New High Density Connectors for SAS

SAS Application Requirements per the STA:

1. An External 8x I/O solution with sidebands.

2. An Internal 8x I/O solution with sidebands.

Customer Feedback based on providing a new 8x connector for SAS:

1. Increasing the width of the current SFF-8086 SAS connector would achieve the goal of an 8x port with side bands but would also have the following consequences:

   - a wider connector decrease the overall port density on PCIe cards and on host/system boards for both internal & external applications

   - an 8x connector would create the need for "Y" cables to connect to new and
     to existing 4x ports for both internal and external applications.

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New High Density Connectors for SAS

Design Solutions:

1. Provide both external and internal high density iPass+ connector solutions that provide the new 8x requirement while maintaining the 4x granularity

Solution Descriptions

1. Each single 4x port (or ganged 4x ports) will accept a single 4x plug or multiples of 4x plugs in "combo" housings:

   - each 1x4 receptacle will accept:
   - (4) 4x plugs
   –or-
   - (2) 8x "combo" plugs
   -or-
   - (1) 8x "combo" Plug + (2) 4x plugs
   - or -
     (1) 12x "combo" plug + (1) 4x plug
   –or-
     (1) 16x "combo" plug

2. These solutions provide the same 4x granularity and port density as provided on full high PCIe cards today on low profile PCIe cards while providing the flexibility to implement larger pipes, such as the 8x requested by STA, when req'd.

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New High Density Connectors for SAS

Physical Descriptions

1. Changing from a die-cast housing to a stamped and formed solution enables a 1x4 ganged cage to physically fit on a LP PCIe card.

2. The contact pitch was reduced from 0.8mm pitch to 0.75mm to enable the solution to fit on a low profile PCIe card. The contact geometry is the same as the current iPass+ interface which was recently voted into the InfiniBand QDR Specification and is being documented in SFF-8642.
   (This interface has been shipping in the InfiniBand market for over two years without any issues. Molex has also been shipping 0.75mm pitch in AMC products and custom products to large OEM's for several years without issues.
   - The same contact wafers are used for both internal & external solutions

3. Small pull to release tab fashioned so that your fingers do not easily slip off.

4. Bulk cable – 28ga standard

5. Depth from inside of bezel to end of shielded external cage and the depth of the of the unshielded integrated internal connector from the rear edge of the card have both been increased to accommodate the press-fit pin array required on host board – see page 7 for a size comparison.
   - The compliant pin geometry is Telco proven and is currently being shipped as part of the Molex 20G "Impact" backplane product and as the 12x CXP InfiniBand I/O aka: the 84 ckt iPass+ HSC Molex connector.

The Internal I/O is SFF-8643
The external I/O is SFF-8644

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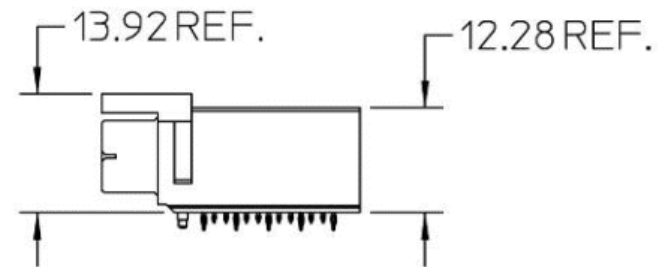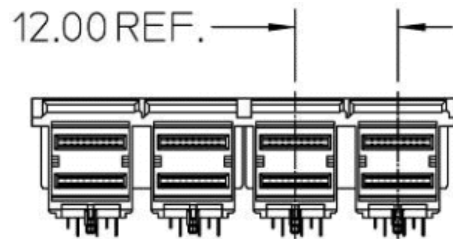# A Low Profile PCIe Card with SFF-8643 & SFF-8644 1x4's

