

# ComboStak® and PowerStak® connectors Board To Board connector

Product Presentation

Amphenol Information Communications  
and Commercial Products

 **FCi Basics**

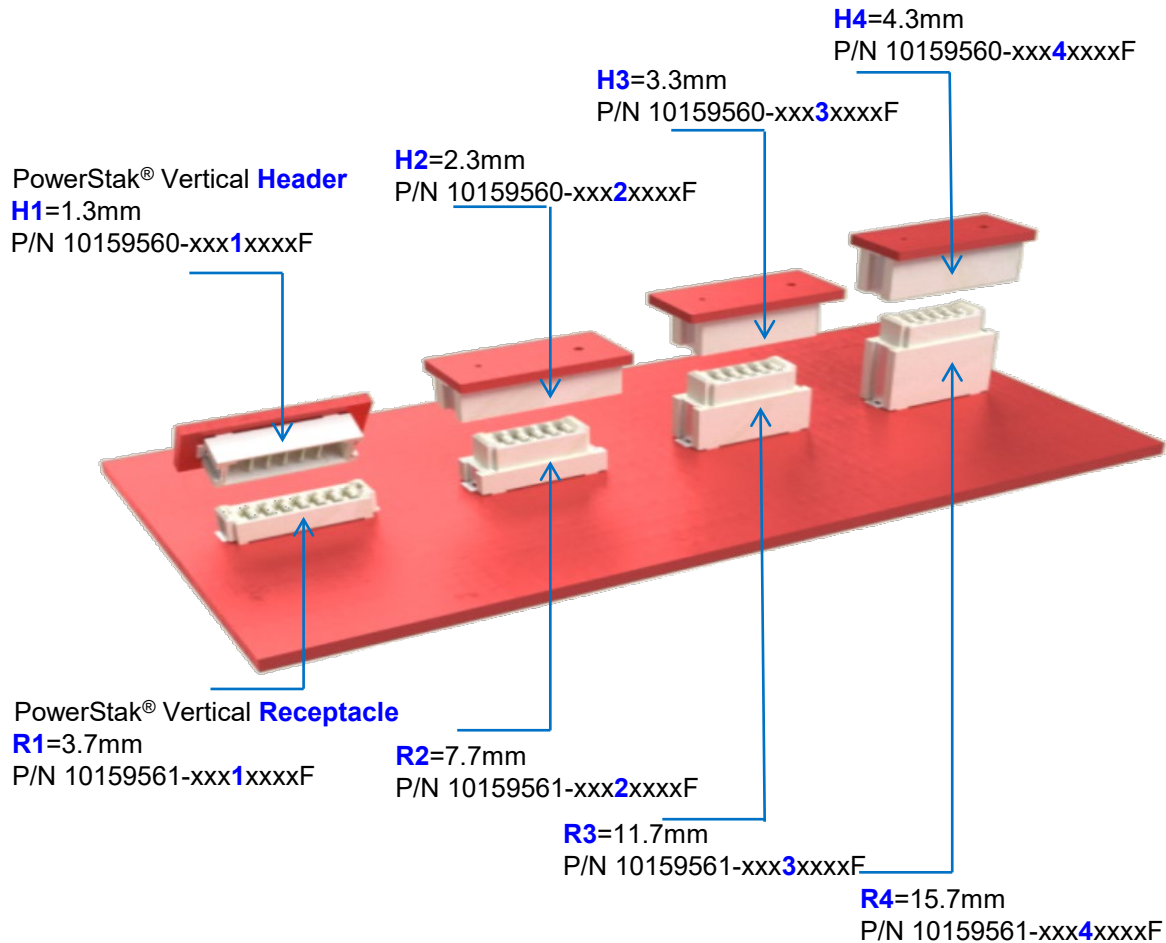
**Amphenol ICC**

- ComboStak® offers as **space saving, reliable combination of power** (2.00mm pitch) **and signal** (0.80mm pitch) **in one connector**
- ComboStak® is a **symmetrical board to board connector** with an even number of power contacts at both ends of the connector and signal contacts in between
- ComboStak® is designed for stack heights from **5mm to 20mm** (1mm increments), for **6 to 140** signal pins (6, 8, 10, 20, 30, 40, 60, 80, 100, 120, 140) and an even number of **2 up to 10 power pins**
- ComboStak® is a double row, mezzanine connector system with **surface-mount** solder tails
- PowerStak® is the **compact, space saving power only version** on 2.00mm pitch
- PowerStak® support stack height from **5mm to 20mm** (1mm increments) and from **2 to 10pos**
- PowerStak® offers a 4 point of contact system to **support current ratings** up to **20A/pin**
- ComboStak® and PowerStak® Connectors are ideal for applications in the **Mobile Networks, Datacenter, Industrial & Automotive** markets.

