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-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 4.0 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.

<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>2~4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DM3BT</td>
<td>5~6</td>
<td></td>
</tr>
<tr>
<td>Hinge-manual insertion/ejection</td>
<td>DM3CS</td>
<td>7~8</td>
<td></td>
</tr>
<tr>
<td>Push-Pull manual insertion/ejection</td>
<td>DM3D</td>
<td>9~10</td>
<td></td>
</tr>
</tbody>
</table>

The product information in this catalog is for reference only. Please request the Engineering Drawing for the most current and accurate design information.
### 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>1000 MΩ min. (Initial value)</td>
<td>Measure at 500 V 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>100 mΩ max. (Initial value)</td>
<td>1 mA</td>
</tr>
<tr>
<td>4. Vibration</td>
<td>Contact resistance: 40 mΩ max. (change from initial value)</td>
<td>Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 3 directions for 2 hours</td>
</tr>
<tr>
<td></td>
<td>No deformation of components affecting performance.</td>
<td></td>
</tr>
<tr>
<td>5. Humidity</td>
<td>Contact resistance: 40 mΩ 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: 100 MΩ min.</td>
<td></td>
</tr>
<tr>
<td>6. Temperature cycle</td>
<td>Contact resistance: 40 mΩ 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: 100 MΩ 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: 40 mΩ max. (change from initial value)</td>
<td>10,000 cycles, 400 to 600 cycles per hour (DM3AT, DM3B)</td>
</tr>
<tr>
<td></td>
<td>Insulation resistance: 100 MΩ min.</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 and Finishes

#### 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, Lead area: Gold plated</td>
<td></td>
</tr>
<tr>
<td>Guide cover</td>
<td>Stainless steel (DM3AT) Copper alloy (DM3BT)</td>
<td>Lead area: Gold plated</td>
<td></td>
</tr>
<tr>
<td>Other components</td>
<td>Stainless steel (DM3AT, DM3BT) Piano wire (DM3BT)</td>
<td>Nickel plated</td>
<td></td>
</tr>
</tbody>
</table>

#### DM3CS, DM3D

<table>
<thead>
<tr>
<th>Part</th>
<th>Material</th>
<th>Finish</th>
<th>Remarks</th>
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<tr>
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<tr>
<td>Contacts</td>
<td>Copper alloy</td>
<td>Contact area: Gold plated, Lead area: Gold plated</td>
<td></td>
</tr>
<tr>
<td>Guide cover</td>
<td>Stainless steel</td>
<td>Tin plated</td>
<td></td>
</tr>
</tbody>
</table>

### Ordering information

**DM3 AT – SF – PEJM5**

1. **Series name:** DM3
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)
3. **Termination type:** SF: Right-angle SMT (Standard), DSF: Right-angle SMT (Reverse)
4. **Card ejection code:** PEJM5, PEJS (Push insert/push eject), None: Manual card insertion/ejection

Number of contacts: 8
DM3AT Push-Push (ejection mechanism), Top board mounting (Standard)

<table>
<thead>
<tr>
<th>Part number</th>
<th>CL No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM3AT-SF-PEJM5</td>
<td>609-0031-0</td>
</tr>
</tbody>
</table>

Recommended PCB mounting pattern

Note: 1. Indicates the center line of the microSD card slot.
2. Card detection switch
   - Without the card
     - Open
     - Closed
   - Card inserted
     - Open
     - Closed
3. No conductive traces.

Example of applications

All dimensions: mm

The product information in this catalog is for reference only. Please request the Engineering Drawing for the most current and accurate design information.
Packaging Specifications

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

All dimensions: mm

Reel Dimensions
DM3 Series® microSD™ Card Connectors

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

<table>
<thead>
<tr>
<th>Part number</th>
<th>CL No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM3BT-DSF-PEJS</td>
<td>609-0029-9</td>
</tr>
</tbody>
</table>

■ Recommended PCB mounting pattern

Note
1. CL indicates the center line of the microSD card slot.
2. Card detection switch
   - Without the card: Open
   - Card inserted: Closed
   - (A) (B) (A) (B)
3. Oblique-hatched area is projection of contact.
4. No conductive traces.

● Example of applications
Packaging Specifications

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

Reel Dimensions

All dimensions: mm
DM3 Series microSD™ Card Connectors

DM3CS, Hinge, Push-Pull (no ejection mechanism), Top board mounting (Standard)

Recommended PCB mounting pattern

Note 1 C 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.

Example of Use applications

All dimensions: mm
Packaging Specifications

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

![Diagram showing embossed carrier tape dimensions](image)

All dimensions: mm

Reel Dimensions

![Diagram showing reel dimensions](image)
DM3D, Push-Pull (no ejection mechanism), Top board mounting (Standard)

<table>
<thead>
<tr>
<th>Part number</th>
<th>CL No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM3D-SF</td>
<td>609-0025-8</td>
</tr>
</tbody>
</table>

Recommended PCB mounting pattern

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

2. Card detection switch
   - Without the card: Open
   - Card inserted: Closed
     - Without the card: (A) Open
     - Card inserted: (B) Closed

3. No conductive traces.

Example of applications
Packaging Specifications

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

Reel Dimensions
Recommended temperature profile

![Temperature profile graph]

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 60mmx100mmx1.0mm 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.

<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>