensions and tolerances. The drawing shows a cross-section of a component with various features and dimensions. Key dimensions include:

- Overall width: 10MIN, 9.25MAX, 8.65, 7.7, 1.55, 1.2, 1.1, 0.7, 0.15MIN, 0.7, 1.2, 3.7, 7.9MIN, 5.7MAX, 14.05, 13.3MIN, 9.9, 14.1MAX, 14.5, 15.1.
- Internal features: 8.9MIN, 8.2MIN, 0.5, 4.4MAX, 6MIN, 0.15, (3.2), 2.7, 3.25, 1.3, 1.9, C0.15, 2.8, 0.8, 1, 9.1.
- Surface finish: 3, 3, 3, 1.
- Material: P=1.1.

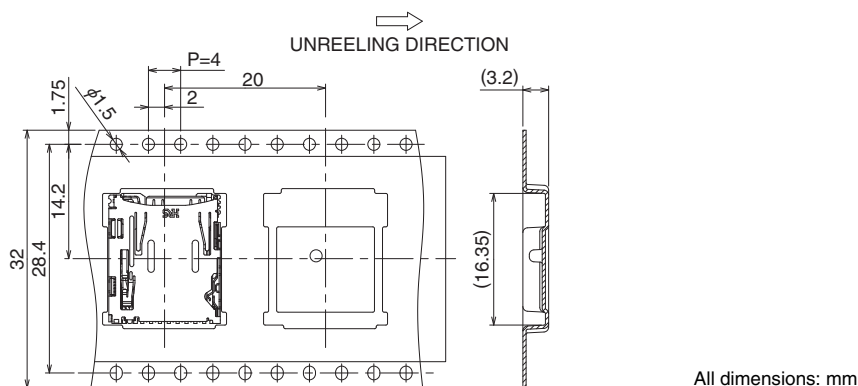
2

Card detection switch	
Without the card	Card inserted
<p>Open</p> <p>(A) (B)</p>	<p>Closed</p> <p>(A) (B)</p>

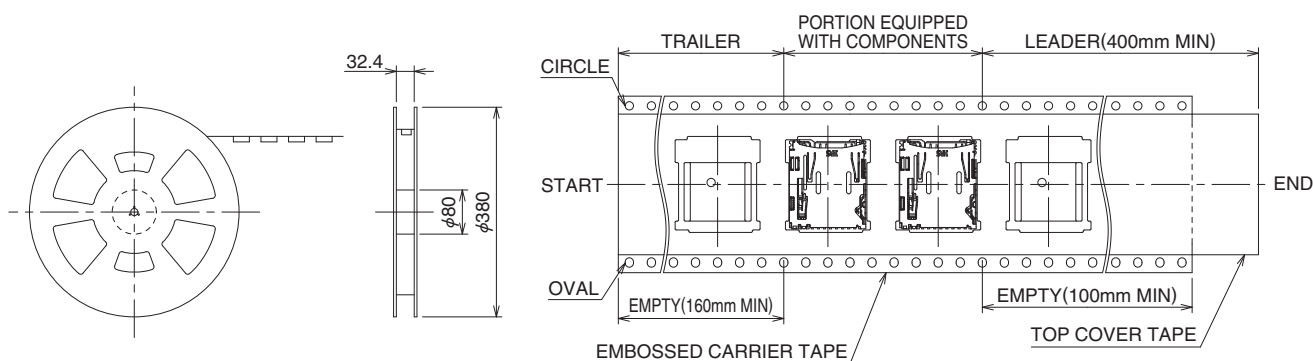
All dimensions: mm

## ■ Packaging Specifications

- Embossed carrier tape dimensions (1,500 pieces per reel)



- Reel Dimensions



Technical drawing of the HRS-01 module, showing top, side, and front views with dimensions and pin labels.

