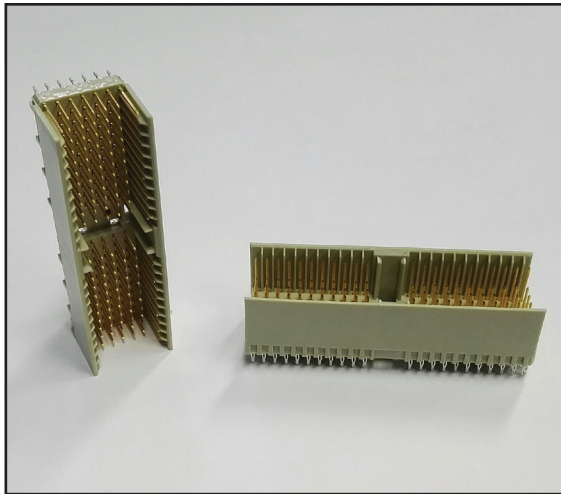


# 3M™ CP2 Press-Fit Header

2 mm Type A 110 Signal Contacts

CP2 Series



- 25 mm basic system unit
- 50 mm module
- 2 mm grid spacing allows for high signal density at low cost
- “Eye of the Needle” compliant pin press-fit design reduces manufacturing time and cost
- Three contact mating levels for Early Mate Late Break or “Hot Swap” applications reduces manufacturing time and cost
- Feed through termination available for midplane applications
- Additional grounding rows available for improved ground bounce and EMI immunity
- Mates with 5 row 3M™ HSHM, UHM and CP2 Sockets
- End to end stackable with 5 row 3M™ HSHM, HM, and CP2 Headers
- See the Regulatory Information Appendix (RIA) in the “RoHS compliance” section of [www.3Mconnectors.com](http://www.3Mconnectors.com) for compliance information (RIA E1 & C1 apply)

Date Modified: August 5, 2015

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Sheet 1 of 5

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## Physical

### Insulation:

Material: Glass Filled Polyester (PBT)

