

# Molex 736420000 PDF

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### Introduction

Bellcore has proposed generic requirements for separable electrical connectors used in telecommunications hardware (TR-NWT-001217, Issue 1, Nov. 1995). Many customers who choose to utilize the HDM (High Density Metric) product line, as manufactured by Molex, require that the product perform up to the standards as established by Bellcore. This report will summarize the performance of the Molex HDM product as submitted to an outside source and tested to the TR-NWT-001217. The specific testing procedures applied, equipment utilized, and raw data can be acquired from Molex upon request.

### Product Description

The test boards utilized for the Bellcore test consisted of two 144 signal modules separated by a guidance module. The backplane pins were lubricated using Molex environmental barrier EB-1. The daughtercard assembly is available under Molex part number 73670-0083. When measuring mating and unmating forces, the values are for the full assembly (288 signal pins and guide module). Also, the variation in initial measurement values (between minimum and maximum) for the Low Level Circuit Resistance (LLCR) is due to the variation in bulk resistance between rows A and F.

The following sections give the group description of the tests completed and the results for each step completed during testing.

|                   |                                 |   |   |   |   |   |   |     |              |        |  |          |             |          |                |              |  |   |                 |  |
|-------------------|---------------------------------|---|---|---|---|---|---|-----|--------------|--------|--|----------|-------------|----------|----------------|--------------|--|---|-----------------|--|
| REV.              | A                               | A | A | A | A |   |   |     |              |        |  |          |             |          |                |              |  |   |                 |  |
| SHEET             | 1                               | 2 | 3 | 4 | 5 |   |   |     |              |        |  |          |             |          |                |              |  |   |                 |  |
| REVISE ON PC ONLY |                                 |   |   |   |   |   | TITLE   |     |              |        |  |          |             |          |                |              |  |   |                 |  |
| A                 | INITIAL RELEASE<br>UDT1999-0428 |   |   |   |   | BELLCORE SUMMARY<br>FOR HDM (HIGH DENSITY METRIC) |   |     |              |        |  |          |             |          |                |              |  |   |                 |  |
|                   |                                 |   |   |   |   |   | THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX<br>INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION |     |              |        |  |          |             |          |                |              |  |   |                 |  |
| REV.              | DESCRIPTION                     |   |   |   |   | WRITTEN BY:                                       |   |     |              |        |  |          | CHECKED BY: |          |                | APPROVED BY: |  |   | DATE: YR/MO/DAY |  |
|                   | DESIGN CONTROL                  |   |   |   |   | STATUS  |   | ELO |              | BIXLER |  | BREARLEY |             |          | 1998 / NOV / 5 |              |  |   |                 |  |
| LISLE             |                                 |   |   |   |   |   | M   |     |              |        |  |          |             |          |                |              |  |   |                 |  |
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| TS-73670-990      |                                 |   |   |   |   |   |   |     | CRITICAL = 0 |        |  |          |             | MAJOR =0 |                | testsum2.lwp |  | 1 |                 |  |



TEST SUMMARY

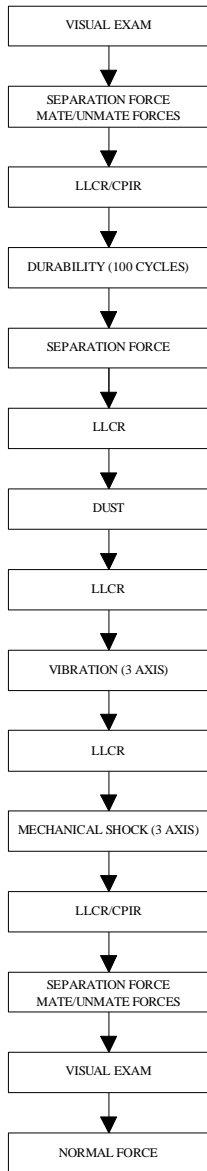


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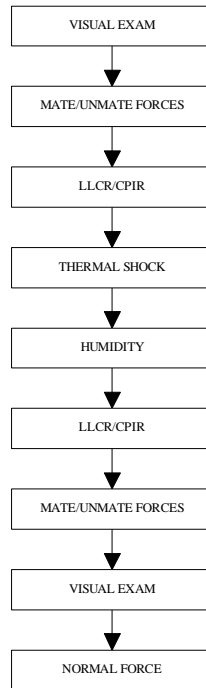
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Vibration and Shock

GROUP 1

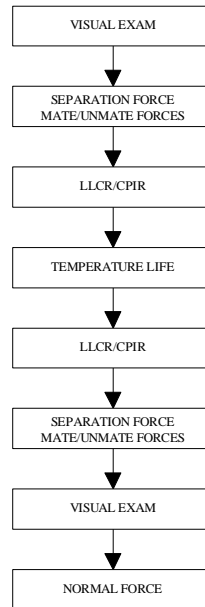


Thermal Shock and Humidity  
GROUP 2



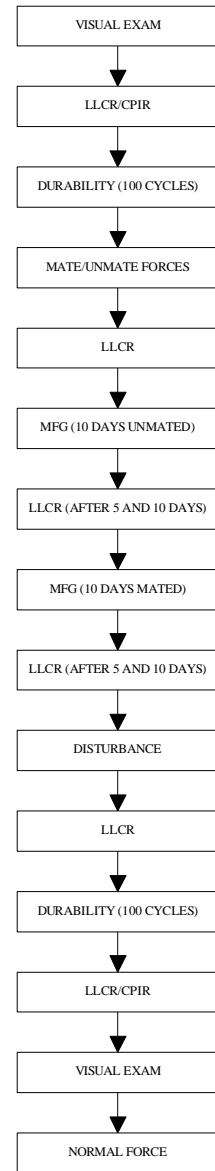
Temperature Life

GROUP 3



Mixed Flowing Gas

GROUP 4



CPIR = COMPLIANT PIN INTERFACE RESISTANCE  
LLCR = LOW LEVEL CONTACT RESISTANCE

Test Performance  
Group 1

|  |                   |  |   |            |
|--|-------------------|--|---|------------|
| A  | REVISE ON PC ONLY | TITLE  | BELLCORE SUMMARY<br>FOR HDM (HIGH DENSITY METRIC) |            |
|  | SEE SHEET 1       |  |   |            |
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| ES-4000-3996 REV. A SHEET 8 95/MAR/10 EC U5-0926 DCBRD07.MWP |                   |  |   |            |