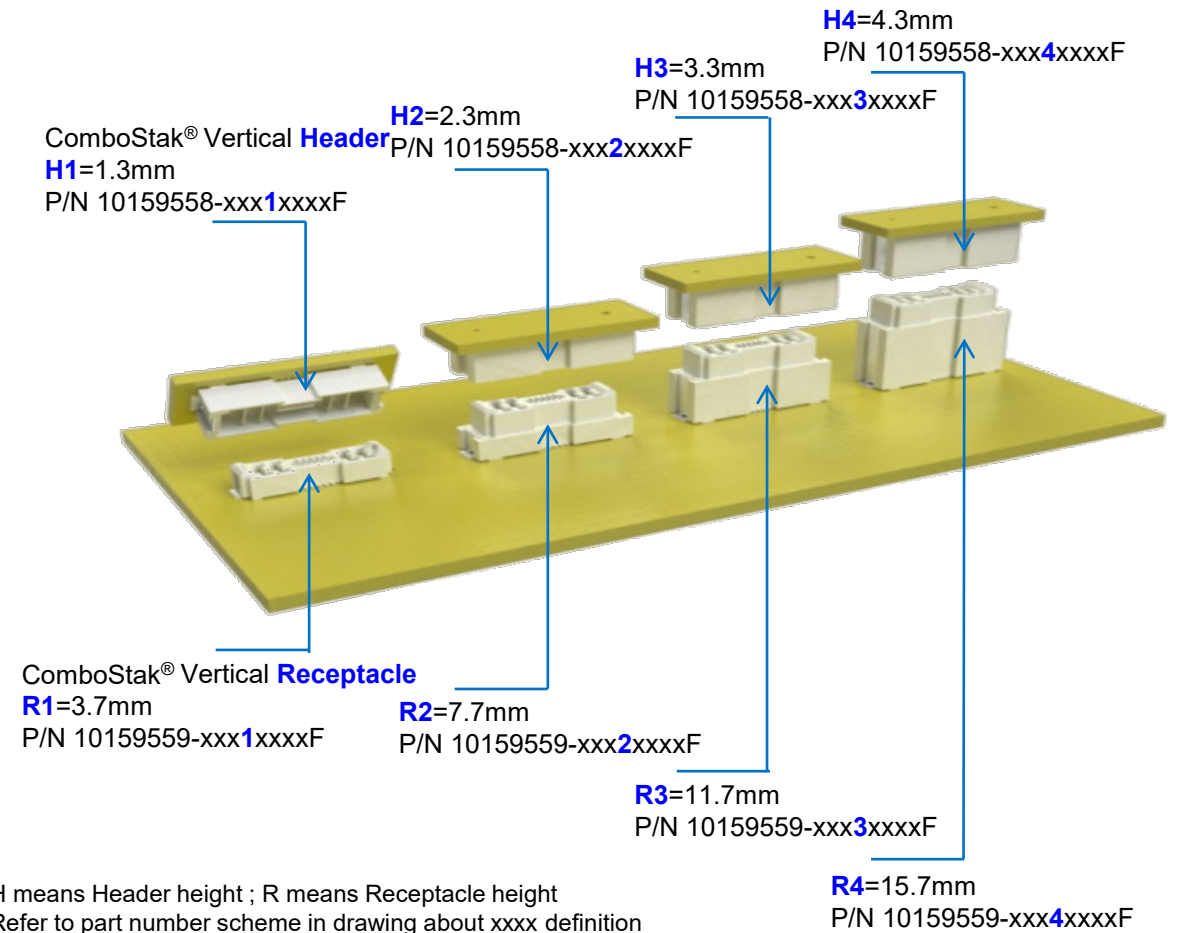
# ComboStak® and PowerStak®

## Product Overview

### PowerStak®

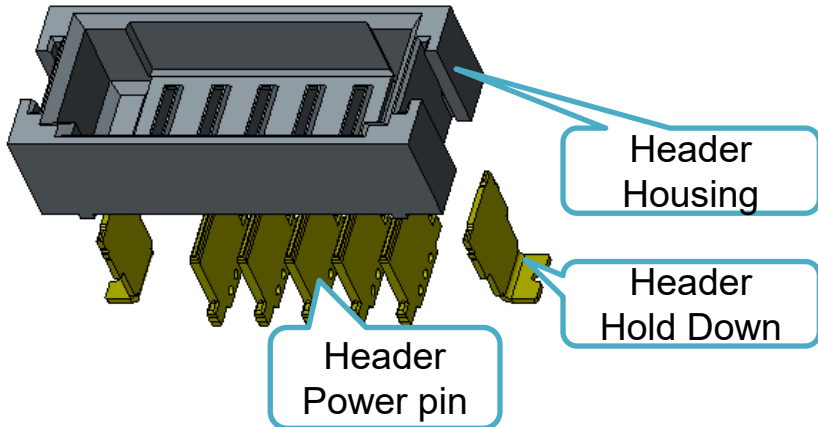


### ComboStak®

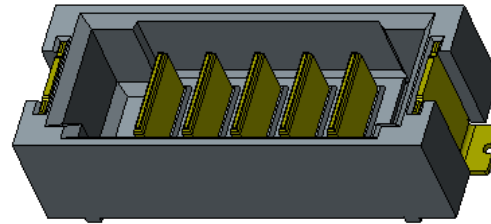


