

## Q7 series connectors

### Product Introduction

Q7 series wire spring socket connectors comply with the CPCI bus operating requirement, which can substitute the ordinary spring reed 2 mm gap connector. It has reliable contact performance and resistance to environmental performance.

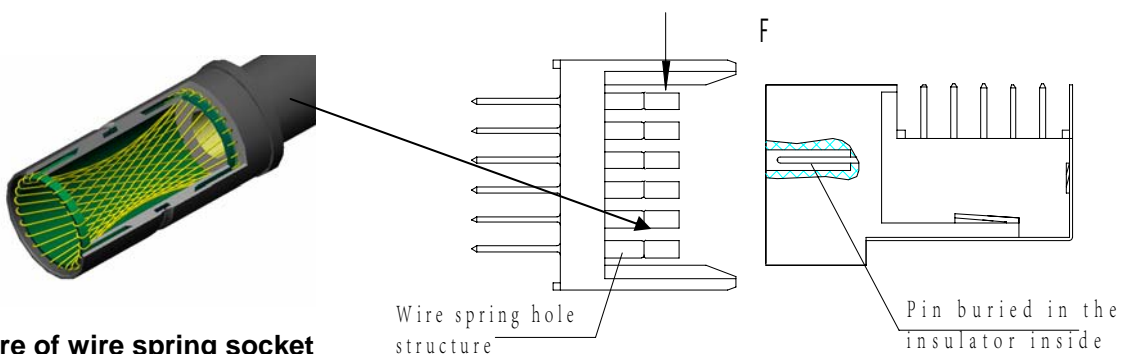
- Electrical and environmental performance comply with IEC61076-4-101
- Adopt high reliable wire spring socket, suitable for severe environment such as vibration and shock
- 100  $\Omega$  matching differential characteristic impedance strengthens signal integrity
- Suitable for the data transmission between motherboards and package board
- Transmission rate 3.125Gbps
- Apply to aviation, aerospace etc. military field
- Execution enterprise standard: Q/21EJ739



### Product advantages

[Adopt wire spring socket, improve the contact reliability]

Compare with normal connector with 2 mm spring reed, J4 series use high reliable hyperboloid wire spring socket structure, which ensures that interruptions failure does not occur under the high strength vibration, shock and other severe environment. Vibration and shock condition is far higher than common spring reed, structure products. Connector mechanical life is more than 4000 times. It is much more than the common leaf spring structure products 500 times requirement.



**Structure of wire spring socket**

Performance comparison			
No.	Main performance	Common spring reed series	Wire spring J4 series
1	Mechanical life	500 cycles	4000 cycles

2	Vibration	10~2000Hz, 196m/s <sup>2</sup>	~2000Hz, PSD(power spectral density) g <sup>2</sup> /Hz
3	Shock	490m/s <sup>2</sup>	980m/s <sup>2</sup>

[Pin and socket reverse installation, improve the operating reliability]

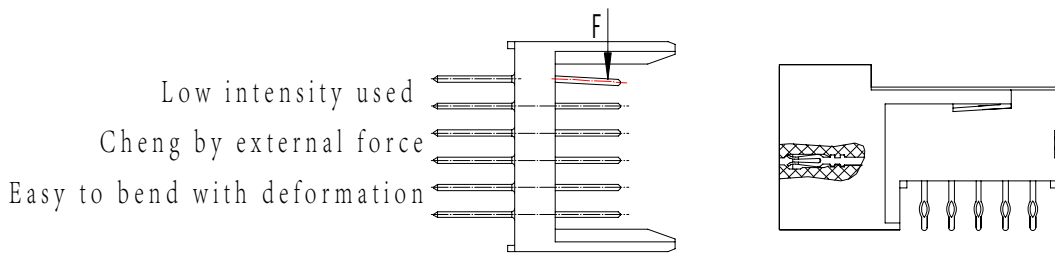
Q7 series connector receptacle (rear panel end connector) use socket exposed structure, plug adopt the pin embedded structure. It prevents the pin from bending and fracture caused by the accident knock of the exposed pin which usually occurs in the mating and separating process of the common spring reed connector.



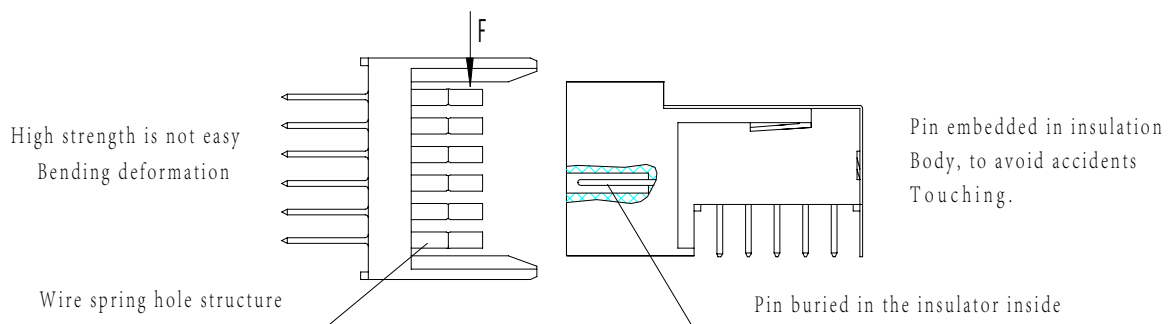
**Q7 series receptacle**



**Common spring reed receptacle**



**Common spring reed series**



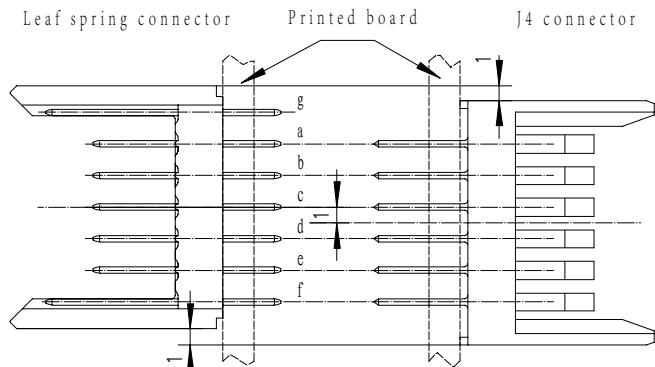
**Q7 series**

Compared with spring reed receptacle

Q7 series wire spring socket connectors comply with the CPCI bus operating requirement, which

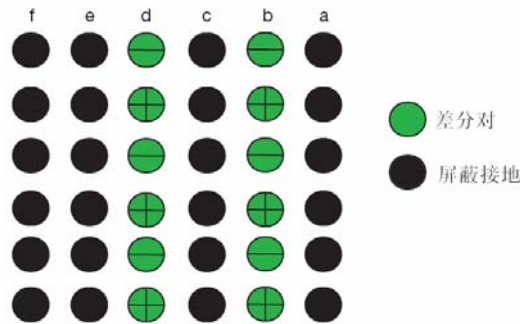
can substitute the ordinary connector with spring reed 2 mm spacing. It has reliable contact performance and resistance to environmental performance.

a~ e row for signal contacts, f, g row for shielding contacts. When the signal contacts of Q7 connector coincides with common spring reed connector, the exterior wall of the two kinds of connector will offset 1 mm, since the structure of these two kinds of connector is different. Relative position of the two kinds of connector is as shown on the right.

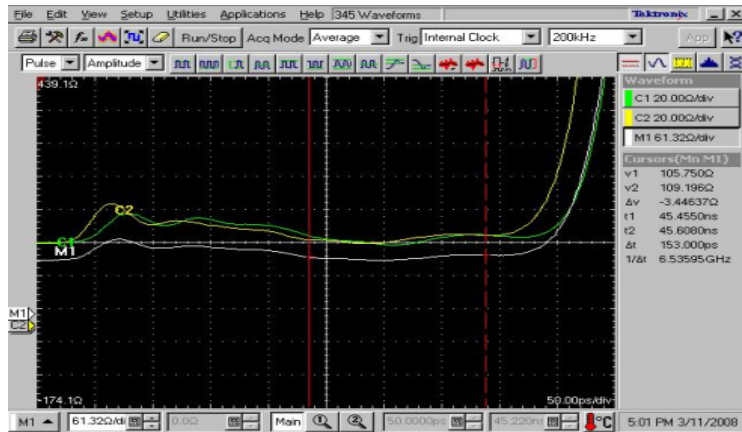


### High-speed transmission performance test

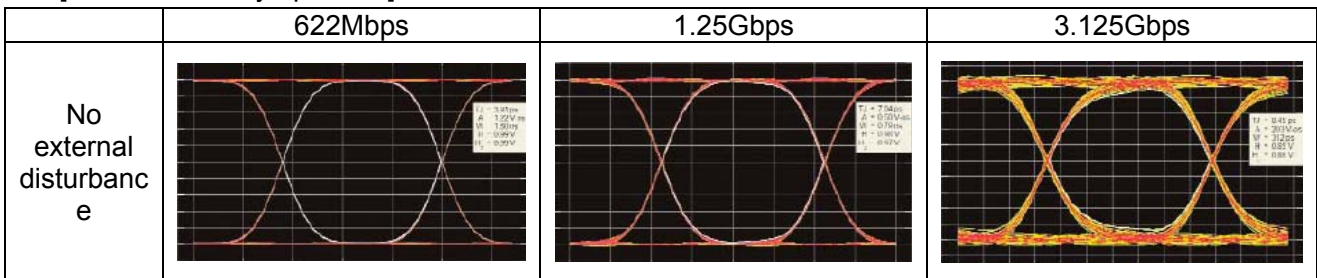
[Differential signal transmission connection mode]