TEST SUMMARY



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| Test Condition       | Requirement                  | Units      | Minimum | Maximum |
|----------------------|------------------------------|------------|---------|---------|
| Visual               | Appearance                   | No Damage  |         |         |
| Compliant Resistance | Record                       | mΩ         | 0.65    | 1.28    |
| Separation Force     | Record                       | oz.        | 0.6     | 1.3     |
| Mating Force         | Record                       | lbs.       | 25.5    | 32.0    |
| Unmating Force       | Record                       | lbs.       | 26.3    | 30.3    |
| LLCR                 | Record                       | mΩ         | 11.3    | 38.7    |
| Durability           | Appearance                   | No Damage  |         |         |
| Separation Force     | Record                       | oz.        | 0.8     | 1.2     |
| LLCR                 | 10 Max (change from initial) | mΩ         | N/A     | 2.4     |
| Dust                 | Apply                        | Applied    |         |         |
| LLCR                 | 10 Max (change from initial) | mΩ         | N/A     | 2.8     |
| Vibration (3 - axis) | Appearance                   | No Damage  |         |         |
|                      | 10 Max (detect)              | nanosecond | Passed  |         |
| LLCR                 | 10 Max (change from initial) | mΩ         | N/A     | 3.4     |
| Shock (3 - axis)     | Appearance                   | No Damage  |         |         |
|                      | 10 Max (detect)              | nanosecond | Passed  |         |
| LLCR                 | 10 Max (change from initial) | mΩ         | N/A     | 3.0     |
| Compliant Resistance | 1 Max (change from initial)  | mΩ         | N/A     | 0.20    |
| Mating Force         | Record                       | lbs.       | 28.9    | 31.2    |
| Unmating Force       | Record                       | lbs.       | 27.8    | 29.4    |
| Separation Force     | Record                       | oz.        | 0.8     | 1.4     |
| Visual               | Appearance                   | No Damage  |         |         |
| Normal Force         | Record                       | grams      | 59      | 77      |

Group 2

| Test Condition       | Requirement | Units     | Minimum | Maximum |
|----------------------|-------------|-----------|---------|---------|
| Visual               | Appearance  | No Damage |         |         |
| Compliant Resistance | Record      | mΩ        | 0.78    | 1.25    |

|  |             |  |       |
|--|-------------|--|-------|
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|  |             | FILENAME   | SHEET |
|  |             | testsum2.lwp   | 3     |
| ES-4000-3996 REV. A SHEET 8 95/MAR/10 EC U5-0926 DCBRD07.MWP |             |  |       |



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|                      |                              |           |      |      |
|----------------------|------------------------------|-----------|------|------|
| Mating Force         | Record                       | lbs.      | 28.2 | 30.0 |
| Unmating Force       | Record                       | lbs.      | 25.3 | 26.5 |
| LLCR                 | Record                       |           | 11.7 | 32.1 |
| Thermal Shock        | Appearance                   | No Damage |      |      |
| Humidity             | Appearance                   | No Damage |      |      |
| LLCR                 | 10 Max (change from initial) | mΩ        | N/A  | 3.6  |
| Compliant Resistance | 1 Max (change from initial)  | mΩ        | N/A  | 0.35 |
| Mating Force         | Record                       | lbs.      | 31.1 | 36.9 |
| Unmating Force       | Record                       | lbs.      | 26.4 | 35.5 |
| Visual               | Appearance                   | No Damage |      |      |
| Normal Force         | Record                       | grams     | 55   | 70   |

Group 3

Group 3 (cont.)

| Test Condition | Requirement | Units     | Minimum | Maximum |
|----------------|-------------|-----------|---------|---------|
| Visual         | Appearance  | No Damage |         |         |
| Normal Force   | Record      | grams     | 54.4    | 75      |

| Test Condition       | Requirement                  | Units     | Minimum | Maximum |
|----------------------|------------------------------|-----------|---------|---------|
| Visual               | Appearance                   | No Damage |         |         |
| Compliant Resistance | Record                       | mΩ        | 0.82    | 1.3     |
| Separation Force     | Record                       | lbs.      | 0.6     | 1.3     |
| Mating Force         | Record                       | lbs.      | 28.2    | 30.1    |
| Unmating Force       | Record                       | lbs.      | 20.4    | 27.4    |
| LLCR                 | Record                       | mΩ        | 11.6    | 31.7    |
| Temperature Life     | Appearance                   | No Damage |         |         |
| LLCR                 | 10 Max (change from initial) | mΩ        | N/A     | 1.1     |
| Compliant Resistance | 1 Max (change from initial)  | mΩ        | N/A     | 0.28    |
| Mating Force         | Record                       | lbs.      | 17.4    | 21.6    |
| Unmating Force       | Record                       | lbs.      | 13.5    | 17.7    |
| Separation Force     | Record                       | oz.       | 0.5     | 1.4     |

Group 4

| Test Condition | Requirement | Units     | Minimum | Maximum |
|----------------|-------------|-----------|---------|---------|
| Visual         | Appearance  | No Damage |         |         |

|                                 |             |  |  |                          |
|---------------------------------|-------------|--|--|--------------------------|
| REVISE ON PC ONLY               |             | TITLE  |  |                          |
| A                               | SEE SHEET 1 | BELLCORE SUMMARY<br>FOR HDM (HIGH DENSITY METRIC)  |  |                          |
| REV.                            | DESCRIPTION | THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION |  |                          |
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|                                 |             |  |  | SHEET<br>4               |





TEST SUMMARY



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|                      |                              |           |      |      |
|----------------------|------------------------------|-----------|------|------|
| Compliant Resistance | Record                       | mΩ        | 0.72 | 1.28 |
| LLCR                 | Record                       | mΩ        | 11.5 | 31.7 |
| Durability           | Appearance                   | No Damage |      |      |
| Mating Force         | Record                       | lbs.      | 29.4 | 32.8 |
| Unmating Force       | Record                       | lbs.      | 23.6 | 31.8 |
| LLCR                 | 10 Max (change from initial) | mΩ        | N/A  | 0.3  |
| MFG, Unmated         | Appearance                   | No Damage |      |      |
| LLCR, 5 day          | 10 Max (change from initial) | mΩ        | N/A  | 0.6  |
| LLCR, 10 day         | 10 Max (change from initial) | mΩ        | N/A  | 2.2  |
| MFG, Mated           | Appearance                   | No Damage |      |      |
| LLCR, 5 day          | 10 Max (change from initial) | mΩ        | N/A  | 1.5  |
| LLCR, 10 day         | 10 Max (change from initial) | mΩ        | N/A  | 1.3  |
| Disturbance          | Appearance                   | No Damage |      |      |
| LLCR                 | 10 Max (change from initial) | mΩ        | N/A  | 1.8  |
| Durability           | Appearance                   | No Damage |      |      |
| LLCR                 | 10 Max (change from initial) | mΩ        | N/A  | 1.5  |
| Compliant Resistance | 1 Max (change from initial)  | mΩ        | N/A  | 0.58 |
| Visual               | Appearance                   | No Damage |      |      |
| Normal Force         | Record                       | grams     | 64.6 | 76.7 |

|  |             |   |   |
|--|-------------|---|---|
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|  |             |   | SHEET<br>5  |
| ES-4000-3996 REV. A SHEET 8 95/MAR/10 EC U5-0926 DCBRD07.MWP |             |   |   |