- H means Header height ; R means Receptacle height
- Refer to part number scheme in drawing about xxxx definition

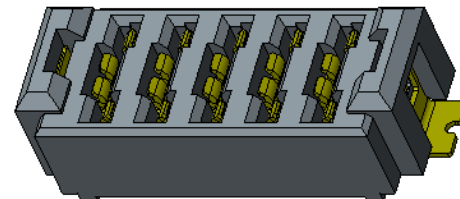
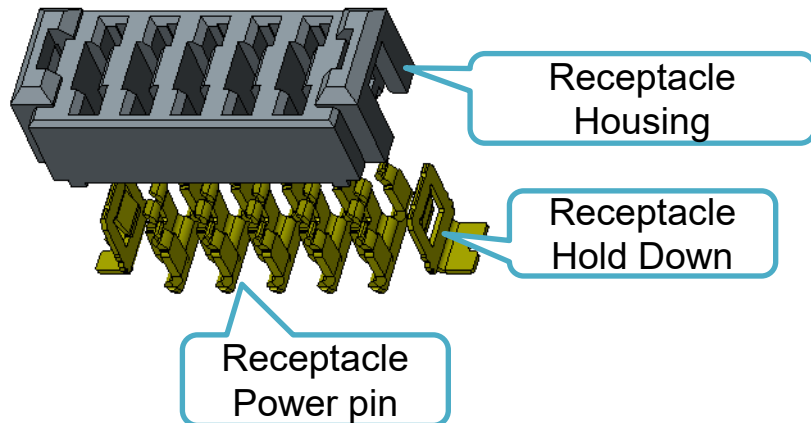
### PowerStak®



