



## 4X IO connector module

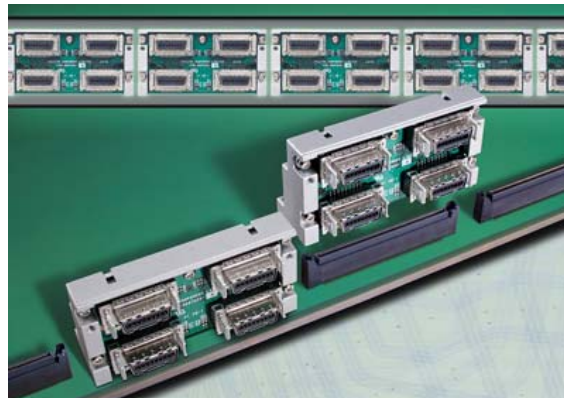
Part Number for Existing Product

2x2 Module: FCN-268Y032-A

Straight socket (board side) : FCN-268F036-G/3DB

**RoHS Compliant**

### Description



Newly developed Multi-IO connector module, The Fujitsu Multi-IO microGiGaCN™ series product supports high speed signal transmission in compact package and easy to install structure. This series of modules incorporates Fujitsu's world standard high-speed differential 4 channel IO socket interface which is defined by SFF 8470, InfiniBand™, 10G Base-CX4, and 10G Fiber Channel. The module is designed to meet InfiniBand DDR, along with the previously mentioned industry standards, in a 4channel, bi-directional data transfer mode. The Multi-IO connector module allows for increased I/O port density, while allowing for ease of signal routing on the main pcb.

The Multi-IO microGiGaCN™ product makes it possible to install multiple modules within a small area with ease of installation with specially designed board to board high speed connector system. The original concept for the design is to accommodate 20 ports in a 1U form factor. This series of module has capability to accommodate LED link status indicator and MDC (media detect circuitry, connector detect and power supply circuitry) for Fujitsu's o-microGiGaCN™ four channel optical transceiver module, which extends transmission length up to 300 (2.5Gbps) over optic fiber. Future versions of module on development roadmap (1x4 scheduled) will allow users to select the most suitable ones for their applications. The die cast backshells provide firm and robust mechanical connection.

Future applications will include 1x4, 1x2, and low profile 2x2 with and without AC blocking caps, LED's, etc.