TEST SUMMARY



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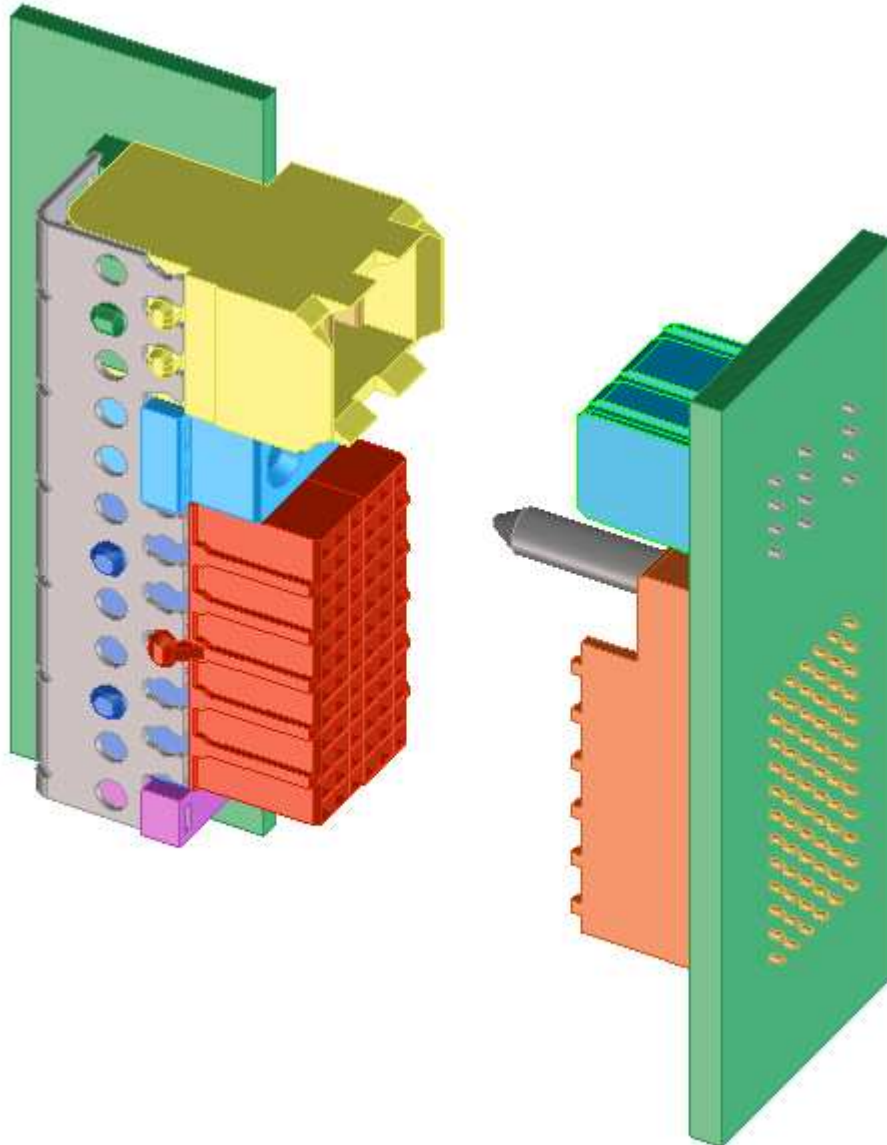
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|---------------------------------|-------------|--|--|
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# PRODUCT SPECIFICATION

## PRODUCT SPECIFICATION FOR HIGH DENSITY METRIC (HDM) BACKPLANE AND DAUGHTERCARD INTERCONNECT SYSTEM



|  |   |   |                                  |
|--|---|---|----------------------------------|
| REVISION:<br><b>G</b>                    | ECR/ECN INFORMATION:<br>EC No: <b>UCP2009-2455</b><br>DATE: <b>2009/06/22</b> | TITLE: <b>PRODUCT SPECIFICATION FOR HIGH DENSITY METRIC (HDM) INTERCONNECT SYSTEM</b> | SHEET No.<br><b>1 of 7</b>       |
| DOCUMENT NUMBER:<br><b>PS-73670-9999</b> | CREATED / REVISED BY:<br><b>S. DANNELLEY</b>                                  | CHECKED BY:<br><b>B. SMART</b>  | APPROVED BY:<br><b>S. MILLER</b> |





# PRODUCT SPECIFICATION

## 1.0 SCOPE

This specification covers the performance requirements and test methods for the following products listed by series numbers:

- \* 73642, 73643, 73644, 73650, 73942, 73943, 73944, 74992, 74349, 74301 HDM Backplane Signal Module
- \* 73656, 73659 HDM Backplane Power Module
- \* 73670 HDM Daughtercard Assembly
- \* 73998 HDM Vertical Daughtercard Power Module

The HDM backplane interconnect system consists of 2mm 6 row modular configurations with custom signal, power and guidance modules. These connectors are two-piece devices, which connect two printed circuit boards. The right angle receptacle connectors (daughtercard) and header pin connectors (backplane) are through hole devices with solder or eye-of-the-needle compliant pin terminals.

## 2.0 PRODUCT DESCRIPTION

### 2.1 PRODUCT NAMES

HDM (High Density Metric)

### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Refer to the appropriate sales drawings for information on dimensions, materials, platings and markings.

### 2.3 SAFETY AGENCY APPROVALS

UL File Number: E29179  
CSA File Number: 152514 (LR19980)

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

- AS-73642-9998 Application Specification HDM Compliant Backplane Connectors
- AS-73656-1998 Application Specification HDM Compliant BP Power Modules
- AS-73670-9996 Application Specification HDM Compliant Terminal Performance
- AS-73670-9997 Application Specification HDM Backplane and Daughtercard Trace Routing Guidelines
- AS-73670-9998 Application Specification HDM Compliant and Solder Tail Daughtercard Connectors

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| DOCUMENT NUMBER:<br><b>PS-73670-9999</b> | CREATED / REVISED BY:<br><b>S. DANNELLEY</b>                                  | CHECKED BY:<br><b>B. SMART</b>  | APPROVED BY:<br><b>S. MILLER</b> |



# PRODUCT SPECIFICATION

Refer to the appropriate sales drawings and other sections of this specification for additional referenced documents and specifications.