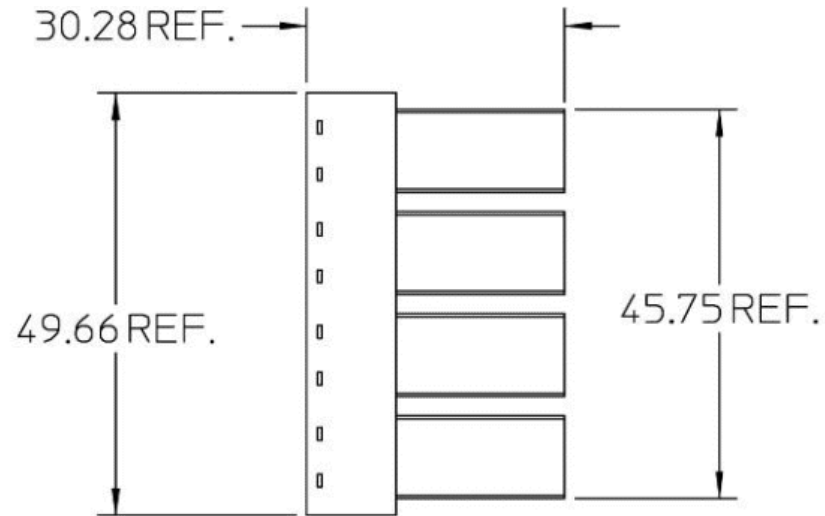SFF- 8643
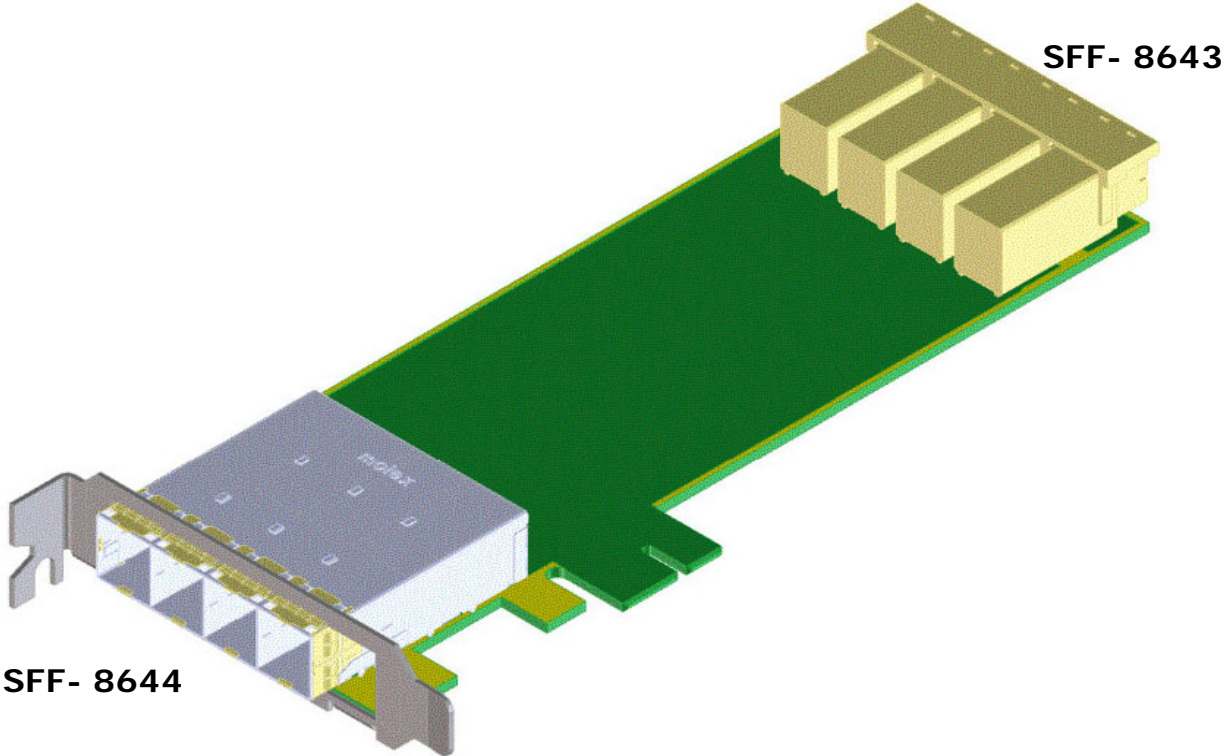
SFF- 8644