### Features

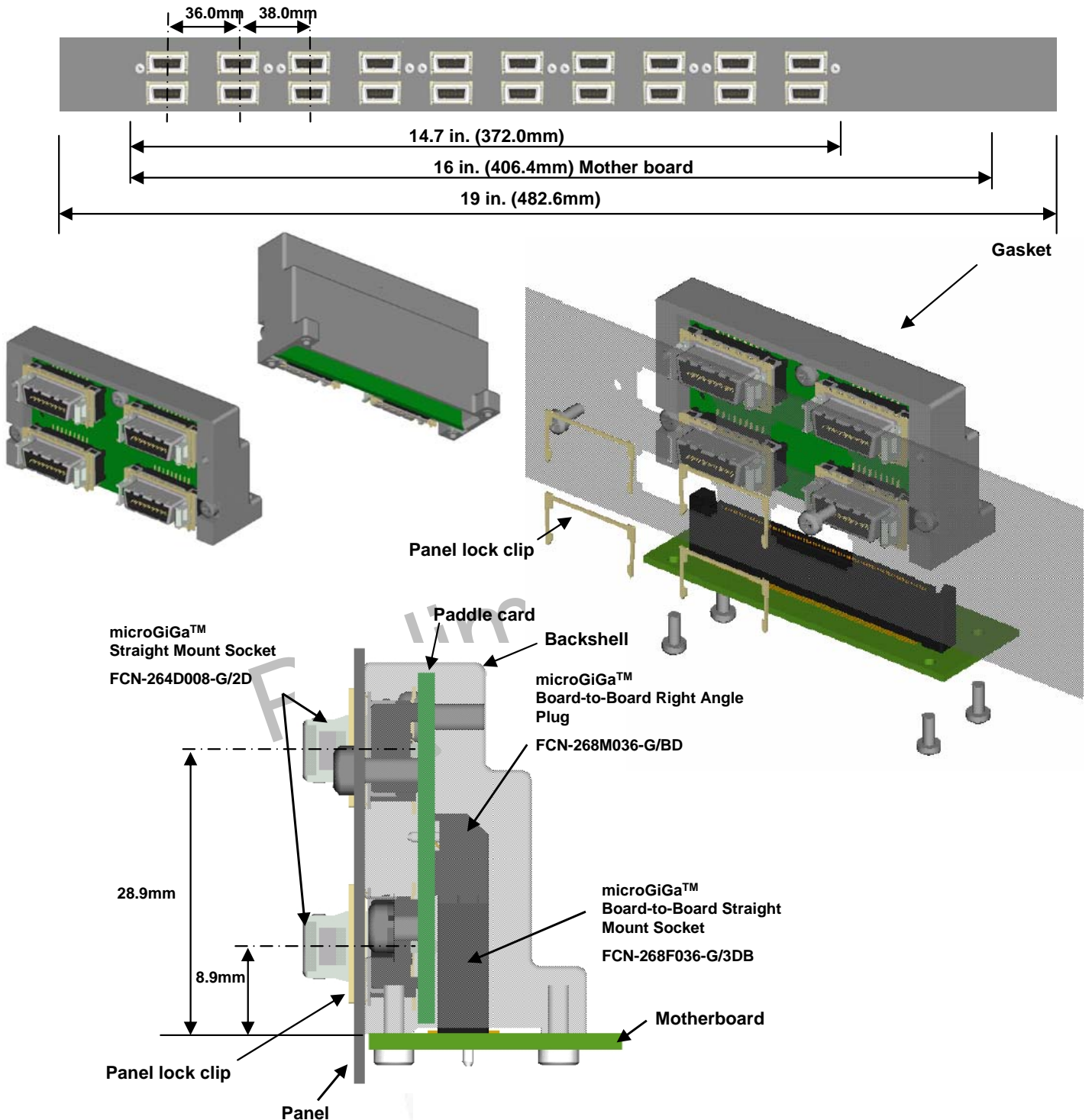
- Full compatibility with following world industrial standards. InfiniBand™, InfiniBand™ DDR, 10G Fiber Channel, 10G Base-CX4, SFF-8470, etc.
- Four 4x links per module with 2x2 arrangement
- Allows up to twenty 4x links in 1U form factor on single pcb
- Well controlled signal integrity available for DDR signal rate (5Gbps)
- Easy to install structure with high speed board to board interface connector
- Options for Link status LED's, power line for Fujitsu o-microGiGaCN™ four channel optical transceiver module (consult factory)
- Robustness by die cast body
- Ease of Signal Routing on motherboard
- **Good EMI characteristics with Gasket/Clip on the IO socket**



## Overview

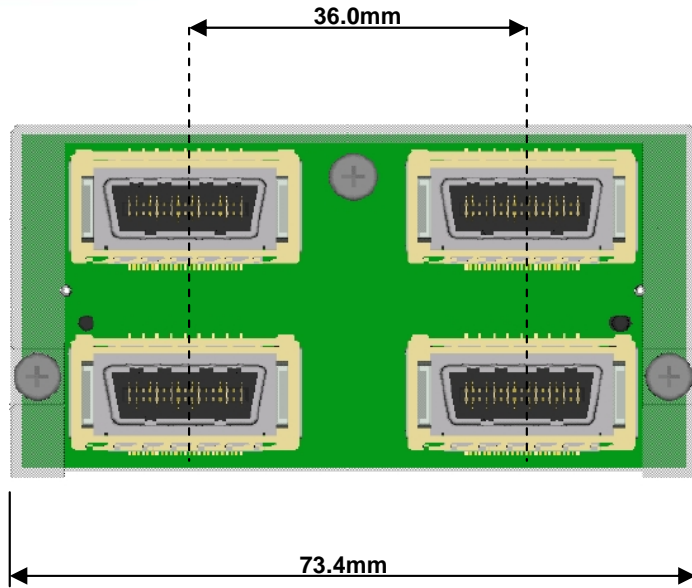
### 2 x 2 Module

- By using the module with 4 I/O sockets, 20 I/O sockets (5 modules) max. in 1U.
- IO connector mating face meets InfiniBand™, SFF-8470, 10G Base-CX4, 10G Fiber Channel, and etc.