**Pin Labels (Top View):**

- #4(VDD)
- #5(CLK)
- #3(CMD)
- #6(VSS)
- #2(CD/DAT3)
- #7(DAT0)
- #1(DAT2)
- #8(DAT1)

**Dimensions (mm):**

- Top View: 2.38MAX, 1.83, (3.2), 13.85, (6.5), 2.7MAX, 6.7MAX, 15.1, 15.45, (11), (5.5), 2.9±0.15
- Side View: (0.55), 2.38MAX, 1.83, (3)
- Front View: (21.55); CARD EJECT POSITION, (17.55); CARD LOCK POSITION, (16.75); CARD OVER STROKE POSITION, 16.05, 15.95, (15), 15.1, 15.45, (3)



**Other Labels:**


- CARD DETECTION SWITCH(B)
- CARD DETECTION SWITCH(A)
- microSD CARD
- HRS
- Φ

All dimensions: mm

[illegible]

2

Card detection switch	
Without the card	Card inserted
<p>Open</p>  <p>(A) (B)</p>	<p>Closed</p>  <p>(A) (B)</p>

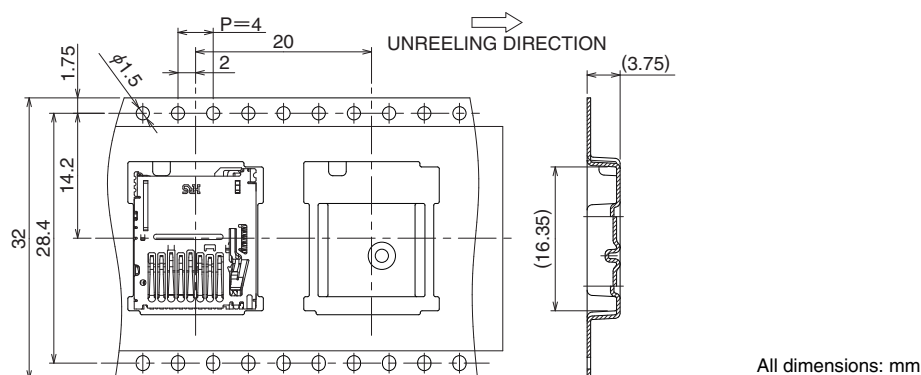
4  No conductive traces.

DM3BT-DSF-PEJS

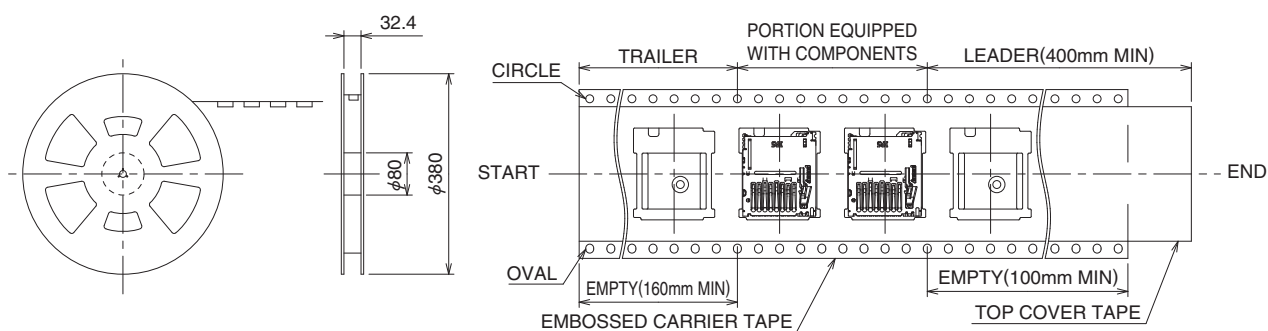
Portable device

## ■ Packaging Specifications

- Embossed carrier tape dimensions (1,200pieces per reel)



- Reel Dimensions





The drawing shows the mechanical specifications of the SD card reader. The top view includes dimensions for the overall size (13.8 x 13.9 mm), the card insertion area (6.9 x 12 mm), and the card detection switch (13.8 mm). The side view shows the thickness (1.83 mm) and the card detection switch (0.1 mm). The bottom view shows the pin connections for the microSD card, including DAT1, DAT0, VSS, CMD, CL K, VDD, and DAT2.