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A Low Profile PCIe Card with SFF-8643

SFF- 8643

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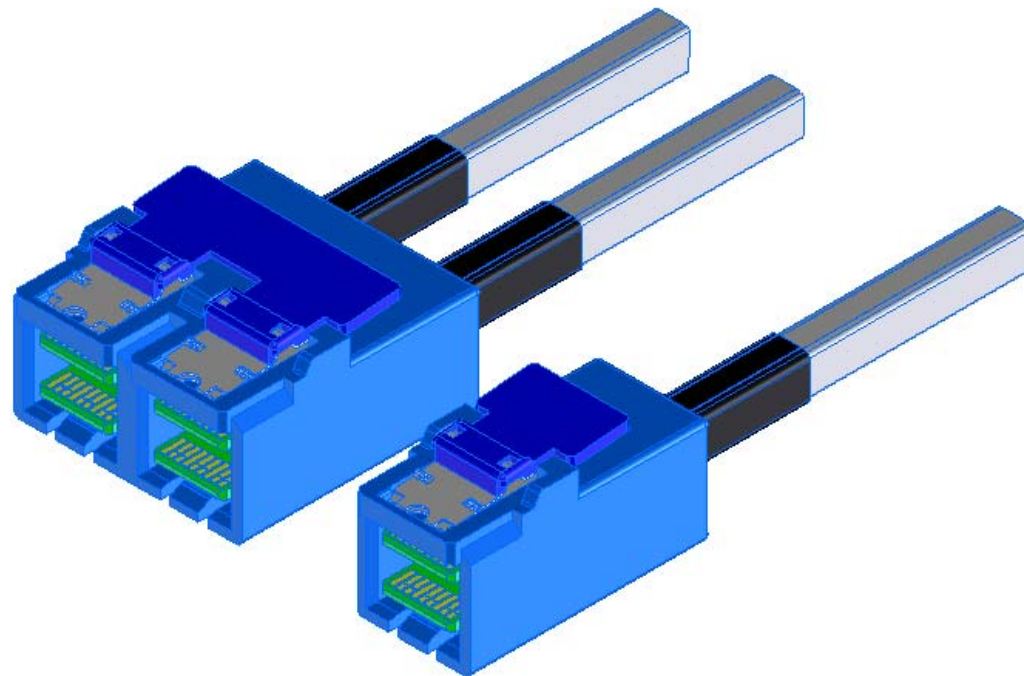# SFF-8643 Integrated Connector Receptacle

SFF-8643 Integrated Connector Plugs

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SFF-8643 Integrated Connector Plugs