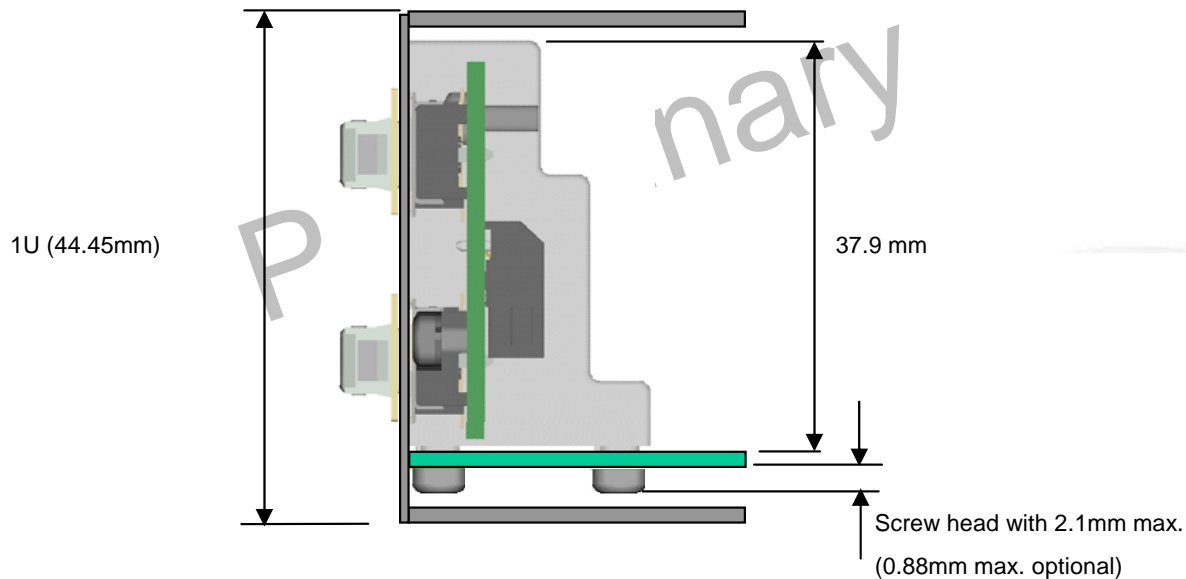
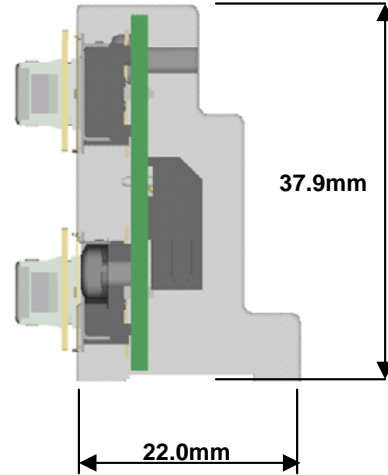




## Dimensions 2 x 2 Module



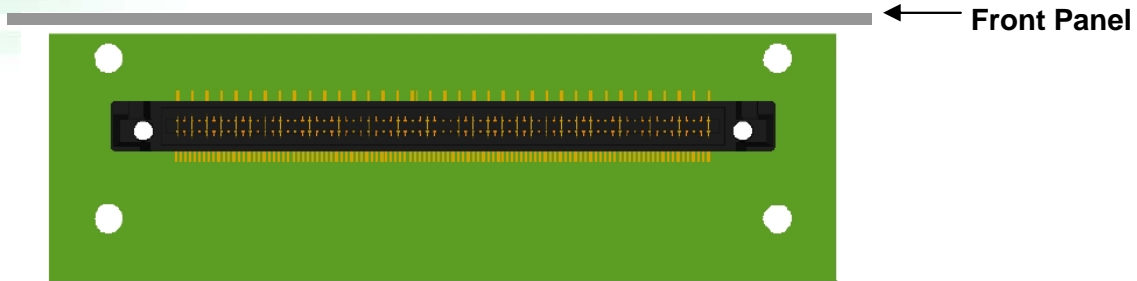
Module  
FCN-268Y032-A



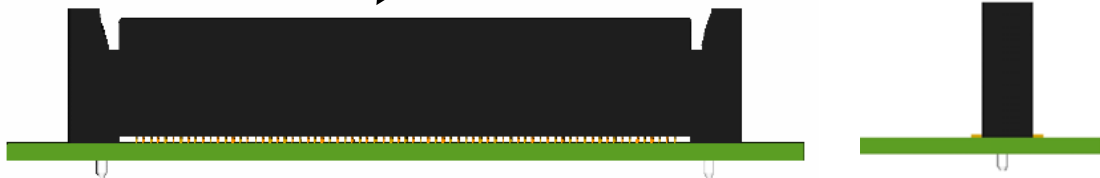
Note: B-to-B ST Socket not shown in the drawing



