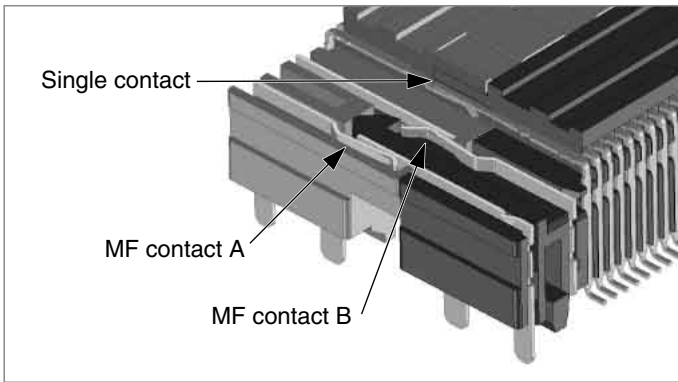


10+Gbps 0.8mm pitch Board to Board Connectors

FX18 Series



Mechanical features

- 0.8mm Pitch
- Variations :Coplanar / Vertical / Stacking
- Number of Contacts : 40 / 60 / 80 / 100 / 120/ 140
- Multi functional contact (MF contact) as;
 - ① ground contact to enhance grounding.
 - ② power supply contacts up to 12 A to reduce required pin counts.
 - ③ 3-step sequential contacts for grounding and detection.
- Effective mating length of signal contact: 2.0 mm.
(MF contact A:2.5mm / MF contact B:1.5mm)
- Pin through hole mounting MF contacts increase strength against wrenching.
- Large mating guide for easy mating.

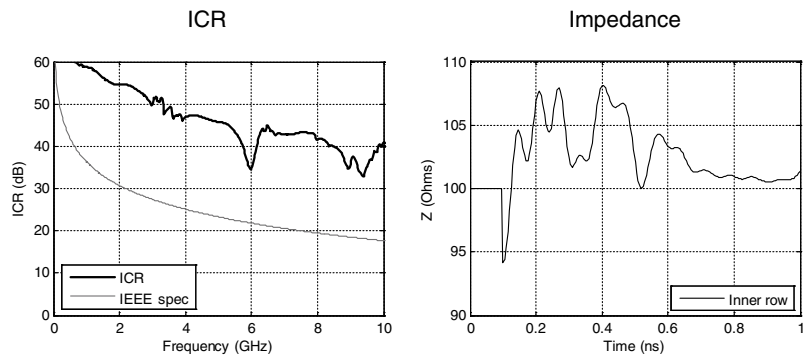
Signal integrity features

● Insertion Loss-to-Crosstalk-Ratio (ICR)

The insertion loss-to-crosstalk ratio (ICR) with five-aggressor differential FEXT meets the extrapolated IEEE802.3ap specification for 10+Gbps with plenty of margins.

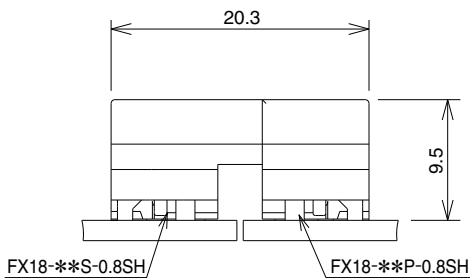
● Differential Impedance

The differential impedance is within 100 ± 10 ohms at 35 ps rise time(20% to 80%)

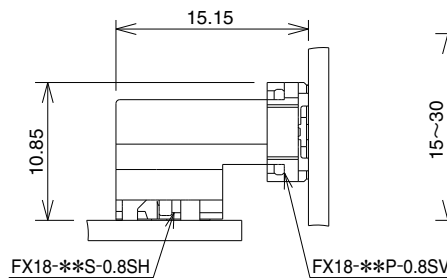


Variations

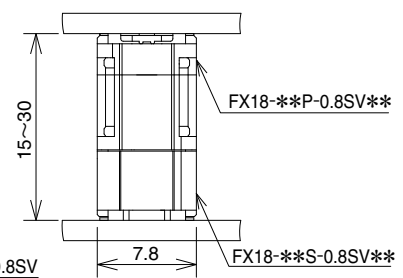
Coplanar connection



Vertical connection



Stacking connection



■Product Specification

| | | |
|--------|--|---|
| Rating | Current Rating 0.5A(Signal) (Note3) 3.0A(MF contact) | Operating Temperature Range -55℃ ~ 80℃ (Note 1) |
| | Voltage Rating AC100V | Storage Temperature Range -10℃ ~ 60℃ (Note 2) |

| Item | Specification | Condition |
|--------------------------------|--|---|
| 1.Contact Resistance | 90m ohms max | 100mA |
| 2.Insulation Resistance | 1000M ohms min | 250V DC |
| 3.Voltage Proof | No flashover or insulation breakdown | 300V AC / 1min |
| 4.Durability (mating/unmating) | Contact resistance: 100m ohms max | 500 cycles |
| 5.Vibration | No electrical discontinuity of 1μs or more | Frequency:10 to 55Hz, Approx 5 min Single amplitude0.75mm, 10cycles for 3 directions |
| 6.Shock | No electrical discontinuity of 1μs or more | 490m/s ² ,Duration of pulse 11ms, at 3 time for 3 directions |
| 7.Humidity (Steady state) | Contact Resistance :100m ohms max Insulation Resistance: 1000M ohms min | 96 hours at temperature of 40±2℃ and humidity of 90% to 95% |
| 8.Temperature Cycle | Contact Resistance :100m ohms max Insulation Resistance: 1000M ohms min | (-55℃:30 minutes,85℃:30minutes) under 5 cycle |

(Note 1) Includes temperature rise caused by current flow.

(Note 2) "Storage" means a long-term storage state for the unused product before assembly to pcb.

(Note 3) The rated current applies to per contact.

(Note 4) Information contained in this catalog represents general requirements for this Series. Contact us for the drawings and specifications for a specific part number shown.

■Material

●Receptacle / Header

| Part | Material | Finish | Remark |
|----------------|-----------------|--|---------|
| Insulator | PA | Black | UL94V-0 |
| Signal contact | Phosphor bronze | Contact area:Gold plated Lead area :Gold plated | —— |
| MF contact | Phosphor bronze | Contact area:Gold plated Lead area :Tin plated | —— |

■Ordering Information

●Right Angle Receptacle

FX18 - 60 S - 0.8 SH

① ② ③ ④ ⑤

●Right Angle Header

FX18 - 60 P - 0.8 SH

① ② ③ ④ ⑤

●Straight Header

FX18 - 60 P - 0.8 SV 10

① ② ③ ④ ⑤ ⑥

●Straight Receptacle

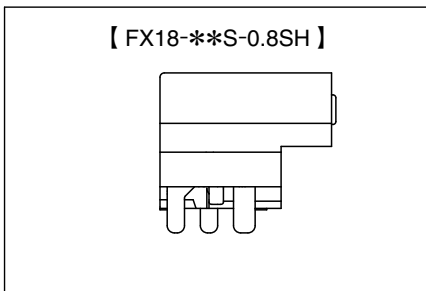
FX18 - 60 S - 0.8 SV 15

① ② ③ ④ ⑤ ⑥

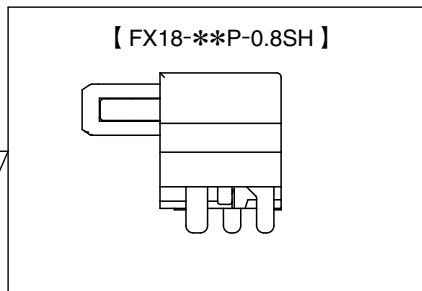
| | |
|-------------------------------|---|
| ① Series Name | :FX18 |
| ② Number of contacts | |
| ③ Connector Type | S :Receptacle P :Header |
| ④ Contact Pitch | :0.8mm |
| ⑤ Contact Type | SH :Board Right Angle Type SV :Board Straight Type |
| ⑥ Stacking Height Designation | |