Header

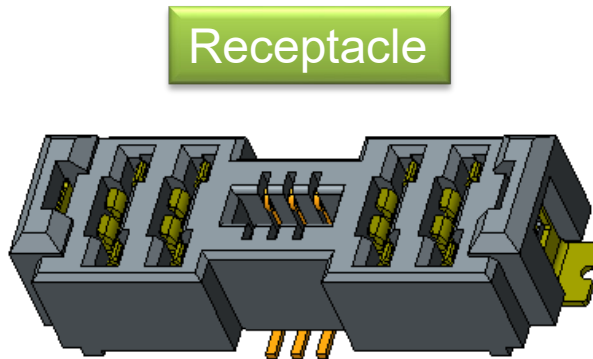
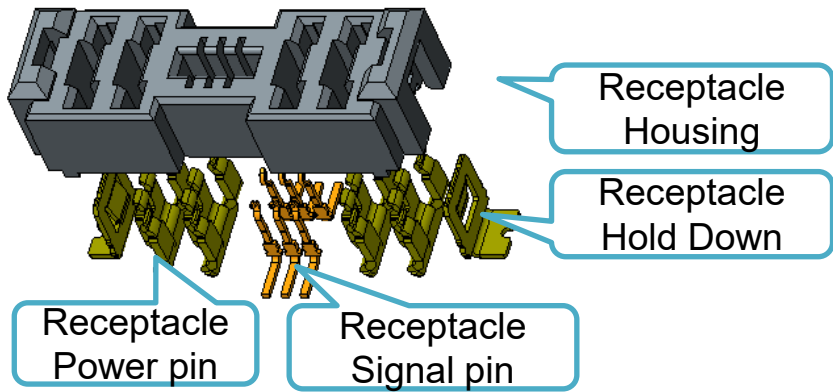
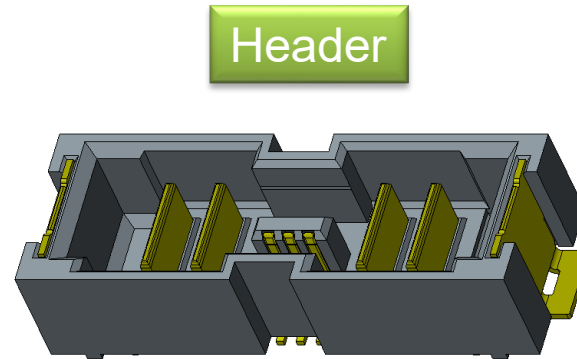
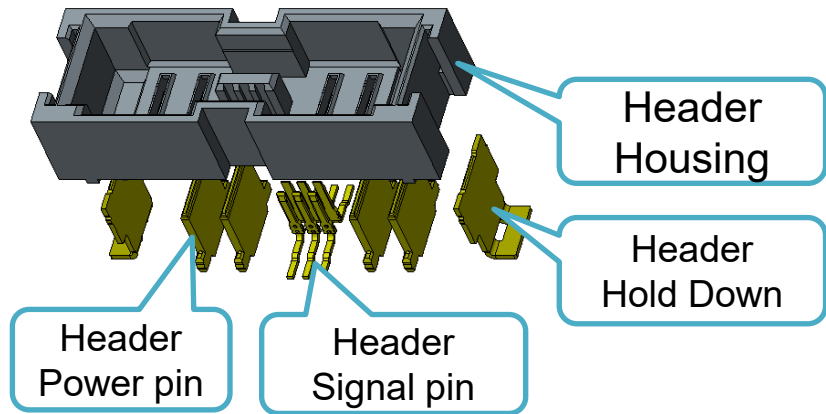


Receptacle



Major parameter	
Base P/N	10159560 & 10159561
Pitch (mm)	Power Pin: 2.0mm
Current Rating/Contact	Power pin: 20A min @ 1 Pin
Stack height	5-20mm, Incremental 1mm
Misalignment	Pitch direction +/-0.9mm
	Width direction +/-0.9mm
Wipe length	Power Pin: 1.5mm
# Positions Power pin	Power pin: 2 ~10, Incremental 1

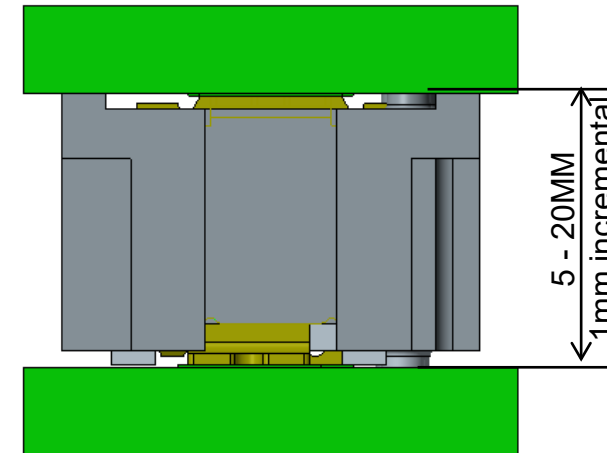
### ComboStak®



Major parameter	
Base P/N	10159558 & 10159559
Pitch (mm)	Power Pin: 2.0mm
	Signal: 0.8mm
Current Rating/Contact	Power pin: 20A @ 1 Pin
	Signal pin: 0.8A, all pin powered
Stack height	5-20mm, Incremental 1mm
Misalignment	Pitch direction +/-0.9mm
	Width direction +/-0.9mm
Wipe length	Power Pin: 1.5mm
	Signal Pin: 1.2mm
# Positions Power pin	Power pin: 2 ~ 10, Incremental 1
	Signal pin: 6 ~140 (6, 8, 10, 20, 30, 40, 60, 80, 100, 120, 140)

