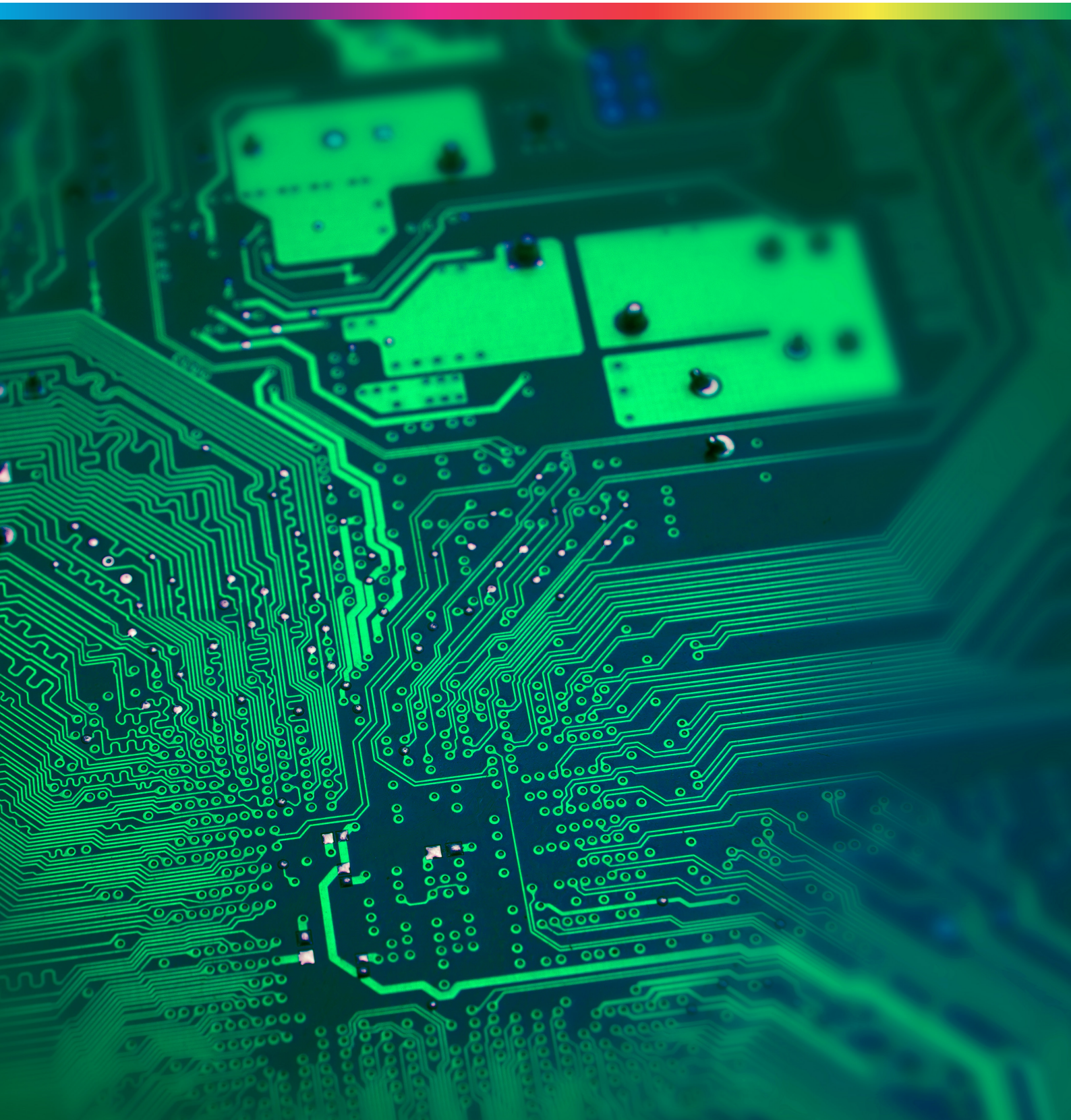
Exception PCB

CAPABILITIES LIST

High-Reliability Printed Circuit Boards for Critical Industries



			Standard		Advanced	
	Inner/Outer	**Product**	**Min**	**Max**	**Min**	**Max**
General						
Maximum Panel Size				495 X 571 mm		
PCB Overall Thickness		Rigid	0.2 mm	5.00 mm	0.1 mm	6.00 mm
PCB Overall Thickness		Flex-Rigid	0.8 mm	3.2 mm	0.5 mm	4.8 mm
PCB Overall Thickness		Flex	0.25 mm			
PCB Overall Thickness Tolerance		ALL	± 10% (max 100 µm)		± 5%	
Stiffener Thickness		Flex & Flex-Rigid	0.5 mm	3.2 mm		
Bond Cycle (any layer technology)		Rigid	5 bond cycles (4+N+4)		7 bond cycles (6+N+6)	
Rigid Layer Count		Rigid		48		60
Flex-Rigid Layer Count		Flex-Rigid		18		24
Pure Flex Layer Count		Flex		6		12
Foil Thickness		Rigid	9 µm	140 µm	5 µm	210 µm
Laminate Core Thickness		Rigid	50 µm		25 µm	
Liquid Coverlay		Flex & Flex-Rigid	Available			
High Pot Test	Outer	ALL	Max V: 5000Vdc, Max current 15mA, continuity value max: 10 Mohm			
Impedance Rigid Board	Outer	Rigid	10%		5%	
Impedance Flex-Rigid Board	Outer	Flex-Rigid	10%		5%	
Layout						
Track & Gap Outer Layer 35 µm Finished Track Height	Outer	ALL	50 µm		40 µm	
Track & Gap Outer Layer 70 µm Finished Track Height	Outer	ALL	150 µm		125 µm	
Track & Gap Outer Layer 105 µm Finished Track Height	Outer	ALL	200 µm		175 µm	
Track & Gap Inner Layer 17 µm Finished Track Height	Inner	ALL	75 µm		50 µm	
