

# Micro-Coaxial/Twinaxial connectors - Horizontal mating type / 0.5 and 0.25 mm pitch

(Board pitch 0.5 mm)

ZenShield® Full EMI Shield

LK Mechanical Lock

105°C Operating Temperature

Click on each product information to jump to the web.

| Product name  |               | CABLINER <sup>®</sup> -VS II  | CABLINER <sup>®</sup> -VS   | CABLINER <sup>®</sup> -CX II without cover  | CABLINER <sup>®</sup> -CX II with cover   |
|---|---------------|---|---|---|---|
| Appearance  |               | <br>ZenShield® LK 105°C | <br>LK | <br>LK | <br>LK |
| Feature   |               | High-speed (32 GTs/Lane)<br>Operation Temp. 105°C   | VESA standard for 16:9 panel<br>High-speed (32 Gbps/Lane)                                 | Small and low height<br>0.78 mm max.  | With EMI shield cover   |
| Plug Assembly Part Number   |               | 20846   | 20453   | 20978   | 20977   |
| Receptacle Part Number  |               | 20849   | 20455   | 20976   | 20976   |
| Wire Pitch  |               | 0.5 mm  | 0.5 mm  | 0.25 mm   | 0.25 mm   |
| Board Pitch   |               | 0.5 mm  | 0.5 mm  | 0.5 mm  | 0.5 mm  |
| Pin Count   | Range         | Up to 60  | Up to 60  | Up to 40  | Up to 40  |
|   | Available     | 20, 30, 40  | 20, 30, 40, 50  | 40  | 40  |
| Please inquire for pin counts not listed or outside of the pin count range. |               |   |   |   |   |
| Mated Size (*1)   | Height        | 1.2 mm max.   | 1.1 mm max.   | 0.78 mm max.  | 1.0 mm max.   |
|   | Width         | 6.85 + (0.5 x pin count) mm   | 7.55 + (0.5 x pin count) mm   | 6.45 + (0.25 x pin count) mm  | 6.45 + (0.25 x pin count) mm  |
|   | Depth         | 6.7 mm  | 5.8 mm  | 5.21 mm   | 5.6 mm  |
| Contact Mating Length   |               | 0.54 mm   | 0.61 mm   | 0.62 mm   | 0.62 mm   |
| Reference Applicable Cable Size (*2)  | Micro-coaxial | AWG 36, 38, 40, 42, 44  | AWG 36, 38, 40, 42, 44  | AWG 39 (*5), 44, 46   | AWG 39 (*5), 44, 46   |
|   | Twinaxial     | AWG 40  | AWG 40  | -   | -   |
|   | Discrete      | AWG 32, 34, 36  | AWG 32, 34, 36  | AWG 39  | AWG 39  |
| Contact Point   |               | Top   | Top   | Top and Bottom  | Top and Bottom  |
| Operating Temperature   |               | -40 to +105°C   | -40 to +85°C  | -40 to +85°C  | -40 to +85°C  |
| Performance (Reference Only)  |               | PCIe Gen5 (32 GT/s/Lane)<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)                     | 32 Gbps/Lane<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)                 | USB3.2 Gen1 (5 Gbps/Lane)<br>VBO HS 1.4 (4 Gbps/Lane)<br>HDMI 1.3 (3.4 Gbps/Lane)         | USB3.2 Gen1 (5 Gbps/Lane)<br>VBO HS 1.4 (4 Gbps/Lane)<br>HDMI 1.3 (3.4 Gbps/Lane)         |
| Automotive Standards  |               | LV214 (*3)  | LV214 (*4)  | -   | -   |

Note (\*1) : Height, Width formula and Depth dimensions are including Lock Cover / Bar. (\*2) : Cable outer diameters need to be smaller than connector pitch. (\*3) : 40 pin tested. PG17 Dynamic loading evaluation passed. (\*4) : 50 pin tested. PG17 Dynamic loading evaluation passed. (\*5) : Characteristic impedance un-matching.

# Micro-Coaxial/Twinaxial connectors - Horizontal mating type / 0.4 mm pitch

ZenShield® Full EMI Shield

LK Mechanical Lock

105°C Operating Temperature

Click on each product information to jump to the web.

| Product name  |               | CABLIN®-CA II  | CABLIN®-CA II PLUS   | CABLIN®-CA IIP PLUS  | CABLIN®-CA  | CABLIN®-CAP   | CABLIN®-CAL   |
|---|---------------|--|--|--|---|---|---|
| Appearance  |               | <br>ZenShield® LK 105°C | <br>ZenShield® LK 105°C | <br>ZenShield® LK | <br>LK | <br>LK | <br>LK |
| Feature   |               | High-speed<br>(32 Gbps/Lane)<br>Operation Temp. 105°C  | High-speed<br>(32 Gbps/Lane)<br>Operation Temp. 105°C  | High-speed<br>(64 Gbps PAM4/Lane)  | High-speed<br>(32 Gbps/Lane)  | High-speed<br>(64 Gbps PAM4/Lane)   | Height 0.8 mm max.<br>High-speed<br>(40 Gbps/Lane PAM3)                                   |
| Plug Assembly Part Number   |               | 20679  | 20788  | 82065  | 20633   | 81863   | 20728   |
| Receptacle Part Number  |               | 20682  | 20790  | 20790  | 20525   | 20525   | 20729   |
| Wire Pitch  |               | 0.4 mm   | 0.4 mm   | 0.4 mm Signal contacts<br>1.2 mm differential pair   | 0.4 mm  | 0.4 mm  | 0.4 mm  |
| Board Pitch   |               | 0.4 mm   | 0.4 mm   | 0.4 mm   | 0.4 mm  | 0.4 mm  | 0.4 mm  |
| Pin Count   | Range         | Up to 60   | Up to 60   | Up to 60   | Up to 60  | Up to 60  | Up to 60  |
|   | Available     | 20, 30, 40, 50   | 60   | 60 (19 differential pair max.)   | 10, 12, 20, 30, 40, 50, 60  | 50 (16 differential pair max.)  | 30, 40  |
| Please inquire for pin counts not listed or outside of the pin count range. |               |  |  |  |   |   |   |
| Mated Size (*1)   | Height        | 1.1 mm max.  | 1.2 mm max.  | 1.3 mm max.  | 1.1 mm max.   | 1.35 mm max.  | 0.8 mm max.   |
|   | Width         | 6.95 + (0.4 x pin count) mm  | 6.95 + (0.4 x pin count) mm  | 6.95 + (0.4 x pin count) mm  | 6.95 + (0.4 x pin count) mm   | 5.75 + (0.4 x pin count) mm   | 10 ~ 20 pin : 6.85 + (0.4 x pin count) mm<br>22 ~ 40 pin : 8.05 + (0.4 x pin count) mm    |
|   | Depth         | 6.2 mm   | 6.7 mm   | 8.2 mm   | 5.73 mm   | 6.86 mm   | 5.5 mm  |
| Contact Mating Length   |               | 0.54 mm  | 0.54 mm  | 0.55 mm  | 0.54 mm   | 0.525 mm  | 0.4 mm  |
| Reference Applicable Cable Size (*2)  | Micro-Coaxial | AWG 36 (*5), 38, 40, 42, 44  | AWG 36 (*5), 38, 40, 42, 44  | AWG 36, 38   | AWG 36 (*5), 38, 40, 42, 44   | AWG 38  | AWG 38, 40, 42, 44  |
|   | Twinaxial     | AWG 40, 42   | AWG 40, 42   | AWG 34   | AWG 40, 42  | -   | -   |
|   | Discrete      | AWG 34, 36   | AWG 34, 36   | -  | AWG 34, 36  | -   | AWG 34, 36  |
| Contact Point   |               | Top  | Top  | Top  | Top   | Top   | Top   |
| Operating Temperature   |               | -40 to +105°C  | -40 to +105°C  | -40 to +85°C   | -40 to +85°C  | -40 to +85°C  | -40 to +85°C  |
| Performance (Reference Only)  |               | 32 Gbps/ Lane<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)                               | 32 Gbps/Lane<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)                                  | 64 Gbps PAM4<br>56 Gbps PAM4<br>32 Gbps NRZ  | 32 Gbps/Lane<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)                 | 64 Gbps PAM4<br>56 Gbps PAM4<br>32 Gbps NRZ   | USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)<br>V-by-One® US (16 Gbps/Lane)  |
| Automotive Standards  |               | LV214 (*3)   | -  | -  | LV214 (*4)  | -   | -   |