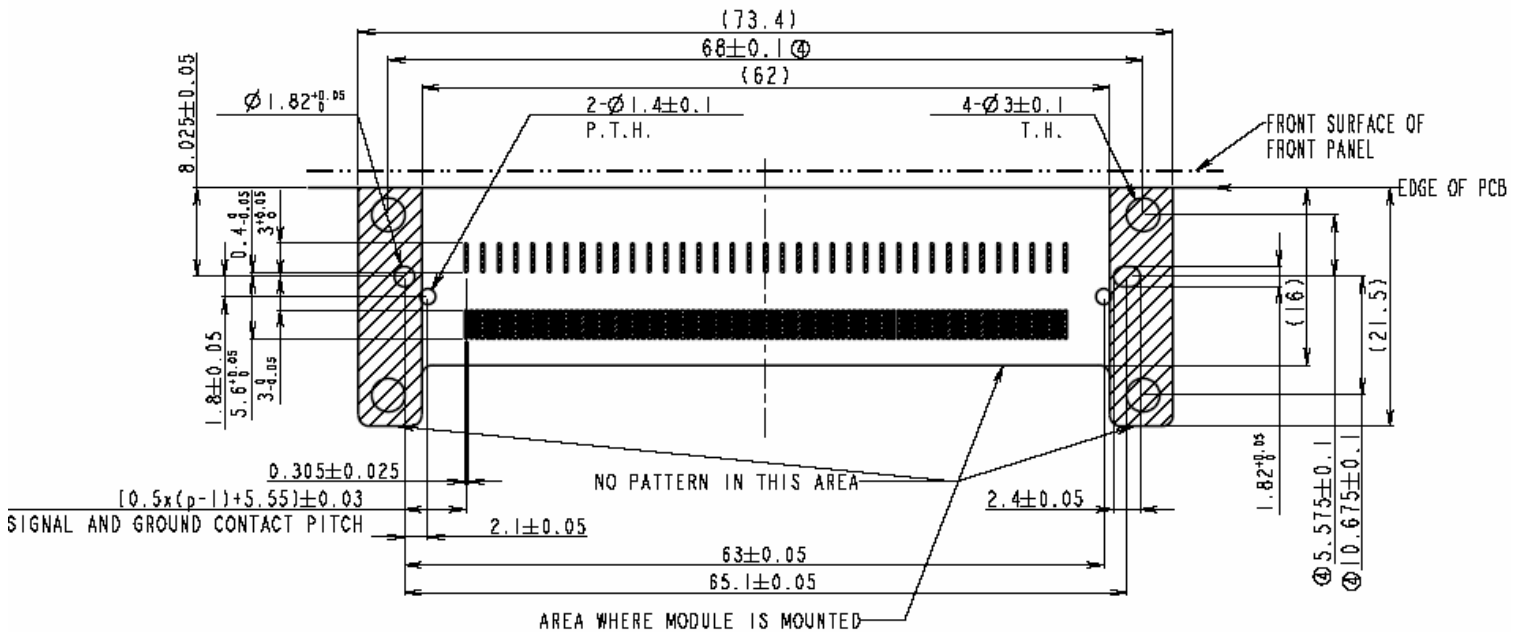
## Mother Board Dimensions 2 x 2 Module



microGiGa™ Board-to-Board Straight Mount Socket  
FCN-268F036-G/3DB



MOTHERBOARD FOOTPRINT (RECOMMENDED)





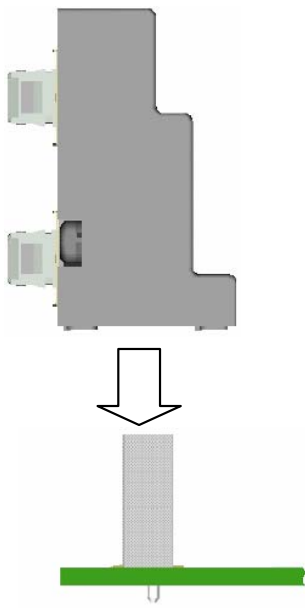
## Recommended Installment Procedure **2 x 2 Module**

To minimize stresses on the solder joints, following installation procedure is recommended.