Flammability: UL94V-0

### Contact:

Material: Copper Alloy

Plating: See Ordering Information

---

## Mechanical

Mating Force:  $\leq 0.75\text{N/PIN}$

Withdrawal Force:  $\geq 0.15\text{N/PIN}$

Mating and Un-mating Operations: 200 for KR plating

---

## Electrical

Current Rating: 1.0 Amperes at 70°C with all contacts powered

Contact Resistance:  $\leq 20\text{ m}\Omega$

Insulation Resistance:  $\geq 10,000\text{ M}\Omega$

Test Voltage: 750 VAC<sub>RMS</sub>

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## Environmental

Temperature Ratings: -55°C to +125°C

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## PCB Data

Recommended PCB Plated Through Hole:  $\varnothing 0.6\pm 0.05\text{ mm}$

Drill Hole Diameter:  $\varnothing 0.7\pm 0.02\text{ mm}$

Hole platings: Cu 25~50  $\mu\text{m}$ , Sn<10  $\mu\text{m}$

PCB thickness: 2.4 - 5.6 mm for 3.7 mm tails, 1.4 - 5.6 mm for 2.3 mm tails

Press-In Force:  $\leq 204\text{N/pin}$  on nominal hole diameter

Retention Force:  $\geq 13.5\text{N/pin}$  on nominal hole diameter



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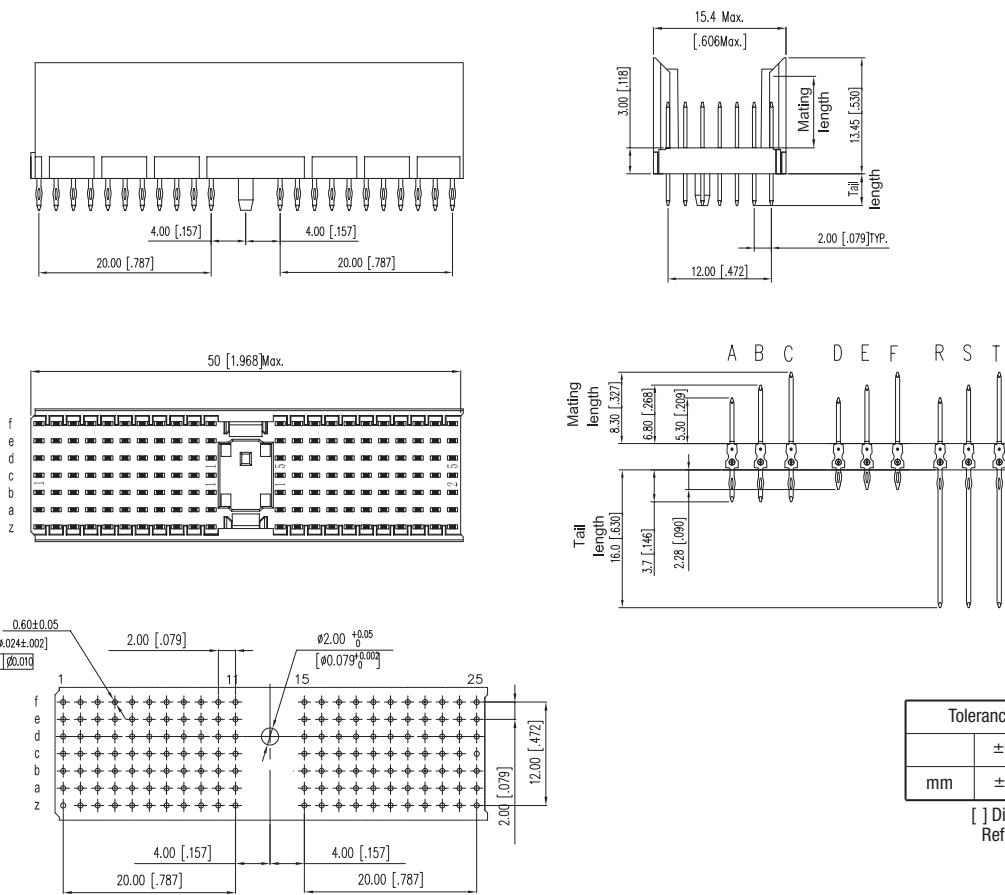
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# 3M™ CP2 Press-Fit Header

2 mm Type A 110 Signal Contacts

CP2 Series



Recommended PCB Layout

| mm<br>[Inch]           |     |      |       |
|------------------------|-----|------|-------|
| Tolerance Unless Noted |     |      |       |
|                        | ±0. | ±.0  | ±.00  |
| mm                     | ±1  | ±0.3 | ±0.13 |

[ ] Dimensions for Reference only

## Ordering Information

### CP2-HA110-XXX-XXXX

#### Loading Configurations

(See diagrams on following pages)

#### Grounding Options:

G= with ground pins

Blank= without ground pins

#### EMLB Patterns

#### Primary Tail Length

1= 3.7 mm

2= 2.3 mm

4= 15.8 mm

#### Plating Options

FJ= 10~20 µ" Gold Contact Area

100~200 µ" Matte Tin

50~80 µ" Nickel Underplate

(RIA E1 & C1 apply)

KR= 30~40 µ" Gold Contact Area

100~200 µ" Matte Tin

50~80 µ" Nickel Underplate

(RIA E1 & C1 apply)

KV = 30~40 µ" Mate End Gold Contact area

Gold Flash Tail Contact area

50~80 µ" Nickel Underplate

(RIA E1 & C1 apply)

For Primary Tail Length Option 4 only

• This diagram serves only for Part Number descriptive definitions.

• For standard product configuration please see following pages.

PLEASE CONTACT YOUR LOCAL SALES REPRESENTATIVE FOR CUSTOMER SPECIFIC PRODUCT CONFIGURATIONS.