Note (\*1) : Height, Width formula and Depth dimensions are including Lock Cover/Bar. (\*2) : Cable outer diameters need to be smaller than connector pitch. (\*3) : 40 pin tested. PG17 Dynamic loading evaluation passed. (\*4) : 50 pin tested. PG17 Dynamic loading evaluation passed. (\*5) : Characteristic impedance un-matching.

# Micro-Coaxial/Twinaxial connectors - Vertical mating type

ZenShield® Full EMI Shield

LK Mechanical Lock

105°C Operating Temperature

Click on each product information to jump to the web.

| Product name  |               | FPL™ II   | CABLINE® -UM   | CABLINE® -SS   | CABLINE® -UY  | CABLINE® -UA II   | CABLINE® -UX II   |
|---|---------------|---|--|--|---|---|---|
| Appearance  |               |  | <br>ZenShield® LK 105°C |   |  |  |  |
| Feature   |               | High retention force<br>high-speed<br>(12 Gbps/Lane)                              | High-speed<br>(40 Gbps/Lane PAM3)<br>Operation Temp. 105°C   | High retention force<br>High-speed<br>(16 Gbps/Lane)                                 | High-speed<br>(32 Gbps/Lane)<br>and Small size                                      | Slim plug and<br>small connector  | Slim plug and<br>small connector  |
| Plug Assembly Part Number   |               | 20437   | 20877  | 20380  | 20857   | 20496   | 20531   |
| Receptacle Part Number  |               | 20439   | 20879  | 20374  | 20854   | 20498   | 20533   |
| Wire Pitch  |               | 0.5 mm  | 0.4 mm   | 0.4 mm   | 0.35 mm   | 0.3 mm  | 0.25 mm   |
| Board Pitch   |               | 0.5 mm  | 0.4 mm   | 0.4 mm   | 0.35 mm   | 0.6 mm  | 0.5 mm  |
| Pin Count   | Range         | Up to 50  | Up to 70   | Up to 50   | Up to 25  | Up to 50  | Up to 50  |
|   | Available     | 30, 40, 50  | 30, 40, 50, 60, 70   | 10, 14, 20, 30, 32, 35, 40, 50   | 5, 10   | 26, 32, 40, 50  | 30, 34, 40, 50  |
| Please inquire for pin counts not listed or outside of the pin count range. |               |   |  |  |   |   |   |
| Mated Size (*1)   | Height        | 2.4 mm max.   | 2.35 mm max.   | 1.85 mm max.   | 0.82 mm max.  | 1.37 mm max.  | 1.1 mm max.   |
|   | Width         | 5.8 + (0.5 x pin count) mm  | 5.0 + (0.4 x pin count) mm   | 5.8 + (0.4 x pin count) mm   | 2.15 + (0.35 x pin count) mm  | 5.0 + (0.3 x pin count) mm  | 4.1 + (0.25 x pin count) mm   |
|   | Depth         | 6.1 mm  | 5 mm   | 3 mm   | 3.1 mm  | 2.9 mm  | 2.4 mm  |
| Contact Mating Length   |               | 0.51 mm   | 0.65 mm min.   | 0.3 mm   | 0.1 mm  | 0.2 mm  | 0.2 mm  |
| Reference Applicable Cable Size (*2)  | Micro-coaxial | AWG 32 (*3), 34 (*3), 36, 38, 40  | AWG 36(*3), 38, 40, 42, 44   | AWG 36 (*3), 38, 40, 42  | AWG 40, 42  | AWG 42, 44, 46  | AWG 44, 46  |
|   | Twinaxial     | AWG 40  | AWG 40, 42   | -  | -   | -   | -   |
|   | Discrete      | AWG 32, 34, 36  | AWG 34, 36   | AWG 34, 36   | AWG 36  | AWG 39  | AWG 39  |
| Operating Temperature   |               | -40 to +85°C  | -40 to +105°C  | -40 to +85°C   | -40 to +85°C  | -40 to +85°C  | -40 to +85°C  |
| Performance (Reference Only)  |               | HDMI 2.1 (12 Gbps/Lane)<br>USB3.2 Gen2 (10 Gbps/Lane)<br>DP UHBR3 (8.1 Gbps/Lane) | USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)<br>V-by-One® US (16 Gbps/Lane)                   | V-by-One® US (16 Gbps/Lane)<br>HDMI 2.1 (12 Gbps/Lane)<br>USB3.2 Gen2 (10 Gbps/Lane) | 32 Gbps/Lane<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)           | USB3.2 Gen1 (5 Gbps/Lane)<br>VBO HS 1.4 (4 Gbps/Lane)<br>HDMI 1.3 (3.4 Gbps/Lane)   | USB3.2 Gen1 (5 Gbps/Lane)<br>VBO HS 1.4 (4 Gbps/Lane)<br>HDMI 1.3 (3.4 Gbps/Lane)   |

Note: (\*) : CABLINE-UM : Height, Width formula and Depth dimensions are including Lock Cover. (\*\*): Cable outer diameters need to be smaller than connector pitch. (\*\*\*) : Characteristic impedance un-matching.