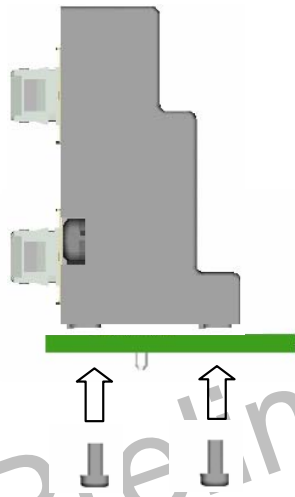
### Step 1: Attaching the module onto PCB

### Step 2: Attaching the module onto Panel

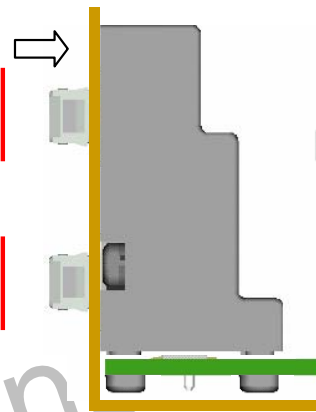
Insert the module



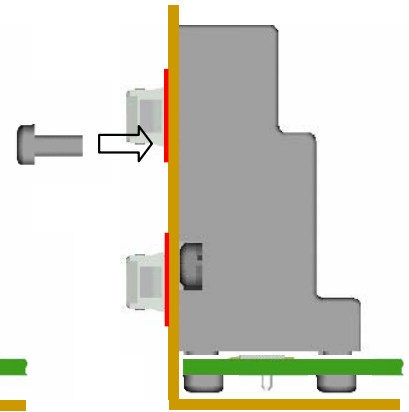
Fixing module by screws



Attaching Clips

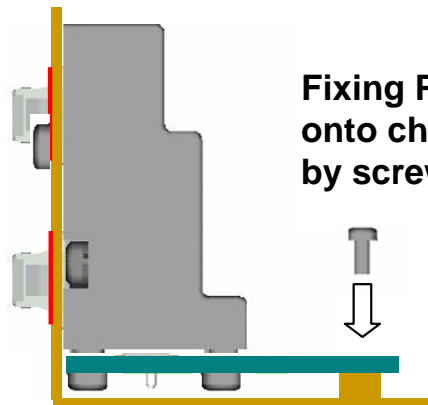


Fixing the module by screws



Preliminary

### Step 3: Attaching PCB to chassis



Fixing PCB onto chassis by screws



## Rating

Item	Rating
(1) Current rating	Signal: 0.1A (AC) Ground: 0.5A (AC)
(2) Voltage rating	<b>16VAC</b>
(3) Environmental rating	-20~+85°C 80% RH max.

## Recommended P.W.B. (mother board)

Applicable board thickness	1.6±0.2mm
Characteristic impedance	100 ohms ±5% (in differential)

## Electrical performance

Item	Spec.
Contact resistance	Signal: 240m ohms max. Ground: 180m ohms max.

## Mechanical performance

### a. Insertion and withdrawal force

#### 1. Board to board connector

Item	2x2, 1x4	1x2
(1) Insertion force	74.0N max.	<b>37.0N max.</b>
(2) Withdrawal force	8.0N min.	<b>4.0N min.</b>
(3) withdrawal force after test	5.0N min.	<b>2.7N min.</b>

#### 2. IO connector

Item	Spec.
(1) Insertion force	55.5N max.
(2) Withdrawal force	2.5N min.
(3) withdrawal force after test	2.0N min.

