

High Freq. / High Speed
Characteristic Evaluation

TEST REPORT

Product : Narrow-pitch connector P5K

Date No. A X K 5 5 0 - 1 9 8

Page No. 1 / 6

Purpose

We evaluate characteristics of high frequency / high speed transmission
of narrow-pitch connector.

Sample

Narrow-pitch connector P5K series (AXK540147YG, AXK640347YG)
Stacking height : 3.0 mm, Terminal pitch : 0.5 mm

Content

The followings are evaluated.

- 1.High frequency characteristic
 - S Parameter (Differential)
- 2.High speed characteristic
 - Eye Pattern (Differential)
 - Characteristic Impedance (Differential)

DATE : Aug. 21, 2017

Panasonic Industry Co., Ltd.

DRAWN BY *M. Kadowaki*

REVIEWED BY _____

CHECKED BY *Y. Saku*

APPROVED BY *X. Yoshida*

Test condition

Measurement system

1.Measurement system of high frequency characteristic

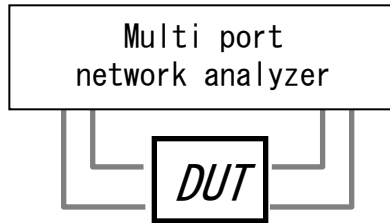


Fig. 1 Measurement system of high frequency characteristic

2.Measurement system of high speed transmission characteristic

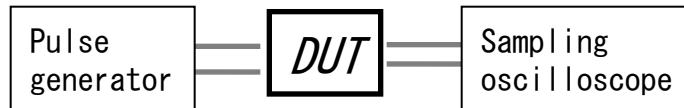


Fig. 2 Measurement system of high speed transmission characteristic

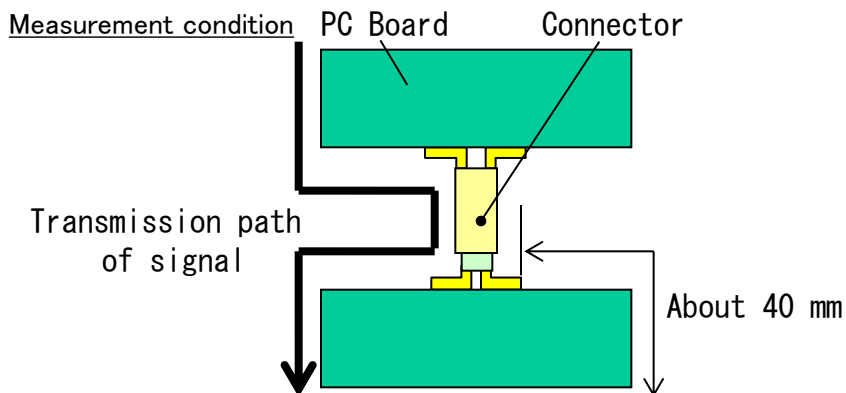


Fig. 3 Side view of DUT

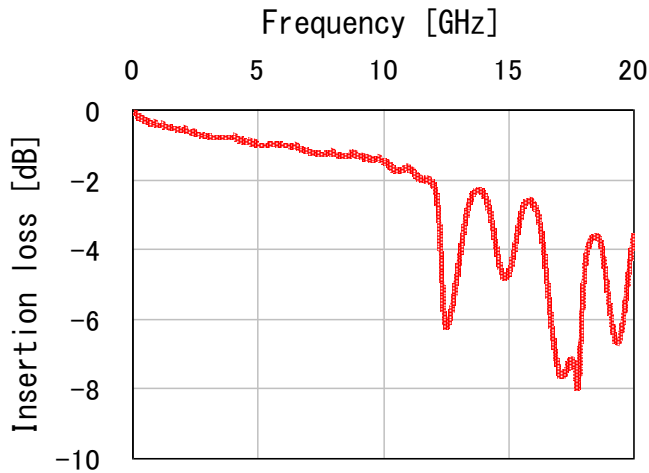
Tab. 1 Measured terminal position of DUT

(● : measured terminal)

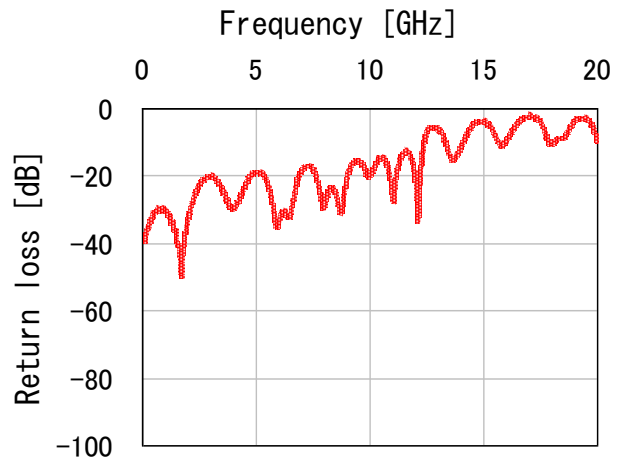
Item	Terminal position
<p>Insertion loss Return loss</p>	
<p>NEXT (Near End X Talk)</p>	
<p>FEXT (Far End X Talk)</p>	