8x "Combo" Plug

4x Plug

26.33 REF.
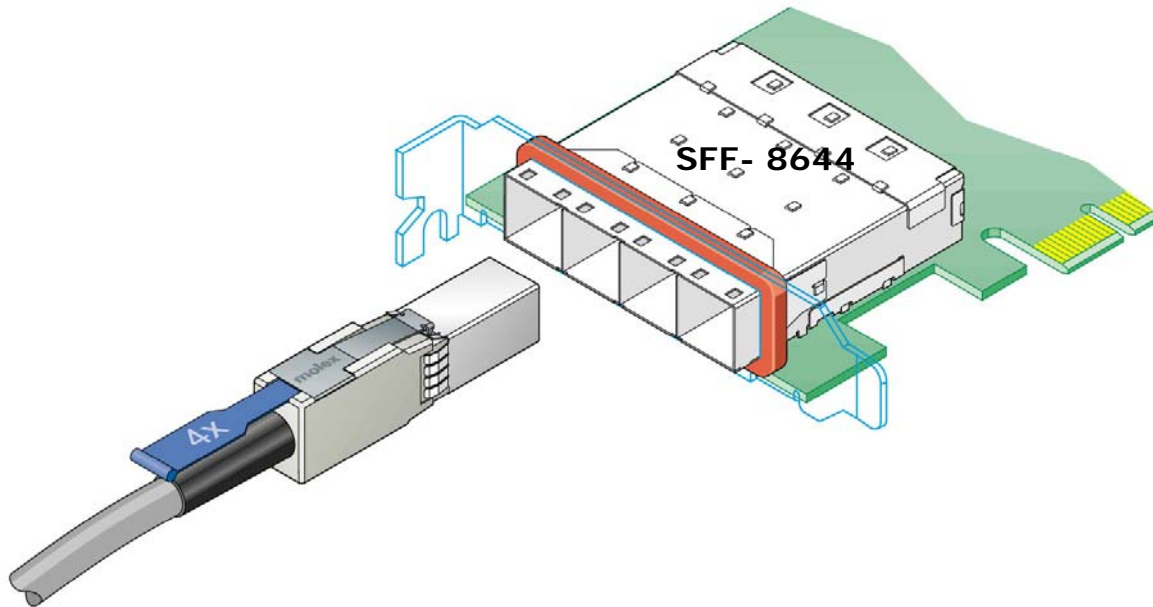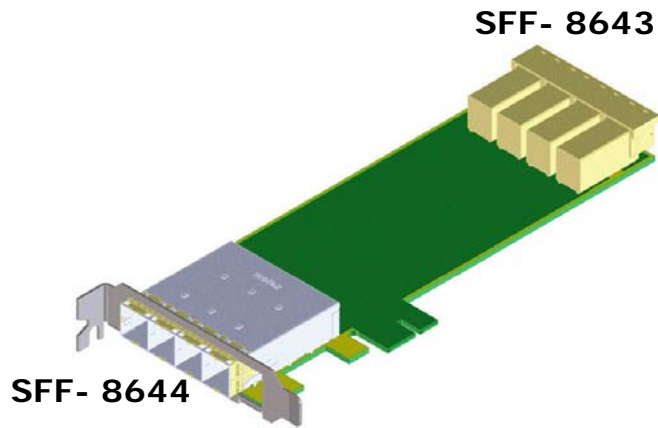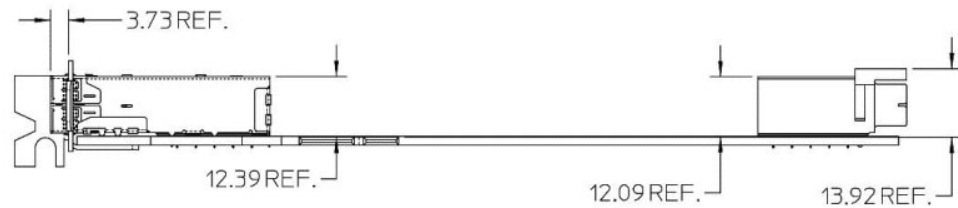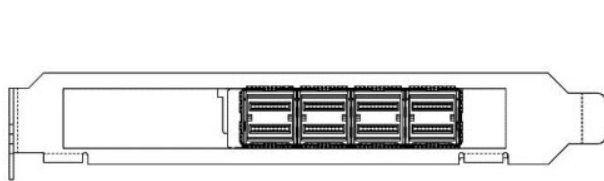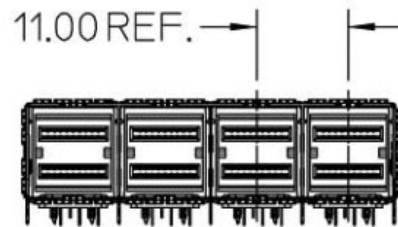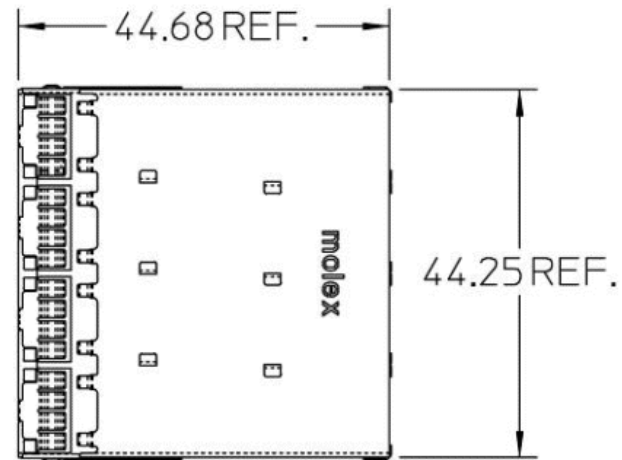
23.85 REF.