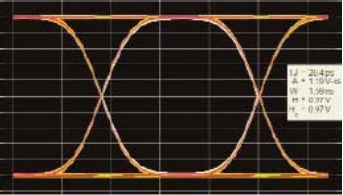
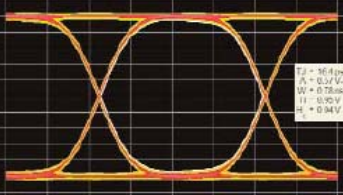
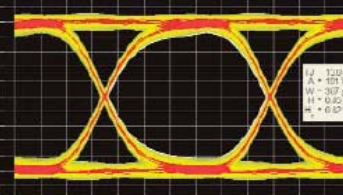
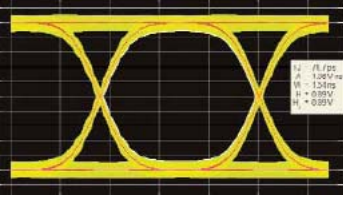
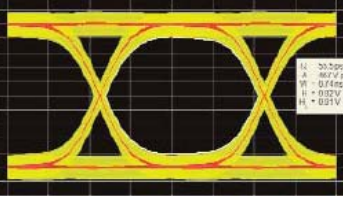
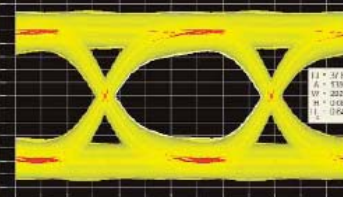
[Characteristic impedance]



[Transmission eye pattern]





Contains near end crosstalk 30%	 <p>Time: 20.4 ps A: 1.18V W: 1.20 ps H: 0.37V L: 0.97V</p>	 <p>Time: 16.4 ps A: 0.7V W: 0.78 ps H: 0.24V L: 0.94V</p>	 <p>Time: 11.0 ps A: 4.01V W: 3.07 ps H: 0.57V L: 0.57V</p>
Contains near end crosstalk 100%	 <p>Time: 8.7 ps A: 1.2V W: 1.2 ps H: 0.29V L: 0.29V</p>	 <p>Time: 50.2 ps A: 0.7V W: 0.74 ps H: 0.71V L: 0.71V</p>	 <p>Time: 11.0 ps A: 1.0V W: 2.02 ps H: 0.52V L: 0.52V</p>

Main technical performance

[Transmission performance]

- Transmission time-lag<30ps
- Impedance: Impedance between differential pairs is 100±15Ω, impedance between differential signal and ground is 50±10Ω
- Crosstalk: Within 100ps rise time <5%
- Data transmission rate: 3.125Gbps
- Reflection: <10%

[Mechanical performance]

- Endurance: 4000 cycles
  - Shock: 11ms half sinusoid, acceleration 980m/s<sup>2</sup>
  - Vibration: Sine: 10Hz~2000Hz, 196m/s<sup>2</sup>  
Random: 10Hz~2000Hz,
- PSD(power spectral density) 0.4g<sup>2</sup>/Hz

[Environmental performance]

- Temperature range: -55℃~+125℃
- Altitude withstanding voltage: 30kPa , 200V AC
- Damp heat: According to GJB1217, alternating damp heat 10d
- Resistance to liquid: Resistant to various fuel, coolant, solvent
- Flame retardant: Extinguished within 10s
- Salt spray: 48h

[Electrical performance]

- Withstanding voltage ( Vrms ) : normal conditions 1000AC
- Contact resistance: ≤25 MΩ
- Insulation resistance: ≥5000 MΩ
- Contact current rating: 1A

Ordering Information

Basic series	Q7	D	110	F	F	D	R
Plug and receptacle type	C—6 row with anti-mis-mating equipment ( 50mm modular) D—6 row without anti-mis-mating equipment CD — B extending type, with anti-mis-mating equipment E — 6 row extending module (25mm lengthening modular) G—8 row without anti-mis-mating equipment ( 50mm modular) H — 8 row extending module (25mm lengthening modular)						
Number of signal contact	55、 88、 95、 110、 125、 200						
Shielding	F— with shielding structure						
Contact	F—receptacle with socket M—plug with pin						
Terminating form	D— straight through-hole soldering						
Mating sequence	No mark—shielding contact simultaneously contacts with signal contact R—Shielding contact should contact earlier than signal contact						

Note: Attributes of the model can't be combined arbitrarily. Please refer to the specific model listed in the “outline dimensions”

Model marking demonstration

**Plug: Q7D110FMD**

Q7 series B type connector, with anti-mis-mating shell structure, 110 signal contacts, shielding structure, plug installed with pin, straight soldering termination form, shielding contacts



**APMA**

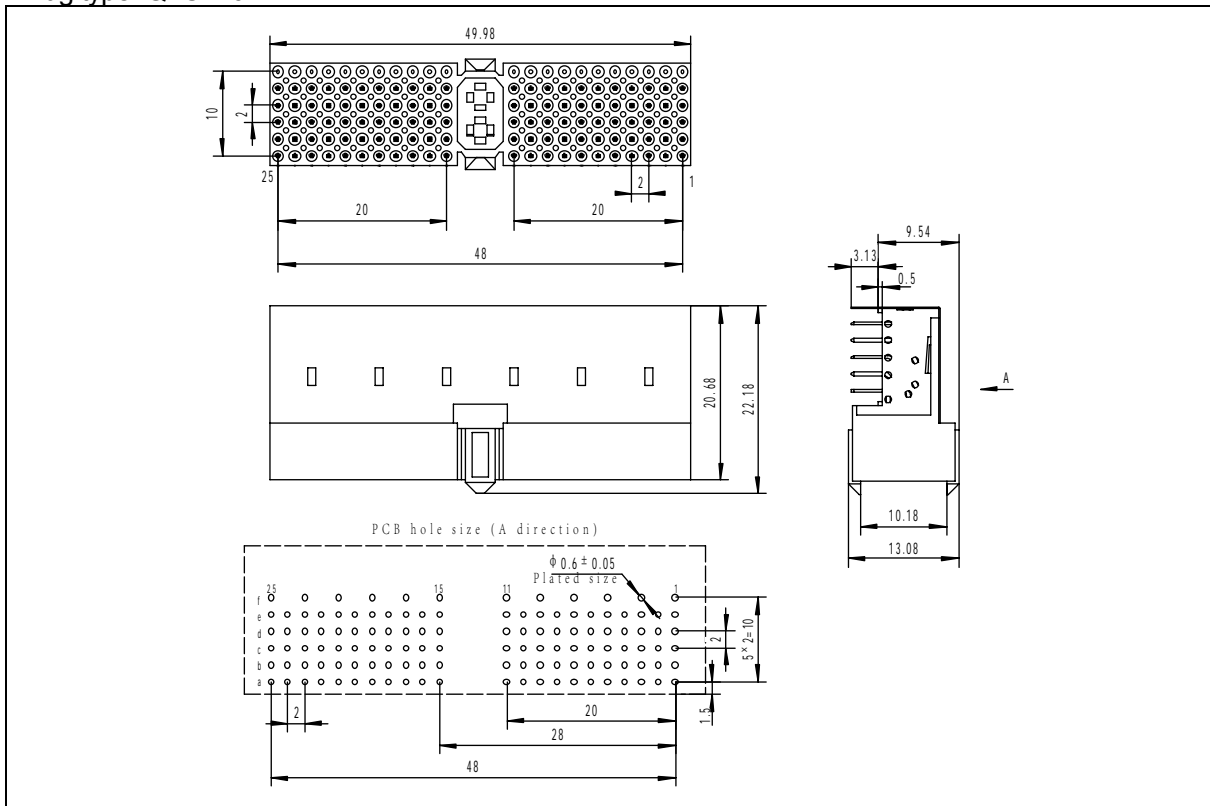
and signal contacts contact in the  
meantime. **Receptacle: Q7B110FFD**

Q7 series B type connector, without anti-mis-mating shell structure, 110 signal contacts, shielding structure, receptacle installed with socket, straight soldering termination form, shielding contacts and signal contacts contact in the meantime.

### Outline dimension and PCB cut-out drawing

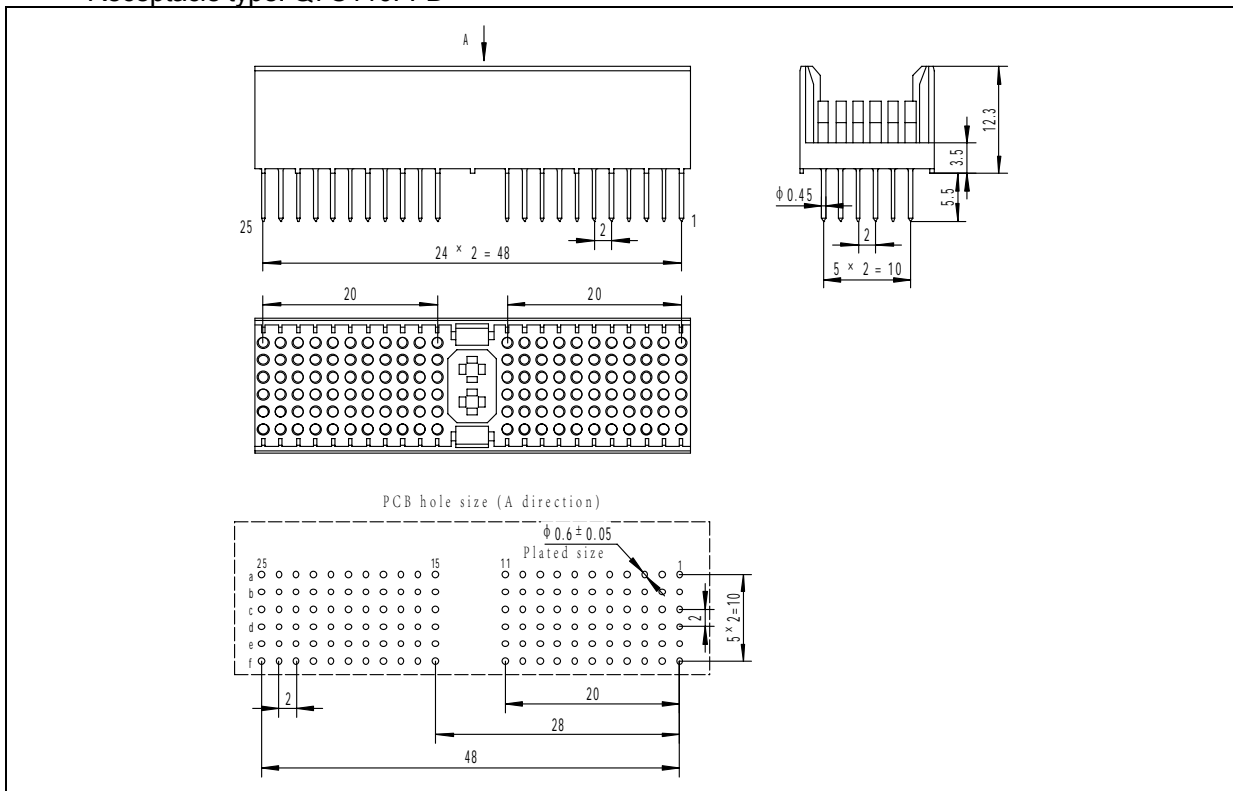
[Q7 series type A plug]