■Function Chart

●Right Angle Receptacle

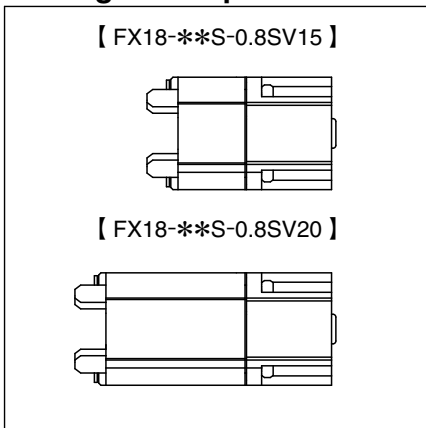


●Right Angle Header

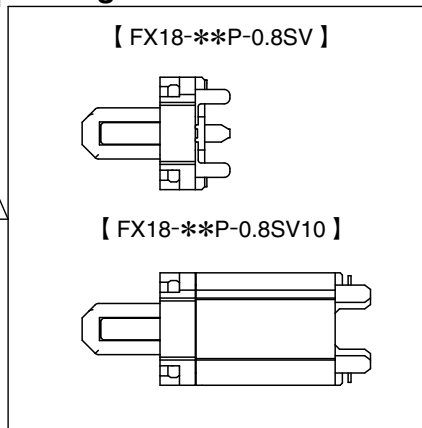


Coplanar connection

●Straight Receptacle



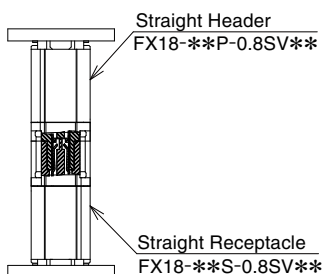
●Straight Header



Vertical connection

Stacking connection

■Stacking connections Heights



Stacking Variation

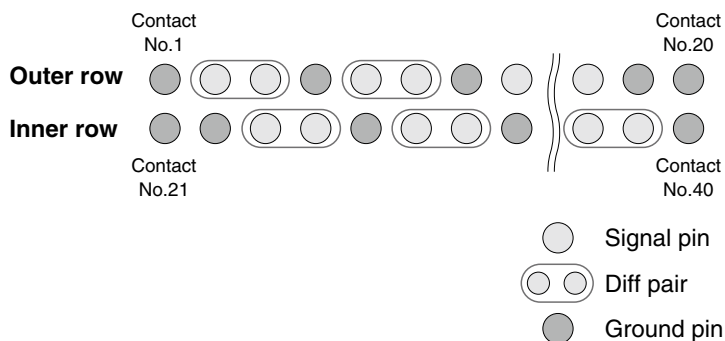
| | FX18-**-P-0.8SV | FX18-**-P-0.8SV10 |
|-------------------|-----------------|-------------------|
| FX18-**-S-0.8SV15 | 15mm | 25mm |
| FX18-**-S-0.8SV20 | 20mm | 30mm |

■Signal Integrity

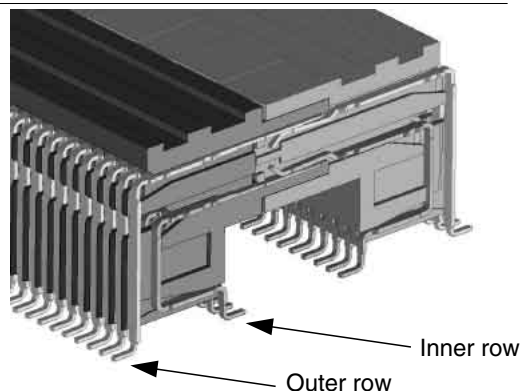
●Pin assignment

To match 100 ohm differential impedance and to reduce crosstalk, a staggered GSSG pin assignment is recommended for FX18. (G=ground and S=signal)

Pin assignment (In case of 40 pos.)

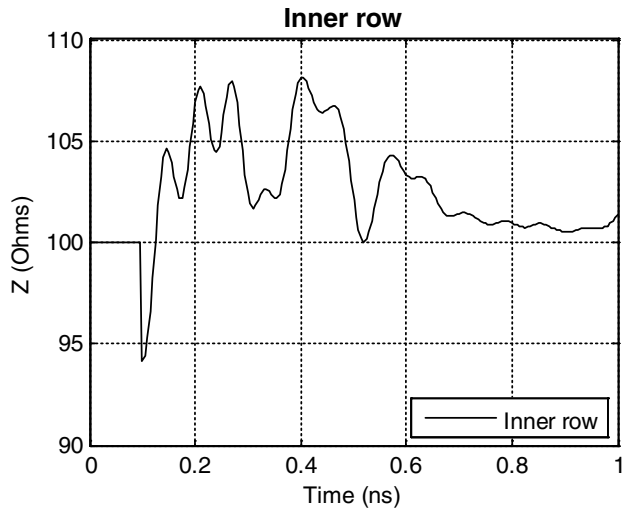
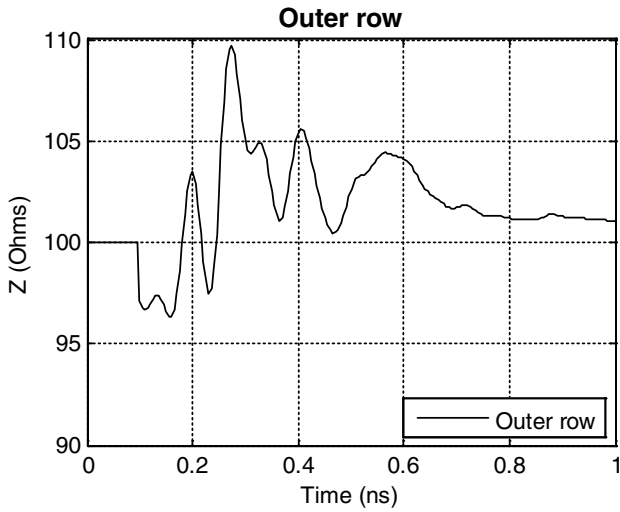


Cross section of mating (coplanar connection)



