High Speed Connector 0.9mm Pitch Systems

Features

- Higher bandwidth applications 56 Gbps NRZ, 112 Gbps PAM-4
- Stack heights from 5.0mm
- High pin counts : 120 total contacts(25 differential pairs)
- Pitch 0.9 mm x 1.5mm
- Differential pair 92ohm nominal impedance
- Surface Mount BGA Pin Design

Benefits

- Minimizes impedance discontinuities
- Excellent Insertion and Return loss performance
- Low crosstalk noise and resonances
- Biggest forced-offset(Rigid alignment) tolerance
- Hermaphroditic mating interface
- Integrated power and additional signal pin per column

Application

- Telecommunication and Data Embedded
- Data Servers and Storage
- Industrial Controls and Equipment
- Medical Instrumentation
- Military Electronics
- Network Diagnostics
- Test and Measurement Electronics

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▪ MECHANICAL PERFORMANCE

- Mating Tolerance :
  - X: ±1.0mm(floating mating)
  - Y: ± 1.2mm(floating mating)
  - Z: -0.2/+0.5mm
- Forced-offset (Rigid alignment) tolerance : X/Y ±0.2mm
- Mating Force 0.45N max. per contact
- Un-mating Force 0.1N min. per contact

▪ ELECTRICAL PERFORMANCE

- Contact Resistance: <10mΩ change from initial reading after environmental exposure
- Current Rating(with <30°C temperature rise above ambient): 0.5A min
- Insulation Resistance : 1000Mohm min
- Withstanding Voltage : 500Vrms min

