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Part Number:

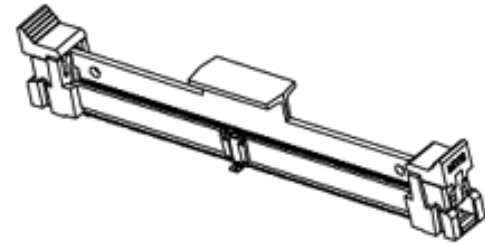
0877823005

Status:

Active

Description:

0.60mm (.024") Pitch miniDIMM DDR3 Socket, Vertical, SMT, 0.76µm (30µ") Gold (Au) over Nickel, 1.5V, with Pick and Place Cover, 244 Circuits, Type A Tray, Lead free



Series

image - Reference only

Documents:

- [3D Model](#)
- [Drawing \(PDF\)](#)
- [Product Specification PS-87782-027 \(PDF\)](#)
- [RoHS Certificate of Compliance \(PDF\)](#)

General

|                |                                            |
|----------------|--------------------------------------------|
| Product Family | Memory Module Sockets                      |
| Series         | 87782                                      |
| Comments       | <LI>Latches in Off-White Color<LI>With Cap |
| Component Type | Socket                                     |
| JEDEC Outline  | MO-244                                     |
| Product Name   | MiniDIMM                                   |

Physical

|                                |                                |
|--------------------------------|--------------------------------|
| Circuits (Loaded)              | 244                            |
| Color - Resin                  | Black                          |
| Durability (mating cycles max) | 25                             |
| Entry Angle                    | Vertical (Top Entry)           |
| Keying to Mating Part          | Yes                            |
| Material - Metal               | Copper Alloy                   |
| Material - Plating Mating      | Gold                           |
| Material - Plating Termination | Tin                            |
| Material - Resin               | High Temperature Thermoplastic |
| PCB Locator                    | Yes                            |
| PCB Retention                  | Yes                            |
| Packaging Type                 | Tray                           |
| Pitch - Mating Interface (in)  | 0.024 In                       |
| Pitch - Mating Interface (mm)  | 0.60 mm                        |
| Pitch - Term. Interface (in)   | 0.024 In                       |
| Pitch - Term. Interface (mm)   | 0.60 mm                        |
| Plating min: Mating (µin)      | 30                             |
| Plating min: Mating (µm)       | 0.76                           |
| Plating min: Termination (µin) | 100                            |
| Plating min: Termination (µm)  | 2.54                           |
| Temperature Range - Operating  | -55°C to +85°C                 |
| Termination Interface: Style   | Surface Mount                  |

Electrical

|                               |           |
|-------------------------------|-----------|
| Current - Maximum per Contact | 1A        |
| Voltage - Maximum             | 30V (RMS) |
| Voltage Key                   | 1.5V      |

Solder Process Data

|                                                |                              |
|------------------------------------------------|------------------------------|
| Duration at Max. Process Temperature (seconds) | 5                            |
| Lead-free Process Capability                   | SMC & Wave Capable (TH only) |
| Max. Cycles at Max. Process Temperature        | 2                            |
| Process Temperature max. C                     | 260                          |

Material Info

Reference - Drawing Numbers

|                           |              |
|---------------------------|--------------|
| Application Specification | AS-87782-001 |
| Product Specification     | PS-87782-027 |

**EU RoHS**  
**ELV and RoHS**  
**Compliant**  
**REACH SVHC**  
Not Reviewed  
**Halogen-Free**  
**Status**

**China RoHS**



**Need more information on product environmental compliance?**

Email [productcompliance@molex.com](mailto:productcompliance@molex.com)  
For a multiple part number RoHS Certificate of Compliance, [click here](#)

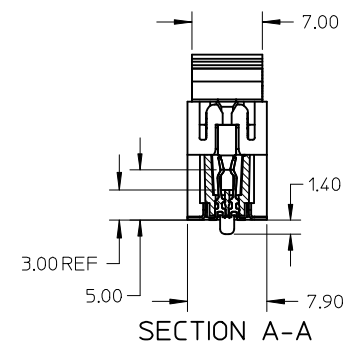
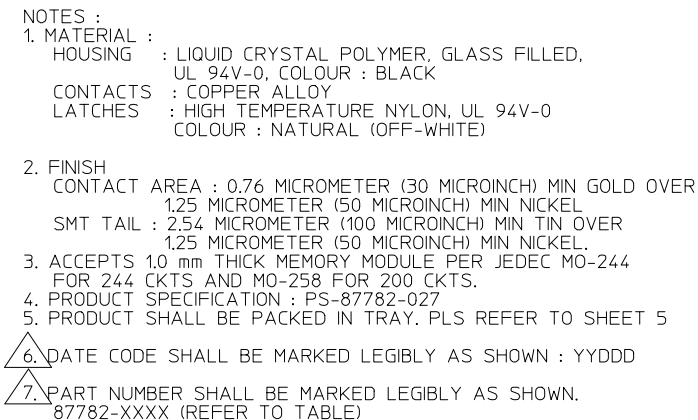
Please visit the [Contact Us](#) section for any non-product compliance questions.