Plug type: Q7C110FMD



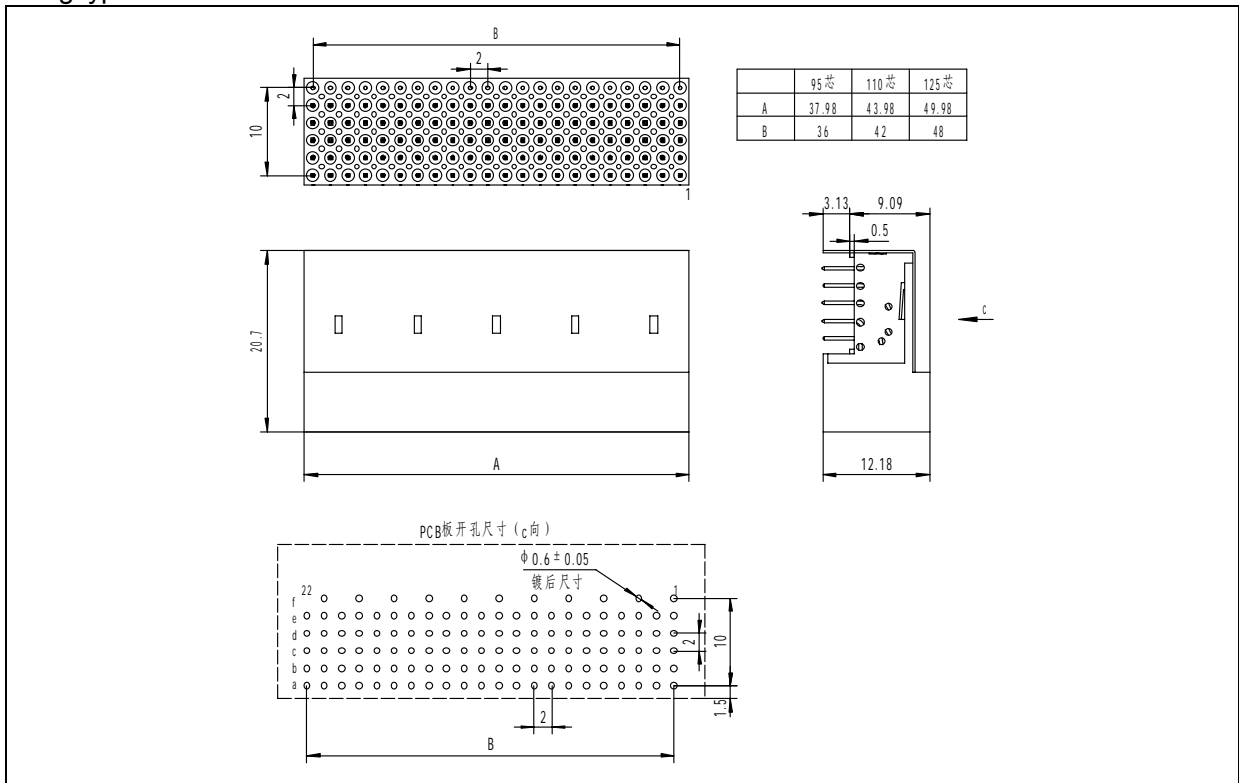
[Q7 series type A receptacle]

Receptacle type: Q7C110FFD



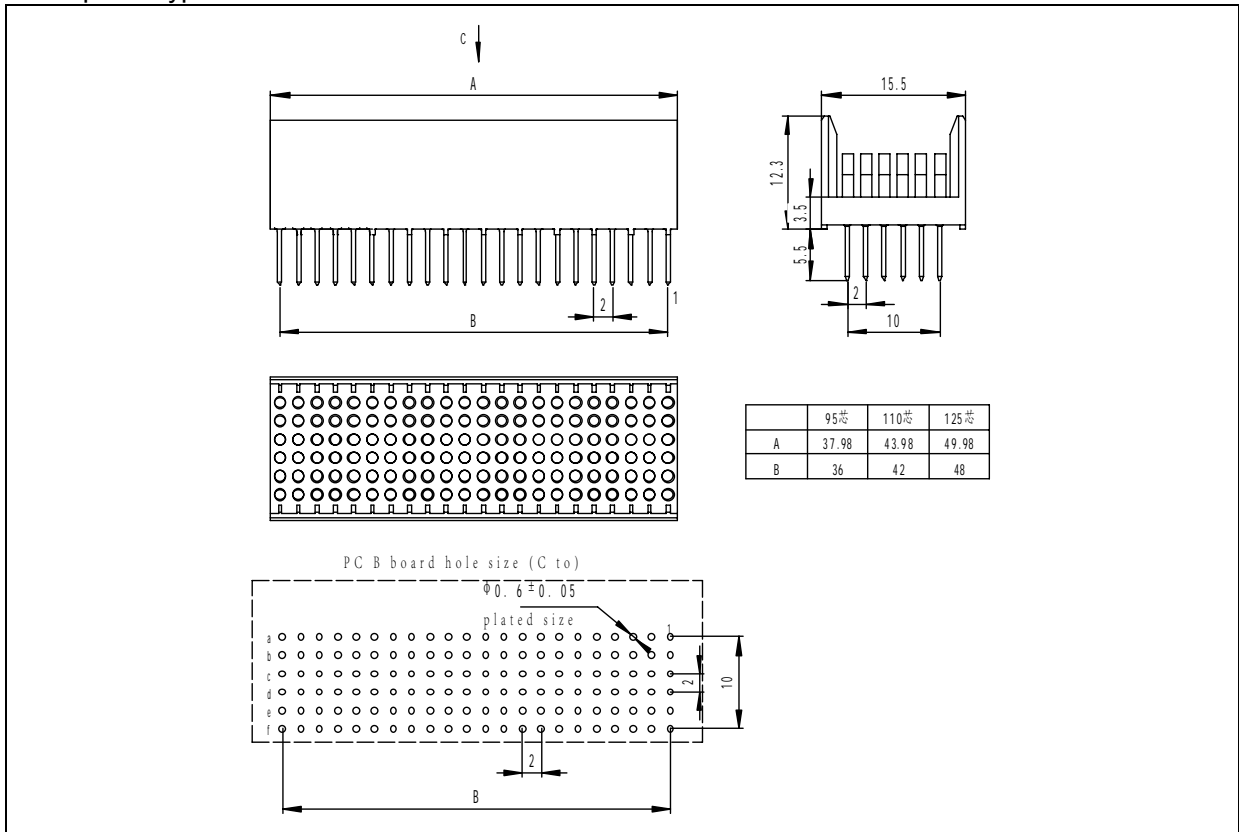
[Q7 series type D plug]

Plug type: Q7D95FMD, Q7D110FMD, Q7D125FMD



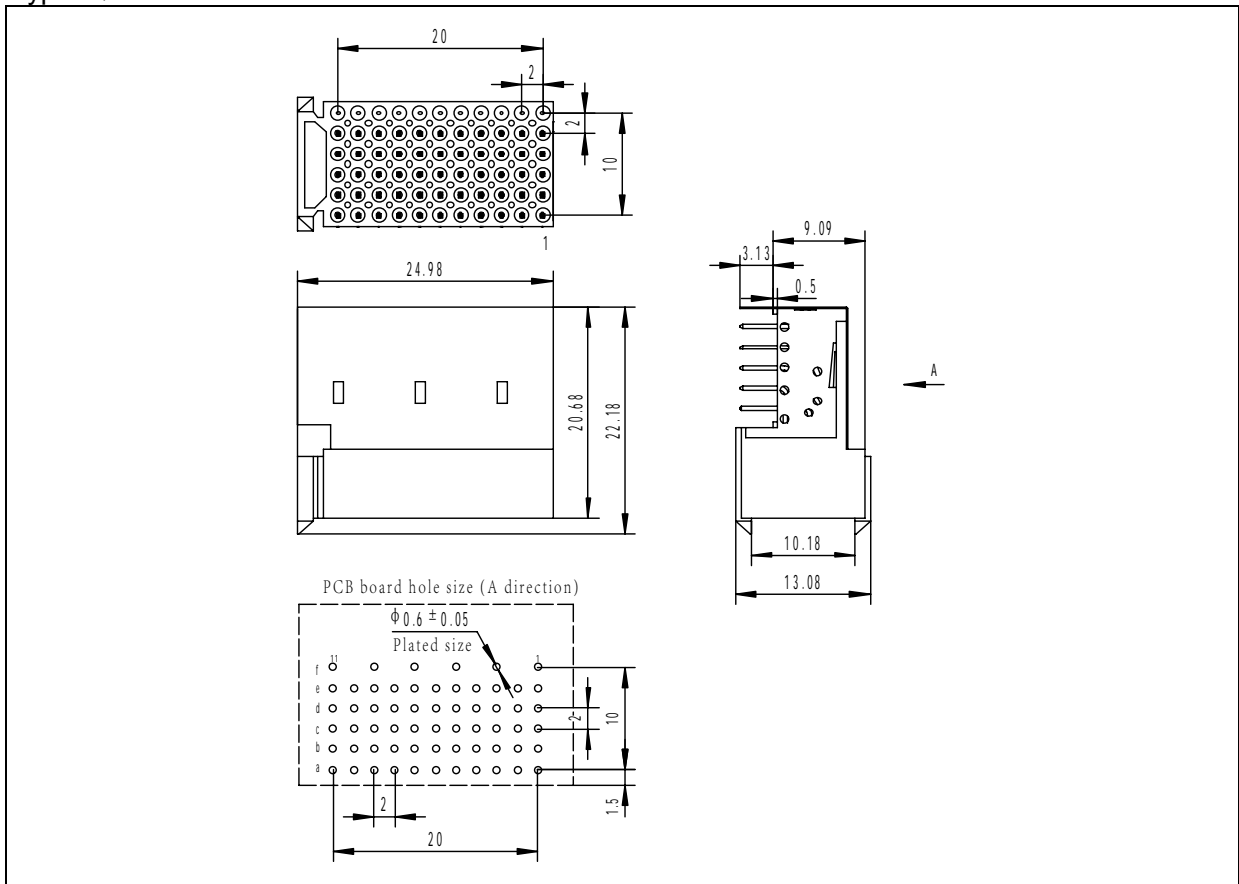
[Q7 series type D receptacle]