## 4.0 RATINGS

### 4.1 CURRENT

Signal Contact: 1 Amp  
Power: 15 Amps per blade at 30°C rise from ambient temperature

### 4.2 VOLTAGE

Signal Contact: 250VAC  
Power Contact: 500VAC

### 4.3 CONTACT BULK RESISTANCE

Mated Signal:

|              |              |
|--------------|--------------|
| <b>A Row</b> | 13 milliohms |
| <b>B Row</b> | 18 milliohms |
| <b>C Row</b> | 20 milliohms |
| <b>D Row</b> | 25 milliohms |
| <b>E Row</b> | 30 milliohms |
| <b>F Row</b> | 32 milliohms |

Power Blade: 3 milliohms maximum

### 4.4 TEMPERATURE RANGE

Operating: -55°C to 105°C  
Non-operating: -55°C to 85°C

|  |   |   |                                  |
|--|---|---|----------------------------------|
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# PRODUCT SPECIFICATION

## 4.5 CONTACT WIPE LENGTH

|                     |        |
|---------------------|--------|
| 5.0mm Backplane Pin | 1.75mm |
| 5.5mm Backplane Pin | 2.25mm |
| 6.0mm Backplane Pin | 2.75mm |
| Short Power Blade   | 3.75mm |
| Medium Power Blade  | 4.75mm |
| Long Power Blade    | 5.75mm |

## 5.0 PERFORMANCE

### 5.1 ELECTRICAL PERFORMANCE

| ITEM                               | TEST CONDITION  | REQUIREMENT  |
|------------------------------------|---|--|
| CONTACT RESISTANCE (LOW LEVEL)     | Mated, 100mA max, 20mV per EIA-364-TP-23                          | 10 milliohm maximum change                                   |
| INSULATION RESISTANCE              | Unmated, 500VDC per EIA-364-TP-21                                 | Initial: 5000 megohms minimum<br>Final: 1000 megohms minimum |
| DIELECTRIC WITHSTANDING VOLTAGE    | Unmated, 1500VAC for signal, 2000VAC for power, per EIA-364-TP-20 | No breakdown or flashover                                    |
| SIGNAL CONTINUITY                  | Mated per EIA-364-TP-87   | No interrupts greater than 10 nanoseconds                    |
| COMPLIANT PIN INTERFACE RESISTANCE | Contact inserted into PCB per EIA-364-TP-23                       | 1 milliohm maximum   |

|                                       |   |   |                               |
|---------------------------------------|---|---|-------------------------------|
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# PRODUCT SPECIFICATION

## 5.2 MECHANICAL PERFORMANCE

| ITEM                              | TEST CONDITION  | REQUIREMENT  |
|-----------------------------------|---|--|
| MATING FORCE                      | Mate daughtercard and backplane assembly per EIA-364-TP-13  | 0.6N per signal pin<br>1.3N per power blade<br>(nominal values)                                    |
| DURABILITY                        | 250 Cycles, mated and unmated per EIA-364-TP-09   | 10 milliohm max change in LLCR   |
| VIBRATION                         | Mated, 10-100Hz, 10g's, 24 hr, 3 axis per EIA-364-TP-28   | 10 milliohm max change in LLCR   |
| MECHANICAL SHOCK                  | Mated, 30g half-sine, 11ms, 3 axis per EIA-364-TP-27  | 10 milliohm max change in LLCR   |
| NORMAL FORCE/<br>SPRING RATE      | Apply perpendicular force to terminal at rate of 25+/-6mm per minute  | Signal: 0.5N (50 g) min<br>Spring Rate: 12.5 g/mil deflection (nominal)<br>Power: 1.0N (100 g) min |
| GUIDE PIN STRENGTH                | Apply perpendicular force to guide pin tip at rate of 12.7+/-6mm per minute. Record force at 1mm pin displacement | Guide pin in plastic housing: 75N<br>Stand alone guide pin: 130 N<br>(nominal values)              |
| TORQUE SETTING FOR MOUNTING SCREW | Using torque driver, turn screw into plastic guide module until screw strips out                                  | 2.5 in-lbs minimum for 1.6-4.8mm PCB thickness   |

|  |   |   |                                  |
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# PRODUCT SPECIFICATION

## 5.3 ENVIRONMENTAL PERFORMANCE

| ITEM              | TEST CONDITION  | REQUIREMENT                    |
|-------------------|---|--------------------------------|
| THERMAL SHOCK     | Mated, 5 cycles from -55°C to 85°C per EIA-364-TP-32            | 10 milliohm max change in LLCR |
| TEMPERATURE LIFE  | Mated, +105°C for 1000 hours per EIA-364-TP-17                  | 10 milliohm max change in LLCR |
| HUMIDITY          | Mated, 600 hours from +25°C to +65°C per EIA-364-TP-31          | 10 milliohm max change in LLCR |
| DUST              | Unmated per EIA-364-TP-50                                       | 10 milliohm max change in LLCR |
| MIXED FLOWING GAS | 10 days unmated, 10 days mated, per EIA-364-TP-65 and ASTM B827 | 10 milliohm max change in LLCR |

|  |   |   |                                  |
|--|---|---|----------------------------------|
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# PRODUCT SPECIFICATION