# Micro-Coaxial/Twinaxial connectors - 0.5 & 0.4 mm pitch FPC connection

(Related series FPC connectors)

ZenShield® Full EMI Shield

LK Mechanical Lock

105°C Operating Temperature

Click on each product information to jump to the web.

| Product name  |              | CABLINER® -VS IIF  | CABLINER® -VSF   | CABLINER® -CA IIF  | CABLINER® -CA IIF PLUS   | CABLINER® -CAF  | CABLINER® -CAL IIF   | CABLINER® -UMF   |
|---|--------------|--|--|--|--|---|--|--|
| Appearance  |              | <br>ZenShield® LK | <br>LK | <br>ZenShield® LK | <br>ZenShield® LK | <br>LK | <br>ZenShield® LK | <br>ZenShield® LK 105°C |
| Feature   |              | High-speed (32 Gbps/Lane)<br>mates to VS II receptacle   | High-speed (32 Gbps/Lane)<br>mates to VS receptacle                                      | High-speed (32 Gbps/Lane)<br>mates to CA II receptacle   | High-speed (32 Gbps/Lane)<br>mates to CA II PLUS receptacle  | High-speed (32 Gbps/Lane)<br>mates to CA receptacle                                       | High-speed (32 Gbps/Lane)<br>Low profile 0.9 mm max.   | High-speed (40 Gbps/Lane PAM3)<br>Operation Temp. 105°C<br>mates to UM receptacle                          |
| Plug Assembly Part Number   |              | 20862  | 20645  | 20856  | 20901  | 20858   | 21088  | 21102  |
| Receptacle Part Number  |              | 20849  | 20455  | 20682  | 20790  | 20525   | 21089  | 20879  |
| Wire Pitch  |              | 0.5 mm   | 0.5 mm   | 0.4 mm   | 0.4 mm   | 0.4 mm  | 0.4 mm   | 0.4 mm   |
| Board Pitch   |              | 0.5 mm   | 0.5 mm   | 0.4 mm   | 0.4 mm   | 0.4 mm  | 0.4 mm   | 0.4 mm   |
| Mating Type   |              | Horizontal   | Horizontal   | Horizontal   | Horizontal   | Horizontal  | Horizontal   | Vertical   |
| Pin Count   | Range        | Up to 60   | Up to 60   | Up to 60   | Up to 60   | Up to 60  | Up to 60   | Up to 70   |
|   | Available    | 30, 40   | 30, 40   | 30, 40, 50   | 60   | 40, 60  | 50   | 40, 70   |
| Please inquire for pin counts not listed or outside of the pin count range. |              |  |  |  |  |   |  |  |
| Mated Size (*)  | Height       | 1.2 mm max.  | 1.1 mm max.  | 1.1 mm max.  | 1.2 mm max.  | 1.1 mm max.   | 0.9 mm max.  | 2.35 mm max.   |
|   | Width        | 6.85 + (0.5 x pin count) mm  | 6.15 + (0.5 x pin count) mm  | 6.95 + (0.4 x pin count) mm  | 6.95 + (0.4 x pin count) mm  | 5.75 + (0.4 x pin count) mm   | 5.74 + (0.4 x pin count) mm  | 5.0 + (0.4 x pin count) mm   |
|   | Depth        | 7.27 mm  | 5.97 mm  | 6.74 mm  | 7.24 mm  | 6.06 mm   | 6.41 mm  | 5 mm   |
| Contact Mating Length   |              | 0.48 mm  | 0.62 mm  | 0.48 mm  | 0.48 mm  | 0.48 mm   | 0.44 mm  | 0.65 mm min.   |
| FPC Type  |              | Shielded FPC   | Shielded/Non-shielded FPC  | Shielded FPC   | Shielded FPC   | Shielded/Non-shielded FPC   | Shielded FPC   | Shielded/Non-shielded FPC  |
| FPC Thickness   | Contact Area | 0.25 +0.02 / -0.03 mm  | 0.28 +0.02 / -0.03 mm  | 0.25 +0.02 / -0.03 mm  | 0.25 +0.02 / -0.03 mm  | 0.26 +0.02 / -0.02 mm   | 0.25 +0.02 / -0.03 mm  | 0.34 +0.04 / -0.04 mm  |
|   | Ground Area  | 0.37 +0.04 / -0.06 mm  | 0.34 +0.05 / -0.05 mm  | 0.37 +0.04 / -0.06 mm  | 0.37 +0.04 / -0.06 mm  | 0.40 +0.05 / -0.05 mm   | 0.37+0.04 / -0.06 mm   | 0.34 +0.04 / -0.04 mm  |
| Contact Point   |              | Top  | Top  | Top  | Top  | Top   | Top  | -  |
| Operating Temperature   |              | -40 to +85°C   | -40 to +85°C   | -40 to +85°C   | -40 to +85°C   | -40 to +85°C  | -40 to +85°C   | -40 to +105°C  |
| Performance (Reference Only)  |              | 32 Gbps/Lane<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)                          | 32 Gbps/Lane<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)                | 32 Gbps/Lane<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)                            | 32 Gbps/Lane<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)                            | 32 Gbps/Lane<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)                 | 32 Gbps/Lane<br>USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)                            | USB4 Gen4 (40 Gbps/Lane PAM3)<br>DP UHBR20 (20 Gbps/Lane)<br>V-by-One® US (16 Gbps/Lane)                   |