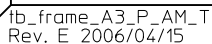
**Search Parts in this Series**  
87782Series

**Mates With**  
JEDEC MO-244 Modules

This document was generated on 05/20/2010

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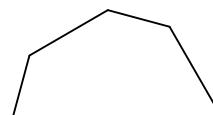
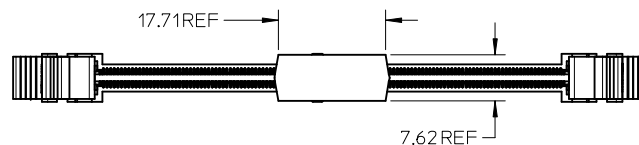
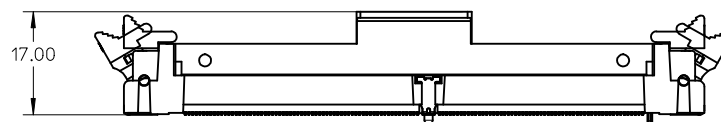
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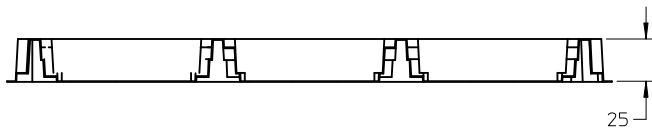
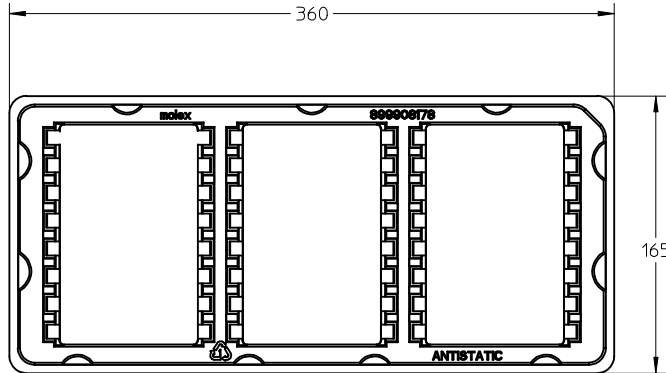
10 9 8 7 6 5 4 3 2 1

FOR OPTIONS WITH COVER

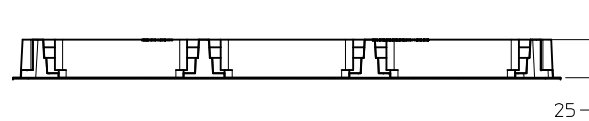
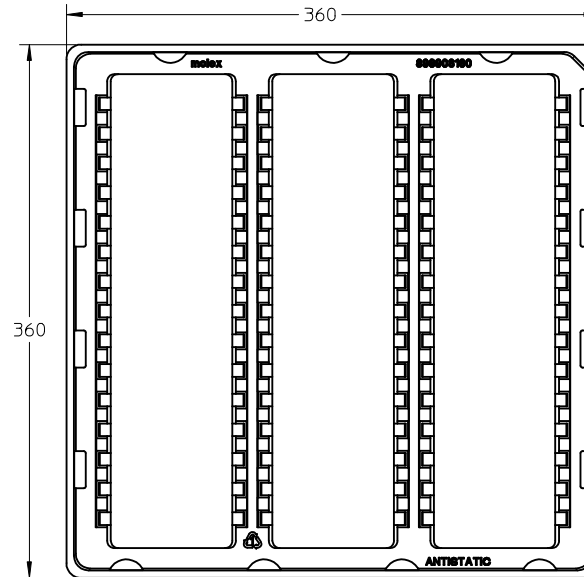