Receptacle type: Q7D95FFD, Q7D110FFD, Q7D125FFD

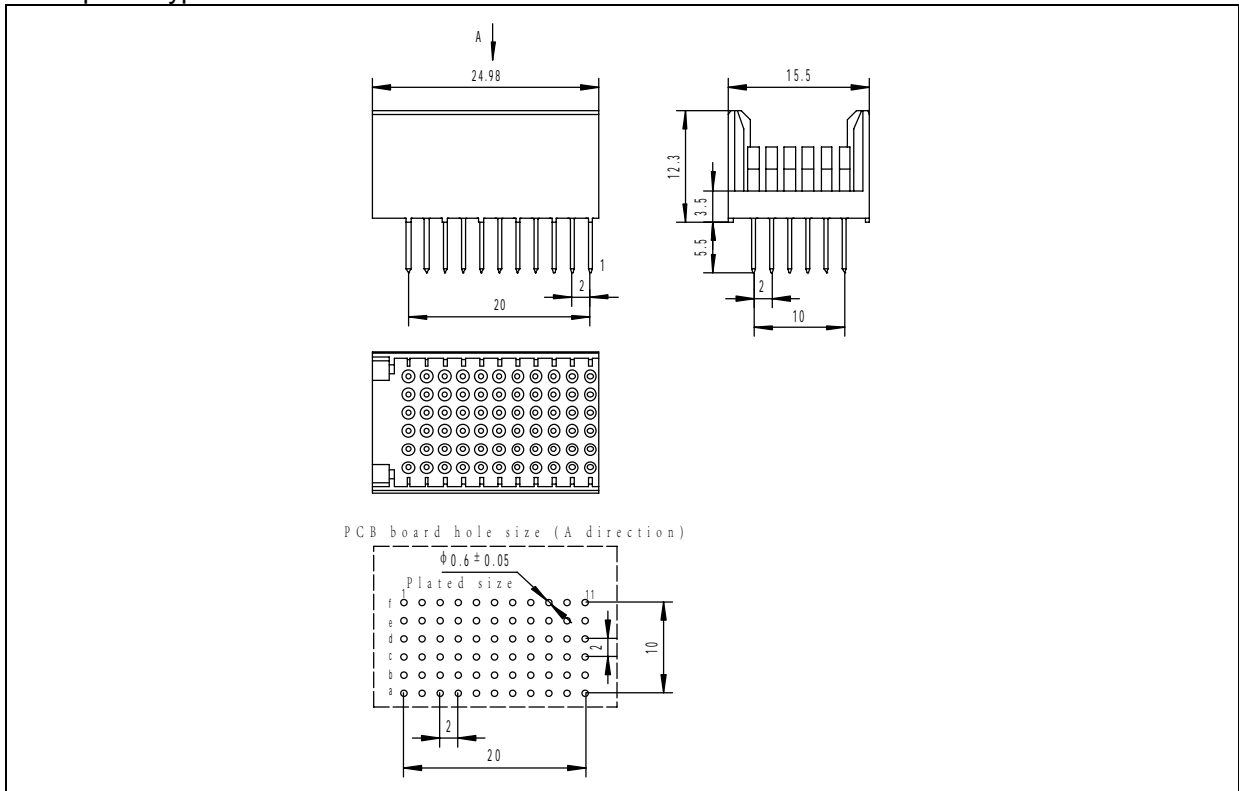




[Q7 series type E plug] Plug  
type: Q7E55FMD

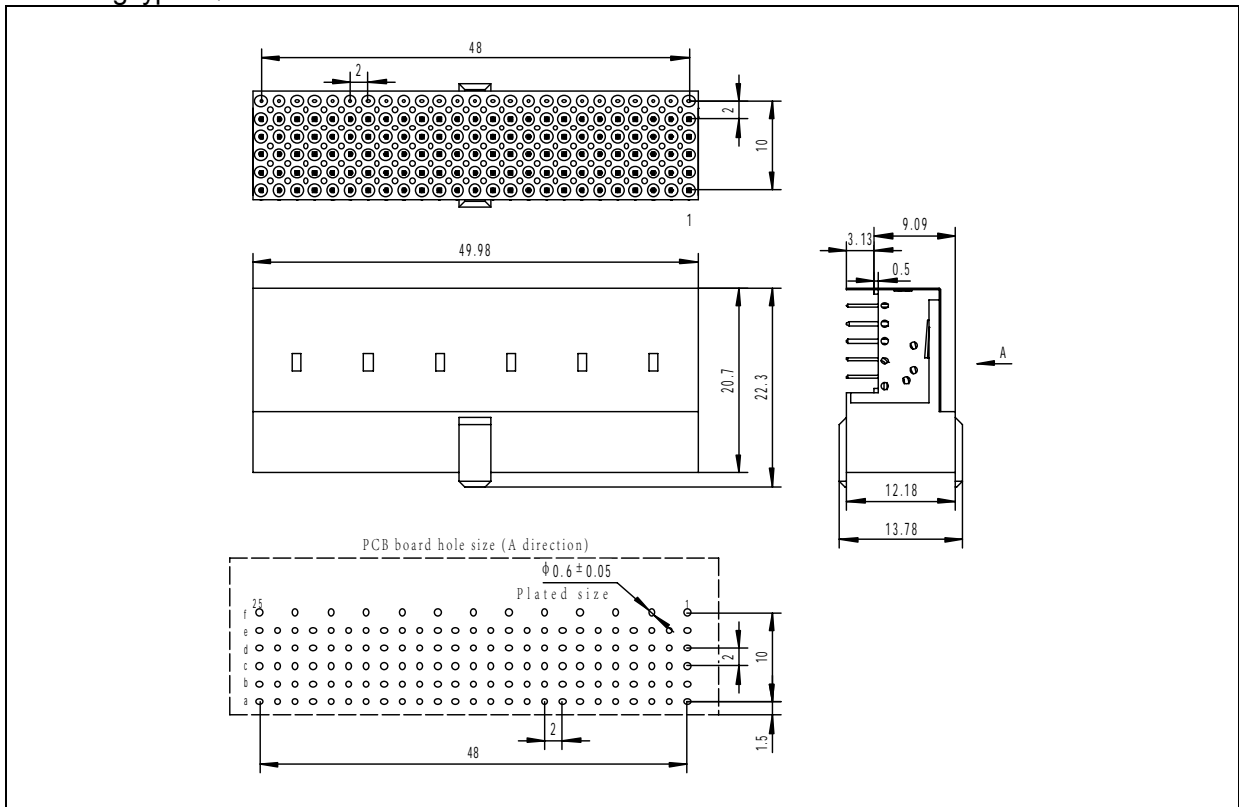


[Q7 series type C receptacle] Receptacle type: Q7E55FFD

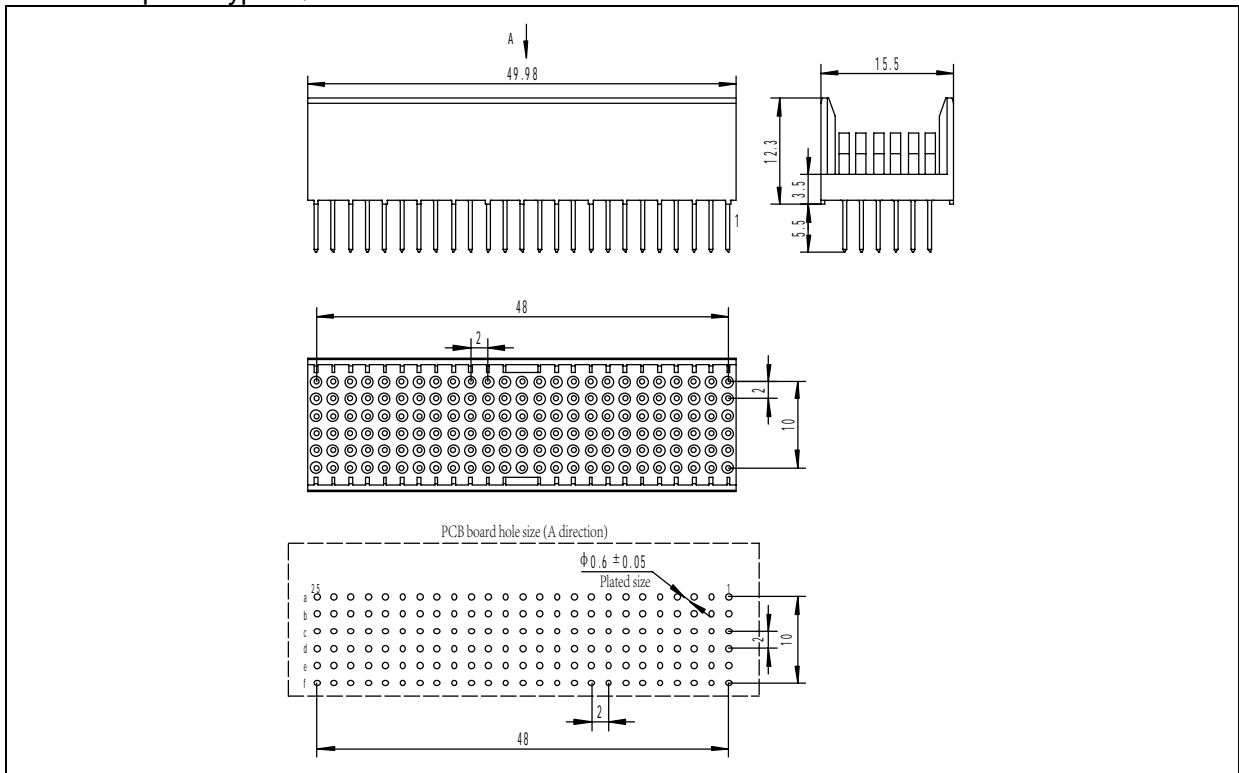




[Q7 series type CD plug]  