FOR HEADER, SEE DWG. NO. 10159558				
COMBINATION OF MATED HEIGHT	HEADER 1	HEADER 2	HEADER 3	HEADER 4
RECEPTACLE 1	HEIGHT: 1.3	HEIGHT: 2.3	HEIGHT: 3.3	HEIGHT: 4.3
RECEPTACLE 2	5	6	7	8
RECEPTACLE 3	9	10	11	12
RECEPTACLE 4	13	14	15	16
RECEPTACLE 5	17	18	19	20

### Stack Height





### Specifications

- Pitch: 2.0mm
- Positions: Power 2 ~ 10pos
- Termination: SMT
- Configurations: Vertical
- Stack Heights: 5~20mm , start with 6 , 8, 10, 12mm
- USCAR, UL E66906

### Materials

- Header / Receptacle : High temperature thermoplastic LCP, Natural (UL94V-0)
- Terminal: Copper Alloy
- Hold down: Copper Alloy
- Plating: Gold or GXT

### Electrical Performances

- Voltage Rating: 100V DC
- Current Rating: 20A max. per contact
- Insulation Resistance: 1000MΩ min.
- Contact Resistance: 30m-ohms max (Initial)

### Mechanical Performance

- Durability: 200 cycles
- Insertion Force: Power pin 6N max.
- Withdrawal Force: Power pin 0.8N min.
- Point of contact: 4
- Wiping length: 1.5mm

### Environmental

- Operating Temperature: -40°C to +125°C
- MFG:EIA 364-65 Class –IIA compatible

### Packaging

- Tape and reel
- Tube

### Specifications

- Pitch: Power 2.0mm ; Signal 0.80mm
- Positions: Power 2 ~ 10pos ; Signal 6 ~ 140pos
- Termination: SMT
- Configurations: Vertical
- Stack Heights: 5~20mm, start with 6 , 8, 10, 12mm
- USCAR, UL E66906

### Materials

- Header / Receptacle : High temperature thermoplastic LCP, Natural (UL94V-0)
- Terminal: Copper Alloy
- Hold down: Copper Alloy
- Plating: Gold or GXT

### Electrical Performances

- Voltage Rating: 100V DC
- Current Rating:
  - Power Pin: 20A max. per contacts
  - Signal Pin: 0.8A all contacts powered)
- Insulation Resistance: 1000MΩ min.
- Contact Resistance: 30m-ohms max (Initial)
- Speed: up to 12Gbps

### Mechanical Performance

- Durability: 200 cycles
- Insertion Force: Power pin 6N max. ; Signal pin 0.9N max.
- Withdrawal Force: Power pin 0.8N min. Signal pin 0.1N min.
- Point of contact: 4 (power)
- Wiping length: 1.2mm