11.85 REF.

12.00 REF.

12.17 REF.
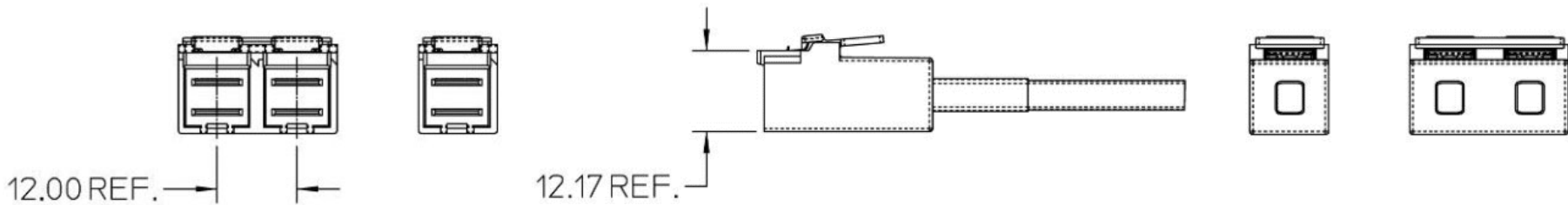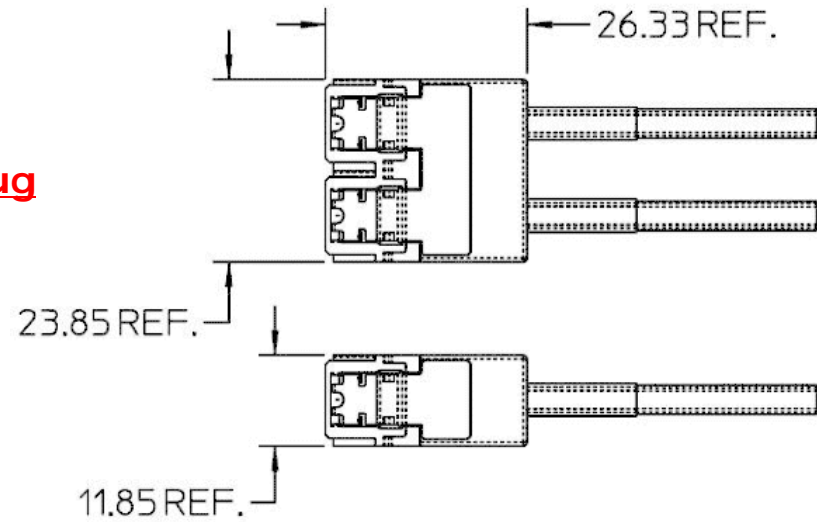
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SFF-8644

A 16 Port (4 x 4x) Low Profile PCIe Card Solution

- Each port is a Molex "iPass+ HD" with 8 diff pairs + 8 Side Bands

- The stacked paddle cards accommodate 2x + 4 side bands each

- The side bands can accommodate power for active cables as well
  as 2 wire and other management functions defined by T10

SFF- 8644

4X

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A Low Profile PCIe Card with SFF-8644