Plug type: Q7CD125FMD

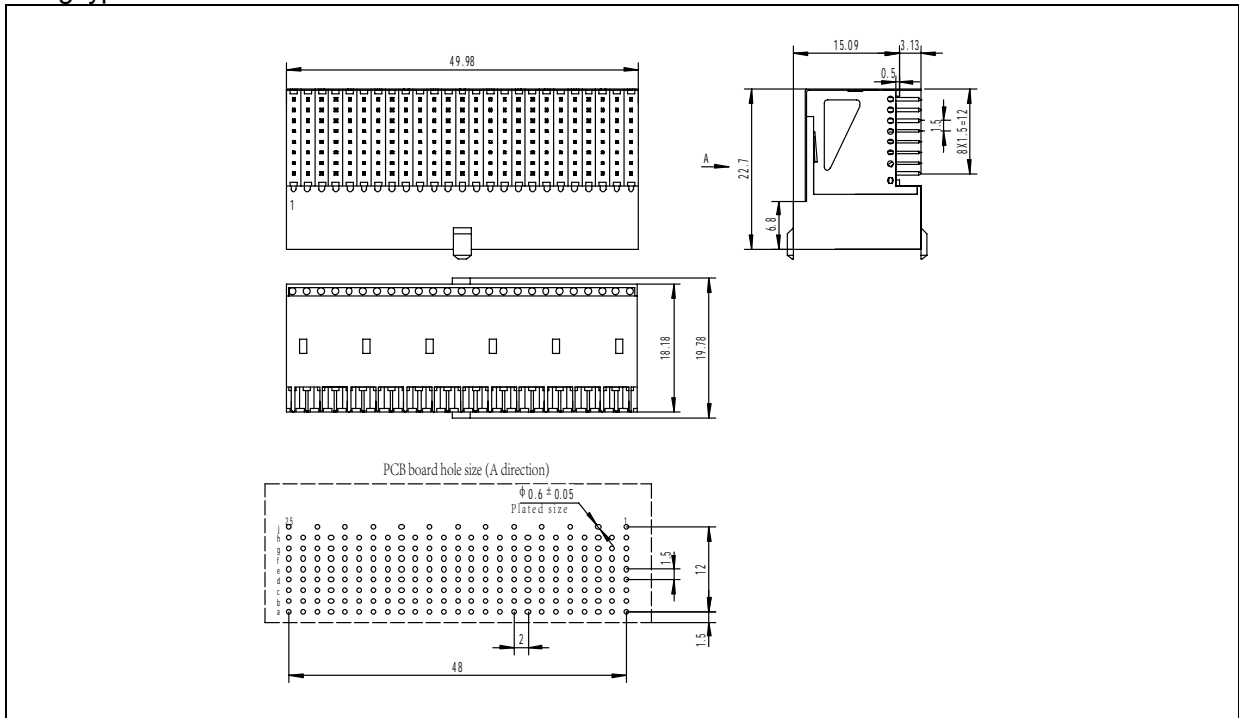


[Q7 series type CD receptacle]  
Receptacle type: Q7CD125FFD



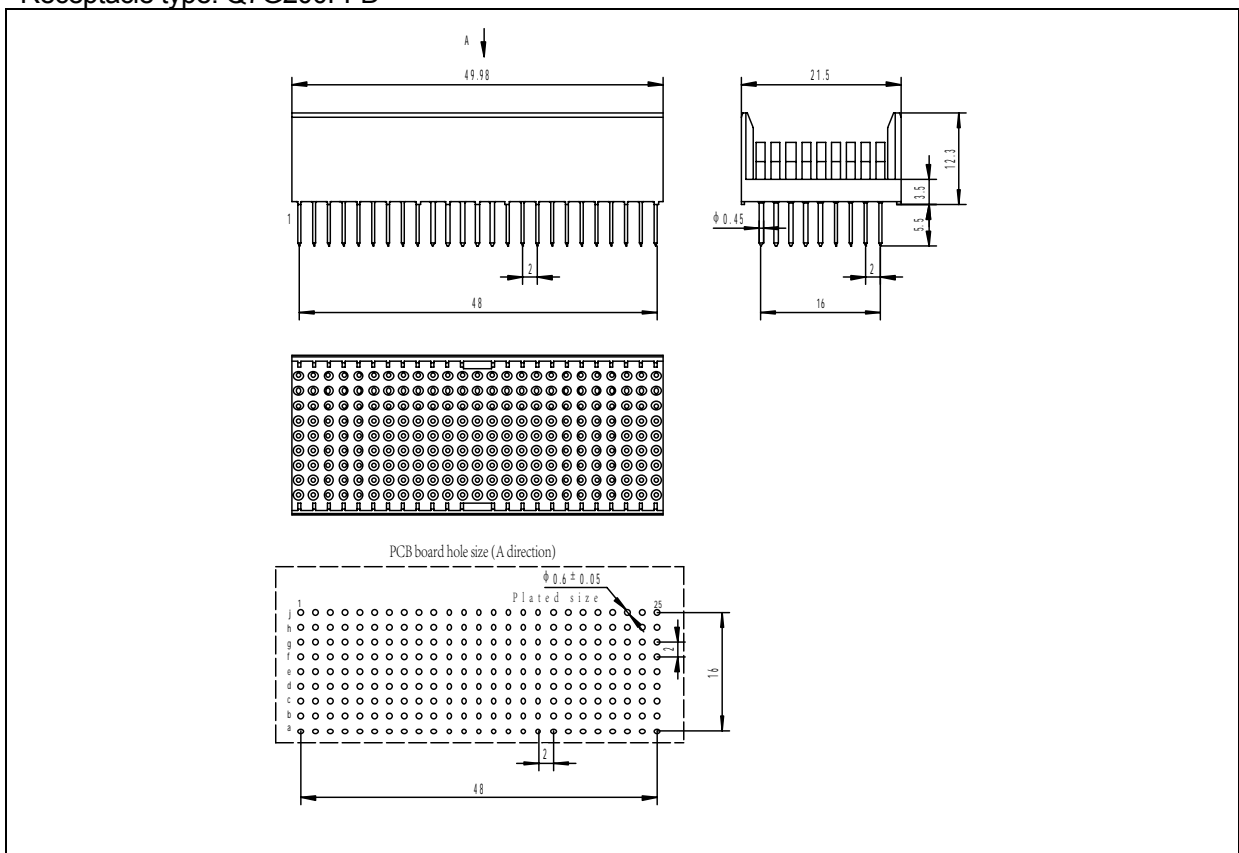
[Q7 series type G plug]

Plug type: Q7G200FMD

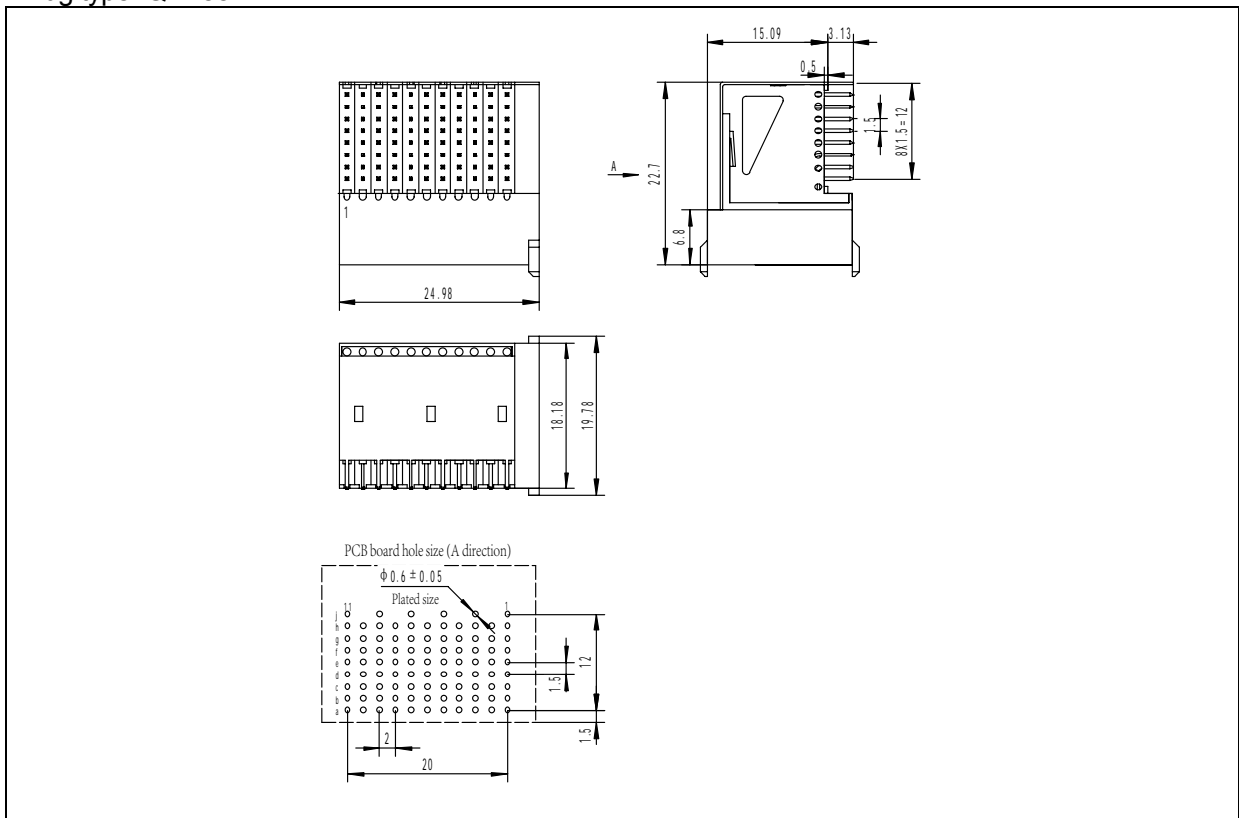


[Q7 series type G receptacle]