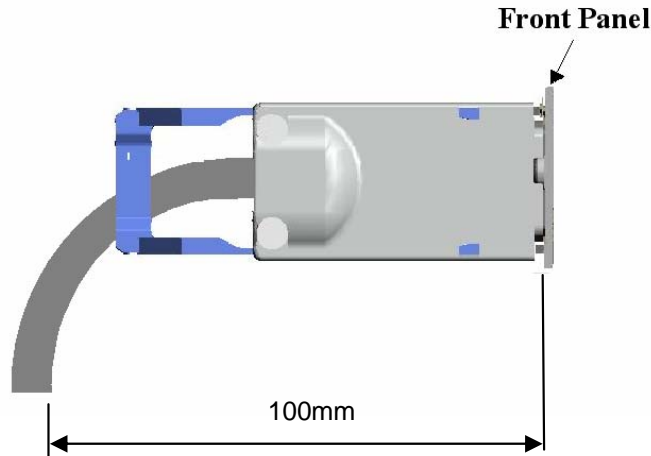
### b. Durability

- Board to board connector : 100 of insertion and withdrawal cycles
- IO connector: 250 of insertion and withdrawal cycles



## Signal transmission characteristics

When the connectors are mated in the condition shown in a figure below, characteristics shown in below should be satisfied.



This specification is applied only to the cable assembly manufactured by Fujitsu Component Limited using recommended cables as in following table.

No. of pair	AWG	Recommended cable
8	24	SPECTRASTRIP SKEWCREA® 8 pair 24 AWG Part Number: 166-2499-998
8	26	SPECTRASTRIP SKEWCREA® 8 pair 26 AWG Part Number: 166-2699-997

### a. Module characteristic

#### 1. Module characteristic impedance .

Differential characteristic impedance in module area shall be 100 ohms ± 10% with 100ps rise time. (measured pair should be terminated with 50 ohm terminator and measured with TDR)

#### 2. Cross talk

NEXT (Near end cross talk) shall be less than 4% with 100ps rise time when adjacent two-pair are driven.



## b. Cable assembly transmission characteristics

### 1. Cross talk (EIA-364-90)

NEXT (Near end cross talk) shall be less than 4% with 100ps (20-80%) rise time when adjacent two-pair are driven.

### 2. Differential impedance of cable area (EIA-364-108, rise time:100ps 20-80%)

Nominal value of cable area : 95 Ω ~ 155 Ω

It should be measured over the length of each signal pair, from the unequalized end (if equalizer is used).

Deviation from nominal value of cable area: 5 ohm or less

### 3. Insertion loss (EIA-364-101)

Mated cable assembly and connector, at frequencies up to 1.25GHz.

Gauge	Cable without equalizer		Cable with equalizer		
			8m	10m	12m
24AWG	$L \leq 8m$	$8m < L$	10.0 dB or less	12.0 dB or less	15.0 dB or less
	10.0 dB or less	1.1 dB/m or less			
26AWG	$L \leq 7m$	$7m < L$	12.0 dB or less	14.0 dB or less	17.5 dB or less
	10.0 dB or less	1.2 dB/m or less			
28AWG	$L \leq 6m$	$6m < L$	12.0 dB or less	Not Available	Not Available
	10.0 dB or less	1.4 dB/m or less			





4. Eye pattern (EIA 364-107, Input signal: Frequency 2.5Gbps, Differential amplitude: +/-0.5V, Width of bit: 400ps PRBS 1000 wave forms input)

See below table.

		Cable without equalizer		Cable with equalizer		
		L ≤ 5m	5m < L	8m	10m	12m
24AWG	Jitter	0.25 UI or less	Not Available	0.25UI or less	0.25UI or less	0.25UI or less
	Eye height	316 mV or more	Not Available	316mV or more	250mV or more	160mV or more
26AWG	Jitter	0.25 UI or less	Not Available	0.25UI or less	0.25UI or less	0.25UI or less
	Eye height	316 mV or more	Not Available	270mV or more	250mV or more	190mV or more
28AWG	Jitter	0.25 UI or less	Not Available	0.25UI or less	Not Available	Not Available
	Eye height	316 mV or more	Not Available	250mV or more	Not Available	Not Available

5. Pair to pair skew (EIA-364-103, Rise time: 100ps)

500 ps max.



Revision	Date	Changes
Rev 0.3	Nov. 2, 2005	Initial
Rev 0.4	Nov. 11, 2005	Voltage rate change Added 1x2, 2x2 low, 1x4
Rev 0.5	Nov. 15, 2005	Front panel screw change

Preliminary