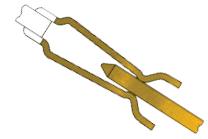
	SPRING LOADED		PIN AND SOCKET			CANTILEVER BEAM	
PIN TYPE	 **POGO pin**	 **ATL Serpentine**	 **Contact Insert**	 **Stamped Socket**	 **Compliant Pin**	 **Single Beam**	 **Dual Beam and Bifurcated Beam**
APPLICATIONS	» Blind Mate Connections » Docking Stations, charging solutions (i.e Fitbit) » Test fixtures	» Tight space constraints » Handheld devices (PDAs, phones) » Low current and data	» Receptacles that accept machined pins or stampeed pins(square) » Corrosive Environments » High Reliability and long life » Military, Medical, Professional Audio/ Video, aerospace	» Wiring connections and Harnesses » Most common solution worldwide » ideal for single use connectors and low cycle life connectors » DB9, (old printer/ monitor standard connector), automotive, internal connections in appliances, etc..	» Solderless PCB (permanent press-fit connection; can not be separated and re-mated) » Typical application is PCB header pins	» USB » HDMI » Docking stations » Device cables	» Higher reliability version of single beam » Low cost connections where connector size is not severely limited. (automotive, internal equipment connections, etc.)
UPSIDE	» Capable of high cycle life » Axial motion » Can handle large displacement » Readily available in many sizes » Easy to seal for water ingress rating	» High density in one axis (0.3mm pitch possible) » Reasonable Cost » Good wiping allows for lower normal force applications » Suited to high volume assembly techniques	» High reliability » Capable of high cycle life » Redundant contact points » Handles misalignment » Stable electrically (low noise in movement/vibration)	» Low cost » Common » Large Contact area	» High contact force » Permanent connection	» Low cost » Highly customizable to specific applications by varying size, force and deflection » Low profile » High density » Easy to automate (gang assembly) » Hot bar termination	» Redundant contacts » Good with vibration » Good with angular misalignment » Redundancy decreases failure mode occurrence for contamination (foreign object, i.e dust / dirt)
DOWNSIDE	» No wiping » Multiple component construction » Requires high normal force due to lack of wiping action » Requires latching to maintain contact » Higher pin pitch required due to pin geometry	» Limited current carrying capacity » Spring grade alloys required (Titanium Copper, Beryllium copper, etc.) resulting in higher cost, MOQs, and longer lead times » Higher profile in non-pitch axis	» Limited vendors » Beryllium Copper	» High insertion force » Lower cycle life	» Not Suitable for separable connection » Requires tight tolerance control of PCB plated through holes	» Easily damaged » Single point of contact	» Easily Damaged » Bifurcation or redundant beams require more space than single beam
COST	High (9¢ in very high volume)	Low ($0.02 to $0.04 per mated pair in high volume)	High $0.15 per mated pair in high volume	Low	Mid	Low ($0.015 to $0.035 per mated pair in high volume)	Low
MANUFACTURING PROCESSES	» Screw machine or deep drawn stamping for body and plunger » Assembly required	» Progressive Die Stamping & Coining	» Screw machine body, stamped contact clip. » Remember plating on contacts is different than on the shell body.	Stamping	Machined or stamped	Stamping » Can be stamped in either plane; need to consider stamped/cut edge interface » Need to consider how the part will be installed in the final product	Stamping » Can be stamped in either plane; need to consider stamped/cut edge interface » Need to consider how the part will be installed in the final product
LIFE-CYCLE/ LONGEVITY	» POGO is theoretically capable of >1,000,000 cycles; however, life is typically limited by oxide/contaminant buildup	» Capable of 15,000 cycles	» 10,000 cycles or more with heavy plating.	Hundreds to a thousand	N/A. Permanent connection	5,000 to 50,000 depending on size, environment and other application factors	5,000 to 50,000 depending on size, environment and other application factors
POWER RATING	Depends upon size. Typical small pins tested at 1 amp with acceptable temp rise	Depends upon size. Typical small pins tested at 0.5 amp with acceptable temp rise	Depends upon size and contact density. Contact system is scalable and be sized for very high current (hundreds of amps) when required	Depends upon size. Typical small pins tested at 1 to 3 amp with acceptable temp rise, depending upon pin density	Depends upon size. Anywhere from fractional amps up to 15 or 20 amps.	Depends upon size. Anywhere from fractional amps up to 5 or 10 amps.	Depends upon size. Anywhere from fractional amps up to 5 or 10 amps.

ATL technology

Still need help finding the right contact mechanism for your device? Click here to get in touch with one of our interconnect experts today.