Top View Dimensions:

- Overall Width: 13.8
- Overall Height: 13.9
- Card Insertion Area Width: 6.9
- Card Insertion Area Height: 12
- Card Detection Switch Width: 13.8
- Card Detection Switch Height: 0.2
- Card Insertion Area Width (Inner): 5.5
- Card Insertion Area Height (Inner): 11
- Card Insertion Area Width (Outer): 14.1
- Card Insertion Area Height (Outer): 15.45

Side View Dimensions:

- Overall Thickness: 1.83
- Card Detection Switch Thickness: 0.1
- Card Detection Switch Height: 0.93
- Card Detection Switch Width: 1.78

Bottom View Dimensions:

- Overall Width: 13.8
- Overall Height: 13.9
- Card Insertion Area Width: 6.9
- Card Insertion Area Height: 12
- Card Detection Switch Width: 13.8
- Card Detection Switch Height: 0.2
- Card Insertion Area Width (Inner): 5.5
- Card Insertion Area Height (Inner): 11
- Card Insertion Area Width (Outer): 14.1
- Card Insertion Area Height (Outer): 15.45

Pin Connections:

- # 8 (DAT1)
- # 7 (DAT0)
- # 6 (VSS)
- # 5 (CL K)
- # 4 (VDD)
- # 3 (CMD)
- # 2 (CD/DAT3)
- # 1 (DAT2)

Labels:

- CARD DETECTION SWITCH
- microSD CARD
- OPEN
- LOCK

Notes:

- 1
- 2

Scale: 1:1

Material: PBT

Color: Black

Finish: Matte

RoHS: Compliant

REVISION: 1.0

DATE: 2023-10-27

DESIGNER: [Name]

CHECKER: [Name]

APPROVER: [Name]

ALL DIMENSIONS: mm

Technical drawing of a mechanical part with dimensions in mm. The drawing shows a top view of a rectangular component with various features and dimensions. Key dimensions include overall width 12.9, overall height 14.4, and a central rectangular feature with a width of 10.1MIN and a height of 7.8MAX. There are also dimensions for a central hole with a diameter of 1.1 and a distance of 7.7 from the left edge. The drawing includes a title block with the number 1 and a scale of 1:1.

2

Card detection switch	
Without the card	Card inserted
<p>Open</p>	<p>Closed</p>

All dimensions: mm

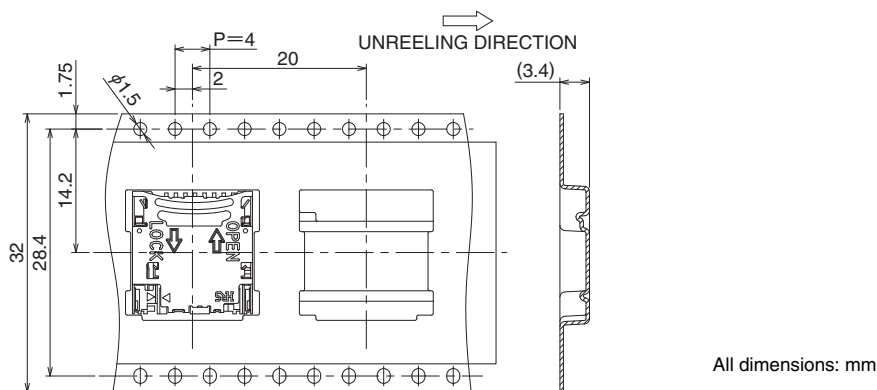
DM3CS-SF (shown open for card insertion)

DM3CS-SF (shown closed, with card inserted)