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|-----------------------------------------------------------------------------------|--------------------|--------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|--------------------|--------------|---------------------------------------------------|--|
| NEW COVER<br>EC NO: S2010-0004<br>DRWN: TARUMUGHAM<br>CHKD: CGTAN<br>APPR: SILENI | DESCRIPTION<br>REV | QUALITY SYMBOLS<br><div>▽=0</div> <div>▽=0</div> | GENERAL TOLERANCES (UNLESS SPECIFIED)                      |                                                                                                                               | DIMENSION STYLE |                  | SCALE              | DESIGN UNITS | THIRD ANGLE PROJECTION                            |  |
|                                                                                   |                    |                                                  |                                                            |                                                                                                                               | MM ONLY         |                  | NTS                | METRIC       |                                                   |  |
|                                                                                   |                    |                                                  |                                                            |                                                                                                                               | DRAWN BY DATE   |                  | TITLE              |              | MINI DIMM, 0.60MM PITCH<br>200/244 CKTS, VERTICAL |  |
|                                                                                   |                    |                                                  | 4 PLACES                                                   | ± --- ± ---                                                                                                                   | mm INCH         | MLONG 2003/01/07 |                    |              |                                                   |  |
|                                                                                   |                    |                                                  | 3 PLACES                                                   | ± --- ± ---                                                                                                                   |                 | CHECKED BY DATE  | MOLEX INCORPORATED |              |                                                   |  |
|                                                                                   |                    |                                                  | 2 PLACES                                                   | ± 0.13 ± ---                                                                                                                  |                 | PTLIM 2003/07/16 |                    |              |                                                   |  |
|                                                                                   |                    |                                                  | 1 PLACE                                                    | ± 0.25 ± ---                                                                                                                  |                 | APPROVED BY DATE | SD-87782-001       |              |                                                   |  |
|                                                                                   |                    |                                                  | ANGULAR ± 1 °                                              |                                                                                                                               |                 | SKTOH 2003/07/17 |                    |              | SHEET NO.                                         |  |
|                                                                                   |                    |                                                  | DRAFT WHERE APPLICABLE<br>MUST REMAIN<br>WITHIN DIMENSIONS |                                                                                                                               | MATERIAL NO.    |                  | DOCUMENT NO.       |              | 4 OF 6                                            |  |
|                                                                                   |                    |                                                  |                                                            |                                                                                                                               | SEE TABLE       |                  |                    |              |                                                   |  |
|                                                                                   |                    | SIZE A3                                          |                                                            | THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION |                 |                  |                    |              |                                                   |  |

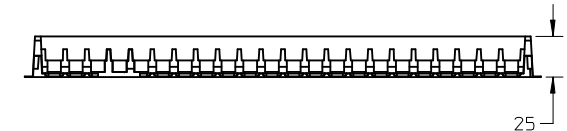
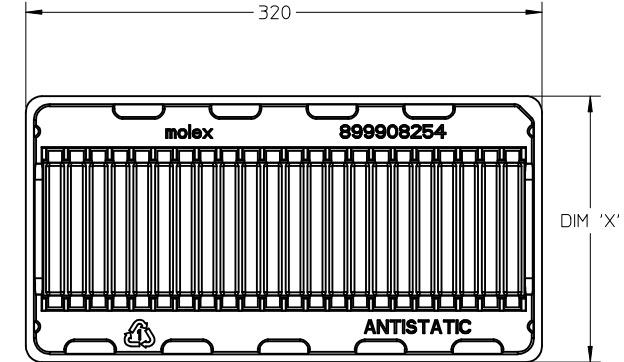
9 8 7 6 5 4 3 2 1



TRAY TYPE A  
QTY OF CAVITY: 3 X 8 = 24 PCS  
COLOUR: TRANSPARENT



TRAY TYPE B  
QTY OF CAVITY: 3 X 15 = 45 PCS  
COLOUR: TRANSPARENT



TRAY TYPE AND COLOUR - SEE TABLE  
QTY OF CAVITY: 1 X 22 = 22 PCS  
COLOUR - SEE TABLE

| TRAY TYPE | DIM 'X' | TRAY COLOUR |
|-----------|---------|-------------|
| C         | 165     | TRANSPARENT |
| D         | 160     | WHITE       |