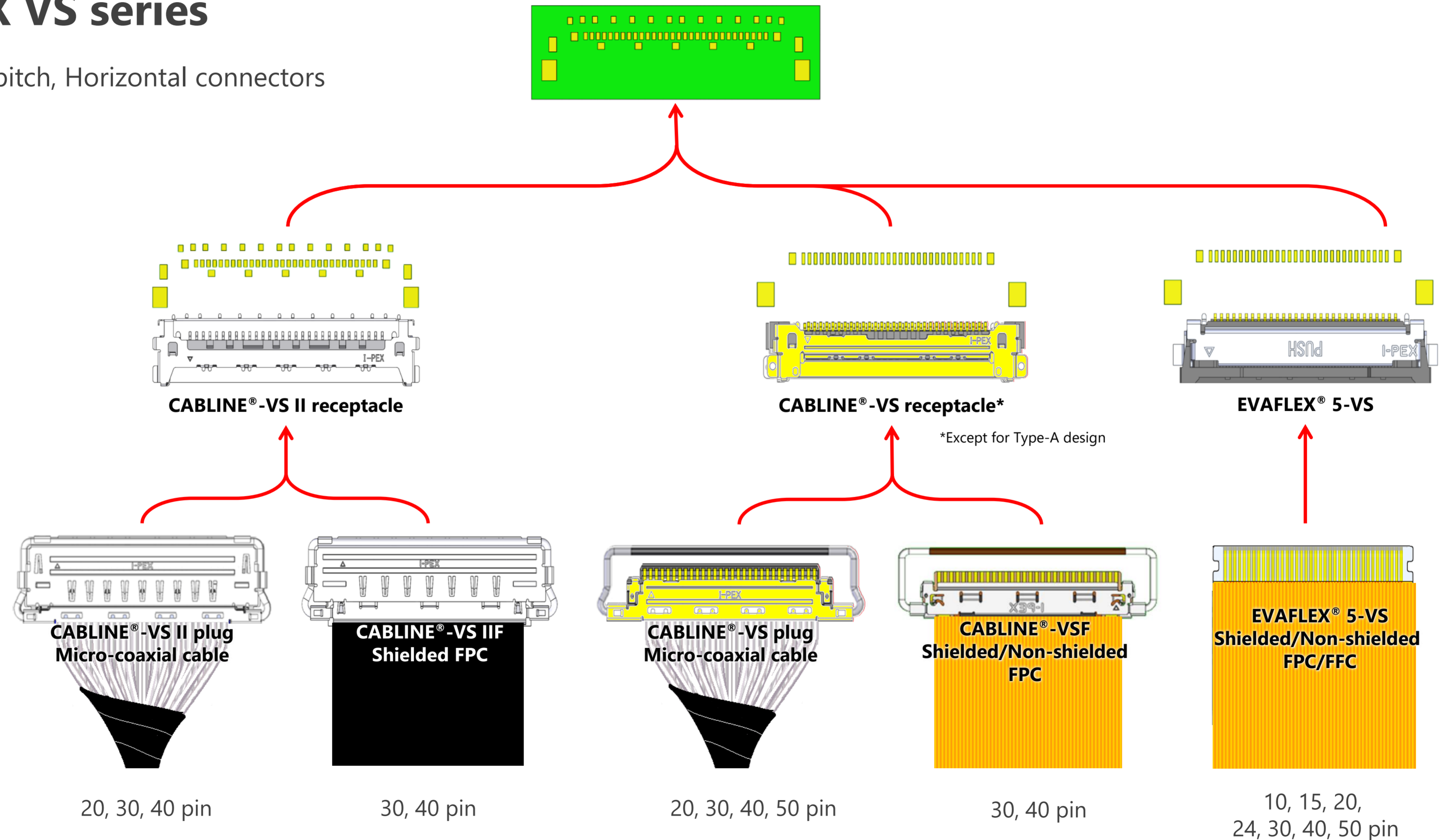
Note (\*): Height, Width formula and Depth dimensions are including Lock Cover / Bar.

# I-PEX VS series connector map (0.5 mm pitch, Horizontal)

CABLINE-VS, VS II receptacles and EVAFLEX 5-VS can be mounted to the same PCB layout.

## I-PEX VS series

0.5 mm pitch, Horizontal connectors



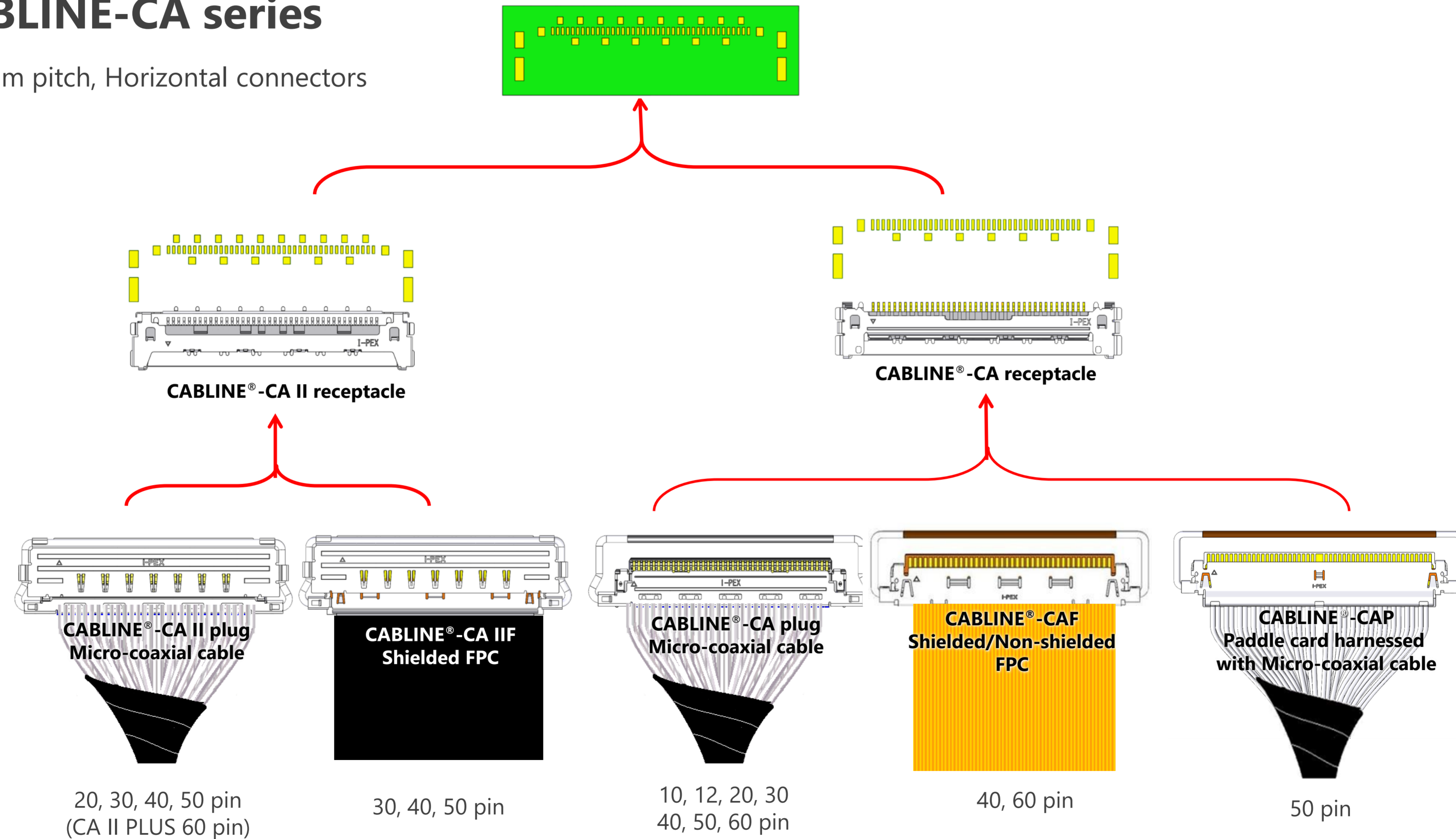
\*Please inquire for pin counts not listed above.

# CABLINE- CA series connector map (0.4 mm pitch, Horizontal)

CABLINE-CA and CA II receptacles can be mounted to the same PCB layout.