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# 3M™ CP2 Press-Fit Header

2 mm Type A 110 Signal Contacts

CP2 Series

| CP2-HA110-E1-TG30 |   |   |   |   |   |   |   |   |   |    |    |  |  | Connector Type A22 |   |    |    |    |    |    |    |    |    |    |    |    |
|-------------------|---|---|---|---|---|---|---|---|---|----|----|--|--|--------------------|---|----|----|----|----|----|----|----|----|----|----|----|
| F                 |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |   |    |    |    |    |    |    |    |    |    |    |    |
| E                 | A | A | A | A | A | A | A | A | A | A  |    |  |  |                    | A | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |    |
| D                 | A | A | A | A | A | A | A | A | A | A  |    |  |  |                    | A | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |    |
| C                 | A | A | A | A | A | A | A | A | A | A  |    |  |  |                    | A | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |    |
| B                 | A | A | A | A | A | A | A | A | A | A  |    |  |  |                    | A | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |    |
| A                 | A | A | A | A | A | A | A | A | A | A  |    |  |  |                    | A | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |    |
| Z                 |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |   |    |    |    |    |    |    |    |    |    |    |    |
|                   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |  |                    |   | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

| CP2-HA110-GE1-TG30 |   |   |   |   |   |   |   |   |   |    |    |  |  | Connector Type A22 |    |    |    |    |    |    |    |    |    |    |    |
|--------------------|---|---|---|---|---|---|---|---|---|----|----|--|--|--------------------|----|----|----|----|----|----|----|----|----|----|----|
| F                  | C | C | C | C | C | C | C | C | C | C  |    |  |  | C                  | C  | C  | C  | C  | C  | C  | C  | C  | C  | C  |    |
| E                  | A | A | A | A | A | A | A | A | A | A  |    |  |  | A                  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |
| D                  | A | A | A | A | A | A | A | A | A | A  |    |  |  | A                  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |
| C                  | A | A | A | A | A | A | A | A | A | A  |    |  |  | A                  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |
| B                  | A | A | A | A | A | A | A | A | A | A  |    |  |  | A                  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |
| A                  | A | A | A | A | A | A | A | A | A | A  |    |  |  | A                  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |
| Z                  | C | C | C | C | C | C | C | C | C | C  |    |  |  | C                  | C  | C  | C  | C  | C  | C  | C  | C  | C  | C  |    |
|                    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |  |                    | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

| CP2-HA110-A1-TG30 |   |   |   |   |   |   |   |   |   |    |    |  |  | Connector Type A22 |    |    |    |    |    |    |    |    |    |    |    |
|-------------------|---|---|---|---|---|---|---|---|---|----|----|--|--|--------------------|----|----|----|----|----|----|----|----|----|----|----|
| F                 |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |    |    |    |    |    |    |    |    |    |    |    |
| E                 | B | B | B | B | B | B | B | B | B | B  | B  |  |  |                    | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |
| D                 | B | B | B | B | B | B | B | B | B | B  | B  |  |  |                    | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |
| C                 | B | B | B | B | B | B | B | B | B | B  | B  |  |  |                    | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |
| B                 | B | B | B | B | B | B | B | B | B | B  | B  |  |  |                    | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |
| A                 | B | B | B | B | B | B | B | B | B | B  | B  |  |  |                    | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |
| Z                 |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |    |    |    |    |    |    |    |    |    |    |    |
|                   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |  |                    | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

| CP2-HA110-GA1-TG30 |   |   |   |   |   |   |   |   |   |    |    |  |  | Connector Type A22 |    |    |    |    |    |    |    |    |    |    |    |
|--------------------|---|---|---|---|---|---|---|---|---|----|----|--|--|--------------------|----|----|----|----|----|----|----|----|----|----|----|
| F                  | C | C | C | C | C | C | C | C | C | C  |    |  |  | C                  | C  | C  | C  | C  | C  | C  | C  | C  | C  | C  |    |
| E                  | B | B | B | B | B | B | B | B | B | B  |    |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |    |
| D                  | B | B | B | B | B | B | B | B | B | B  |    |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |    |
| C                  | B | B | B | B | B | B | B | B | B | B  |    |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |    |
| B                  | B | B | B | B | B | B | B | B | B | B  |    |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |    |
| A                  | B | B | B | B | B | B | B | B | B | B  |    |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |    |
| Z                  | C | C | C | C | C | C | C | C | C | C  |    |  |  | C                  | C  | C  | C  | C  | C  | C  | C  | C  | C  | C  |    |
|                    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |  |                    | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