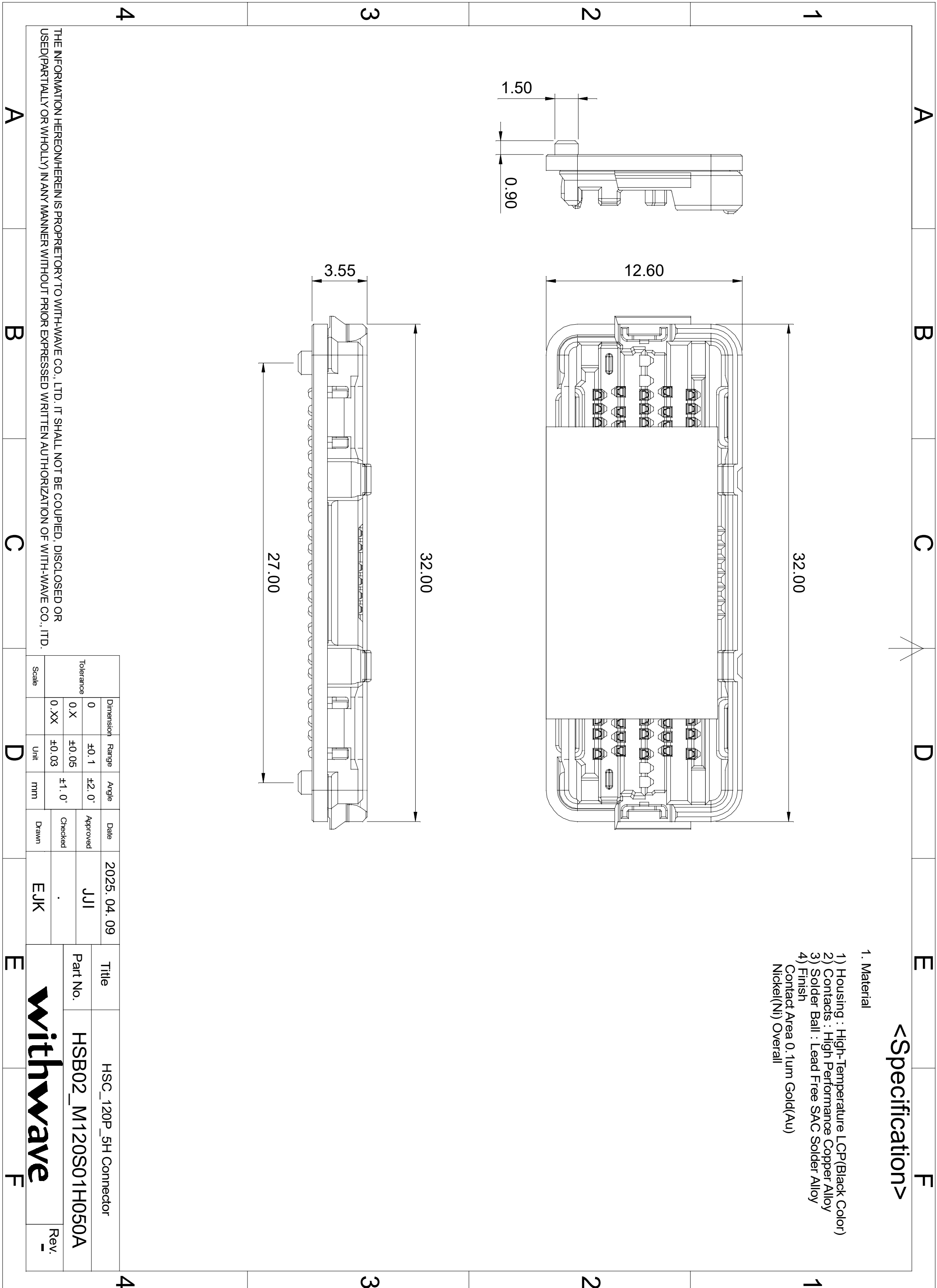
▪ MATERIAL

- Housing : High-Temperature LCP, UL94V-01
- Contacts : High performance Copper Alloy
- Plating(s) :
  - Contact Area 0.1um Gold(Au)
  - Nickel(Ni) Overall