## CABLINE-CA series

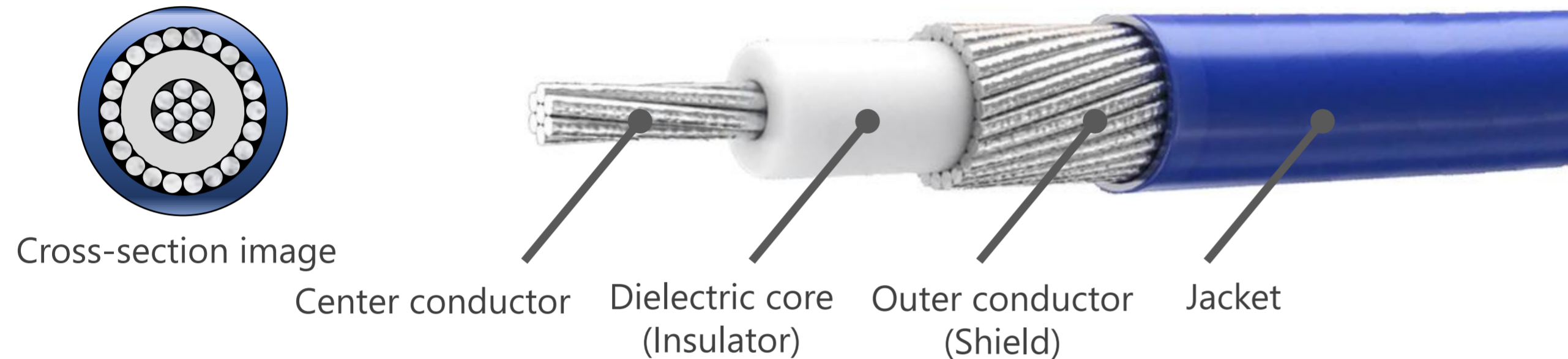
0.4 mm pitch, Horizontal connectors



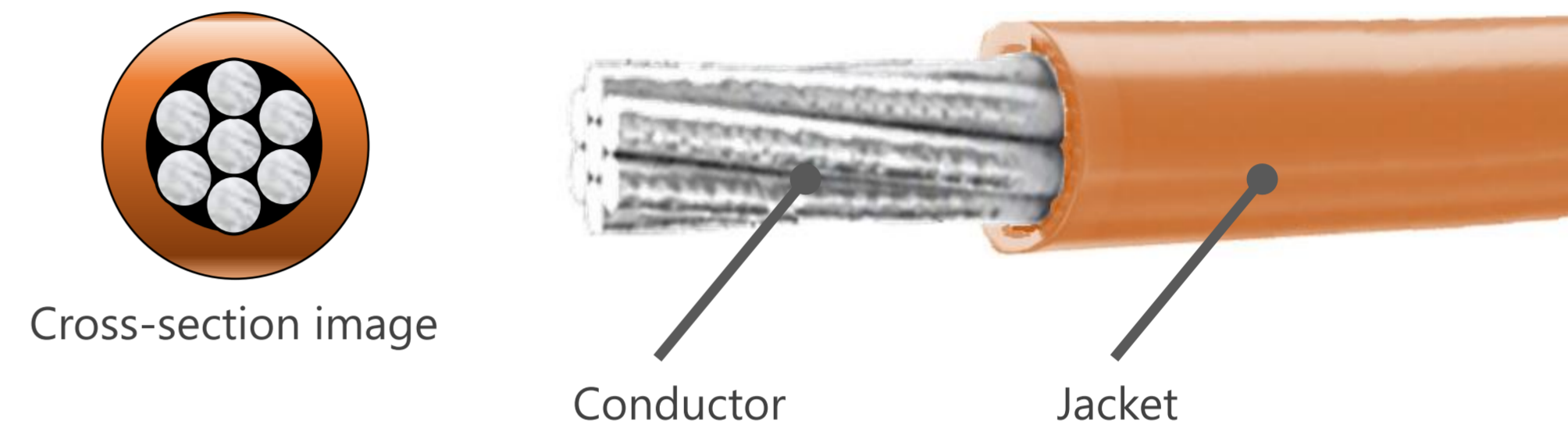
\*Please inquire for pin counts not listed above.