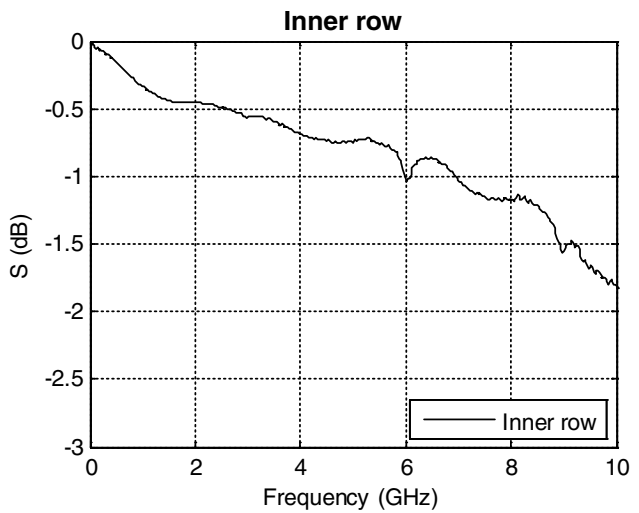
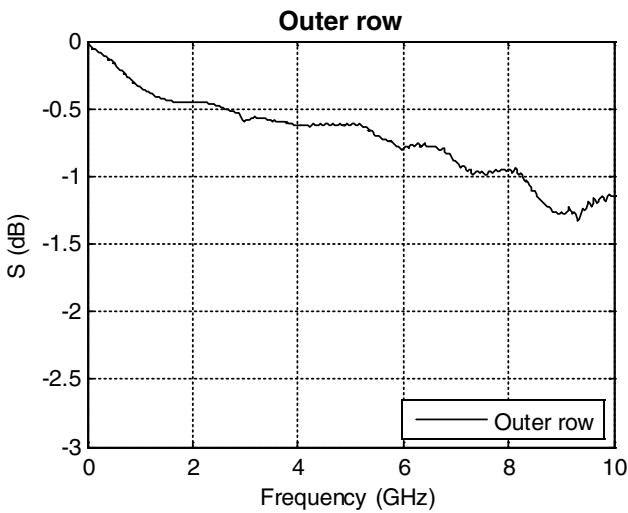
● Impedance

The differential impedance is 100 ± 10 ohm for FX18 at 35 ps rise time (20% to 80%)



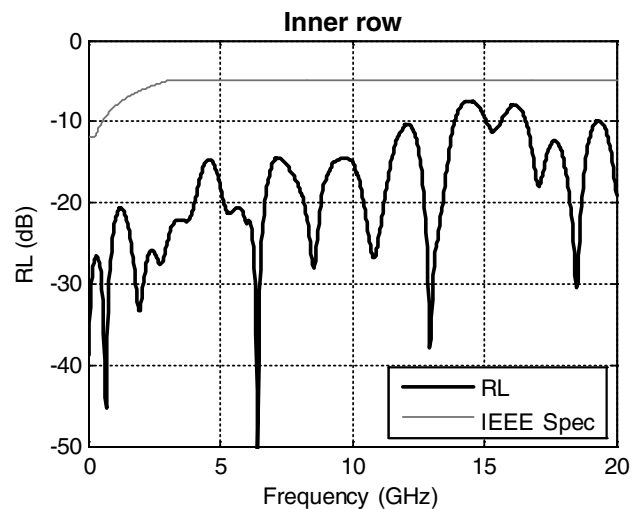
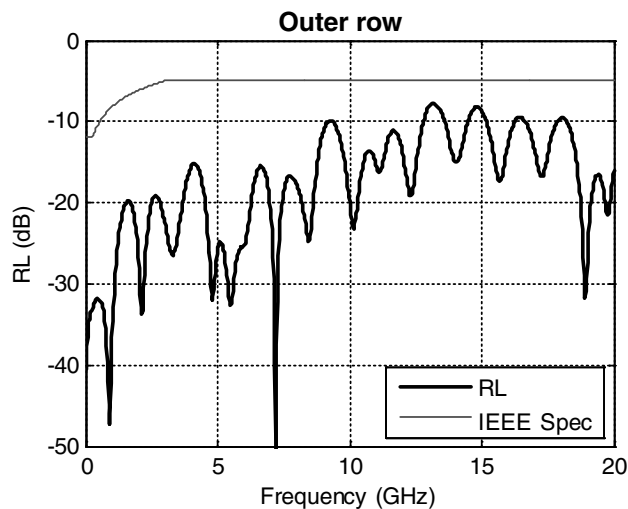
● Insertion Loss

The differential insertion loss crosses 1dB at 6GHz for FX18.



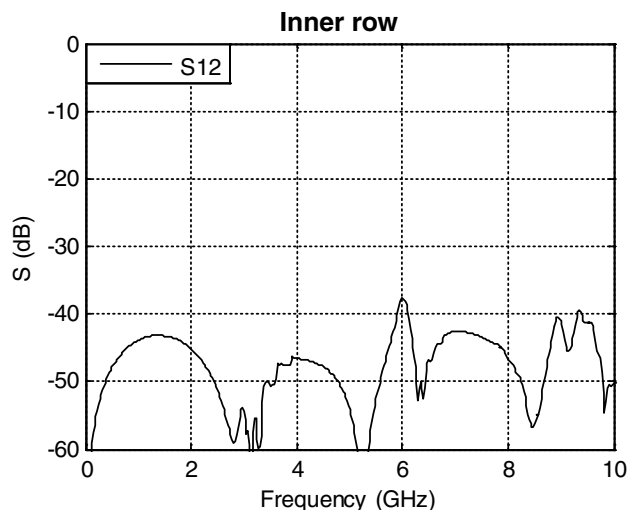
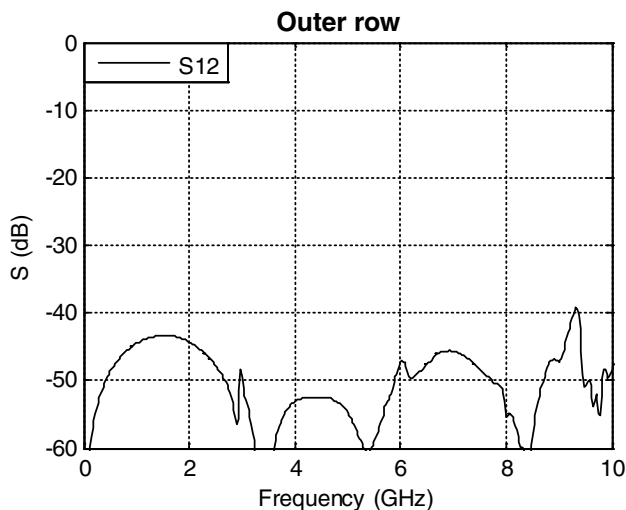
● Return loss

The differential return loss meets the IEEE 802.3ap specification to 10 GHz for FX18.



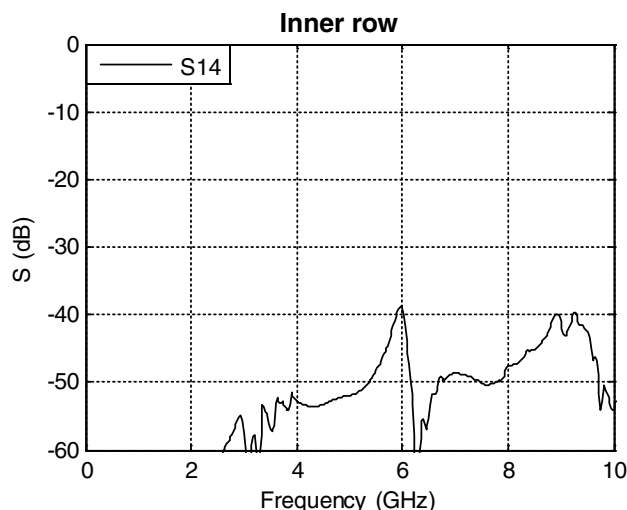
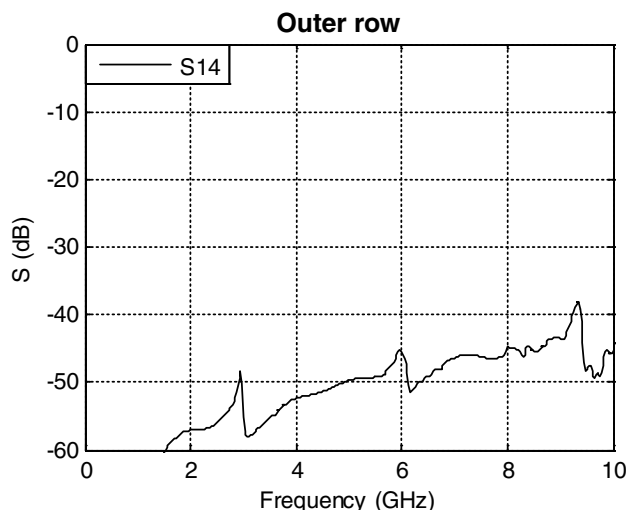
●Near-end crosstalk (NEXT)

The staggered GSSG pin assignments resulted in low differential NEXT.