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# 3M™ CP2 Press-Fit Header

2 mm Type A 110 Signal Contacts

CP2 Series

| CP2-HA110-D1-TG30 |   |   |   |   |   |   |   |   |   |    |    |  |  | Connector Type A22 |  |    |    |    |    |    |    |    |    |    |    |    |
|-------------------|---|---|---|---|---|---|---|---|---|----|----|--|--|--------------------|--|----|----|----|----|----|----|----|----|----|----|----|
| F                 |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |  |    |    |    |    |    |    |    |    |    |    |    |
| E                 | A | A | A | A | A | A | A | A | A | A  | A  |  |  |                    |  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |
| D                 | B | B | A | A | A | A | A | A | A | A  | A  |  |  |                    |  | A  | A  | A  | A  | A  | A  | A  | A  | B  | B  |    |
| C                 | C | C | A | A | A | A | A | A | A | A  | A  |  |  |                    |  | A  | A  | A  | A  | A  | A  | A  | A  | C  | C  |    |
| B                 | B | B | A | A | A | A | A | A | A | A  | A  |  |  |                    |  | A  | A  | A  | A  | A  | A  | A  | A  | B  | B  |    |
| A                 | A | A | A | A | A | A | A | A | A | A  | A  |  |  |                    |  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |
| Z                 |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |  |    |    |    |    |    |    |    |    |    |    |    |
|                   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |  |                    |  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

| CP2-HA110-GB1-TG30 |   |   |   |   |   |   |   |   |   |    |    |  |  | Connector Type A22 |    |    |    |    |    |    |    |    |    |    |    |
|--------------------|---|---|---|---|---|---|---|---|---|----|----|--|--|--------------------|----|----|----|----|----|----|----|----|----|----|----|
| F                  | C | C | C | C | C | C | C | C | C | C  |    |  |  | C                  | C  | C  | C  | C  | C  | C  | C  | C  | C  | C  |    |
| E                  | B | B | B | B | B | B | B | B | B | B  |    |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |    |
| D                  | B | B | B | B | B | B | B | B | B | B  | A  |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |    |
| C                  | B | B | B | B | B | B | B | B | B | C  | B  |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |    |
| B                  | B | B | B | B | B | B | B | B | B | B  | B  |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |    |
| A                  | B | B | B | B | B | B | B | B | B | B  | B  |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |    |
| Z                  | C | C | C | C | C | C | C | C | C | C  | C  |  |  | C                  | C  | C  | C  | C  | C  | C  | C  | C  | C  | C  |    |
|                    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |  |                    | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

| CP2-HA110-GC1-TG30 |   |   |   |   |   |   |   |   |   |    |    |  |  | Connector Type A22 |    |    |    |    |    |    |    |    |    |    |
|--------------------|---|---|---|---|---|---|---|---|---|----|----|--|--|--------------------|----|----|----|----|----|----|----|----|----|----|
| F                  | C | C | C | C | C | C | C | C | C | C  |    |  |  | C                  | C  | C  | C  | C  | C  | C  | C  | C  | C  | C  |
| E                  | B | B | B | B | B | B | B | B | B | B  |    |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |
| D                  | B | B | C | B | B | B | C | B | C | B  | A  |  |  | C                  | B  | C  | B  | C  | B  | C  | B  | C  | B  | B  |
| C                  | B | C | B | C | B | B | B | B | B | B  | B  |  |  | B                  | B  | B  | B  | B  | C  | B  | C  | B  | B  | B  |
| B                  | B | B | B | B | B | B | B | B | B | B  | B  |  |  | B                  | B  | A  | B  | B  | B  | B  | B  | B  | B  | B  |
| A                  | B | B | B | B | B | B | B | B | B | B  | B  |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |
| Z                  | C | C | C | C | C | C | C | C | C | C  | C  |  |  | C                  | C  | C  | C  | C  | C  | C  | C  | C  | C  | C  |
|                    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |  | 15                 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