# Cable structure

## Micro-Coaxial Cable

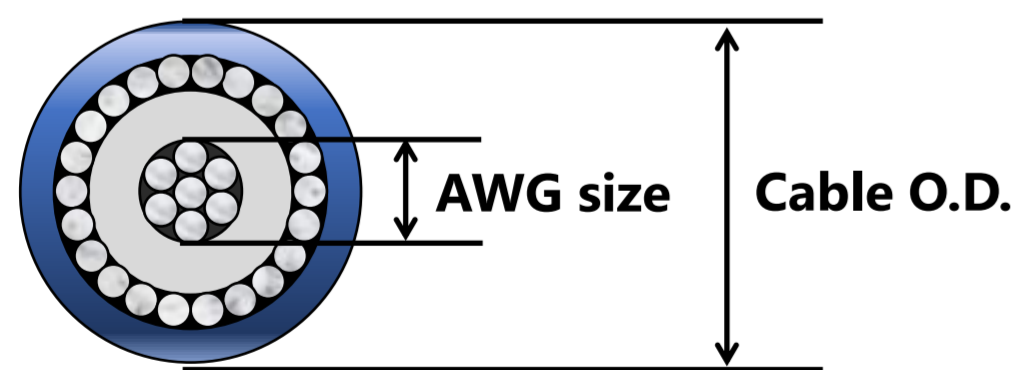


## Discrete Wire



## Cable size (Reference)

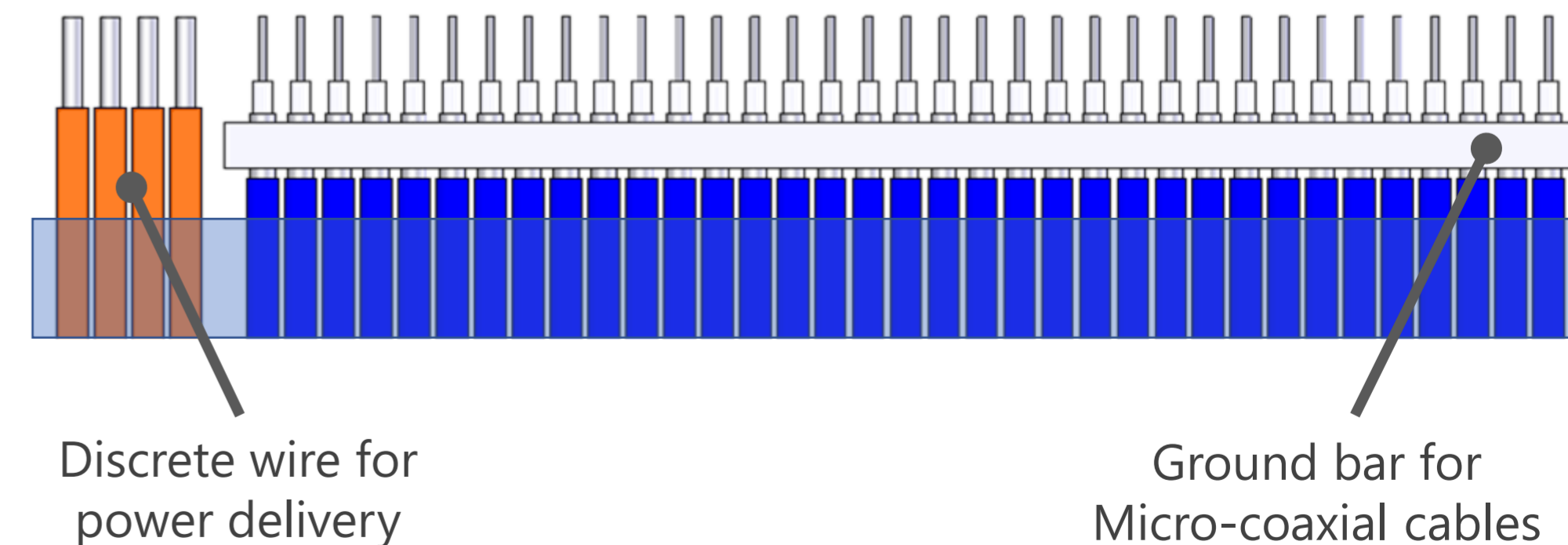
Center conductor : 7-wire stranded type



| AWG size | Center Conductor Diameter | Cable Outer Diameter (O.D.) |         |
|----------|---------------------------|-----------------------------|---------|
|          |                           | 45 ohm                      | 50 ohm  |
| AWG 30   | 0.30 mm                   | 1.04 mm                     | 1.16 mm |
| AWG 32   | 0.24 mm                   | 0.82 mm                     | 0.90 mm |
| AWG 34   | 0.19 mm                   | 0.67 mm                     | 0.73 mm |
| AWG 36   | 0.15 mm                   | 0.49 mm                     | 0.55 mm |
| AWG 38   | 0.12 mm                   | 0.39 mm                     | 0.46 mm |
| AWG 40   | 0.09 mm                   | 0.33 mm                     | 0.37 mm |
| AWG 42   | 0.075 mm                  | 0.29 mm                     | 0.33 mm |
| AWG 44   | 0.060 mm                  | 0.24 mm                     | 0.26 mm |
| AWG 46   | 0.048 mm                  | 0.22 mm                     | 0.24 mm |

\* Cable size varies depending on the types of cable.