Track & Gap Inner Layer 35 µm Finished Track Height	Inner	ALL	100 µm		75 µm	
Track & Gap Inner Layer 70 µm Finished Track Height	Inner	ALL	150 µm		125 µm	
Track & Gap Inner Layer 105 µm Finished Track Height	Inner	ALL	200 µm		175 µm	
Annular Ring Outer Layer Mechanical Drill	Outer	Rigid	75 µm		50 µm	
Annular Ring Outer Layer Microvia Entry/Stop Pad	Outer	Rigid	50 µm		25 µm	
Annular Ring Outer Layer	Outer	Flex-Rigid	100 µm		75 µm	
Annular Ring Outer Layer	Outer	Flex	150 µm		100 µm	
Annular Ring Inner Layer Mechanical Drill	Inner	Rigid	100 µm		75 µm	
Annular Ring Inner Layers Microvia Entry/Stop Pad	Inner	Rigid	50 µm		25 µm	
Annular Ring Inner Layers	Inner	Flex-Rigid	150 µm		100 µm	
Annular Ring Inner Layers	Inner	Flex	150 µm		100µm	
Hole to Copper Inner Layers	Inner	ALL	165 µm		150 µm	
Hole to Copper Outer Layers	Outer	ALL	125 µm		100 µm	
Flex-Rigid Hole to Rigid Interface	Outer	Flex-Rigid	1.5 mm		1.0 mm	
Drilling						
Drill Size	Outer	ALL	0.15 mm		0.1 mm	
Slots Diameter	Outer	ALL	1 mm		0.4 mm	
Slots Length	Outer	ALL	>2.0 X Diameter			
Back Drill Size	Outer	ALL	0.5 mm		0.4 mm	
Drill Depth Tolerance	Outer	ALL	± 150 µm		± 100 µm	
FHS Tolerance Through Holes	Outer	ALL	± 100 µm		± 50 µm	
FHS Tolerance Through Holes Press Fit	Outer	ALL	± 75 µm		± 50 µm	
Microvia Laser Drill Size	ALL	ALL	70 µm		50 µm*	
Aspect Ratio Through Hole	Outer	ALL		.10:1		20:1
Aspect Ratio Microvia (Laser Drill)	ALL	ALL		0.8:1		1.2:1