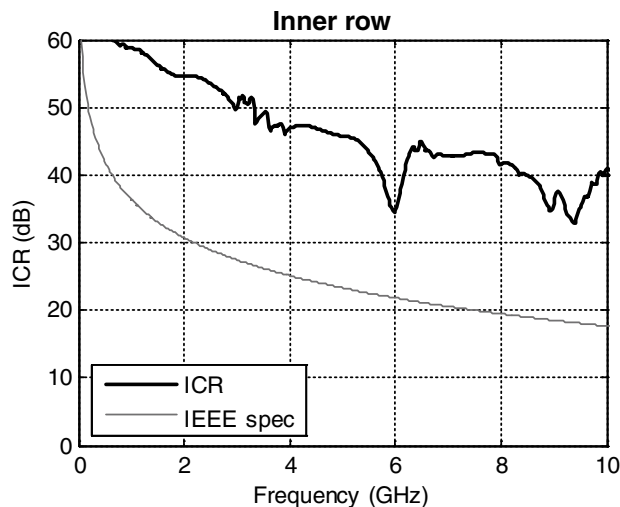
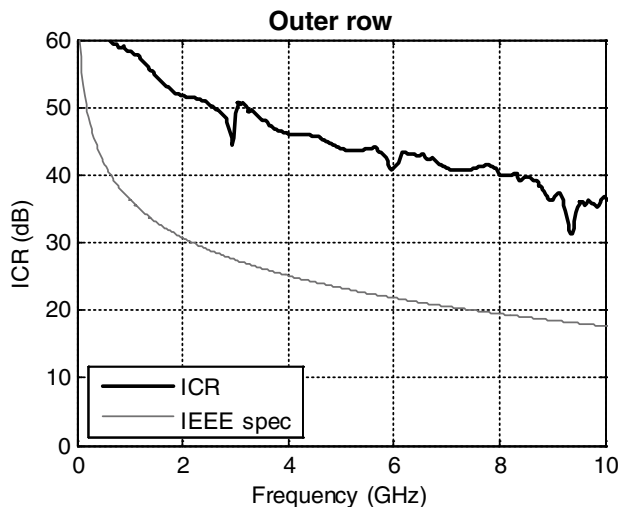
●Far-end crosstalk (FEXT)

The staggered GSSG pin assignments resulted in low differential FEXT.

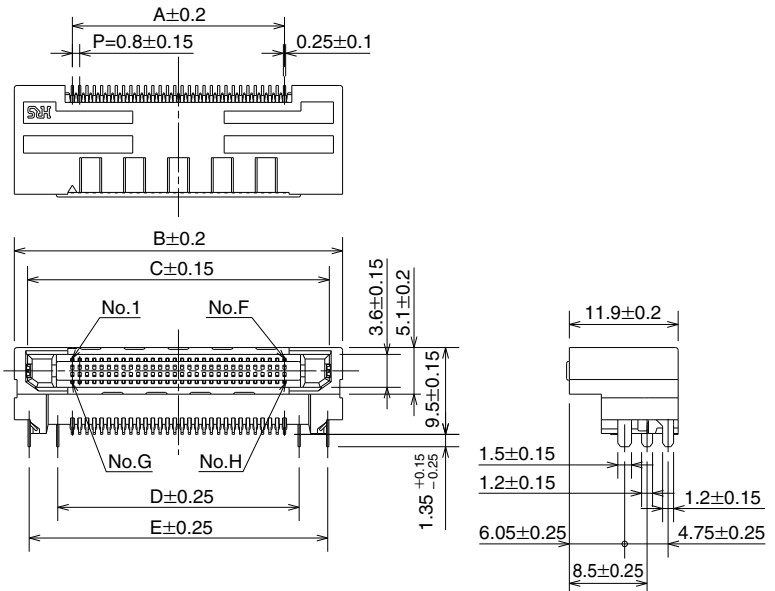


●Insertion-loss-to-crosstalk ratio (ICR)

The insertion-loss-to-crosstalk ratio (ICR) with multi-aggressor differential FEXT meets the extrapolated IEEE 802.3ap specification to 10+Gbps with plenty of margins.



● Right Angle Receptacle

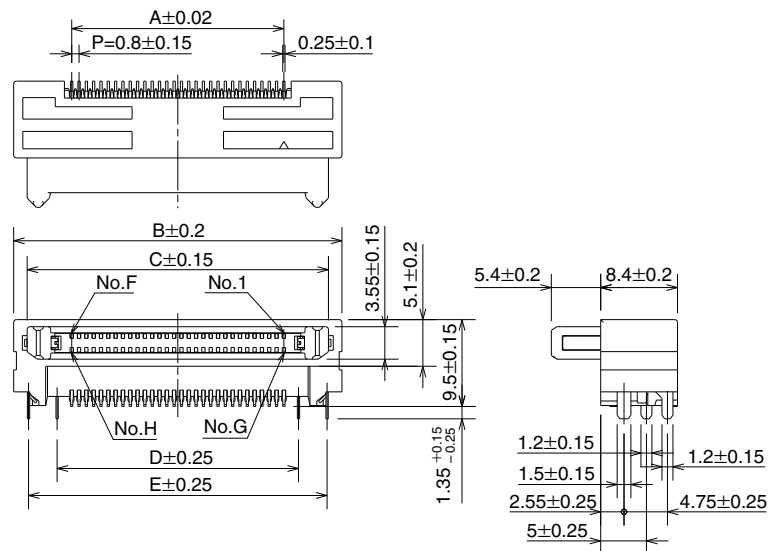


All dimensions in mm

| ★ | Part Number | HRS No. | A | B | C | D | E | F | G | H(pos.) |
|---|-----------------|--------------|------|------|------|------|-------|----|----|---------|
| ★ | FX18-40S-0.8SH | CL579-0009-4 | 15.2 | 27.9 | 25.0 | 18.4 | 24.65 | 20 | 21 | 40 |
| ★ | FX18-60S-0.8SH | CL579-0010-3 | 23.2 | 35.9 | 33.0 | 26.4 | 32.65 | 30 | 31 | 60 |
| ★ | FX18-80S-0.8SH | CL579-0011-6 | 31.2 | 43.9 | 41.0 | 34.4 | 40.65 | 40 | 41 | 80 |
| ★ | FX18-100S-0.8SH | CL579-0012-9 | 39.2 | 51.9 | 49.0 | 42.4 | 48.65 | 50 | 51 | 100 |
| ★ | FX18-120S-0.8SH | CL579-0013-1 | 47.2 | 59.9 | 57.0 | 50.4 | 56.65 | 60 | 61 | 120 |
| ★ | FX18-140S-0.8SH | CL579-0014-4 | 55.2 | 67.9 | 65.0 | 58.4 | 64.65 | 70 | 71 | 140 |

★ indicates "available". No marking, "under development"