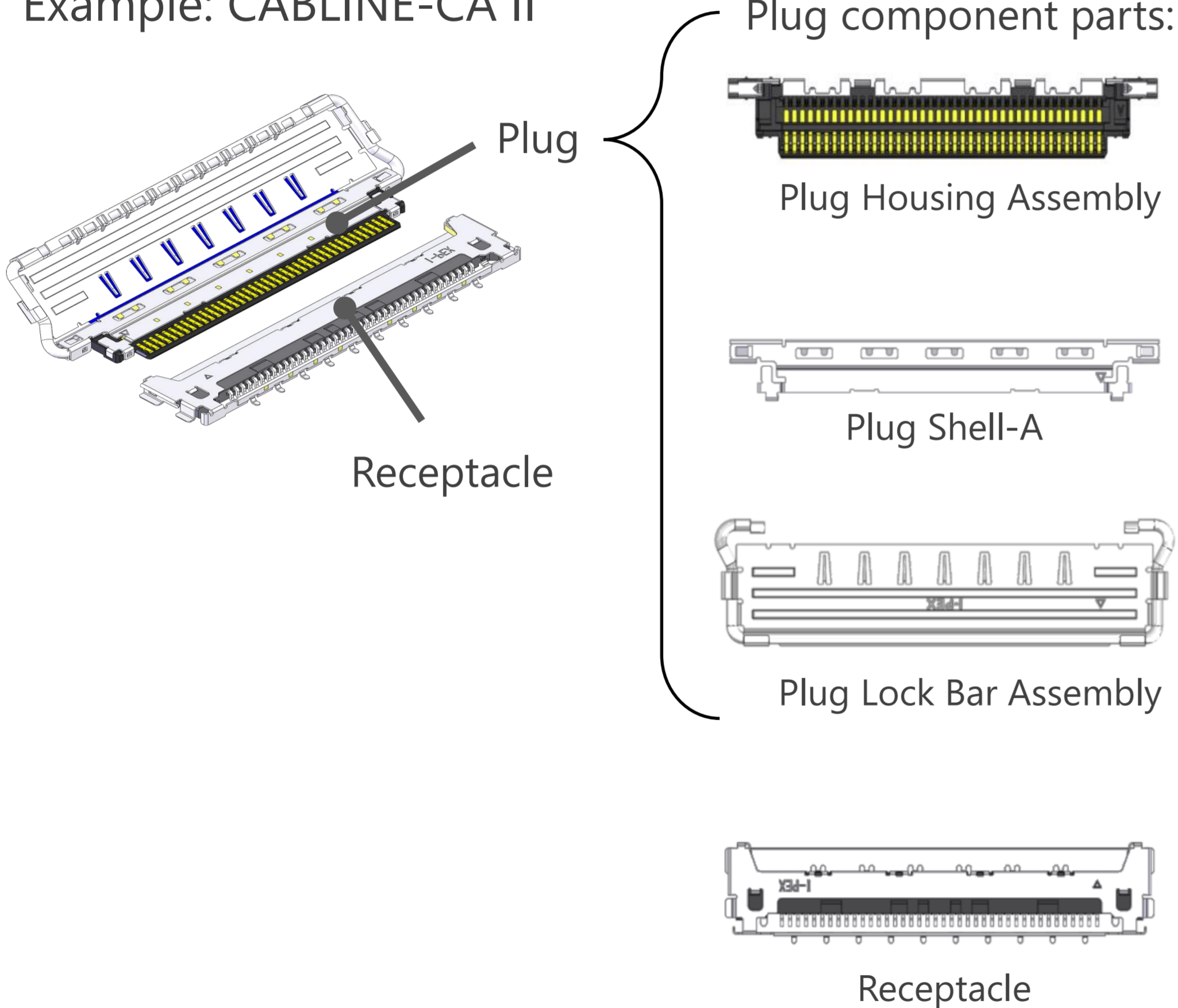
## Cable sub-assembly image



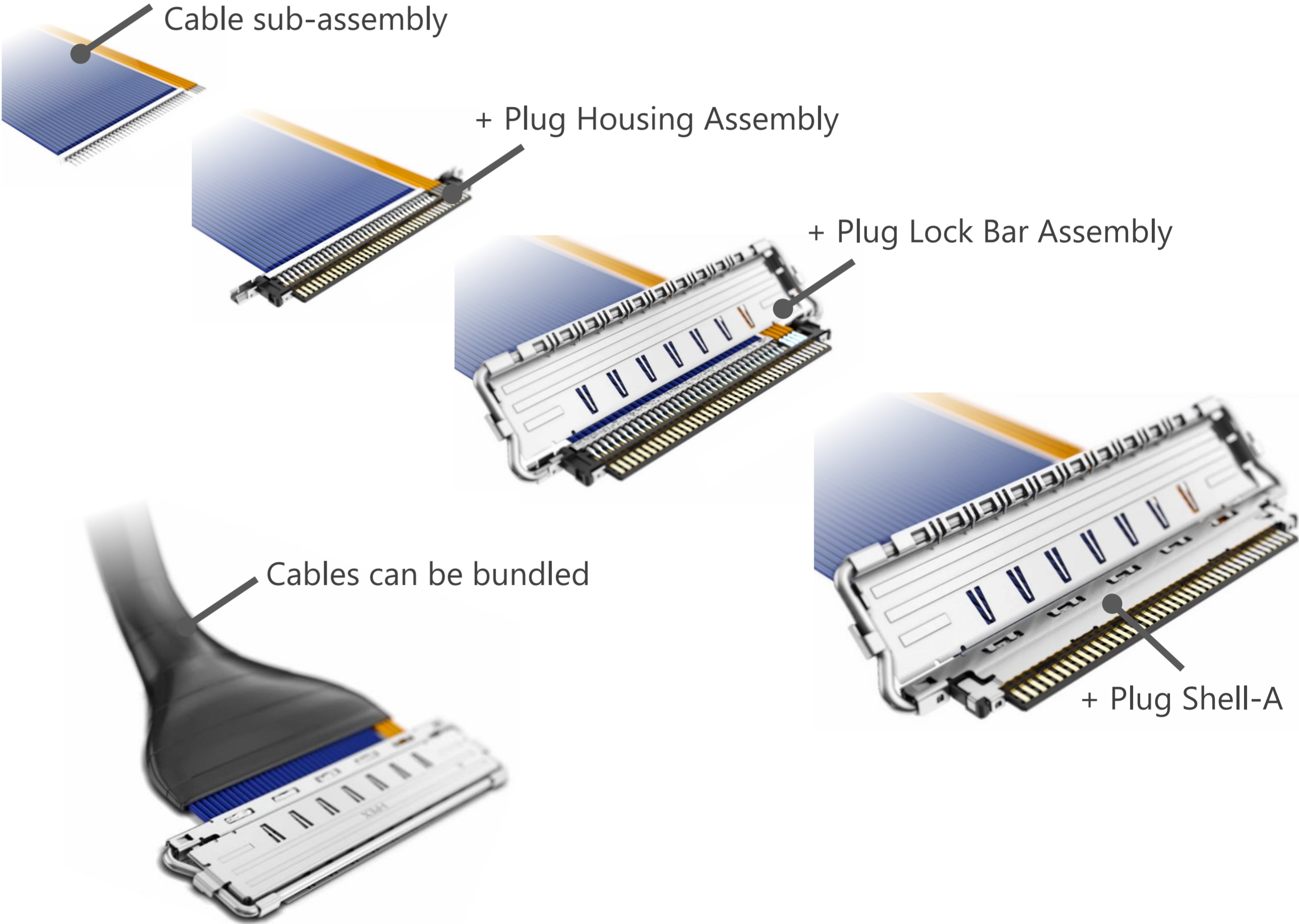
# Micro-Coaxial Connector structure

## Connector parts

Example: CABLINE-CA II

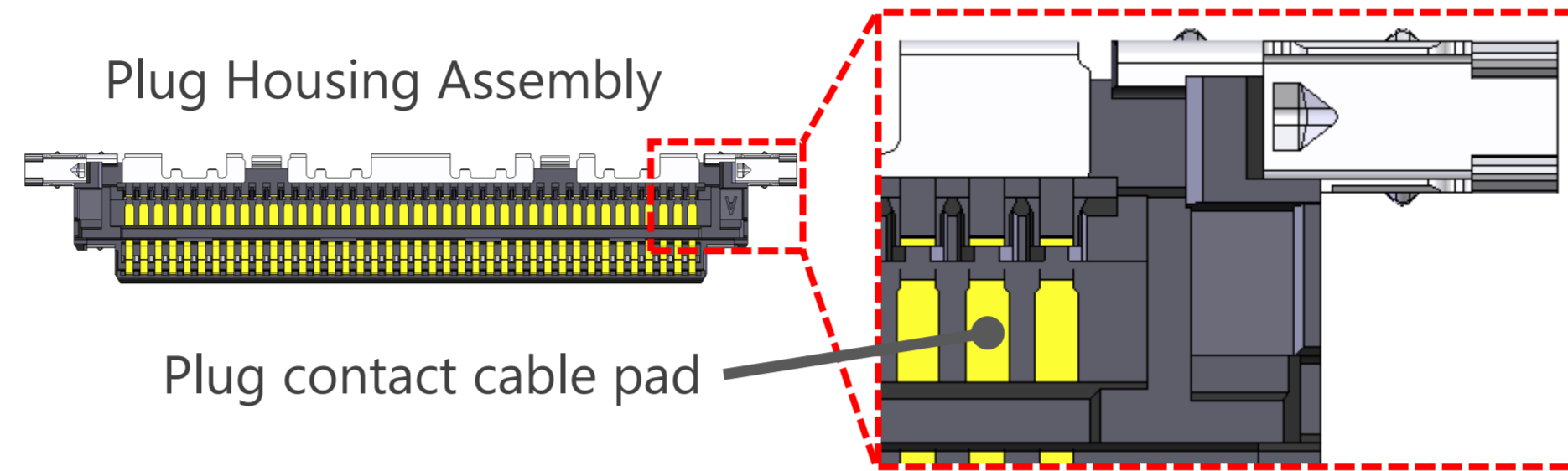
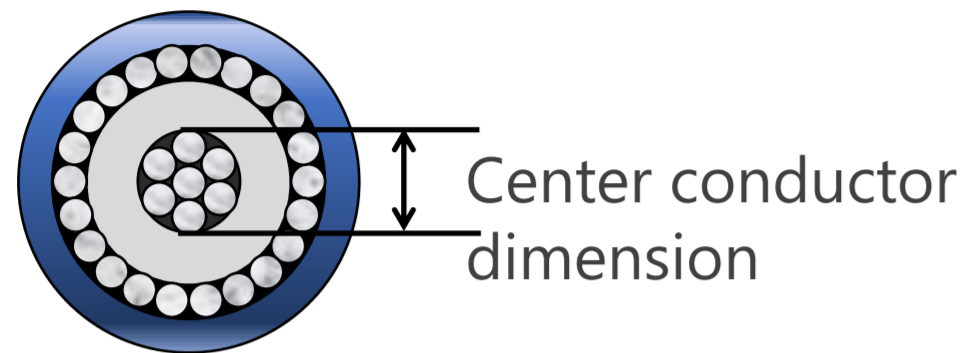