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			Standard		Advanced	
	Inner/Outer	**Product**	**Min**	**Max**	**Min**	**Max**
Hole Filling						
Copper Fill Through Hole Aspect Ratio	ALL	ALL		10:1		12:1
Copper Fill Diameter for Laser Drill Hole	ALL	ALL	70 µm		50 µm	
Resin Fill Hole Aspect Ratio	ALL	ALL		10:1		12:1
Minimum Drill Hole for Resin Fill	ALL	ALL	0.25 mm		0.20 mm	
Profile						
Profile Edge to Copper Rigid Inner Layer	Inner	Rigid	0.20 mm		0.15 mm	
Profile Edge to Copper Rigid Outer Layer	Outer	Rigid	0.175 mm		0.1 mm	
Profile Edge to Copper Flex-Rigid Inner Layer	Inner	Flex-Rigid	0.3 mm		0.25 mm	
Profile Edge to Copper Flex-Rigid Outer Layer	Outer	Flex-Rigid	0.3 mm		0.2 mm	
Scoring Angle	ALL	ALL	30°		45°	
Scoring Positional Tolerances	ALL	ALL	± 200 µm			
Scoring Panel Thickness	ALL	ALL	1 mm	1.6 mm	0.8 mm	5 mm
Routing Cutter Diameter	ALL	ALL	0.8 mm		0.5 mm	
Chamfer to Copper	ALL	ALL	150 µm		100 µm	
Flex Laser Routing	Outer	Flex	± 100 µm		± 50 µm	
Depth Milling Tolerance	Outer	ALL	± 200 µm		± 150 µm	
Solder Mask						
Solder Mask Clearance (Annular)	Outer	ALL	50 µm		25 µm	
Green Solder Mask Dam	Outer	Green	100 µm		75 µm	
Blue Solder Mask Dam	Outer	Blue	115 µm		100 µm	
Red Solder Mask Dam	Outer	Red	115 µm		100 µm	
Black Solder Mask Dam	Outer	Black	120 µm		110 µm	
White Solder Mask Dam	Outer	White	120 µm		110 µm	
Blue Solder Mask Dam	Outer	Blue	130 µm		115 µm	
Red Solder Mask Dam	Outer	Red	130 µm		115 µm	
Black Solder Mask Dam	Outer	Black	130 µm		120 µm	
White Solder Mask Dam	Outer	White	130 µm		120 µm	
Legend Printing Width	ALL	ALL	0.15 mm		0.10 mm	
Clearance Legend Printing	ALL	ALL	0.20 mm		0.15 mm	
Finishing						
SnPb HASL			1 µm	50 µm		
Pb free HASL			1 µm	50 µm		
Immersion NIAu			Ni: 3 µm Au: 0.05 µm	Ni: 6 µm Au: 0.10 µm		Ni: 9 µm Au: 0.15 µm
Electrolytic Nickel			3 µm	8 µm		12 µm
Electrolytic Gold			1 µm	5 µm		1-5 µm
OSP			0.02 µm	0.05 µm		
Immersion Tin			0.7 µm	1.1 µm		1.5 µm
Immersion Silver			0.15 µm	0.25 µm	0.07 µm	0.4 µm
ENEPIG			Ni: 3 µm Pd: 0.05 µm Au: 0.05 µm	Ni: 6 µm Pd: 0.15 µm Au: 0.10 µm		Ni: 9 µm Pd: 0.3 µm
DIG			Au: 0.2 µm	Au: 0.3 µm		
EPIG			Pd: 0.1 µm Au: 0.1 µm	Pd: 0.2 µm Au: 0.2 µm		
ENIG SRG			Ni: 3µm Au: 0.05µm	Ni: 6 µm Au: 0.10 µm		
ISIG			Ag: 0.1µm Au: 0.1µm	Ag: 0.4 µm Au: 0.2 µm		
Immersion Nickel			Ni: 3 µm	Ni: 6 µm		Ni: 9 µm

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ABOUT EXCEPTION PCB

Exception PCB is one of the UK's most advanced manufacturers of printed circuit boards (PCBs), trusted by high-reliability industries to deliver complex, quick-turn solutions with speed, precision, and confidence.

With more than 45 years of engineering expertise, we specialise in quick-turn PCB manufacturing for aerospace, defence, medical, telecoms, and industrial customers. From our advanced facility in Tewkesbury, we build HDI, flex, flex-rigid, and multilayer boards in low to medium volumes which help customers accelerate innovation and maintain supply chain resilience.

We're known for solving complex PCB challenges at speed. Our focus on precision, process capability and service makes us the partner of choice for new product introduction (NPI), prototyping, and production where there's no room for error.

WHAT MAKES US UNIQUE

- **Trusted expertise**: Over 45 years of experience delivering complex, high-reliability PCBs for aerospace, defence, medical, and industrial markets.
- **Fast-turn specialist**: Known as the go-to partner for quick-turn and NPI projects, where speed and precision are critical.
- **Advanced build capabilities**: Multi-bond lamination, laser-drilled microvias, copper and resin via filling, and high aspect ratio plating performance (up to 40:1 in latest equipment).
- **Exotic and hybrid materials**: Expertise with RF, microwave, and high-frequency builds, including Rogers, PTFE, and other specialist substrates.
- **UK sovereign manufacturing**: Onshore production in Tewkesbury ensures supply chain security, rapid responsiveness, and compliance with international standards (AS9100, ISO 9001, IPC class 2 & 3).

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