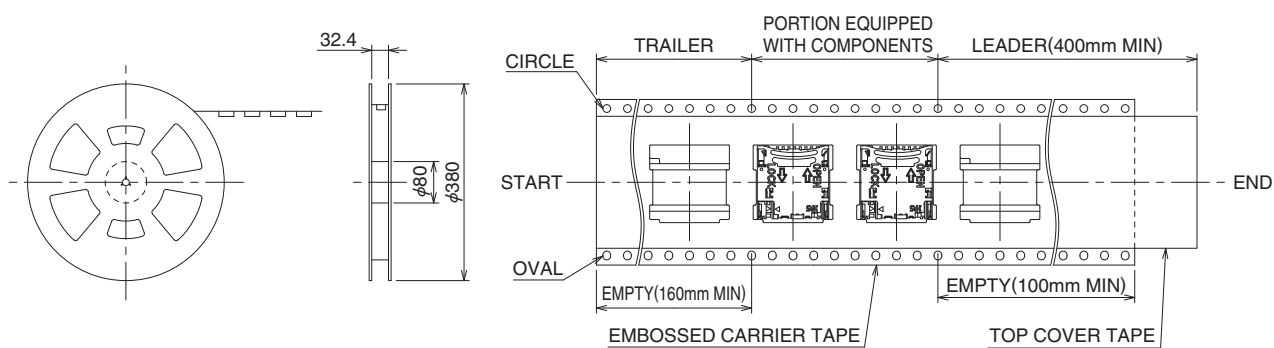
Portable device

## ■ Packaging Specifications

- Embossed carrier tape dimensions (1,300pieces per reel)