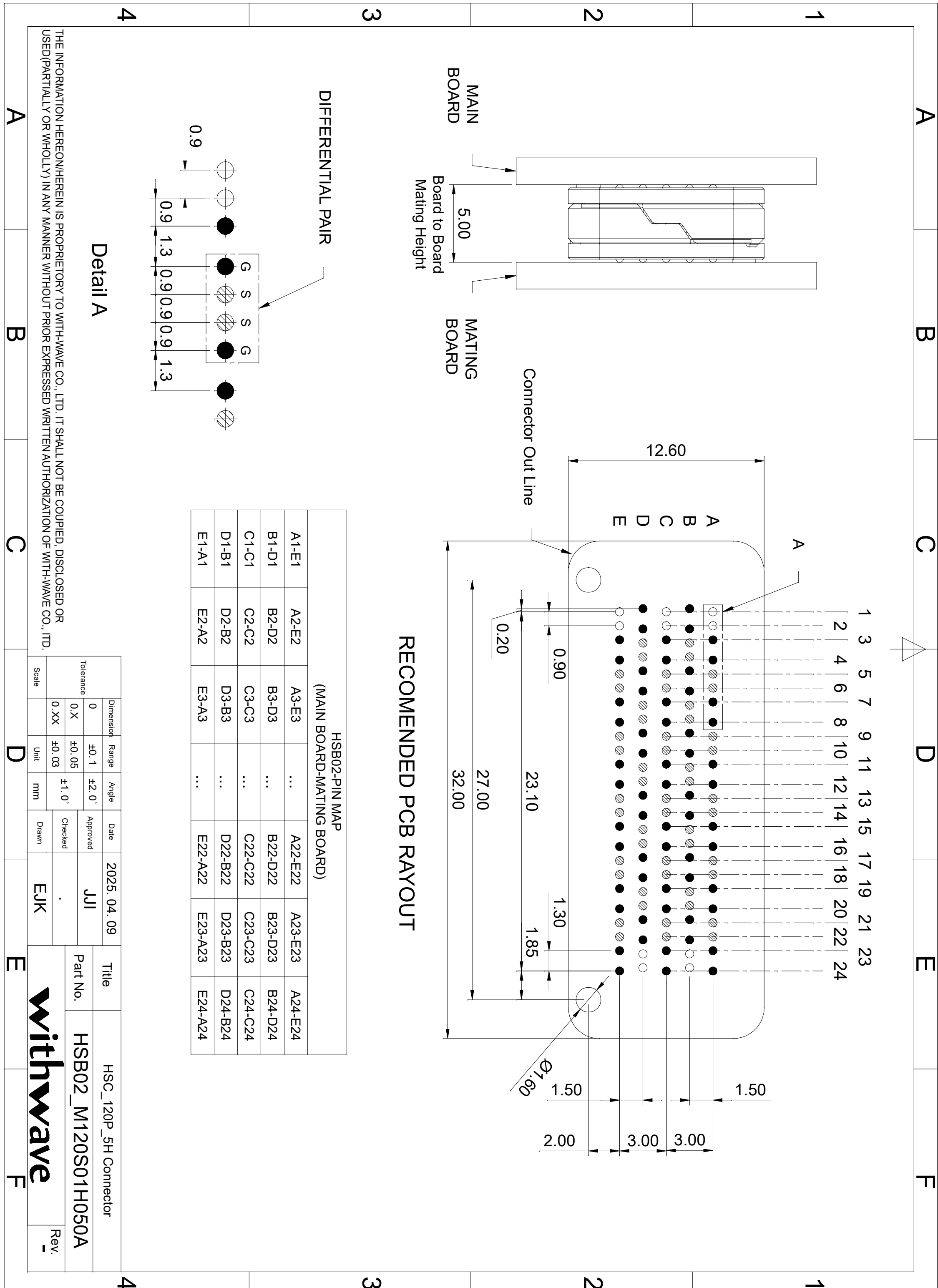
▪ ENVIRONMENTAL

- Operating Temperature range : -55 to +85°C

▪ CONNECTOR DRAWING



▪ RECOMMENDED PCB LAYOUT (BOARD TO BOARD)



HSB02-PIN MAP (MAIN BOARD-MATING BOARD)

A1-E1	A2-E2	A3-E3	:	A22-E22	A23-E23	A24-E24
B1-D1	B2-D2	B3-D3	:	B22-D22	B23-D23	B24-D24
C1-C1	C2-C2	C3-C3	:	C22-C22	C23-C23	C24-C24
D1-B1	D2-B2	D3-B3	:	D22-B22	D23-B23	D24-B24
E1-A1	E2-A2	E3-A3	:	E22-A22	E23-A23	E24-A24

▪ RECOMMENDED PCB METAL MASK (MASK THICKNESS : 0.1mm)

RECOMENDED PCB METAL MASK LAY OUT
MASK THICKNESS : 0.1mm

0.20
1.30
11.65
23.10
0.90
11.45
23.10
1.50
3.00
6.00
120-Ø0.40

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Tolerance	Dimension	Range	Angle
	0	±0.1	±2.0˚
	0.X	±0.05	±1.0˚
	0.XX	±0.03	
Scale		Unit	mm

Date	2025. 04. 09
Approved	JJI
Checked	.
Drawn	EJK

Title	HSC_120P_5H_Board to Wire
Part No.	HSB0L_M120S01H050A
withwave	Rev. -

■ PCB DESIGN GUIDE (Applied to high speed systems)

• PCB Stack up

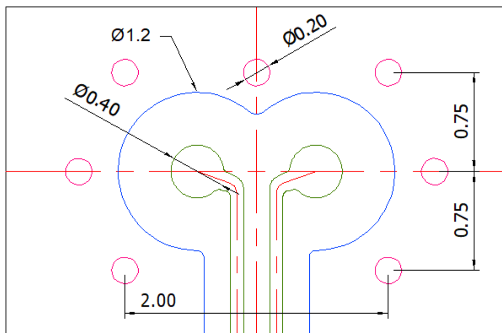
	Layer	Thickness
1	Copper (1oz)	0.045
	Dielectric 01	0.06
2	Copper (1oz)	0.034
	Dielectric 02	0.3
3	Copper (1oz)	0.045

← Signal Trace

- Dielectric 01 : P.P 1080 Er 3.9
- Dielectric 02 : FR4 Er 4.4

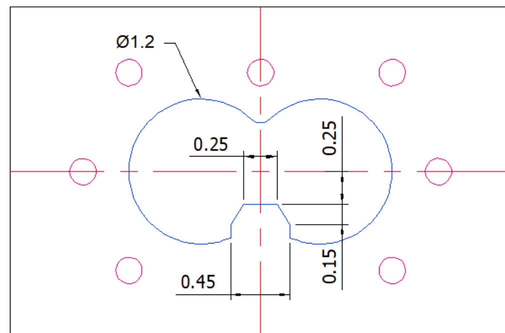
• PCB Layer1 Transition PAD Cutout Thru Via(Ø0.2)