SFF- 8644

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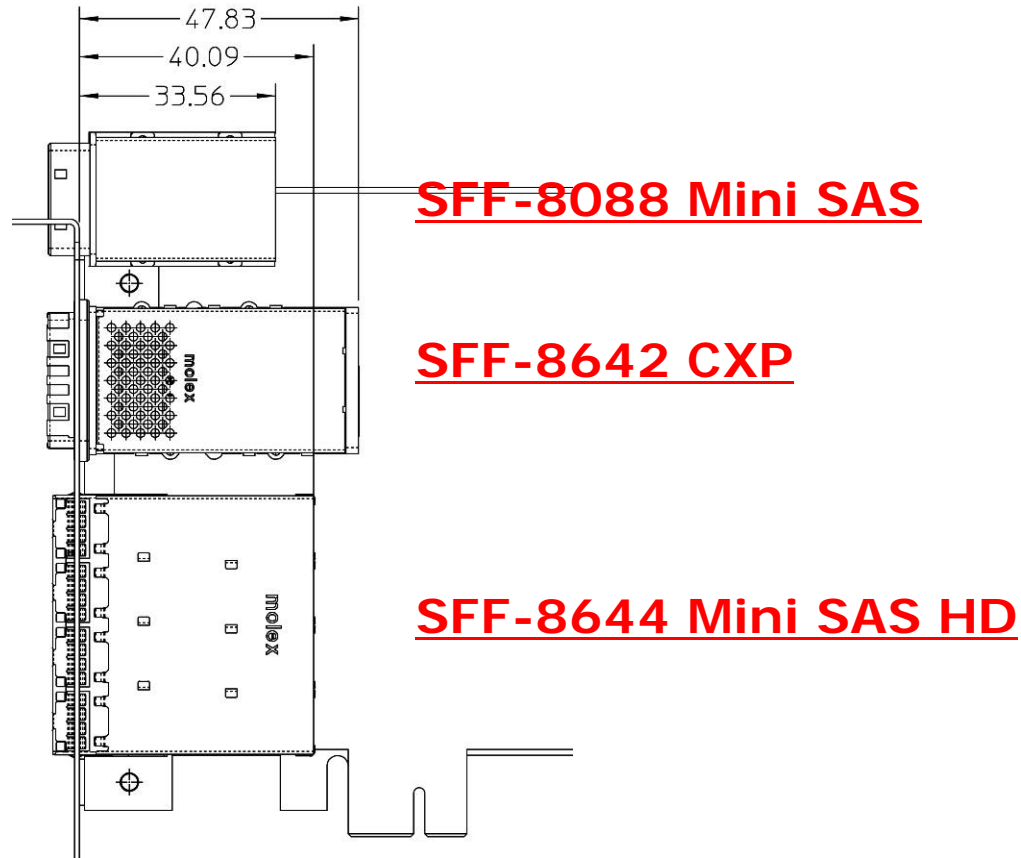# A Low Profile PCIe Card with SFF-8643 & SFF-8644 1x4's

SFF- 8643

SFF- 8644

30.28 REF.
28.64 REF.
12.00 REF.

44.68 REF.
40.09 REF.

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44.25 REF.

45.75 REF.

1.00 REF.

SFF-8644

SFF-8643

3.73 REF.

12.39 REF.

12.09 REF.

13.92 REF.

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SFF-8644 Shielded Integrated Connector

44.68 REF.

44.25 REF.

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11.00 REF.

12.39 REF.

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SFF-8644 Depth Comparisons

SFF-8088 Mini SAS

SFF-8642 CXP

SFF-8644 Mini SAS HD

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SFF-8644
Shielded Integrated Connector Plug

4x

8x

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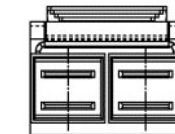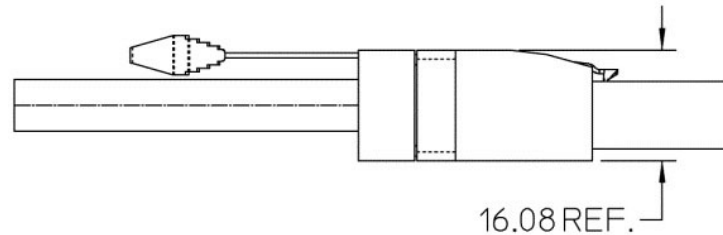01 Nov 2008