Evaluation result

1.High frequency characteristic
1-1).S parameter (Differential)



☒ 4 - 1 Insertion loss



☒ 4 - 2 Return loss

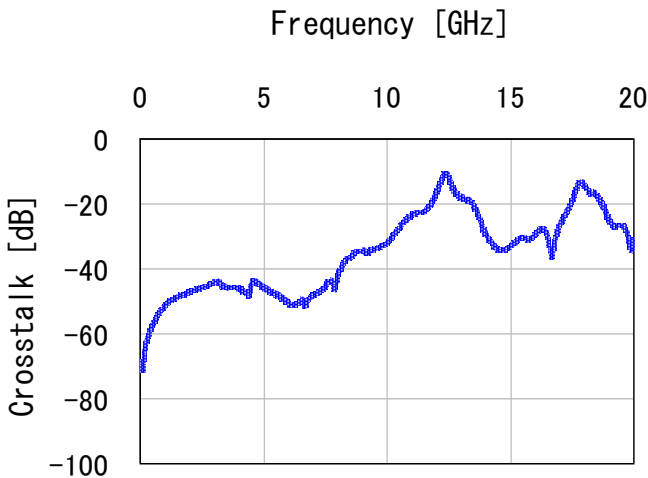


Fig. 4-3 NEXT

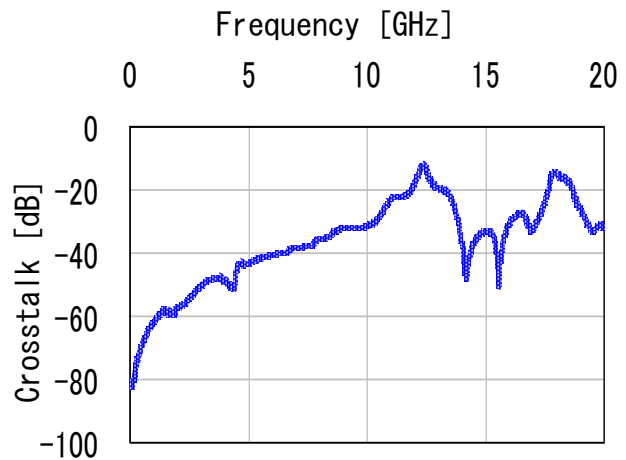
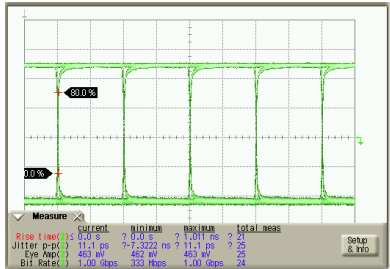
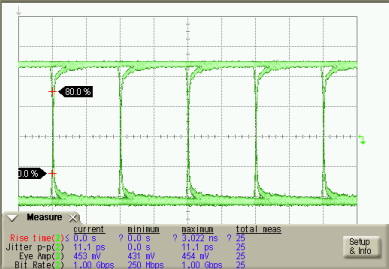
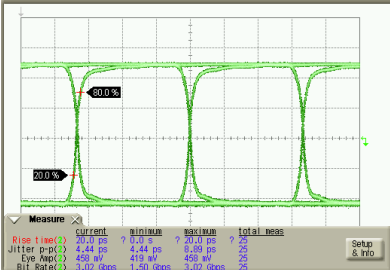
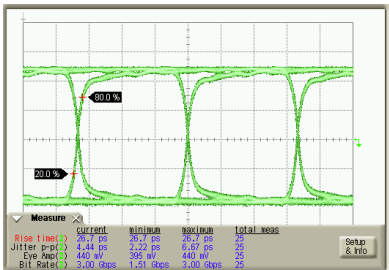
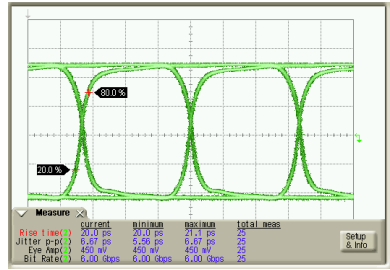
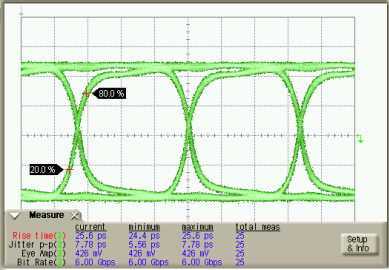
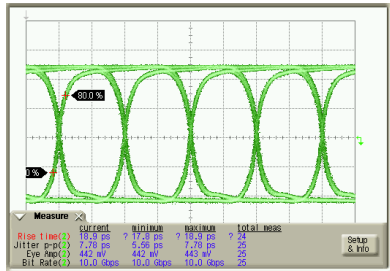
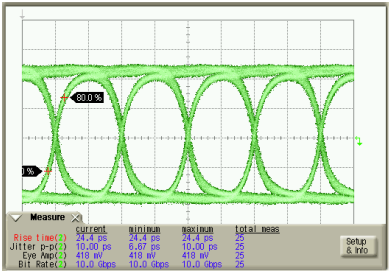