| CP2-HA110-GA4-GG30 |   |   |   |   |   |   |   |   |   |    |    |  |  | Connector Type A22 |    |    |    |    |    |    |    |    |    |    |
|--------------------|---|---|---|---|---|---|---|---|---|----|----|--|--|--------------------|----|----|----|----|----|----|----|----|----|----|
| F                  | T | T | T | T | T | T | T | T | T | T  |    |  |  | T                  | T  | T  | T  | T  | T  | T  | T  | T  | T  | T  |
| E                  | R | R | R | R | R | R | R | R | R | R  |    |  |  | R                  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  |
| D                  | R | R | R | R | R | R | R | R | R | R  |    |  |  | R                  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  |
| C                  | R | R | R | R | R | R | R | R | R | R  |    |  |  | R                  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  |
| B                  | R | R | R | R | R | R | R | R | R | R  |    |  |  | R                  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  |
| A                  | R | R | R | R | R | R | R | R | R | R  |    |  |  | R                  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  |
| Z                  | T | T | T | T | T | T | T | T | T | T  |    |  |  | T                  | T  | T  | T  | T  | T  | T  | T  | T  | T  | T  |
|                    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |  | 15                 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

| Signal Contact Configuration Worksheet |   |   |   |   |   |   |   |   |   |    |    |  |  | Connector Type A22 |  |    |    |    |    |    |    |    |    |    |    |    |
|----------------------------------------|---|---|---|---|---|---|---|---|---|----|----|--|--|--------------------|--|----|----|----|----|----|----|----|----|----|----|----|
| F                                      |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |  |    |    |    |    |    |    |    |    |    |    |    |
| E                                      |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |  |    |    |    |    |    |    |    |    |    |    |    |
| D                                      |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |  |    |    |    |    |    |    |    |    |    |    |    |
| C                                      |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |  |    |    |    |    |    |    |    |    |    |    |    |
| B                                      |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |  |    |    |    |    |    |    |    |    |    |    |    |
| A                                      |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |  |    |    |    |    |    |    |    |    |    |    |    |
| Z                                      |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |  |    |    |    |    |    |    |    |    |    |    |    |
|                                        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |  |                    |  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

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# 3M™ CP2 Press-Fit Header

2 mm Type A 110 Signal Contacts

CP2 Series

| CP2-HA110-F1-KR |   |   |   |   |   |   |   |   |   |    |    |  |  | Connector Type A22 |    |    |    |    |    |    |    |    |    |    |    |
|-----------------|---|---|---|---|---|---|---|---|---|----|----|--|--|--------------------|----|----|----|----|----|----|----|----|----|----|----|
| F               |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |    |    |    |    |    |    |    |    |    |    |    |
| E               | A | A | A | A | A | A | A | A | A | A  | A  |  |  |                    | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |
| D               | A | A | A | A | A | A | A | A | A | A  | A  |  |  |                    | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |
| C               | B | B | B | B | B | B | B | B | B | B  | B  |  |  |                    | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |
| B               | A | A | A | A | A | A | A | A | A | A  | A  |  |  |                    | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |
| A               | A | A | A | A | A | A | A | A | A | A  | A  |  |  |                    | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |
| Z               |   |   |   |   |   |   |   |   |   |    |    |  |  |                    |    |    |    |    |    |    |    |    |    |    |    |
|                 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |  |                    | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

| CP2-HA110-GF1-KR |   |   |   |   |   |   |   |   |   |    |    |  |  | Connector Type A22 |    |    |    |    |    |    |    |    |    |    |    |
|------------------|---|---|---|---|---|---|---|---|---|----|----|--|--|--------------------|----|----|----|----|----|----|----|----|----|----|----|
| F                | C | C | C | C | C | C | C | C | C | C  |    |  |  | C                  | C  | C  | C  | C  | C  | C  | C  | C  | C  | C  |    |
| E                | A | A | A | A | A | A | A | A | A | A  |    |  |  | A                  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |
| D                | A | A | A | A | A | A | A | A | A | A  |    |  |  | A                  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |
| C                | B | B | B | B | B | B | B | B | B | B  |    |  |  | B                  | B  | B  | B  | B  | B  | B  | B  | B  | B  | B  |    |
| B                | A | A | A | A | A | A | A | A | A | A  |    |  |  | A                  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |
| A                | A | A | A | A | A | A | A | A | A | A  |    |  |  | A                  | A  | A  | A  | A  | A  | A  | A  | A  | A  | A  |    |
| Z                | C | C | C | C | C | C | C | C | C | C  |    |  |  | C                  | C  | C  | C  | C  | C  | C  | C  | C  | C  | C  |    |
|                  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |  |                    | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

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U.S.A.  
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RIA-2217A-E

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Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

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Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А