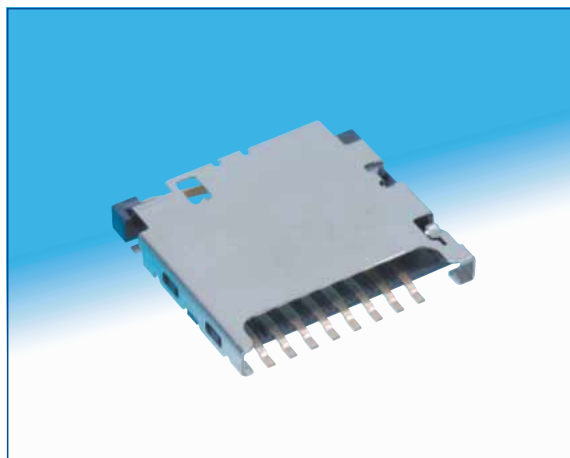


### ● Reel Dimensions

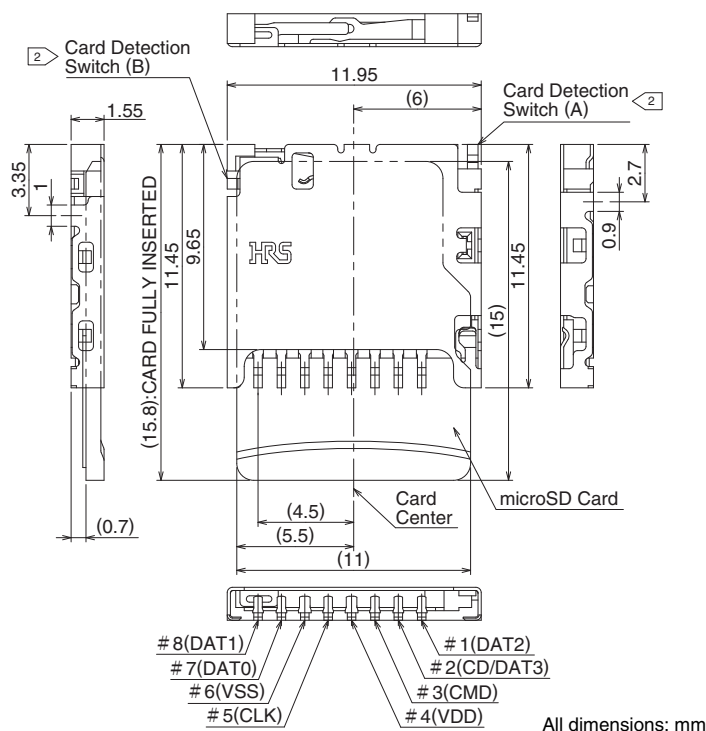




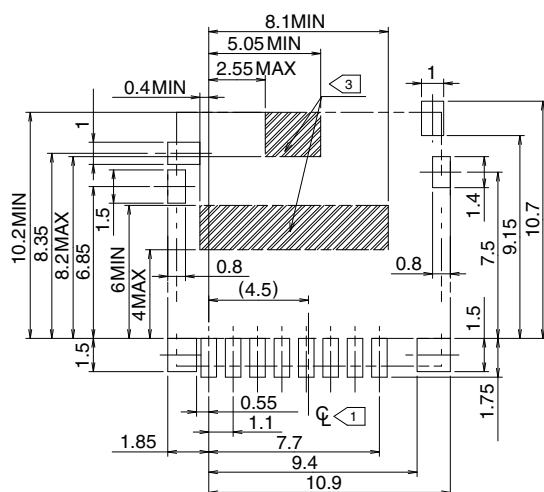
## ■DM3D, Push-Pull (no ejection mechanism), Top board mounting (Standard)



Part number	CL No.
DM3D-SF	609-0025-8



## ■Recommended PCB mounting pattern



Note 1 indicates the center line of the microSD card slot.

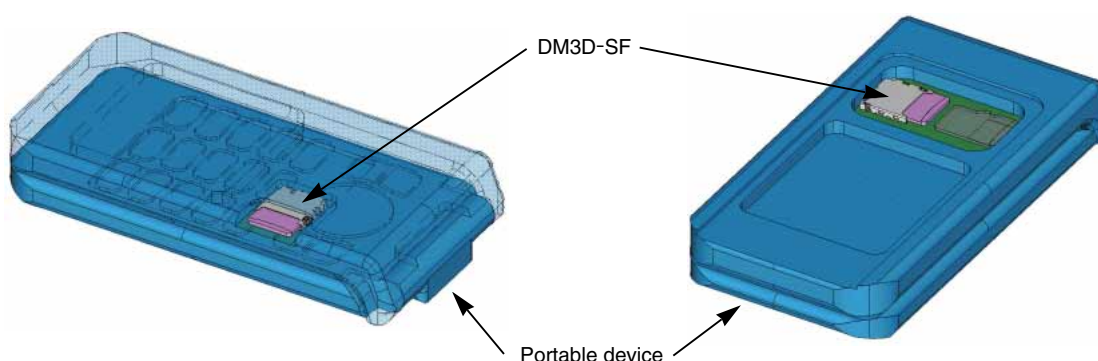
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Card detection switch			
Without the card		Card inserted	
Open		Closed	
(A)	(B)	(A)	(B)