Fig. 4-4 FEXT

2.High speed transmission characteristic
2-1).Eye pattern (Differential)

Tab. 2 Eye pattern (1 / 3 / 6 / 10 Gbps)

	Input	Output																																																		
1 Gbps	 <p>Eye diagram for 1 Gbps Input. The signal shows a clear, wide eye with a 20.0% opening at the bottom and a 80.0% opening at the top. The waveform is a square wave with sharp transitions.</p> <table border="1" data-bbox="361 865 732 923"> <thead> <tr> <th>Measure</th> <th>Current</th> <th>Minimum</th> <th>Maximum</th> <th>Total noise</th> </tr> </thead> <tbody> <tr> <td>Rise Time(2)</td> <td>0.0 ps</td> <td>0.0 ps</td> <td>1.01 ps</td> <td>21</td> </tr> <tr> <td>Jitter p-p(2)</td> <td>11.1 ps</td> <td>9.73 ps</td> <td>11.1 ps</td> <td>25</td> </tr> <tr> <td>Eye Amp(2)</td> <td>463 mV</td> <td>462 mV</td> <td>463 mV</td> <td>25</td> </tr> <tr> <td>Bit Rate(2)</td> <td>1.00 Gbps</td> <td>330 Mbps</td> <td>1.00 Gbps</td> <td>24</td> </tr> </tbody> </table>	Measure	Current	Minimum	Maximum	Total noise	Rise Time(2)	0.0 ps	0.0 ps	1.01 ps	21	Jitter p-p(2)	11.1 ps	9.73 ps	11.1 ps	25	Eye Amp(2)	463 mV	462 mV	463 mV	25	Bit Rate(2)	1.00 Gbps	330 Mbps	1.00 Gbps	24	 <p>Eye diagram for 1 Gbps Output. The signal shows a clear, wide eye with a 20.0% opening at the bottom and a 80.0% opening at the top. The waveform is a square wave with sharp transitions.</p> <table border="1" data-bbox="918 865 1289 923"> <thead> <tr> <th>Measure</th> <th>Current</th> <th>Minimum</th> <th>Maximum</th> <th>Total noise</th> </tr> </thead> <tbody> <tr> <td>Rise Time(2)</td> <td>0.0 ps</td> <td>0.0 ps</td> <td>3.02 ps</td> <td>25</td> </tr> <tr> <td>Jitter p-p(2)</td> <td>11.1 ps</td> <td>0.0 ps</td> <td>11.1 ps</td> <td>25</td> </tr> <tr> <td>Eye Amp(2)</td> <td>463 mV</td> <td>431 mV</td> <td>464 mV</td> <td>25</td> </tr> <tr> <td>Bit Rate(2)</td> <td>1.00 Gbps</td> <td>250 Mbps</td> <td>1.00 Gbps</td> <td>25</td> </tr> </tbody> </table>	Measure	Current	Minimum	Maximum	Total noise	Rise Time(2)	0.0 ps	0.0 ps	3.02 ps	25	Jitter p-p(2)	11.1 ps	0.0 ps	11.1 ps	25	Eye Amp(2)	463 mV	431 mV	464 mV	25	Bit Rate(2)	1.00 Gbps	250 Mbps	1.00 Gbps	25
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2-2).Characteristic Impedance (Differential, at Time Domain Reflectometry)

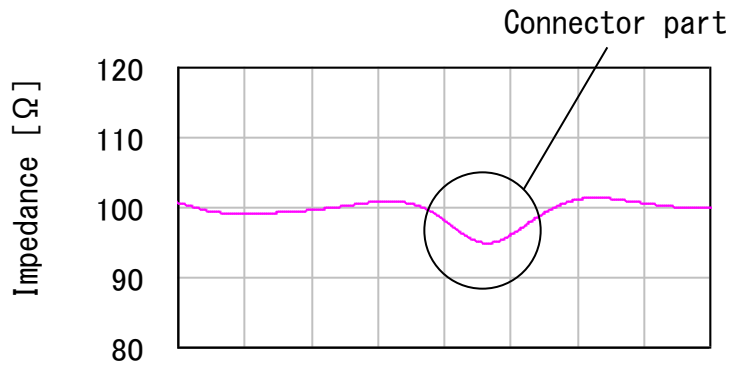


Fig. 5 Characteristic Impedance (at TDR, Tr = 100 ps)