### Environmental

- Operating Temperature: -40°C to +125°C
- MFG:EIA 364-65 Class –IIA compatible

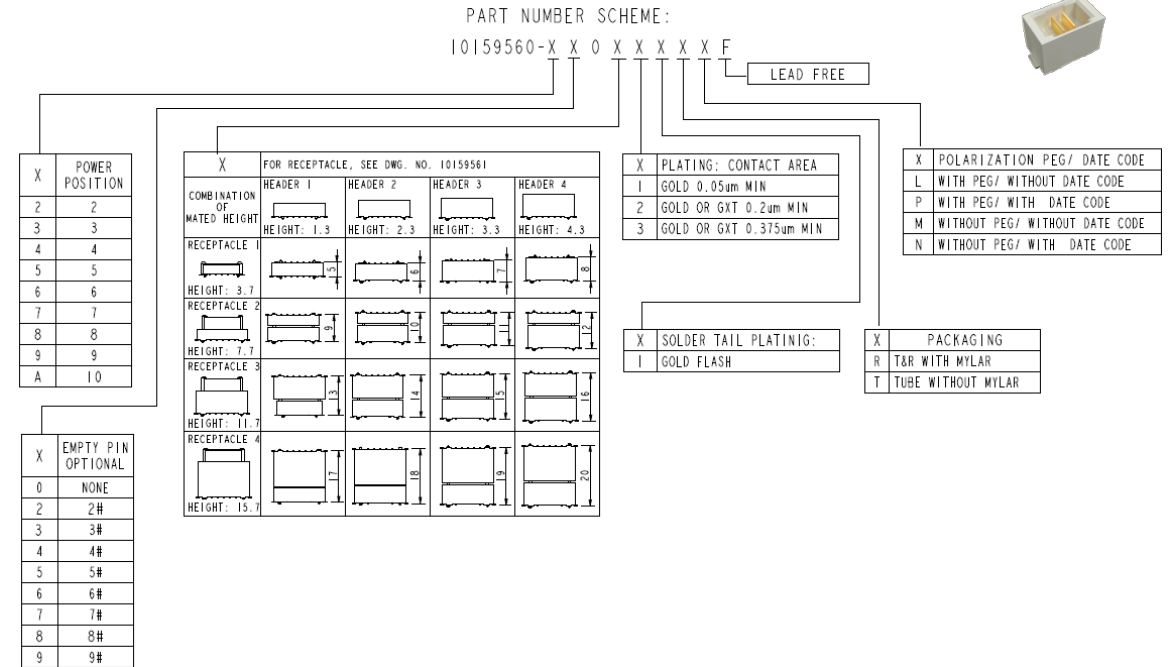
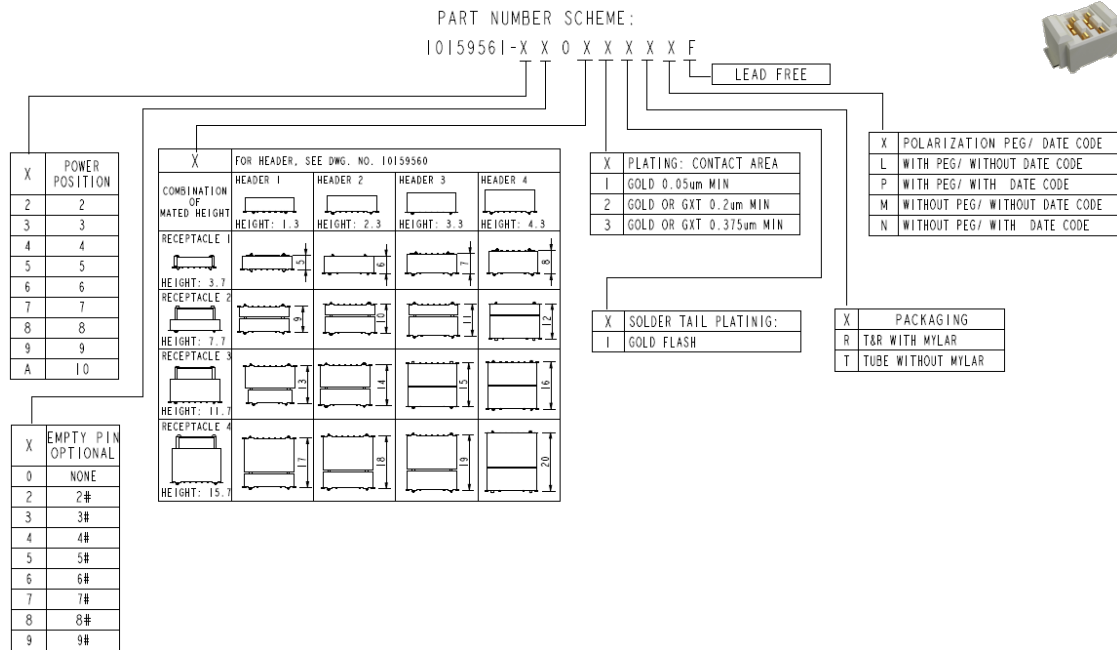
### Packaging