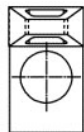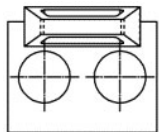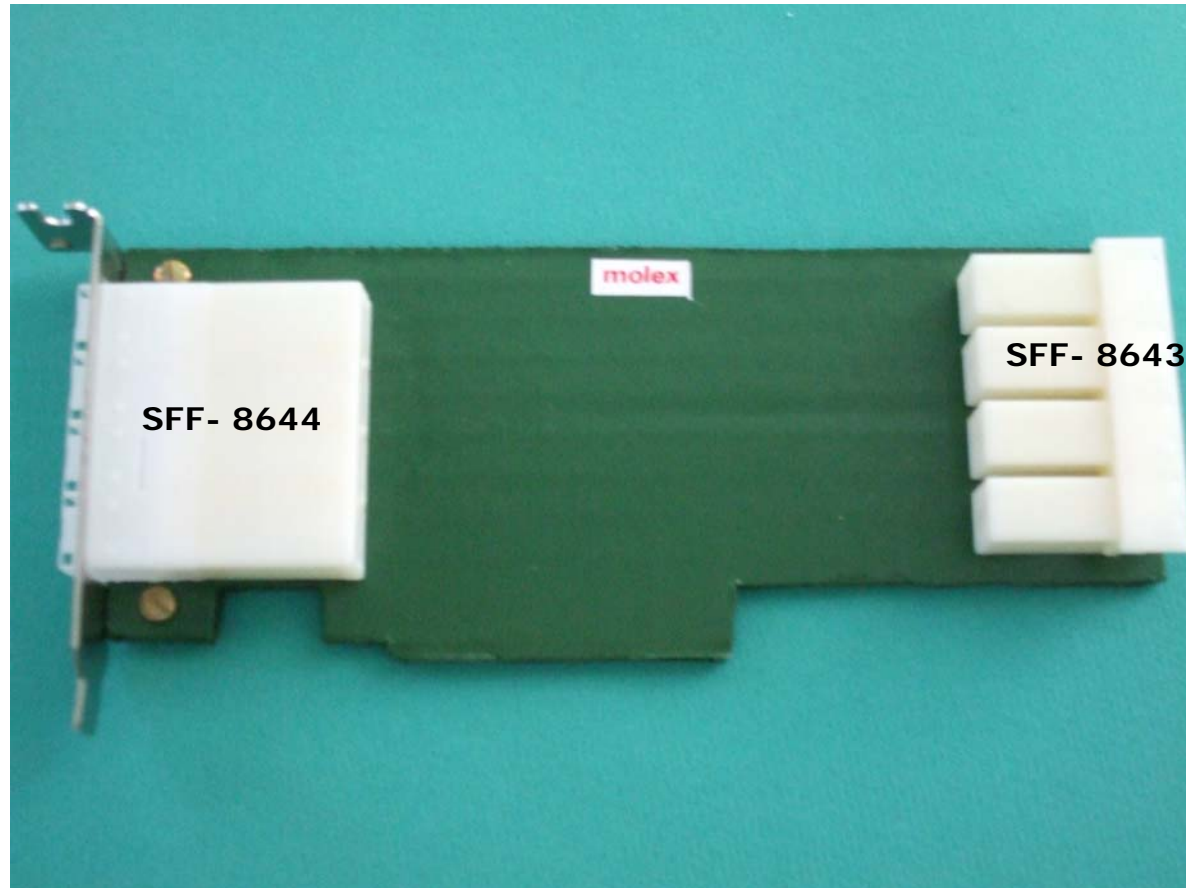# SFF-8644
Shielded Integrated Connector Plugs

8x "Combo" Plug

4x Plug

Low Profile PCIe Card
with SFF-8643 & SFF-8644 1x4's

SFF- 8644

SFF- 8643