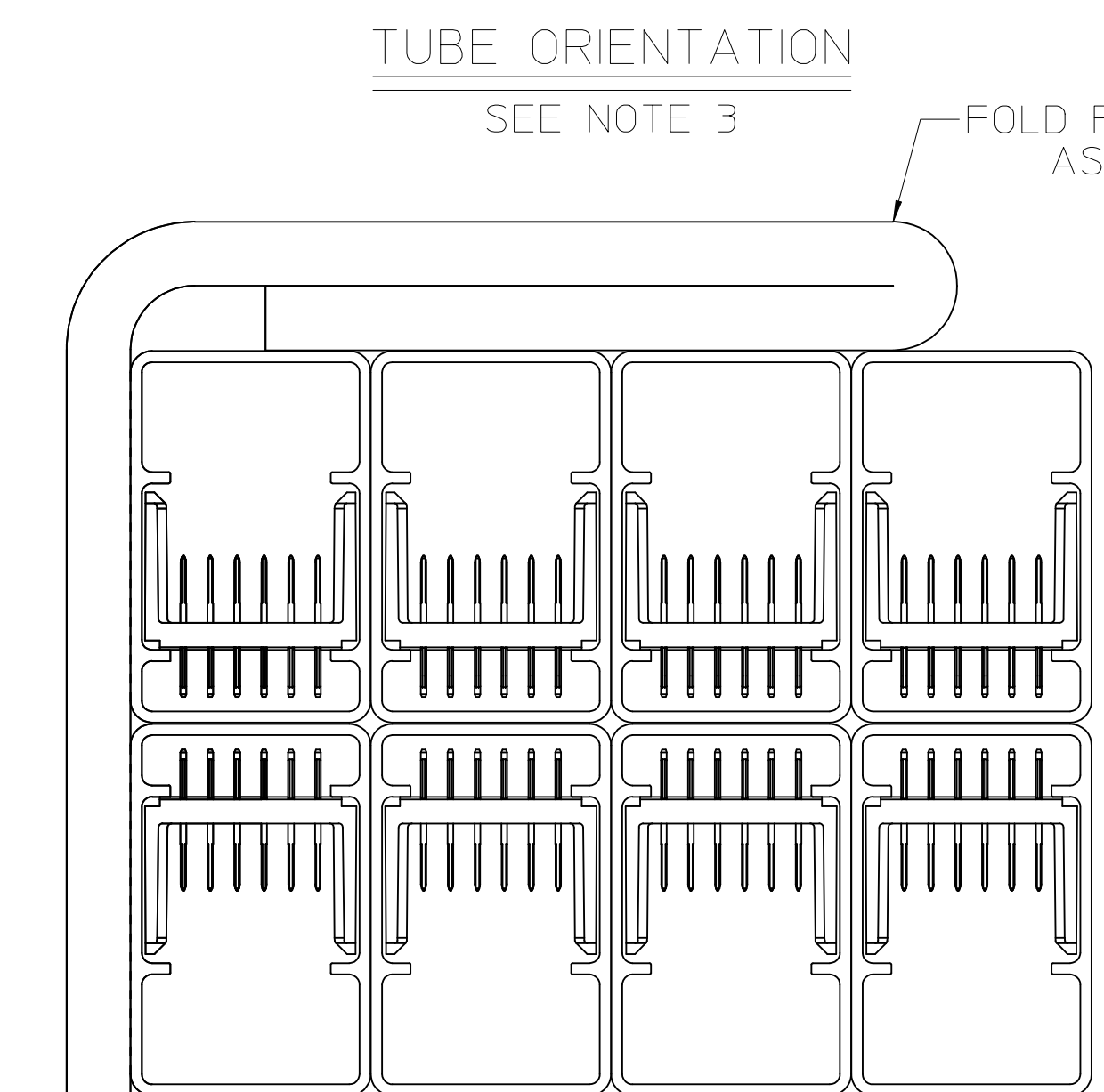
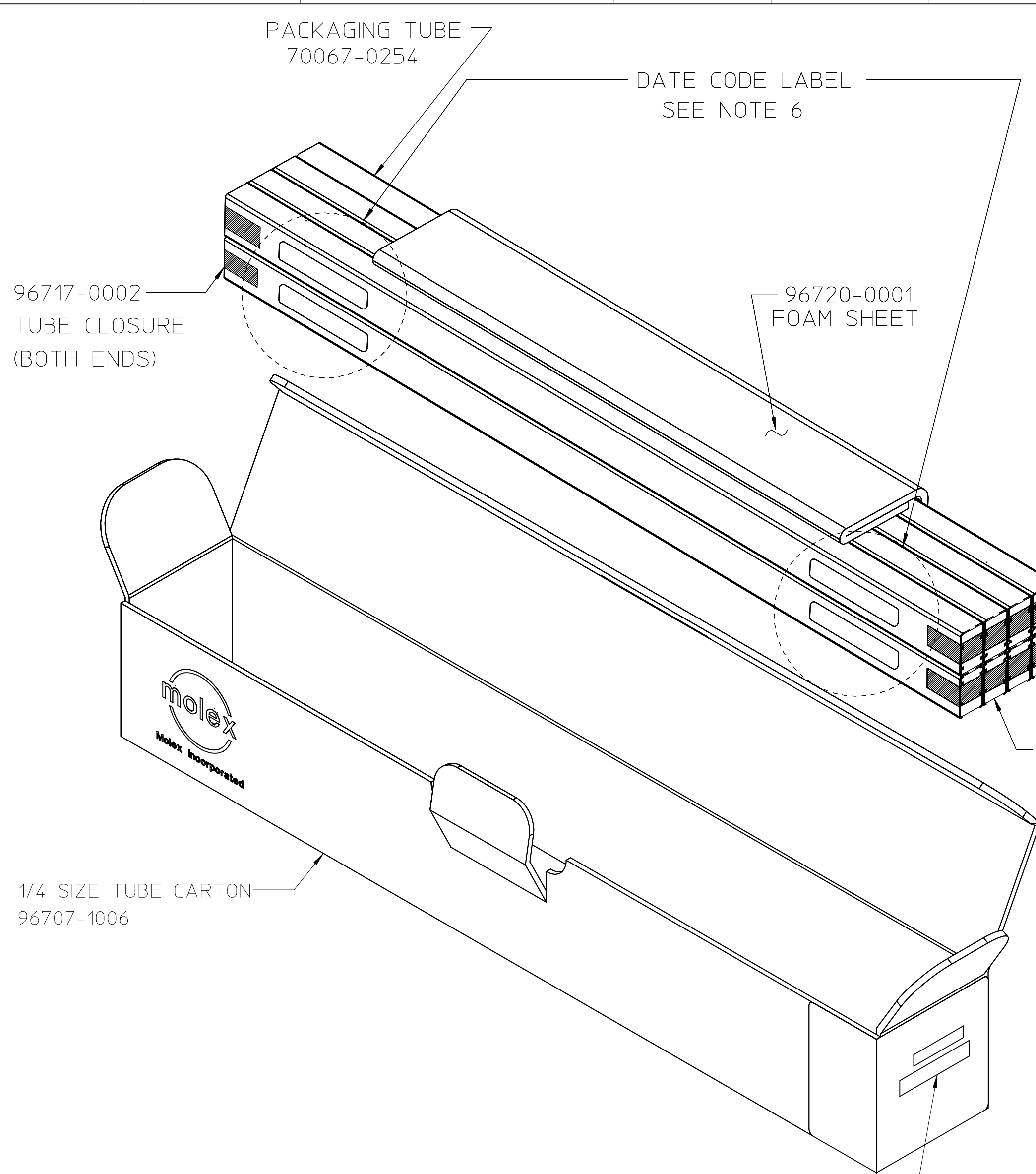
## 6.0 TEST SEQUENCE