- Tape and reel
- Tube



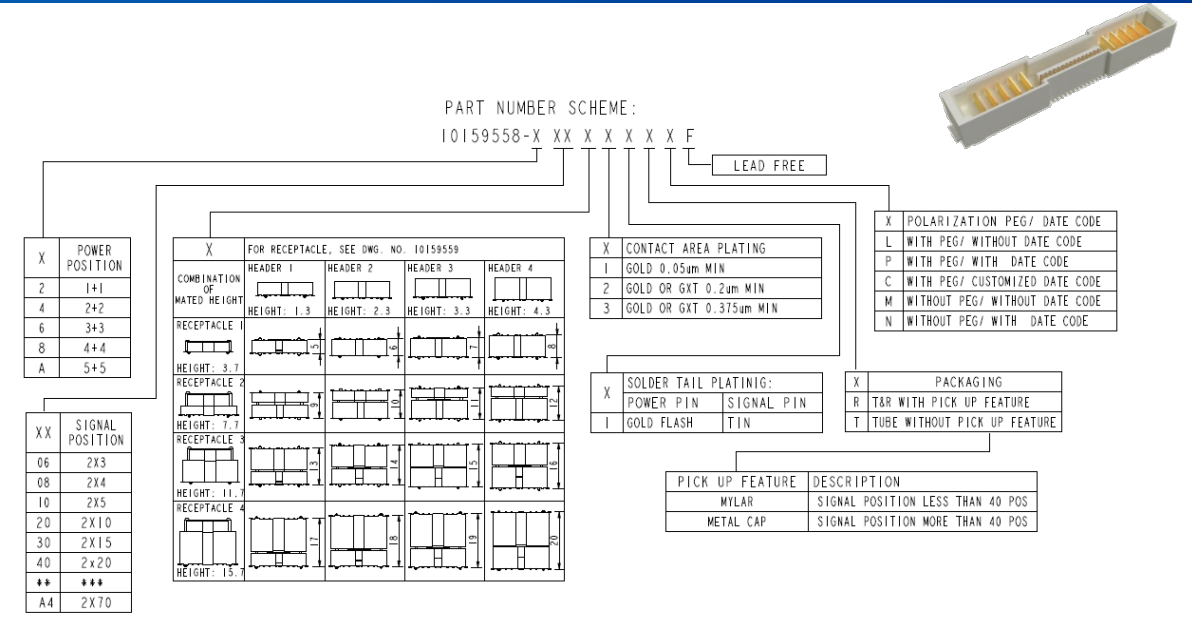
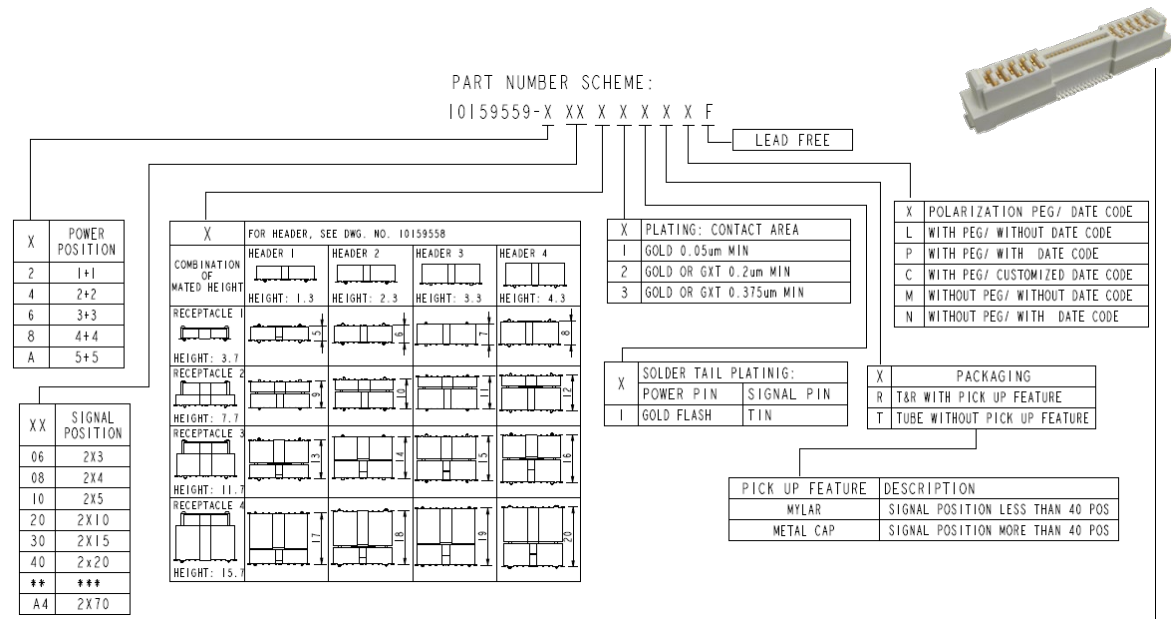
Features	Benefits
2.0mm pitch power only system	High current carrying capacity with miniaturized shape to <b>save space</b>
Variable position and stack height	Meets your needs for a <b>wide range</b> of applications
Reliable 4 points contact system	Provide <b>reliable mating force</b> and excellent contact performance
Scoop proof housing with $\pm 0.9$ mm misalignment tolerance	Supports secure <b>blind mating</b> and automatic assembly
Housing with metal hold down	Guarantees <b>stable</b> PCB retention <b>force</b>
Locating pegs available	Enables <b>easy manual</b> assembly
UL94V-0 high temperature LCP material	<b>High flammability</b> rating with operating temperatures up to 125°C
Lead-Free, RoHS and Halogen-free compliant	Meets environmental, <b>health and safety</b> requirements