● Right Angle Header

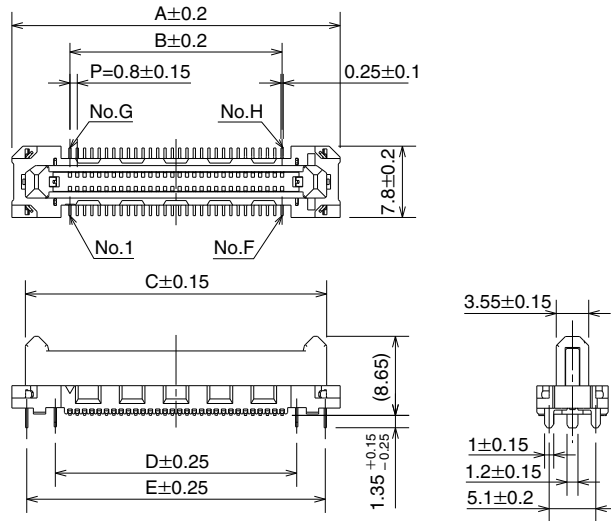
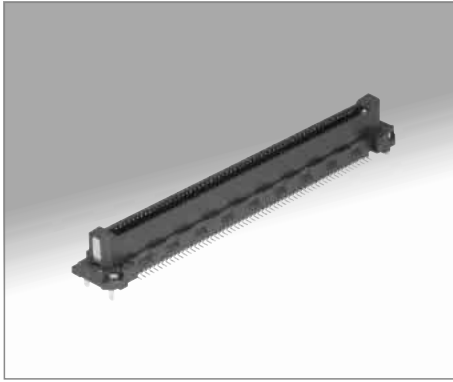


All dimensions in mm

| ★ | Part Number | HRS No. | A | B | C | D | E | F | G | H(pos.) |
|---|-----------------|--------------|------|------|-------|------|-------|----|----|---------|
| ★ | FX18-40P-0.8SH | CL579-0002-5 | 15.2 | 27.9 | 24.95 | 18.4 | 24.65 | 20 | 21 | 40 |
| ★ | FX18-60P-0.8SH | CL579-0003-8 | 23.2 | 35.9 | 32.95 | 26.4 | 32.65 | 30 | 31 | 60 |
| ★ | FX18-80P-0.8SH | CL579-0004-0 | 31.2 | 43.9 | 40.95 | 34.4 | 40.65 | 40 | 41 | 80 |
| ★ | FX18-100P-0.8SH | CL579-0005-3 | 39.2 | 51.9 | 48.95 | 42.4 | 48.65 | 50 | 51 | 100 |
| ★ | FX18-120P-0.8SH | CL579-0006-6 | 47.2 | 59.9 | 56.95 | 50.4 | 56.65 | 60 | 61 | 120 |
| ★ | FX18-140P-0.8SH | CL579-0007-9 | 55.2 | 67.9 | 64.95 | 58.4 | 64.65 | 70 | 71 | 140 |

★ indicates "available". No marking, "under development"

●Straight Header

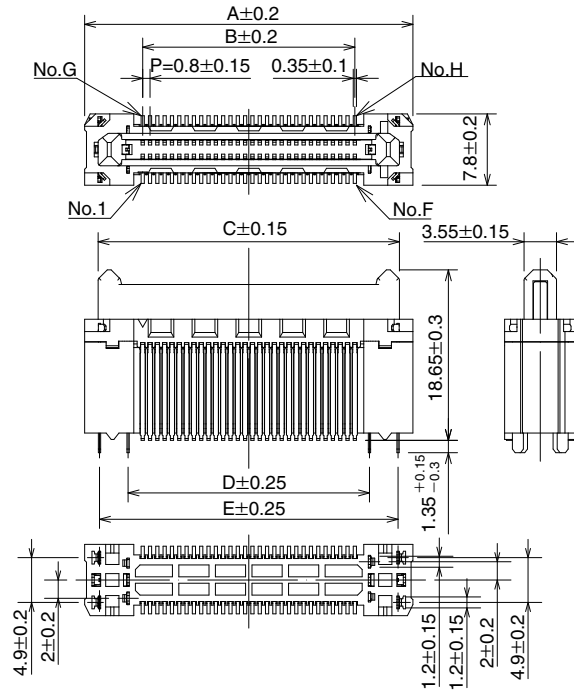


All dimensions in mm

| Part Number | HRS No. | A | B | C | D | E | F | G | H(pos.) |
|-------------------|--------------|------|------|-------|------|-------|----|----|---------|
| ★ FX18-40P-0.8SV | CL579-0016-0 | 27.9 | 15.2 | 24.95 | 18.4 | 24.65 | 20 | 21 | 40 |
| ★ FX18-60P-0.8SV | CL579-0017-2 | 35.9 | 23.2 | 32.95 | 26.4 | 32.65 | 30 | 31 | 60 |
| ★ FX18-80P-0.8SV | CL579-0018-5 | 43.9 | 31.2 | 40.95 | 34.4 | 40.65 | 40 | 41 | 80 |
| FX18-100P-0.8SV | — | 51.9 | 39.2 | 48.95 | 42.4 | 48.65 | 50 | 51 | 100 |
| ★ FX18-120P-0.8SV | CL579-0020-7 | 59.9 | 47.2 | 56.95 | 50.4 | 56.65 | 60 | 61 | 120 |
| FX18-140P-0.8SV | — | 67.9 | 55.2 | 64.95 | 58.4 | 64.65 | 70 | 71 | 140 |

★ indicates "available". No marking, "under development"

●Straight Header (10 type)

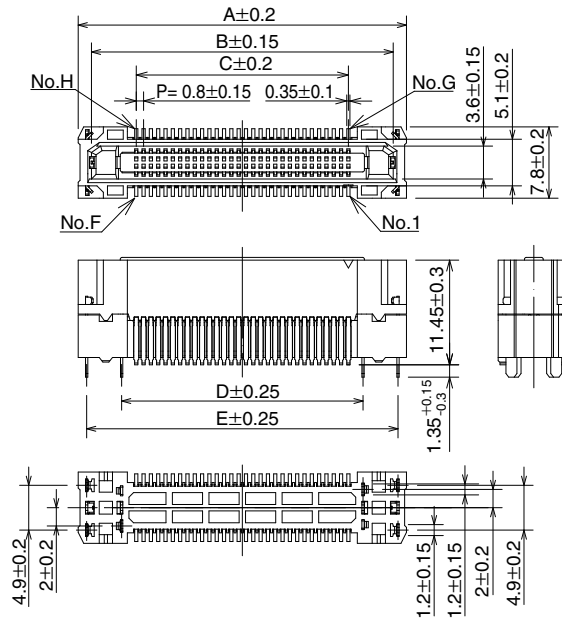
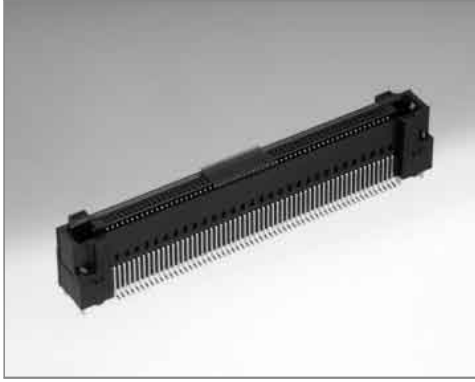