### Bellcore Test Plan

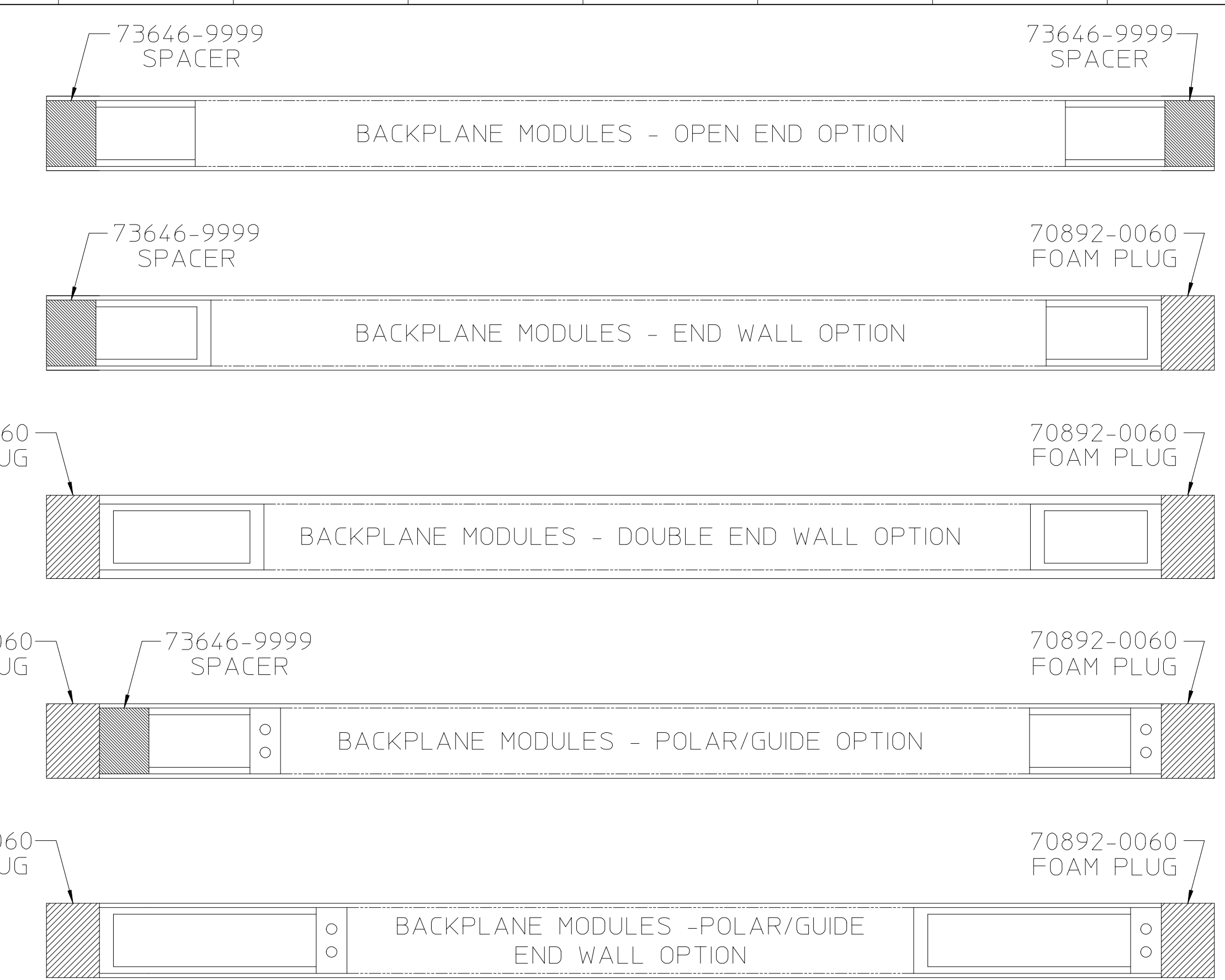
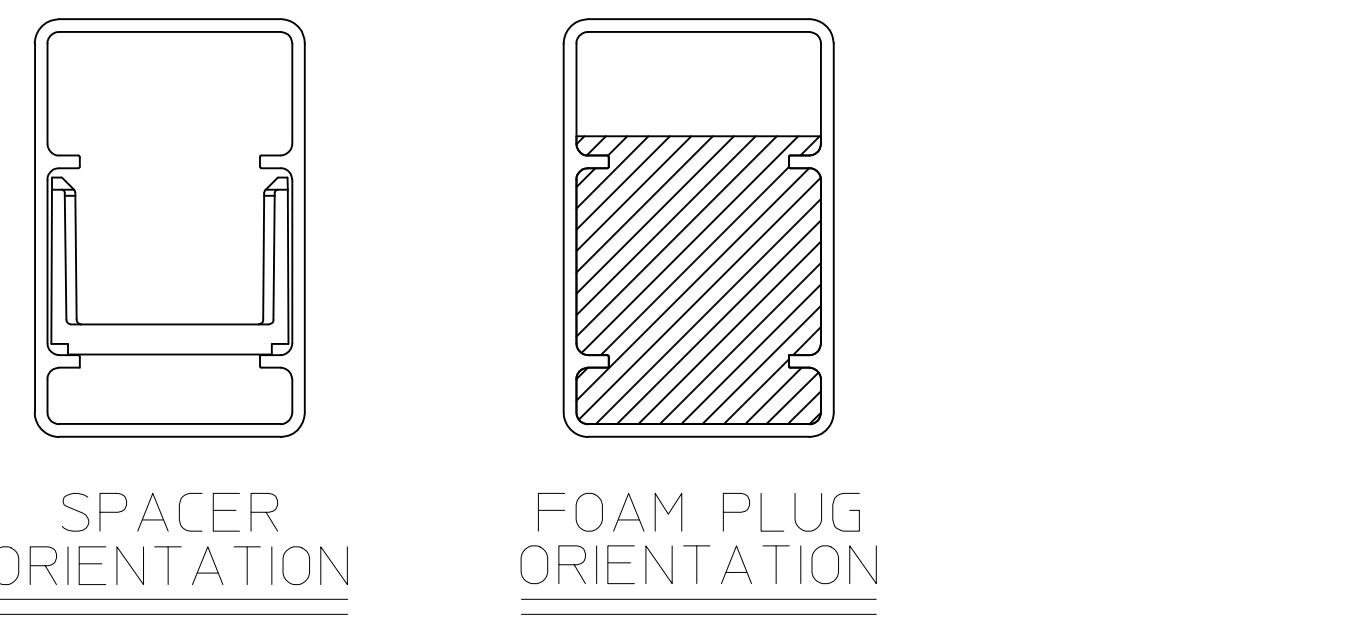
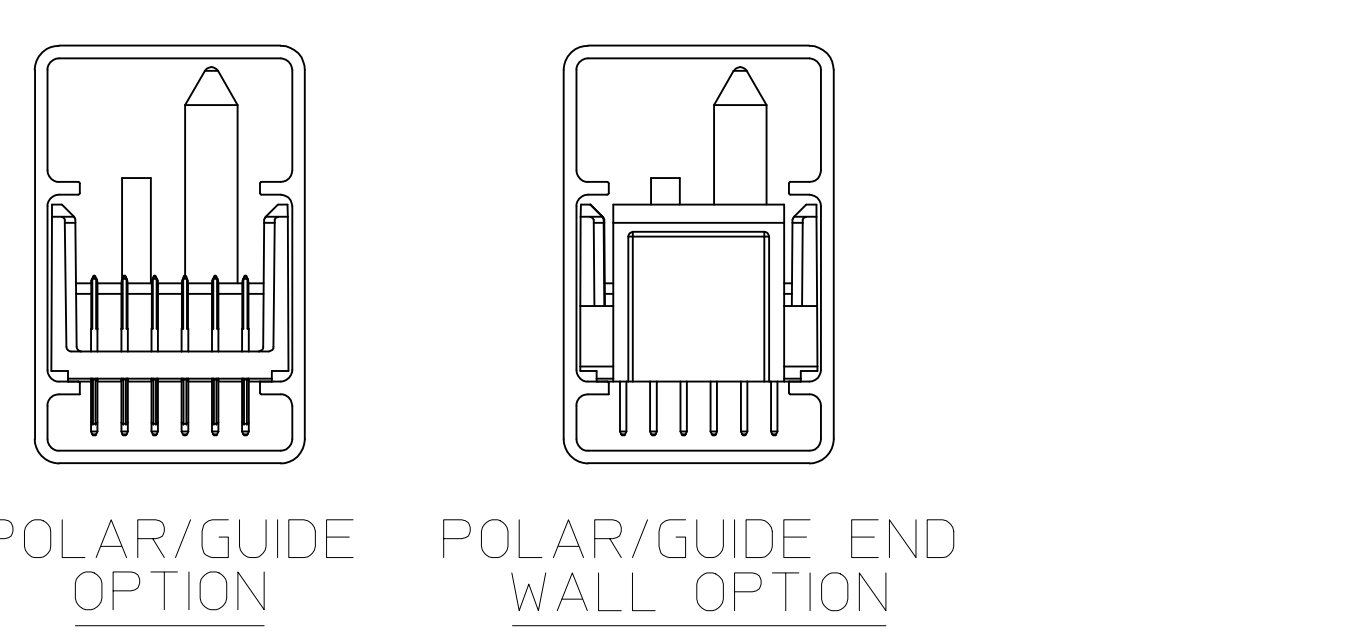
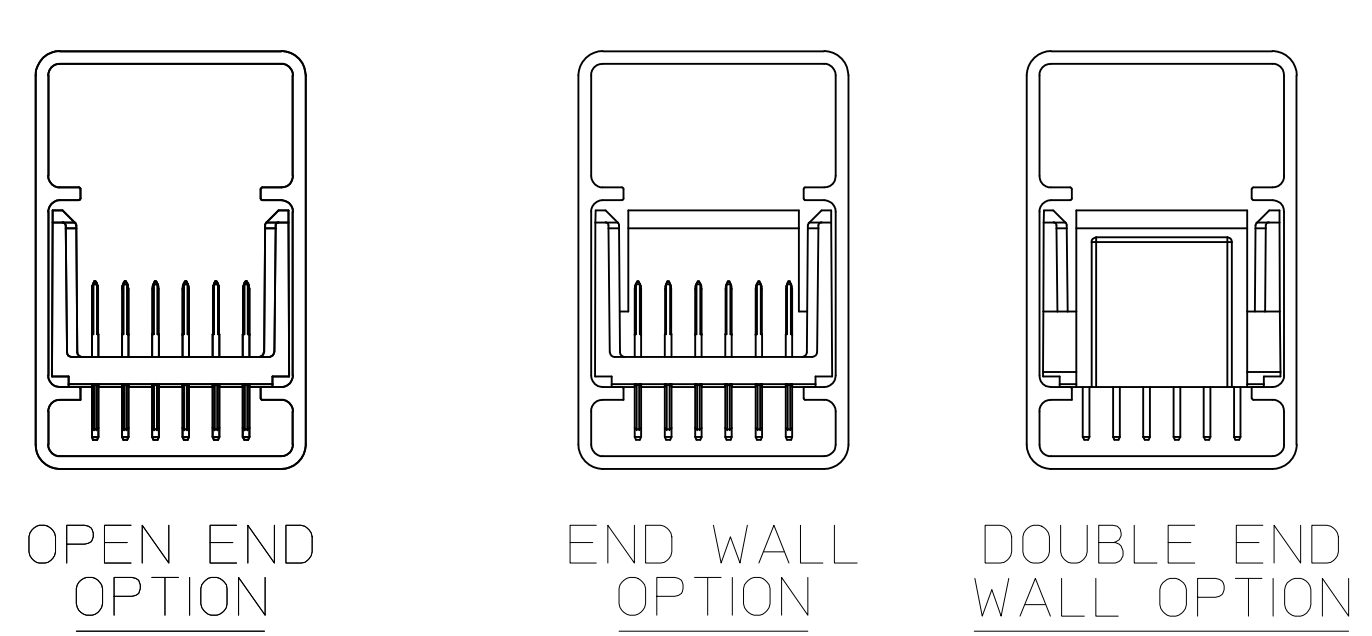
| GROUP 1                                | GROUP 2            | GROUP 3                                | GROUP 4                     | GROUP 5           |
|--|--------------------|--|-----------------------------|-------------------|
| Visual Exam                            | Visual Exam        | Visual Exam                            | Visual Exam                 | Visual Exam       |
| Separation Force<br>Mate/Unmate Forces | Mate/Unmate Forces | Separation Force<br>Mate/Unmate Forces | LLCR/CPIR                   | Normal Force      |
| LLCR/CPIR                              | LLCR/CPIR          | LLCR/CPIR                              | Durability<br>(100 cycles)  | Plating Thickness |
| Durability<br>(100 cycles)             | Thermal Shock      | Temperature Life                       | Mate/Unmate Forces          | Porosity          |
| Separation Force                       | Humidity           | LLCR/CPIR                              | LLCR                        |                   |
| LLCR                                   | LLCR/CPIR          | Separation Force<br>Mate/Unmate Forces | MFG<br>(10 days Unmated)    |                   |
| Dust                                   | Mate/Unmate Forces | Visual Exam                            | LLCR<br>(After 5 & 10 days) |                   |
| LLCR                                   | Visual Exam        | Normal Force                           | MFG<br>(10 days Mated)      |                   |
| Vibration<br>(3 axis)                  | Normal Force       |  | LLCR<br>(After 5 & 10 days) |                   |
| LLCR                                   |                    |  | Disturbance                 |                   |
| Mechanical Shock<br>(3 axis)           |                    |  | LLCR                        |                   |
| LLCR/CPIR                              |                    |  | Durability<br>(100 cycles)  |                   |
| Separation Force<br>Mate/Unmate Forces |                    |  | LLCR/CPIR                   |                   |
| Visual Exam                            |                    |  | Visual Exam                 |                   |
| Normal Force                           |                    |  | Normal Force                |                   |