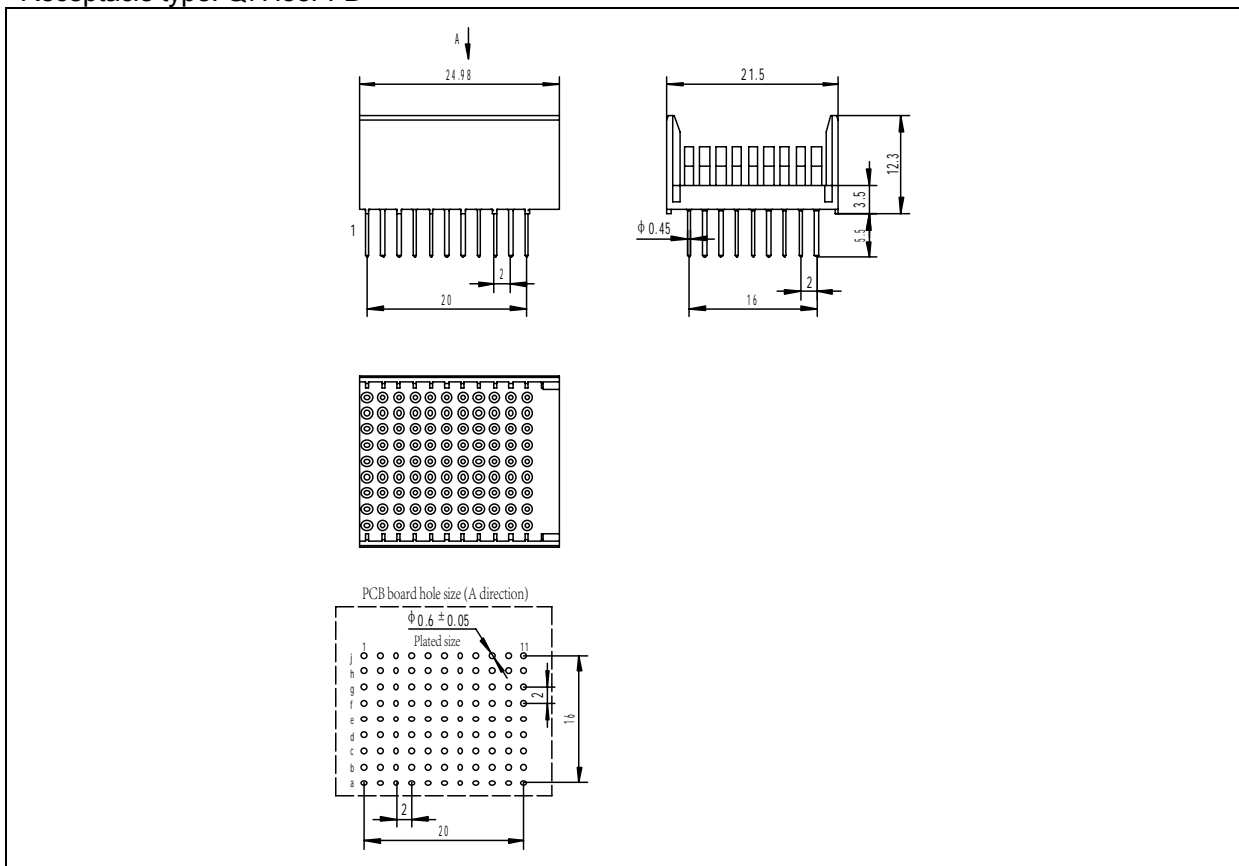
Receptacle type: Q7G200FFD



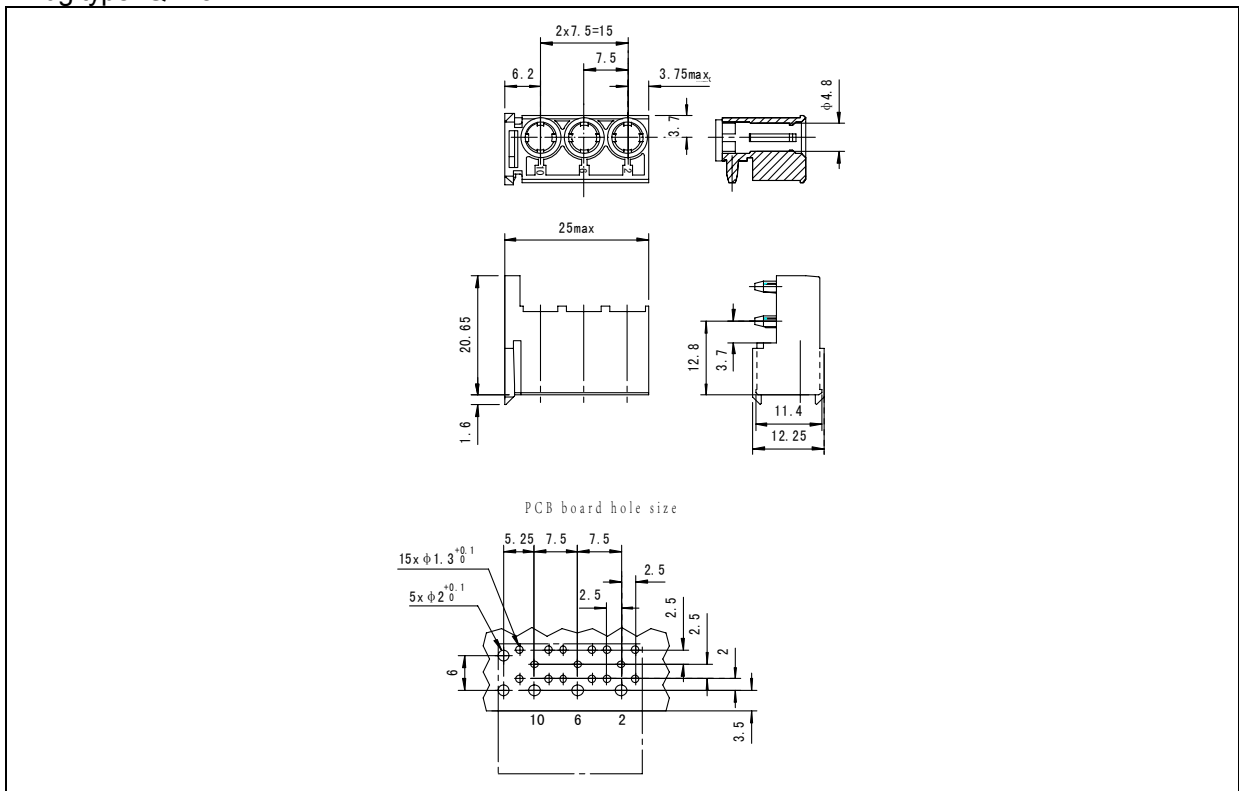
[Q7 series type H plug]  
 Plug type: Q7H88FMD



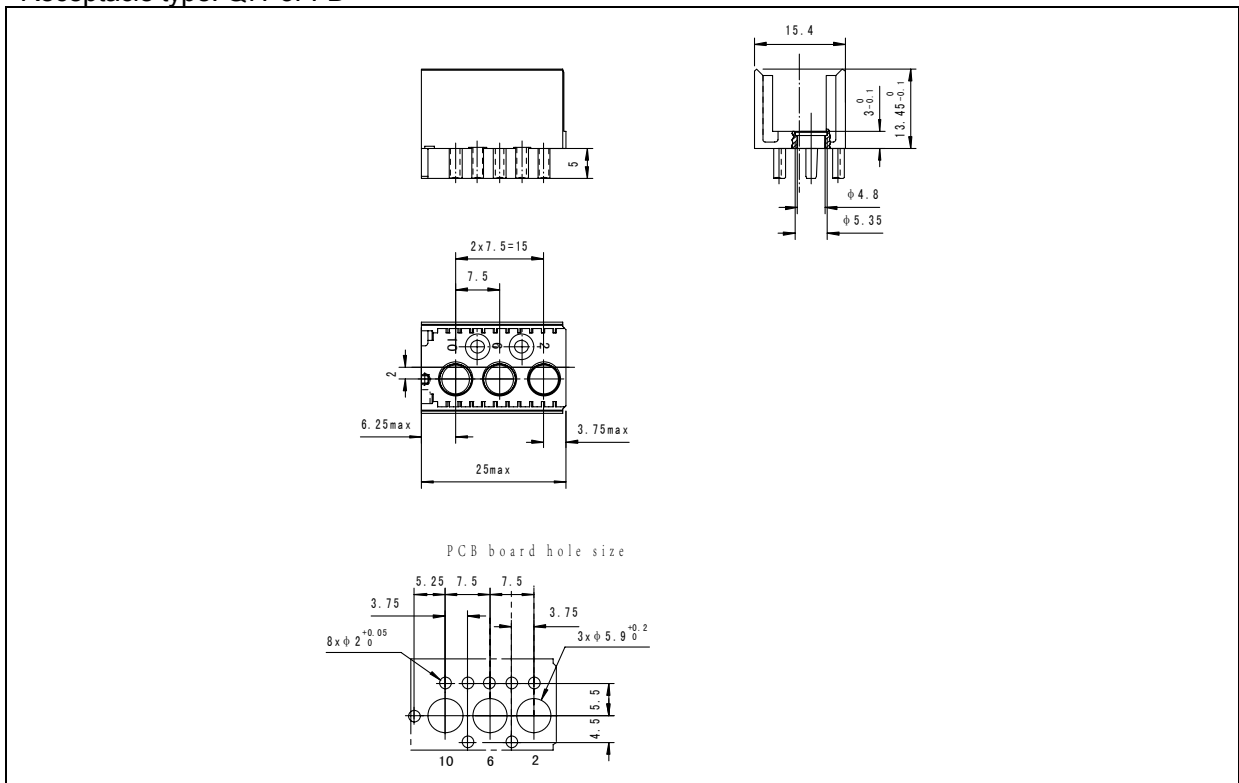
[Q7 series type H receptacle]  
 Receptacle type: Q7H88FFD