All dimensions in mm

| Part Number | HRS No. | A | B | C | D | E | F | G | H(pos.) |
|---------------------|--------------|------|------|-------|------|-------|----|----|---------|
| ★ FX18-40P-0.8SV10 | CL579-0022-2 | 27.9 | 15.2 | 24.95 | 18.4 | 24.65 | 20 | 21 | 40 |
| ★ FX18-60P-0.8SV10 | CL579-0023-5 | 35.9 | 23.2 | 32.95 | 26.4 | 32.65 | 30 | 31 | 60 |
| ★ FX18-80P-0.8SV10 | CL579-0024-8 | 43.9 | 31.2 | 40.95 | 34.4 | 40.65 | 40 | 41 | 80 |
| FX18-100P-0.8SV10 | — | 51.9 | 39.2 | 48.95 | 42.4 | 48.65 | 50 | 51 | 100 |
| ★ FX18-120P-0.8SV10 | CL579-0025-0 | 59.9 | 47.2 | 56.95 | 50.4 | 56.65 | 60 | 61 | 120 |
| FX18-140P-0.8SV10 | — | 67.9 | 55.2 | 64.95 | 58.4 | 64.65 | 70 | 71 | 140 |

★ indicates "available". No marking, "under development"

●Straight Receptacle(15type)

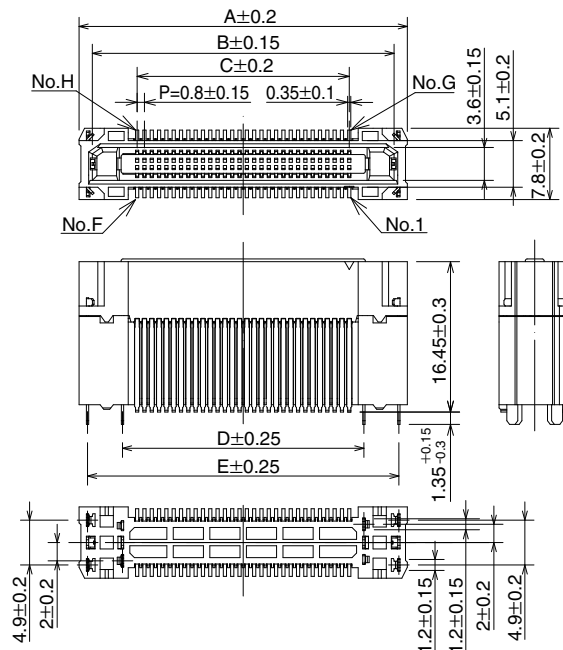


All dimensions in mm

| Part Number | HRS No. | A | B | C | D | E | F | G | H(pos.) |
|---------------------|--------------|------|----|------|------|-------|----|----|---------|
| ★ FX18-40S-0.8SV15 | CL579-0026-3 | 27.9 | 25 | 15.2 | 18.4 | 26.05 | 20 | 21 | 40 |
| ★ FX18-60S-0.8SV15 | CL579-0027-6 | 35.9 | 33 | 23.2 | 26.4 | 34.05 | 30 | 31 | 60 |
| ★ FX18-80S-0.8SV15 | CL579-0028-9 | 43.9 | 41 | 31.2 | 34.4 | 42.05 | 40 | 41 | 80 |
| FX18-100S-0.8SV15 | — | 51.9 | 49 | 39.2 | 42.4 | 50.05 | 50 | 51 | 100 |
| ★ FX18-120S-0.8SV15 | CL579-0029-1 | 59.9 | 57 | 47.2 | 50.4 | 58.05 | 60 | 61 | 120 |
| FX18-140S-0.8SV15 | — | 67.9 | 65 | 55.2 | 58.4 | 66.05 | 70 | 71 | 140 |

★ indicates "available". No marking, "under development"

●Straight Receptacle(20type)



All dimensions in mm

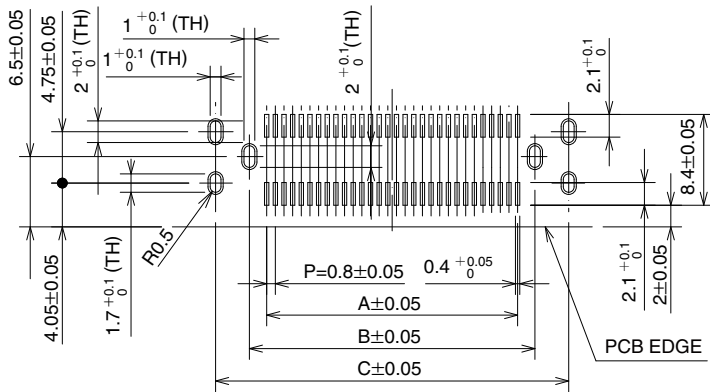
| Part Number | HRS No. | A | B | C | D | E | F | G | H(pos.) |
|---------------------|--------------|------|----|------|------|-------|----|----|---------|
| ★ FX18-40S-0.8SV20 | CL579-0030-0 | 27.9 | 25 | 15.2 | 18.4 | 26.05 | 20 | 21 | 40 |
| ★ FX18-60S-0.8SV20 | CL579-0031-3 | 35.9 | 33 | 23.2 | 26.4 | 34.05 | 30 | 31 | 60 |
| ★ FX18-80S-0.8SV20 | CL579-0032-6 | 43.9 | 41 | 31.2 | 34.4 | 42.05 | 40 | 41 | 80 |
| FX18-100S-0.8SV20 | — | 51.9 | 49 | 39.2 | 42.4 | 50.05 | 50 | 51 | 100 |
| ★ FX18-120S-0.8SV20 | CL579-0033-9 | 59.9 | 57 | 47.2 | 50.4 | 58.05 | 60 | 61 | 120 |
| FX18-140S-0.8SV20 | — | 67.9 | 65 | 55.2 | 58.4 | 66.05 | 70 | 71 | 140 |

★ indicates "available". No marking, "under development"

Recommended Land Pattern Dimension of PCB

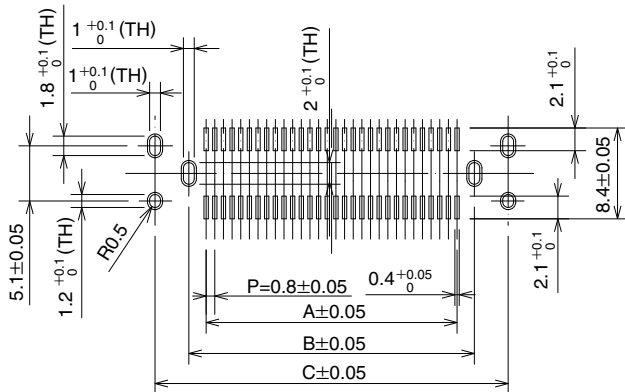
(PCB thickness: $t=1.6\text{mm}$ / Metal mask thickness: $t=0.12\text{mm}$)

Right Angle Receptacle / Right Angle Header



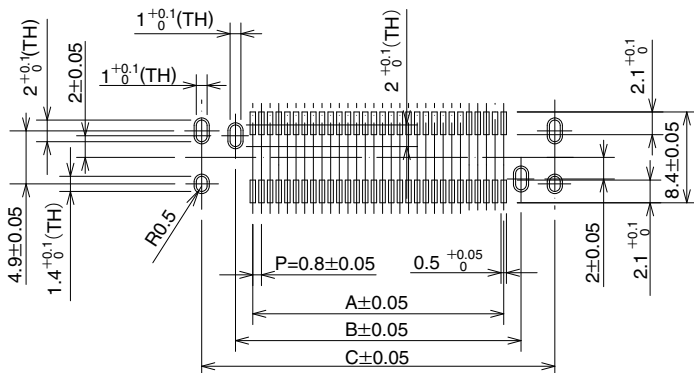
| Part Number | A | B | C |
|-----------------|------|------|-------|
| FX18-40S-0.8SH | 15.2 | 18.4 | 24.65 |
| FX18-40P-0.8SH | | | |
| FX18-60S-0.8SH | 23.2 | 26.4 | 32.65 |
| FX18-60P-0.8SH | | | |
| FX18-80S-0.8SH | 31.2 | 34.4 | 40.65 |
| FX18-80P-0.8SH | | | |
| FX18-100S-0.8SH | 39.2 | 42.4 | 48.65 |
| FX18-100P-0.8SH | | | |
| FX18-120S-0.8SH | 47.2 | 50.4 | 56.65 |
| FX18-120P-0.8SH | | | |
| FX18-140S-0.8SH | 55.2 | 58.4 | 64.65 |
| FX18-140P-0.8SH | | | |