Features	Benefits
2.0mm pitch for power contacts	High current carrying capacity with miniaturized shape to <b>save space</b>
Double row 0.8mm pitch for signal system	Signal pin <b>contains all benefits</b> of BergStak® 0.80mm
Power distribution and signal control in one connector	Streamline BOM usage to <b>save space and cost</b>
Variable position and stack height	Meets your needs for a <b>wide range</b> of applications
Reliable 4 points power contact system	Provide <b>reliable mating force</b> and excellent contact performance
Scoop proof housing with ±0.9mm misalignment tolerance	Supports secure <b>blind mating</b> and automatic assembly with cost effective
Housing with metal hold down	Guarantee <b>stable</b> PCB retention <b>force</b>
Locating pegs available	Enables <b>easy manual</b> assembly
UL94V-0 high temperature LCP material	<b>High flammability</b> rating with operating temperatures up to 125°C
Lead-Free, RoHS and Halogen-free compliant	Meets environmental, <b>health and safety</b> requirements



Description	Product Number
PowerStak® Connector, Vertical Receptacle, 2pos, Height=3.7mm	10159561-200121RLF
PowerStak® Connector, Vertical Header, 2pos, Height=4.3mm	10159560-200421RLF
PowerStak® Connector, Vertical Receptacle, 10pos, Height=7.7mm	10159561-A00221RLF
PowerStak® Connector, Vertical Header, 10pos, Height=2.3mm	10159560-A00221RLF

Remark: More versions will be made available following market demand



Description	Product Number
ComboStak® Vertical Receptacle, 2P+10S+2P, Height=7.7mm	10159559-410221RLF
ComboStak® Vertical Header, 2P+10S+2P, Height=4.3mm	10159558-410421RLF
ComboStak® Vertical Receptacle, 5P+30S+5P, Height=7.7mm	10159559-A30221RLF
ComboStak® Vertical header , 5P+30S+5P, Height=2.3mm	10159558-A30221RLF

Remark: More versions will be made available following market demand

### Industrial

- Analytical Instruments
- Robotics
- PLC & Server Driver



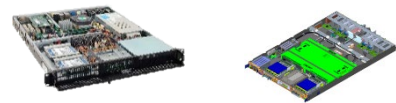
### Automotive

- Cluster
- Domain control unit



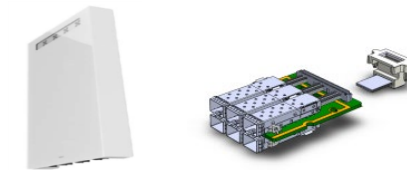
### Datacenter

- Servers
- Storage




### Networks

- mMIMO
- 5G antenna array
- Baseband



- [ComboStak® and PowerStak® Datasheet](#)
- [ComboStak® and PowerStak® Product Presentation](#)
- [ComboStak® and PowerStak® Product Specification](#)
- [ComboStak® and PowerStak® Application Specification](#)
- [ComboStak® and PowerStak® Product overview](#)



- Header *Housing with pins (male connector)*
- Receptacle *Female housing*
- Vertical *Connection axis perpendicular to the board*
- SMT  *Surface-Mount Technology*



**Thank you**