3 No conductive traces.

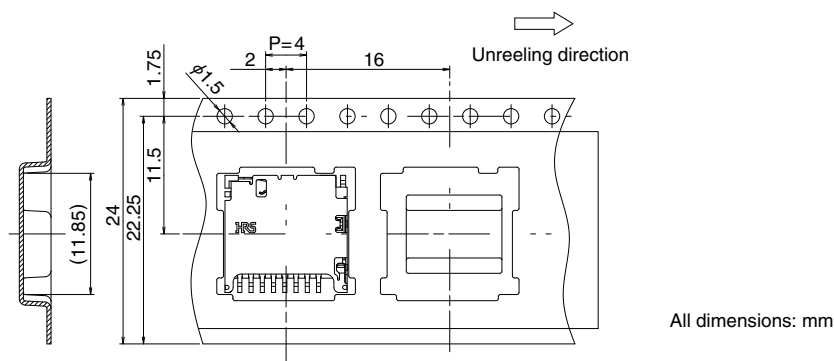
All dimensions: mm

## ● Example of applications

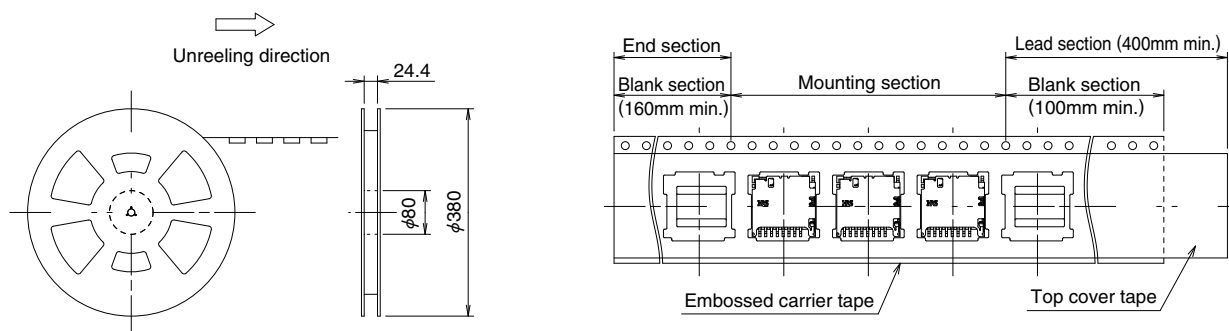


## ■ Packaging Specifications

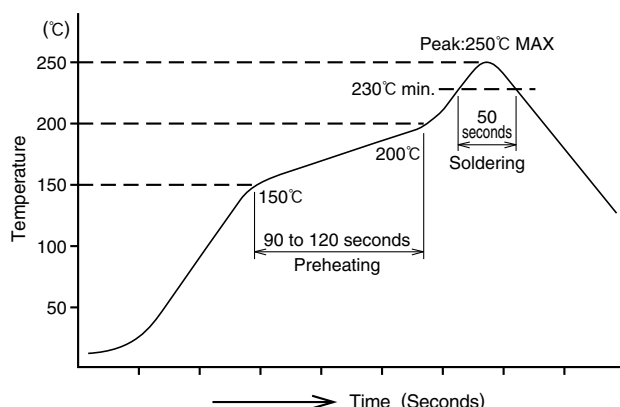
- Embossed carrier tape dimensions (2,000pieces per reel)



- Reel Dimensions



## ■ Recommended temperature profile



### HRS test condition

Solder method :Reflow, IR/hot air  
 Environment :Room air  
 Solder composition :Paste, 96.5%Sn/3.0%Ag/0.5%Cu  
 (Senju Metal Industry, Co., Ltd.'s  
 Part Number:M705-GRN360-K2-V)  
 Test board :Glass epoxy 60mm×100mm×1.0mm thick  
 Metal mask :0.12mm thick  
 Number of reflow cycles : 2cycles max.

The temperature profiles shown are based on the above conditions.

In individual applications the actual temperature may vary, depending on solder paste type, volume / thickness and board size / thickness. Consult your solder paste and equipment manufacturer for specific recommendations.

## ■ Precautions

1. Do not immerse or clean the entire connector with cleaning solutions as this may affect proper operation of the ejection mechanism and electrical performance of the connector
2. Do not apply excessive force to the connector when handling or after installation on the PC board.
3. The connectors will reliably connect and operate with the correctly inserted microSD™ cards.  
 Follow the correct insertion / ejection procedure for the specific connector in use.  
 Attempts of incorrect insertion of the card may cause damage to the connector or the card.
4. The connector must be correctly mounted on the PC board before the card can be inserted. Do not insert the card in the un-mounted connector.
5. Mounting on the Flexible Printed Circuit (FPC)  
 To assure correct performance it is recommended that a flat reinforcement plate 0.3 mm min. thick be used under the FPC.
6. Small visible residual manufacturing fluids or tooling marks do not affect connector's performance.
7. Repeated insertions and removal of the cards may leave some marks on the card itself. This will have no affect on the connector performance.

### ● Refer to applicable Operation Manual listed below for additional precautions.

Series	Operation Manual Number
DM3AT Series	ETAD-F0345
DM3BT Series	ETAD-F0324
DM3CS Series	ETAD-F0335
DM3D Series	ETAD-F0353