[Q7 series type P plug]  
 Plug type: Q7P3FMD

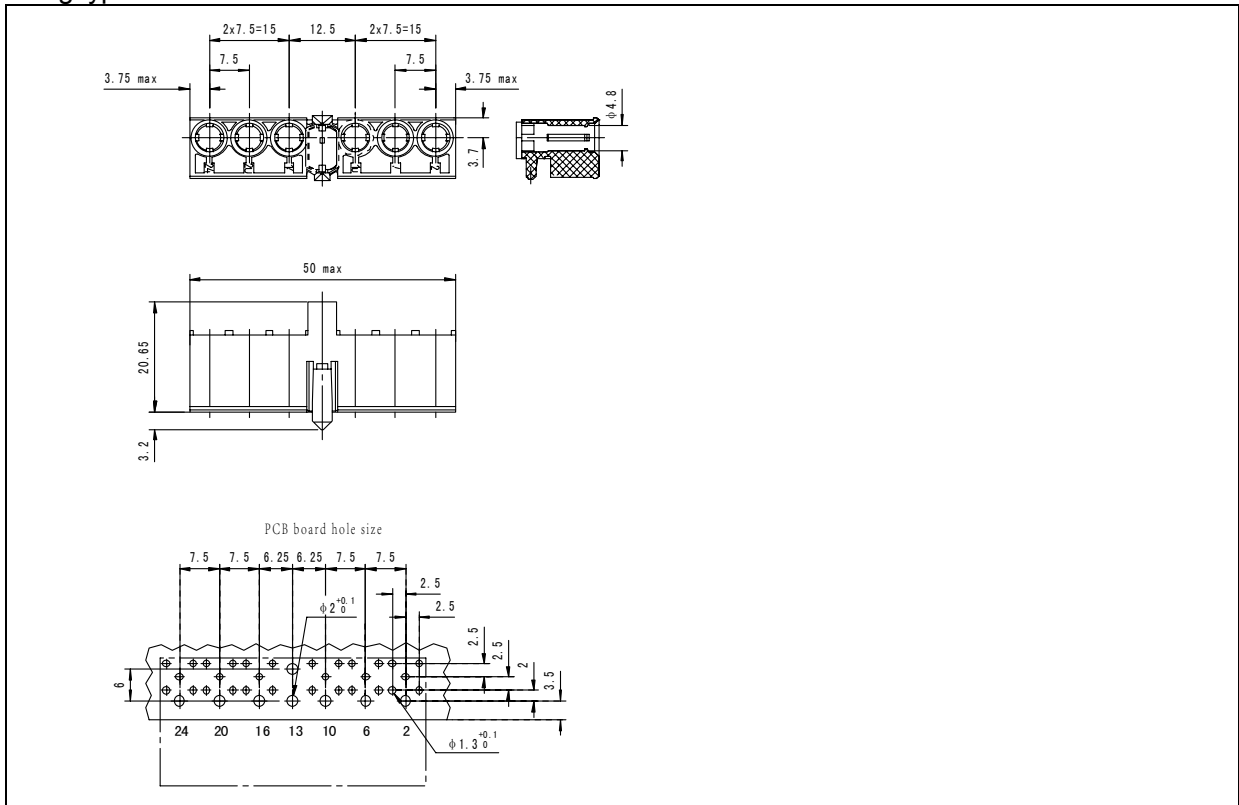


[Q7 series type P receptacle]  
 Receptacle type: Q7P3FFD



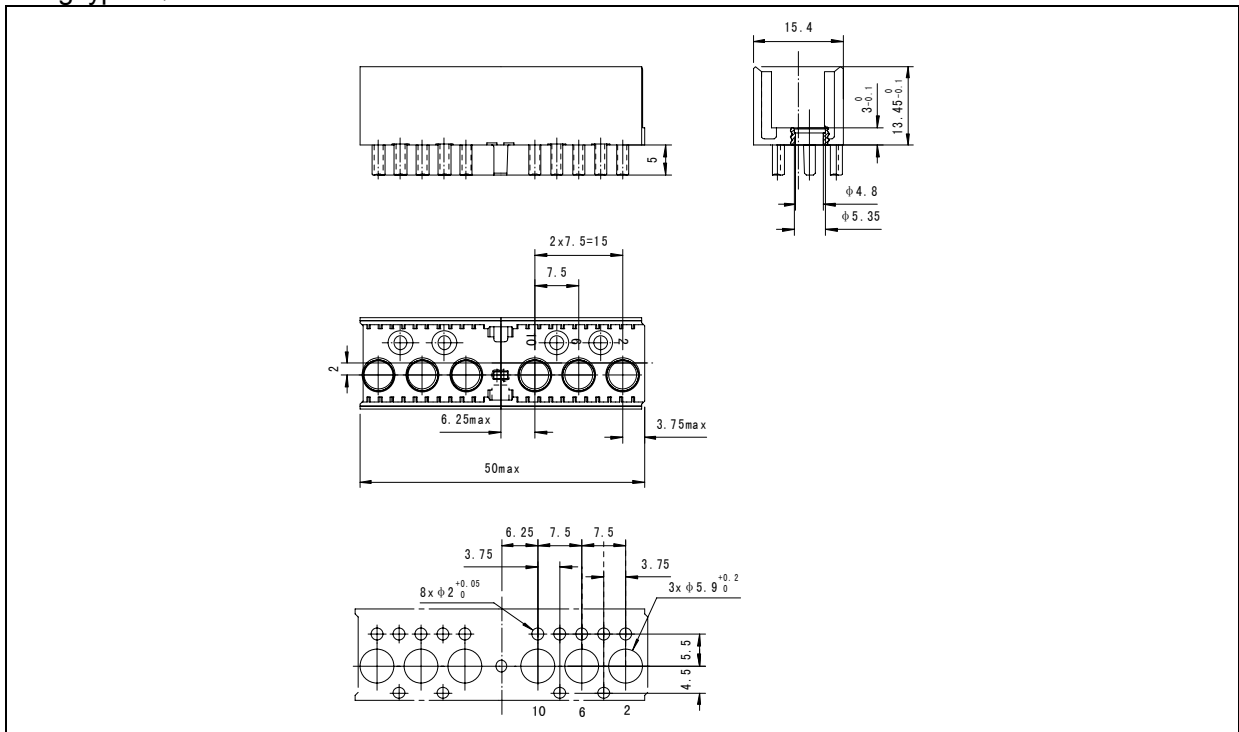
[Q7 series type N plug]