Layer1

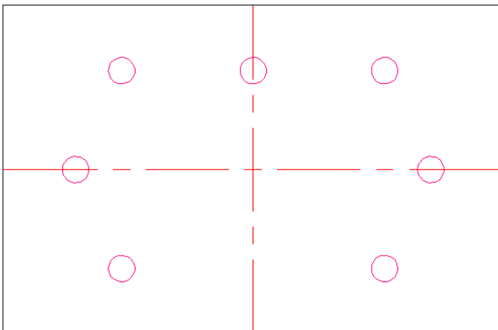


Differential Line

Layer2

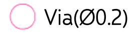


Layer3

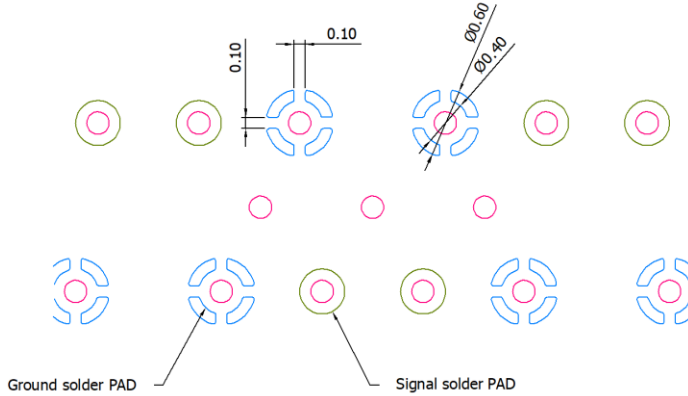


- If the thickness of dielectric 02 is less than 0.3 , copper cut out is required in the layer3

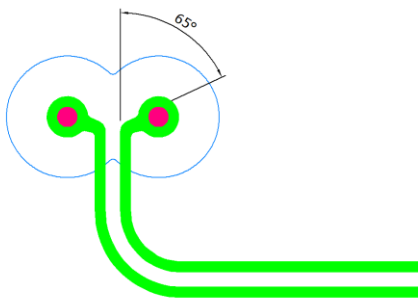
■ PCB DESIGN GUIDE

PAD Cutout  Via(Ø0.2) Back Drill Endmill Ø0.45

· Thermal Relief Pad

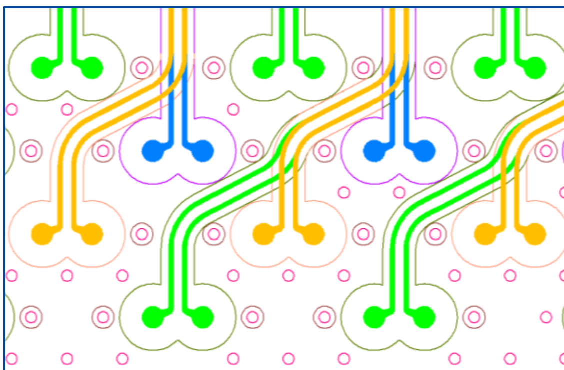


· Differential Pair Signal PAD

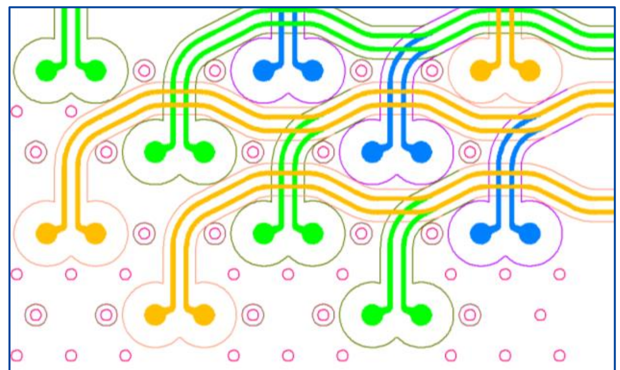


· Differential Pair Routing

- Recommended to route the PCB traces one pitch away.
- Add a GND via between signal and signal for maximum cross talk performance.



Vertical routing



Horizontal routing