## Plug harness assembly process image



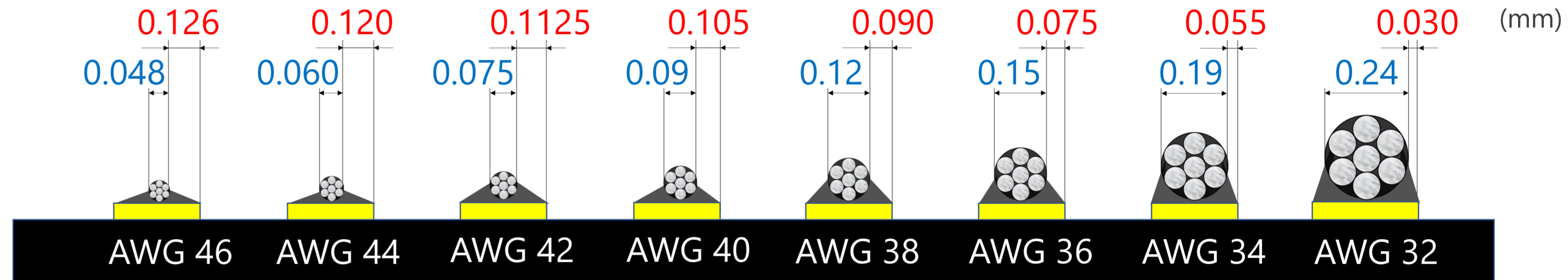
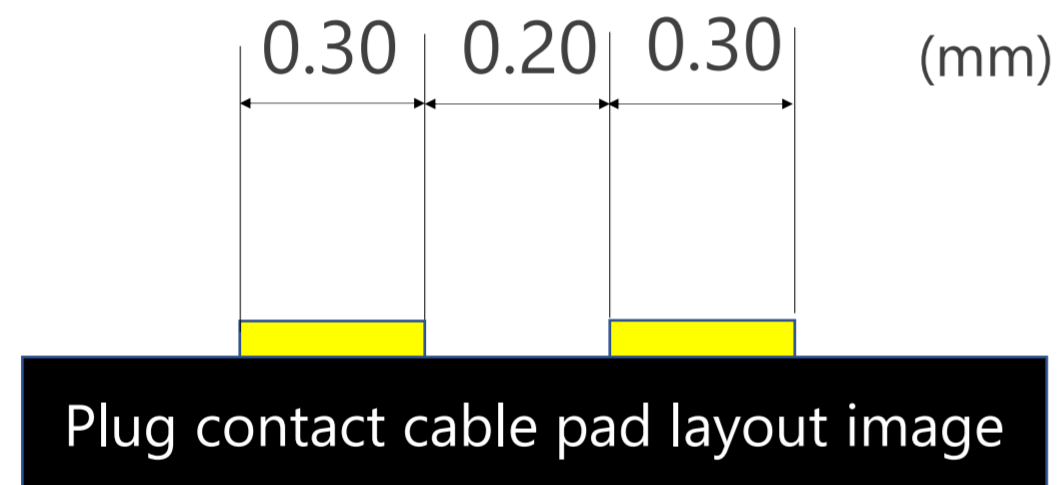
# Center conductor and plug contact cable pad size image

Micro-Coaxial Cable cross-section image

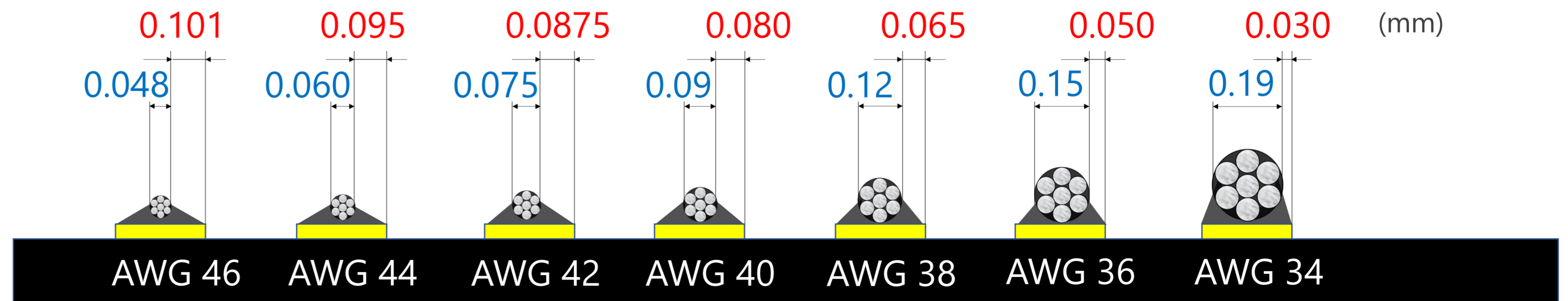
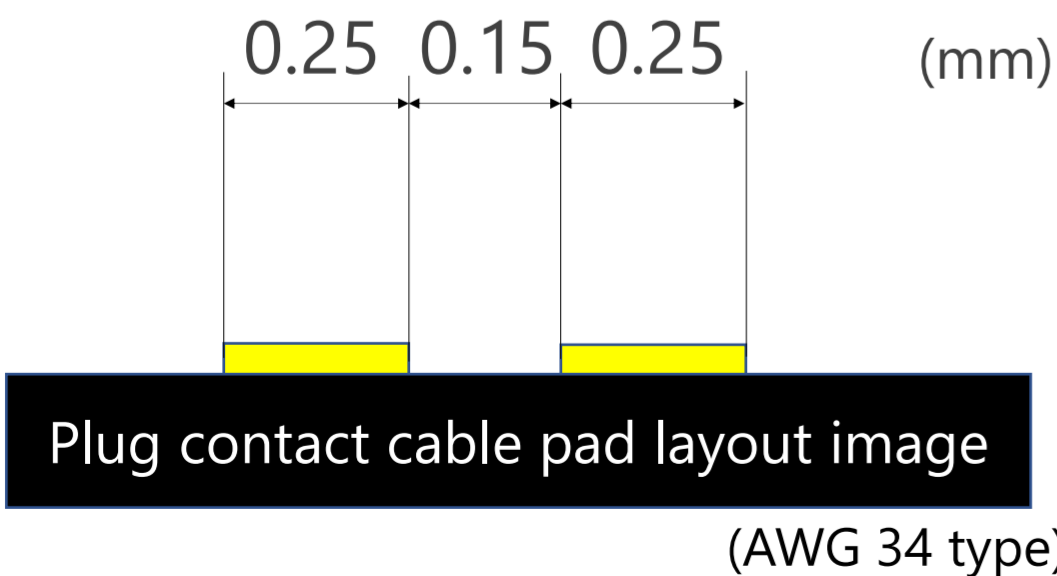


Red color number: Gap of conductor and pad  
 Blue color number: Center conductor dimension  
 (Reference)

## 0.5 mm pitch series



## 0.4 mm pitch series



# I-PEX Product Series



**MHF<sup>®</sup>**  
Series  
RF Connectors



**EVAFLEX<sup>®</sup>**  
Series  
**MINIFLEX<sup>®</sup>**  
Series  
FPC/FFC Connectors



**AP**  
Series  
Terminals



**CABLINE<sup>®</sup>**  
Series  
Micro-Coaxial/  
Twinaxial  
Connectors



**ISH<sup>®</sup>**  
Series  
**IARPB<sup>®</sup>**  
Series  
Wire-to-Board  
Connectors



**MINIDOCK<sup>™</sup>**  
Series  
I/O Connectors



**NOVASTACK<sup>®</sup>**  
Series  
Board-to-Board  
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