LLCR = Low Level Contact Resistance  
 CPIR = Compliant Pin Interface Resistance

|  |   |   |                                  |
|--|---|---|----------------------------------|
| REVISION:<br><b>G</b>                    | ECR/ECN INFORMATION:<br>EC No: <b>UCP2009-2455</b><br>DATE: <b>2009/06/22</b> | TITLE: <b>PRODUCT SPECIFICATION FOR HIGH DENSITY METRIC (HDM) INTERCONNECT SYSTEM</b> | SHEET No.<br><b>7 of 7</b>       |
| DOCUMENT NUMBER:<br><b>PS-73670-9999</b> | CREATED / REVISED BY:<br><b>S. DANNELLEY</b>                                  | CHECKED BY:<br><b>B. SMART</b>  | APPROVED BY:<br><b>S. MILLER</b> |



**BACKPLANE MODULE ORIENTATION**  
SEE NOTE 3



**FOAM & SPACER PLACEMENT IN TUBE**  
PLACE 70892-0060 FOAM PLUG AND 73646-9999 SPACER AT ENDS OF TUBE AS SHOWN  
SEE NOTE 4

- NOTES:**
- CARTON CLOSURES MUST BE DONE WITH TAPE.
  - PARTS SHOULD BE PACKAGED PER QUANTITIES SPECIFIED IN CHART.
  - PARTS TO BE LOADED INTO 70067-0254 PACKAGING TUBE AS SHOWN. TUBES TO BE ORIENTED AS SHOWN WITH TOP FOUR TUBES IN ONE DIRECTION AND BOTTOM FOUR TUBES IN OPPOSITE DIRECTION.
  - AFTER FILLING TUBES, 73646-9999 SPACER AND 70892-0060 FOAM PLUG MUST BE INSERTED INTO ENDS OF TUBE AS SHOWN. TUBE ENDS TO BE CLOSED USING 96717-0002 LABEL. ONE PER END.
  - INFORMATION LABEL TO BE WRAPPED AROUND END OF CARTON SUCH THAT PART NUMBER AND BAR CODE ARE COMPLETELY VISIBLE ON END PANEL.
  - MARK CUSTOM LABEL 73728-0000 WITH PART NUMBER & DATE CODE. PLACE ONE LABEL PER TUBE, TO BE PLACED APPROXIMATELY WHERE SHOWN, SUCH THAT, THE LASER MARKS ON THE PARTS ARE NOT COVERED.
  - SPQ (STANDARD PACK QUANTITY) AND MOQ (MINIMUM ORDER QUANTITY) EQUAL ONE (1) 1/4-SIZE TUBE CARTON UNLESS OTHERWISE SPECIFIED IN SAP.
  - CARTON SHOULD ALWAYS BE PACKED WITH EIGHT (8) PACKAGING TUBES AS SHOWN. IF NECESSARY, USE EMPTY TUBES TO SATISFY THIS REQUIREMENT.

|                      |     |    |     |   |   |
|----------------------|-----|----|-----|---|---|
| POLAR/GUIDE END WALL | 144 | 9  | 72  | 0 | 2 |
|                      | 72  | 15 | 120 | 0 | 2 |
| POLAR/GUIDE          | 144 | 9  | 72  | 1 | 2 |
|                      | 72  | 16 | 128 | 1 | 2 |
| DOUBLE END WALL      | 144 | 9  | 72  | 0 | 2 |
|                      | 72  | 16 | 128 | 0 | 2 |
| END WALL             | 144 | 10 | 80  | 1 | 1 |
|                      | 72  | 19 | 152 | 1 | 1 |
| OPEN END             | 144 | 11 | 88  | 2 | 0 |
|                      | 72  | 22 | 176 | 2 | 0 |

|  |                                      |                                       |                 |                     |                        |
|--|--------------------------------------|---------------------------------------|-----------------|---------------------|------------------------|
| BACKPLANE MODULE OPTION  | CIRCUIT SIZE                         | TUBE                                  | 1/4-SIZE CARTON | QUANTITY OF SPACERS | QUANTITY OF FOAM PLUGS |
|  |                                      | QUANTITY PER                          |                 |                     |                        |
| MOVED TUBE LABEL<br>EC NO: UCP2013-4159<br>DRW:RWHIPPLE 2013/03/28<br>CHKD:WOLFE 2013/03/29<br>APPR:SMILLER 2013/05/03<br>CH | QUALITY SYMBOLS<br>▽=0<br>▽=0<br>▽=0 | GENERAL TOLERANCES (UNLESS SPECIFIED) |                 | DIMENSION STYLE     |                        |
|  |                                      | mm                                    |                 | MM ONLY             |                        |
|  |                                      | INCH                                  |                 | SCALE 1:2           |                        |
|  |                                      | ANGULAR ±1/2°                         |                 | DESIGN UNITS METRIC |                        |
| DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS   |                                      | THIRD ANGLE PROJECTION                |                 | TITLE               |                        |
| SEE TABLE  |                                      | DRAWN BY JBINGHAM                     |                 | DATE 1997/02/13     |                        |
| SEE TABLE  |                                      | CHECKED BY SREED                      |                 | DATE 1997/02/13     |                        |
| SEE TABLE  |                                      | APPROVED BY CBIXLER                   |                 | DATE 1997/02/13     |                        |
| SEE TABLE  |                                      | MATERIAL NO.                          |                 | DOCUMENT NO.        |                        |
| SEE TABLE  |                                      | PK-70873-0818                         |                 | SHEET NO. 1 OF 1    |                        |

**molex**