Straight Header



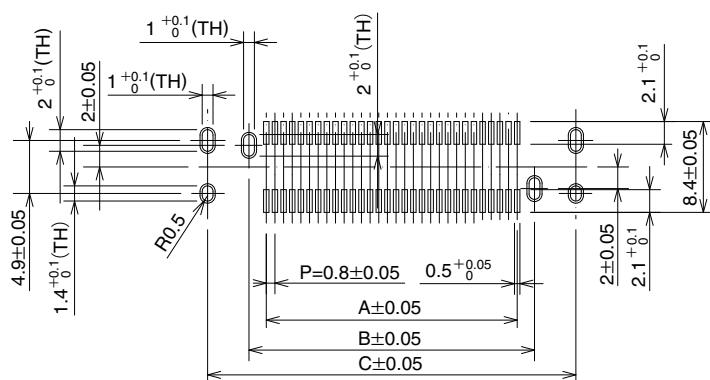
| Part Number | A | B | C |
|-----------------|------|------|-------|
| FX18-40P-0.8SV | 15.2 | 18.4 | 24.65 |
| FX18-60P-0.8SV | 23.2 | 26.4 | 32.65 |
| FX18-80P-0.8SV | 31.2 | 34.4 | 40.65 |
| FX18-100P-0.8SV | 39.2 | 42.4 | 48.65 |
| FX18-120P-0.8SV | 47.2 | 50.4 | 56.65 |
| FX18-140P-0.8SV | 55.2 | 58.4 | 64.65 |

Straight Header (SV 10 type)



| Part Number | A | B | C |
|-------------------|------|------|-------|
| FX18-40P-0.8SV10 | 15.2 | 18.4 | 24.65 |
| FX18-60P-0.8SV10 | 23.2 | 26.4 | 32.65 |
| FX18-80P-0.8SV10 | 31.2 | 34.4 | 40.65 |
| FX18-100P-0.8SV10 | 39.2 | 42.4 | 48.65 |
| FX18-120P-0.8SV10 | 47.2 | 50.4 | 56.65 |
| FX18-140P-0.8SV10 | 55.2 | 58.4 | 64.65 |

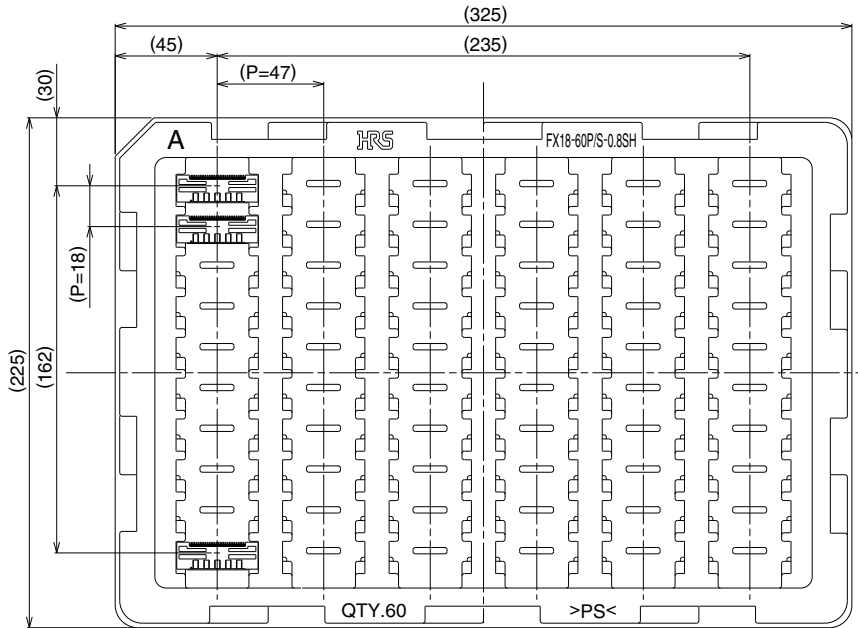
Straight Receptacle (SV 15 / SV20 type)



| Part Number | A | B | C |
|----------------------|------|------|-------|
| FX18-40S-0.8SV15/20 | 15.2 | 18.4 | 26.05 |
| FX18-60S-0.8SV15/20 | 23.2 | 26.4 | 34.05 |
| FX18-80S-0.8SV15/20 | 31.2 | 34.4 | 42.05 |
| FX18-100S-0.8SV15/20 | 39.2 | 42.4 | 50.05 |
| FX18-120S-0.8SV15/20 | 47.2 | 50.4 | 58.05 |
| FX18-140S-0.8SV15/20 | 55.2 | 58.4 | 66.05 |