|           |                                                                                                       |             |                                                  |                                                            |        |                            |                              |                                                                                                                                  |                                                            |                                                          |
|-----------|-------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------|------------------------------------------------------------|--------|----------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------|
| NEW COVER | EC NO: S2010-0004<br>DRWN: TARUMUGHAM 2009/08/12<br>CHKD: CGTAN 2009/08/12<br>APPR: SILENI 2009/08/17 | DESCRIPTION | QUALITY SYMBOLS<br><div>▽=0</div> <div>◻=0</div> | GENERAL TOLERANCES (UNLESS SPECIFIED)                      |        | DIMENSION STYLE<br>MM ONLY |                              | SCALE<br>NTS                                                                                                                     | DESIGN UNITS<br>METRIC                                     | <div><div></div><div></div></div> THIRD ANGLE PROJECTION |
|           |                                                                                                       |             |                                                  |                                                            | mm     | INCH                       | DRAWN BY<br>MLONG            | DATE<br>2003/01/07                                                                                                               | TITLE<br>MINI DIMM, 0.60MM PITCH<br>200/244 CKTS, VERTICAL |                                                          |
|           |                                                                                                       |             |                                                  | 4 PLACES                                                   | ± ---  | ± ---                      | CHECKED BY<br>PTLIM          | DATE<br>2003/07/16                                                                                                               |                                                            |                                                          |
|           |                                                                                                       |             |                                                  | 3 PLACES                                                   | ± ---  | ± ---                      | APPROVED BY<br>SKTOH         | DATE<br>2003/07/17                                                                                                               |                                                            |                                                          |
|           |                                                                                                       |             |                                                  | 2 PLACES                                                   | ± 0.13 | ± ---                      | MOLEX INCORPORATED           |                                                                                                                                  |                                                            |                                                          |
|           |                                                                                                       |             |                                                  | 1 PLACE                                                    | ± 0.25 | ± ---                      | DOCUMENT NO.<br>SD-87782-001 |                                                                                                                                  |                                                            |                                                          |
|           |                                                                                                       |             |                                                  | ANGULAR ± 1 °                                              |        | MATERIAL NO.<br>SEE TABLE  |                              | SHEET NO.<br>5 OF 6                                                                                                              |                                                            |                                                          |
|           |                                                                                                       | REV         |                                                  | DRAFT WHERE APPLICABLE<br>MUST REMAIN<br>WITHIN DIMENSIONS |        | SIZE<br>A3                 |                              | THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX<br>INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION |                                                            |                                                          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10              | 9              | 8              | 7              | 6       | 5       | 4       | 3       | 2       | 1       |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
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| F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | CKT SIZE<br>'N' | PART<br>NUMBER | MODULE<br>CARD | VOLTAGE<br>KEY | DIM 'R' | DIM 'J' | DIM 'K' | DIM 'L' | DIM 'N' | DIM 'A' | DIM 'S' | DIM 'T' | DIM 'E' | DIM 'U' | DIM 'V' | DIM 'G' | DIM 'H' | DIM 'B' | COVER | TRAY   | F |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 244             | 87782-2001     | DDR2           | 1.8 V          | 1.30    | 38.40   | 36.60   | 33.60   | 79.00   | 96.0    | 96.0    | 106.20  | 39.60   | 78.00   | 82.00   | 47.60   | 42.75   | 75.60   | NIL   | TYPE A |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 244             | 87782-2003     | DDR2           | 1.8 V          | 1.30    | 38.40   | 36.60   | 33.60   | 79.00   | 96.0    | 96.0    | 106.20  | 39.60   | 78.00   | 82.00   | 47.60   | 42.75   | 75.60   | YES   | TYPE B |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 | 87782-3003     | DDR3           | 1.5 V          | 2.30    |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 244             | 87782-2005     | DDR2           | 1.8 V          | 1.30    | 38.40   | 36.60   | 33.60   | 79.00   | 96.0    | 96.0    | 106.20  | 39.60   | 78.00   | 82.00   | 47.60   | 42.75   | 75.60   | YES   | TYPE A | E |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 | 87782-3005     | DDR3           | 1.5 V          | 2.30    |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 244             | 87782-2007     | DDR2           | 1.8 V          | 1.30    | 38.40   | 36.60   | 33.60   | 79.00   | 96.0    | 96.0    | 106.20  | 39.60   | 78.00   | 82.00   | 47.60   | 42.75   | 75.60   | YES   | TYPE C |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 | 87782-3007     | DDR3           | 1.5 V          | 2.30    |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 244             | 87782-2009     | DDR2           | 1.8 V          | 1.30    | 38.40   | 36.60   | 33.60   | 79.00   | 96.0    | 96.0    | 106.20  | 39.60   | 78.00   | 82.00   | 47.60   | 42.75   | 75.60   | YES   | TYPE D | D |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 | 87782-3009     | DDR3           | 1.5 V          | 2.30    |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 200             | 87782-2201     | DDR2           | 1.8 V          | 1.30    | 23.40   | 38.40   | 35.40   | 65.80   | 82.8    | 82.8    | 93.00   | 24.60   | 64.80   | 68.80   | 32.60   | 44.55   | 62.40   | NIL   | TYPE A |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 | 87782-2202     | DDR            | 2.5 V          | 2.30    |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 200             | 87782-2203     | DDR2           | 1.8 V          | 1.30    | 23.40   | 38.40   | 35.40   | 65.80   | 82.8    | 82.8    | 93.00   | 24.60   | 64.80   | 68.80   | 32.60   | 44.55   | 62.40   | YES   | TYPE A | C |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 | 87782-2204     | DDR            | 2.5 V          | 2.30    |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        | B |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        | A |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| <div><div><div>NEW COVER</div><div>EC NO: S2010-0004</div><div>DRWN: TARUMUGHAM 2009/08/12</div><div>CHKD: CGTAN 2009/08/12</div><div>APPR: SILENI 2009/08/17</div></div><div><div>QUALITY SYMBOLS</div><div><div>▽=0</div><div>◻=0</div><div>DESCRIPTION</div></div></div><div><div>GENERAL TOLERANCES (UNLESS SPECIFIED)</div><table><tr><td></td><td>mm</td><td>INCH</td></tr><tr><td>4 PLACES</td><td>± ---</td><td>± ---</td></tr><tr><td>3 PLACES</td><td>± ---</td><td>± ---</td></tr><tr><td>2 PLACES</td><td>± 0.13</td><td>± ---</td></tr><tr><td>1 PLACE</td><td>± 0.25</td><td>± ---</td></tr><tr><td colspan="3">ANGULAR ± 1 °</td></tr></table><div>DRAFT WHERE APPLICABLE<br/>MUST REMAIN<br/>WITHIN DIMENSIONS</div></div><div><div>DIMENSION STYLE</div><div>MM ONLY</div><table><tr><td>DRAWN BY</td><td>DATE</td></tr><tr><td>MLONG</td><td>2003/01/07</td></tr><tr><td>CHECKED BY</td><td>DATE</td></tr><tr><td>PTL IM</td><td>2003/07/16</td></tr><tr><td>APPROVED BY</td><td>DATE</td></tr><tr><td>SKTOH</td><td>2003/07/17</td></tr></table><div><div>SIZE</div><div>A3</div><div>THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION</div></div><div><div>SCALE</div><div>NTS</div></div><div><div>DESIGN UNITS</div><div>METRIC</div></div><div><div>THIRD ANGLE PROJECTION</div></div><div><div>TITLE</div><div>MINI DIMM, 0.60MM PITCH<br/>200/244 CKTS, VERTICAL</div></div><div><div><div>MOLEX</div>MOLEX INCORPORATED</div></div><div><div>MATERIAL NO.</div><div>SEE TABLE</div></div><div><div>DOCUMENT NO.</div><div>SD-87782-001</div></div><div><div>SHEET NO.</div><div>6 OF 6</div></div></div></div> |                 |                |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   | mm | INCH | 4 PLACES | ± --- | ± --- | 3 PLACES | ± --- | ± --- | 2 PLACES | ± 0.13 | ± --- | 1 PLACE | ± 0.25 | ± --- | ANGULAR ± 1 ° |  |  | DRAWN BY | DATE | MLONG | 2003/01/07 | CHECKED BY | DATE | PTL IM | 2003/07/16 | APPROVED BY | DATE | SKTOH | 2003/07/17 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | mm              | INCH           |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| 4 PLACES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ± ---           | ± ---          |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| 3 PLACES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ± ---           | ± ---          |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| 2 PLACES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ± 0.13          | ± ---          |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| 1 PLACE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ± 0.25          | ± ---          |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| ANGULAR ± 1 °                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |                |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| DRAWN BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | DATE            |                |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| MLONG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2003/01/07      |                |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| CHECKED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DATE            |                |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| PTL IM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2003/07/16      |                |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| APPROVED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | DATE            |                |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| SKTOH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2003/07/17      |                |                |                |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |
| fb_frame_A3_P_AM-T<br>Rev. E 2006/04/15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 9               | 8              | 7              | 6              | 5       | 4       | 3       | 2       | 1       |         |         |         |         |         |         |         |         |         |       |        |   |    |      |          |       |       |          |       |       |          |        |       |         |        |       |               |  |  |          |      |       |            |            |      |        |            |             |      |       |            |