Plug type: Q7N6FMD

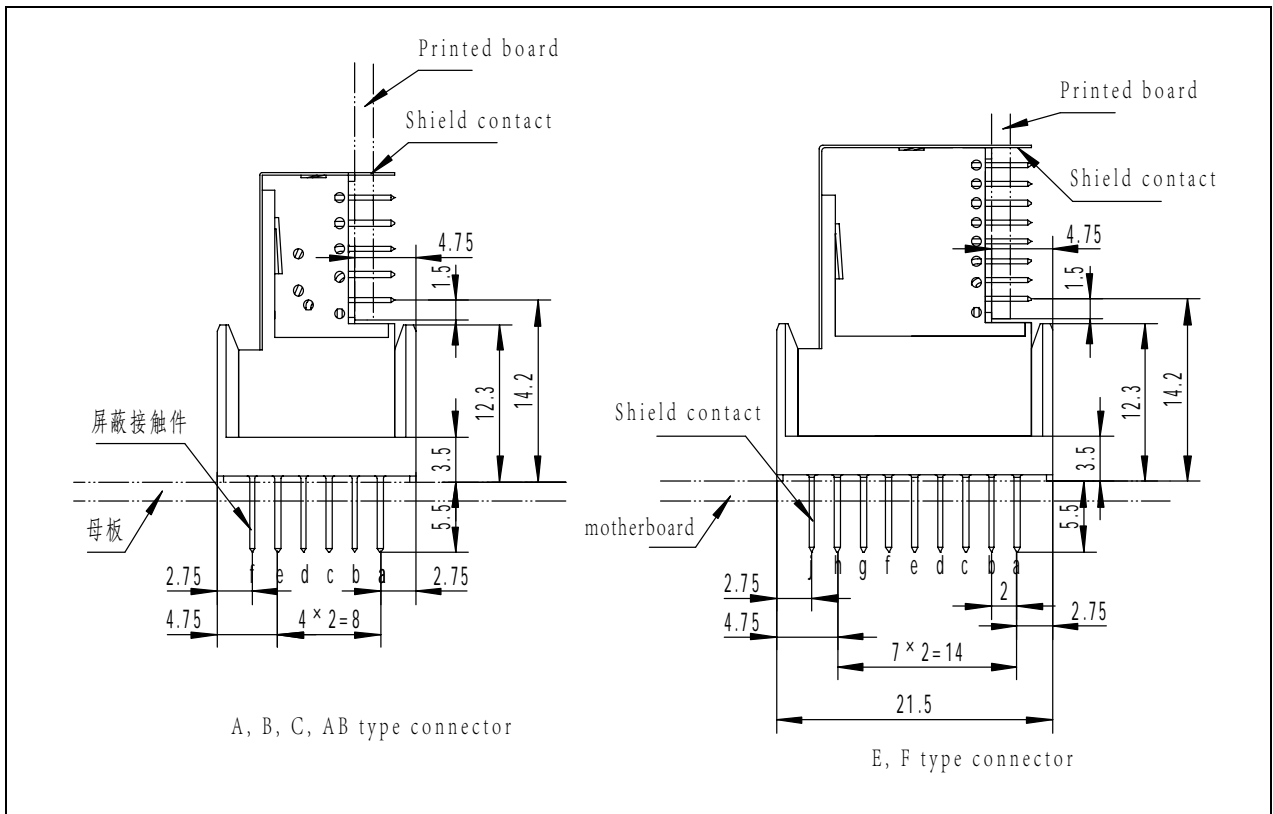


[Q7 series type N receptacle]

Plug type: Q7N6FFD



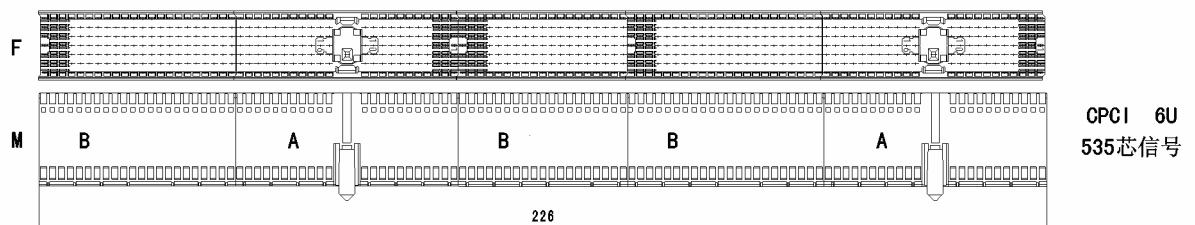
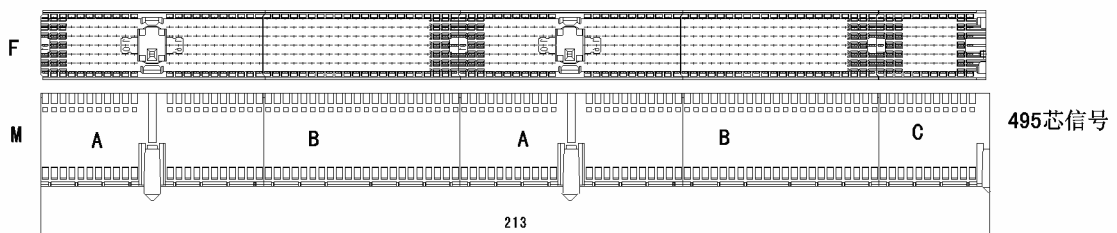
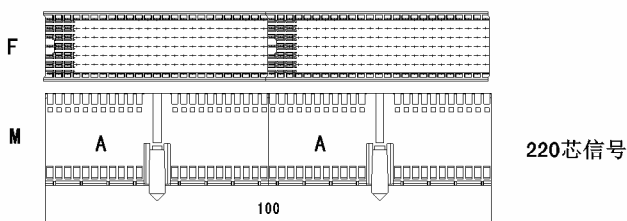
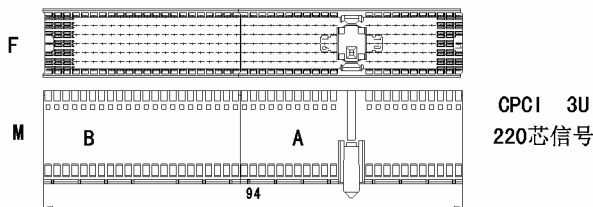
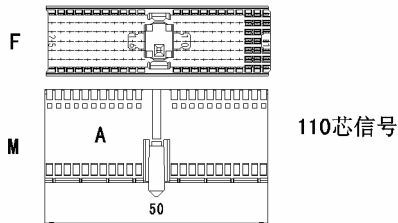
Relative position dimension between PCB, motherboard and connector



## Configuration of PCB CPCI connector

[Combination demonstration]

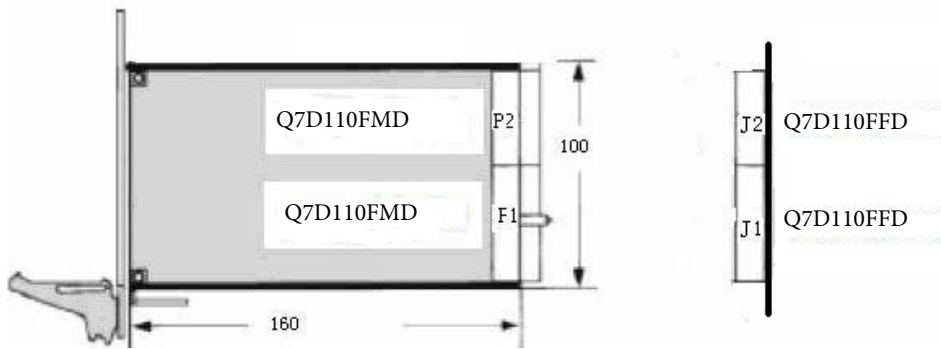
Q7 series wire spring socket connector is used in CPCI bus system. It can replace the common 2 mm spacing spring reed connector. In the concrete use, to prevent mis-mating, B type connectors without anti-mis-mating equipment usually are matched with type A and (or) C connectors with anti-mis-mating equipment. Following is several combinations of common form, of which M stands for plug, F stands for receptacle.



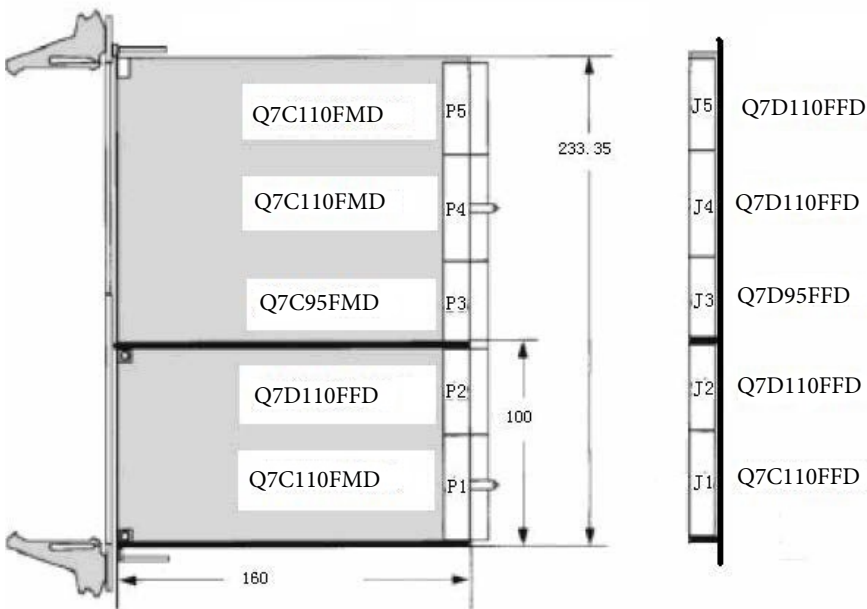


[CPCI connector configuration structure demonstration]

**3U**



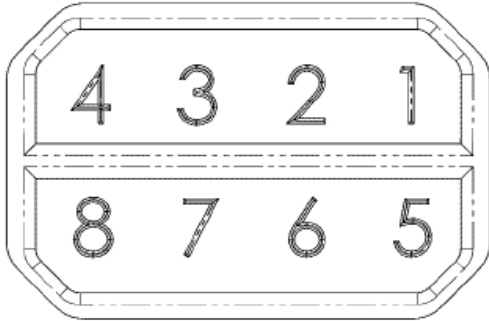
**6U**



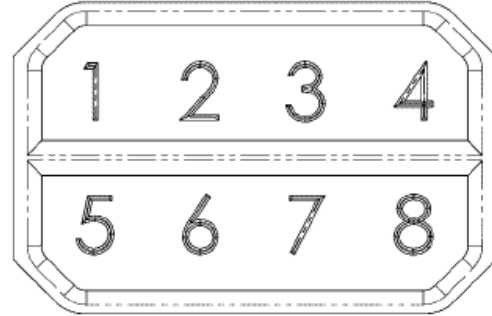
3U/6U configuration	P1/P4	P2/P5	P3	J1/J4	J2/J5	J3
Connector type	Q7C110F Q	Q7D110FM D	Q7D95FM D	Q7C110FF D	Q7D110FF D	Q7D95FF D

### MDM4C identification guide pin explanation

Q7 series identification device combination complies with appendix B of IEC61076-4-101. It can be installed in Q7 series type C connector and it needs to be ordered separately.



Plug (module end) identification device



Receptacle (rear panel end) identification device

Plug identification device	Receptacle identification device	Color	Ordering type	Plug identification device	Receptacle identification device	Color	Ordering type
1236	4578	Fruit brown	1236-4578	1567	2348	jewelry blue	1567-2348
1248	3567	strawberry red	1248-3567	3467	1258	Slate gray	3467-1258
1356	2478	light cyanoze	1356-2478				

Above types are the existing products of our company, suggest selection in priority.