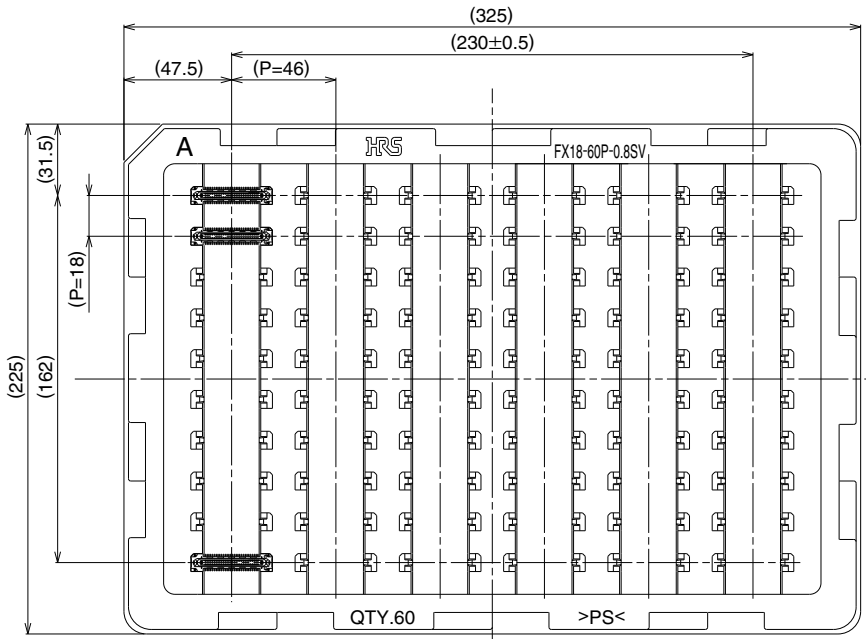
■ Packing specification

● Right Angle Receptacle / Right Angle Header



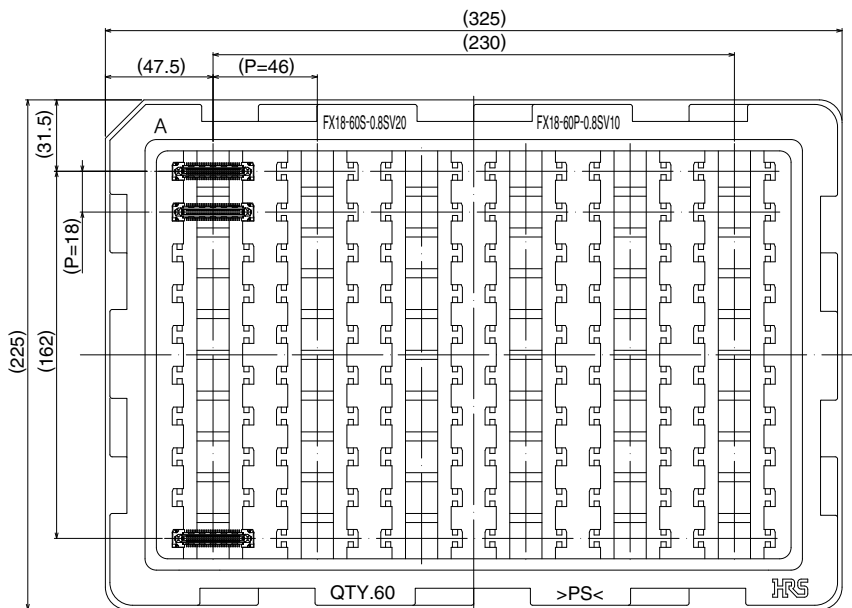
| Part Number | Quantity |
|-----------------|----------|
| FX18-40S-0.8SH | 70 |
| FX18-40P-0.8SH | |
| FX18-60S-0.8SH | 60 |
| FX18-60P-0.8SH | |
| FX18-80S-0.8SH | 50 |
| FX18-80P-0.8SH | |
| FX18-100S-0.8SH | 40 |
| FX18-100P-0.8SH | |
| FX18-120S-0.8SH | 40 |
| FX18-120P-0.8SH | |
| FX18-140S-0.8SH | 40 |
| FX18-140P-0.8SH | |

● Straight Header



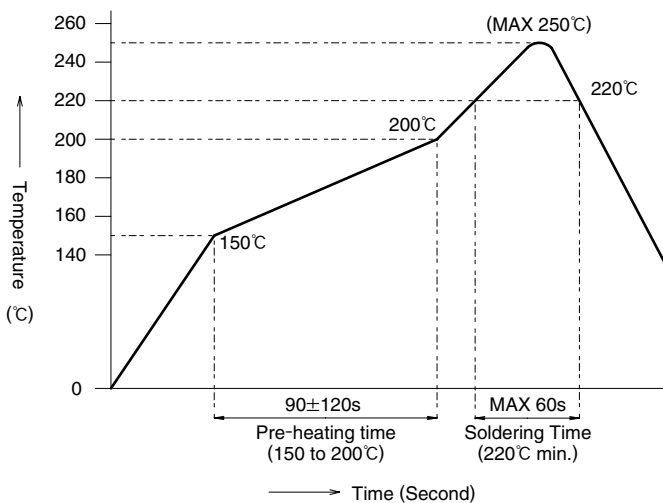
| Part Number | Quantity |
|-----------------|----------|
| FX18-40P-0.8SV | 70 |
| FX18-60P-0.8SV | 60 |
| FX18-80P-0.8SV | 50 |
| FX18-100P-0.8SV | 40 |
| FX18-120P-0.8SV | 40 |
| FX18-140P-0.8SV | 40 |

●Straight Header 10 type / Straight Receptacle (15/20 type)



| Part Number | Quantity |
|-------------------|----------|
| FX18-40P-0.8SV10 | |
| FX18-40S-0.8SV15 | 60 |
| FX18-40S-0.8SV20 | |
| FX18-60P-0.8SV10 | |
| FX18-60S-0.8SV15 | 60 |
| FX18-60S-0.8SV20 | |
| FX18-80P-0.8SV10 | |
| FX18-80S-0.8SV15 | 50 |
| FX18-80S-0.8SV20 | |
| FX18-100P-0.8SV10 | |
| FX18-100S-0.8SV15 | 40 |
| FX18-100S-0.8SV20 | |
| FX18-120P-0.8SV10 | |
| FX18-120S-0.8SV15 | 40 |
| FX18-120S-0.8SV20 | |
| FX18-140P-0.8SV10 | |
| FX18-140S-0.8SV15 | 40 |
| FX18-140S-0.8SV20 | |

■Mounting Temperature Profile (Reference)



HRS test conditions

- Test board dimension : 110×50×1.6mm
- material : Glass epoxy
- Solder method : Reflow
- Solder composition : Paste
Sn-3Ag-0.5Cu
- Metal mask : 0.12mm thick
- Reflow cycle : 2 cycle

The temperature profile is based on the above conditions. In individual applications the actual temperature may vary, depending on solder paste type, Volume/thickness and board size/thickness.

Consult your solder paste and equipment manufacturer for specific recommendations.

■ Cleaning recommendations

● Organic solvent cleaning

| Solvent Type | Room temperature cleaning | Heated cleaning |
|----------------------------------|---------------------------|-----------------|
| IPA (Isopropyl alcohol) | YES | YES |
| HCFC (Hydrochlorofluorocarbon) | YES | YES |

● Water based cleaning

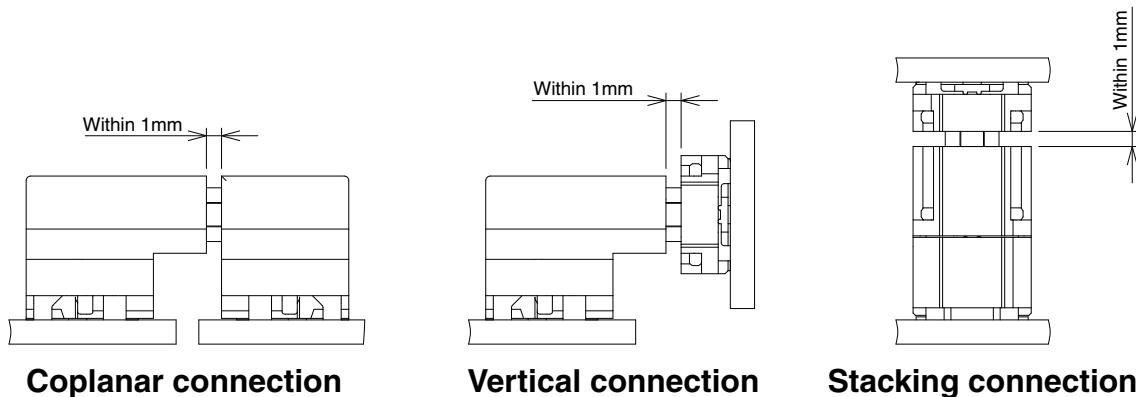
When using water based cleaning agents (e.g., terpene, alkali saponifiers), select the cleaning agent based on the documentation issued by the various manufacturers of cleaning agents which describes it's affects on metals, platings and plastics. Remove any moisture after cleaning.

Residual flux or cleaning agents in the contact areas may affect electrical performance.

■ Connector Precautions

● Allowable Clearance between the Mated Pair

Recommend the allowable clearance at mating including angled insertion to be Max. 1mm.



● PCB Fixture

PCB and chassis can not be stabilized only by the connector.

Fixture to stabilize the PCB is necessary.

When fitting using a rotary insertion plug, please ensure you refer to the Rotary Insertion Guideline (TADC 4-210630)



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