microSD™ Card Connectors

DM3 Series

■ Features

◆ Common to the entire Series

1. Extremely small in 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-strengths 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 4.0mm, 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 reworked.

<table>
<thead>
<tr>
<th>Card insertion-ejection</th>
<th>Series</th>
<th>Image</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Push-Push</td>
<td>DM3AT</td>
<td></td>
<td>2~4</td>
</tr>
<tr>
<td>DM3BT</td>
<td></td>
<td></td>
<td>5~6</td>
</tr>
<tr>
<td>Hinge-manual insertion/ ejection</td>
<td>DM3CS</td>
<td></td>
<td>7~8</td>
</tr>
<tr>
<td>Push-Pull manual insertion/ ejection</td>
<td>DM3D</td>
<td></td>
<td>9~10</td>
</tr>
</tbody>
</table>
DM3 Series●microSD™ Card Connectors

Product Specifications (DM3 Series)

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

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 / Finish

DM3AT, DM3BT

<table>
<thead>
<tr>
<th>Part</th>
<th>Material</th>
<th>Finish</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulator</td>
<td>LCP</td>
<td>Color : Black</td>
<td>UL94V-0</td>
</tr>
<tr>
<td>Contacts</td>
<td>Copper alloy</td>
<td>Contact area : Gold plated</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead area : Gold plated</td>
<td></td>
</tr>
<tr>
<td>Guide cover</td>
<td>Stainless steel</td>
<td>Lead area : Gold plated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Copper alloy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other components</td>
<td>Stainless steel</td>
<td>(DM3AT, DM3BT)</td>
<td>Nickel plated</td>
</tr>
<tr>
<td></td>
<td>Piano wire</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DM3CS, DM3D

<table>
<thead>
<tr>
<th>Part</th>
<th>Material</th>
<th>Finish</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulator</td>
<td>LCP</td>
<td>Color : Black</td>
<td>UL94V-0</td>
</tr>
<tr>
<td>Contacts</td>
<td>Copper alloy</td>
<td>Contact area : Gold plated</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead area : Gold plated</td>
<td></td>
</tr>
<tr>
<td>Guide cover</td>
<td>Stainless steel</td>
<td>(DM3CS)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tin plated (DM3D)</td>
<td></td>
</tr>
</tbody>
</table>

Product Number Structure

Refer to the chart below when determining the product specifications from the product number.
Please select from the product numbers listed in this catalog when placing orders.
DM3AT Push-Push (ejection mechanism), Top board mounting (Standard)

Recommended PCB mounting pattern

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

2. Card detection switch

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

3. No conductive traces.

All dimensions: mm
Packaging Specifications

- Embossed carrier tape dimensions (1,500 pcs/reel)

- Reel Dimensions
DM3 Series™ microSD™ Card Connectors

DM3BT, Push-Push (ejection mechanism), Bottom board mounting (Reverse)

Part No. | HRS No.  
--- | ---  
DM3BT-DSF-PEJS | 609-0029-9

Recommended PCB mounting pattern

Note
1. ☑️ indicates the center line of the microSD card slot.
2. ☑️ Card detection switch

<table>
<thead>
<tr>
<th>Without the card</th>
<th>Card inserted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open (A)</td>
<td>Closed (B)</td>
</tr>
</tbody>
</table>

3. Oblique-hatched area is projection of contact.
4. ☐ No conductive traces.

All dimensions : mm
Packaging Specifications

- Embossed carrier tape dimensions (1,200 pcs/reel)

![Diagram of packaging specifications]

- Reel Dimensions

![Diagram of reel dimensions]
DM3CS, Hinge, Push -Pull (no ejection mechanism), Top board mounting (Standard)

Recommended PCB mounting pattern

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

Card detection switch

<table>
<thead>
<tr>
<th>Without the card</th>
<th>Card inserted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Closed</td>
</tr>
<tr>
<td>GND(1)</td>
<td>GND(1)</td>
</tr>
<tr>
<td>GND(2)</td>
<td>GND(2)</td>
</tr>
<tr>
<td>GND(3)</td>
<td>GND(3)</td>
</tr>
<tr>
<td>GND(4)</td>
<td>GND(4)</td>
</tr>
</tbody>
</table>

No conductive traces.

All dimensions : mm
Packaging Specifications

- Embossed carrier tape dimensions (1,300 pcs/reel)

- Reel Dimensions
**DM3D, Push-Pull (no ejection mechanism), Top board mounting (Standard)**

- **Part No.** DM3D-SF
- **HRS No.** 609-0025-8

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**Recommended PCB mounting pattern**

![Recommended PCB mounting pattern](image)

- **Note 1:** Indicates the center line of the microSD card slot.
- **Card detection switch**
  - **Without the card:** Open
  - **Card inserted:** Closed
    - (A) (B) (A) (B)

- **3 No conductive traces.**

All dimensions: mm

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**Packaging Specifications**

- Embossed carrier tape dimensions (2,000 pcs/reel)

![Diagram of packaging specifications](image)

- Reel Dimensions

![Diagram of reel dimensions](image)
**Recommended temperature profile**

![Temperature profile diagram]

**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**: 2 cycles 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.**

<table>
<thead>
<tr>
<th>Series</th>
<th>Operation Manual Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM3AT Series</td>
<td>ETAD-F0345</td>
</tr>
<tr>
<td>DM3BT Series</td>
<td>ETAD-F0324</td>
</tr>
<tr>
<td>DM3CS Series</td>
<td>ETAD-F0335</td>
</tr>
<tr>
<td>DM3D Series</td>
<td>ETAD-F0353</td>
</tr>
</tbody>
</table>
The characteristics and the specifications contained herein are for reference purpose. Please refer to the latest customer drawings prior to use.

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