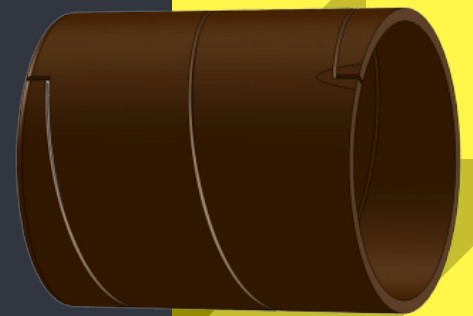
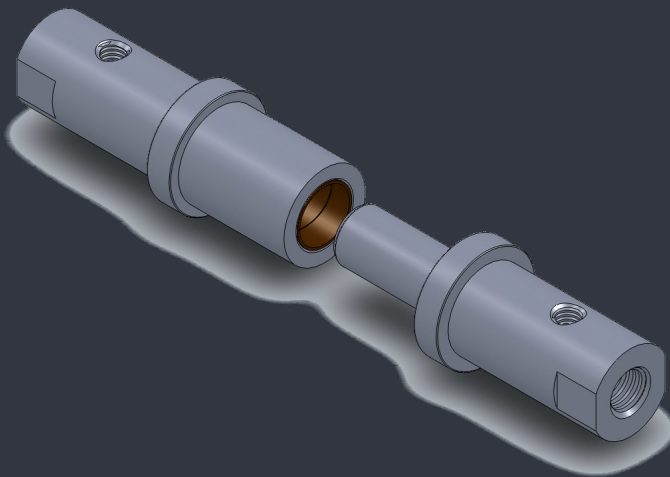


POWERSPEED CONTACT TECHNOLOGY

Overall Wrap-up for Perfect Connection
Pure-Copper Makeup for Best Connection

- HIGHEST CURRENT CAPACITY
- LOWEST TEMPERATURE RISE
- SAFER AND GREENER



PowerSpeed Patented Mating Part



PowerSpeed

Creator of The Best Connection

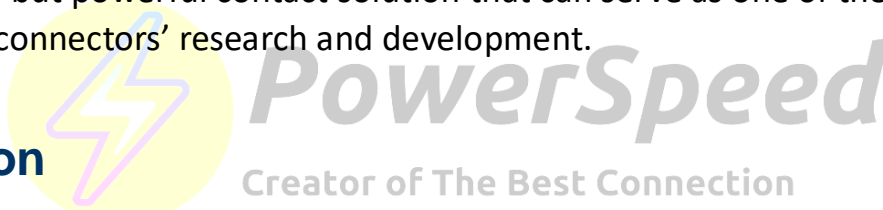
Looking for a perfect connector?

PowerSpeed Contact Technology will serve-- Innovative Connector Interface for the Lowest Resistance, the Highest Current Capacity and the Lowest Temperature Rise

Overview

Kingfont has invented a new and promising class of connector mating technology named as “PowerSpeed”, which has proven to reduce 6.4mm copper mated pair’s electrical resistance by 66% and temperature-rise by 45% when contrasted with the biggest competition in the field. Characteristic of its patented design of the mating part and the corresponding design of the mated female socket, PowerSpeed Contact Technology provides simple but powerful contact solution that can serve as one of the most essential technology for connectors’ research and development.

Introduction



Nowadays, any electrical connector is connected either through female socket and male plug’s direct contact or through indirect contact where a mating part is placed in between the mated socket and plug. While direct contact of pin and socket has only a few contact points, indirect contact with a mating part was designed to increase contact area and thus improve electrical conductivity. However, whether it is direct contact or indirect contact, current connectors connect in the way of “point contact”, where contact is only completed by points of touch of male plug mating female socket.

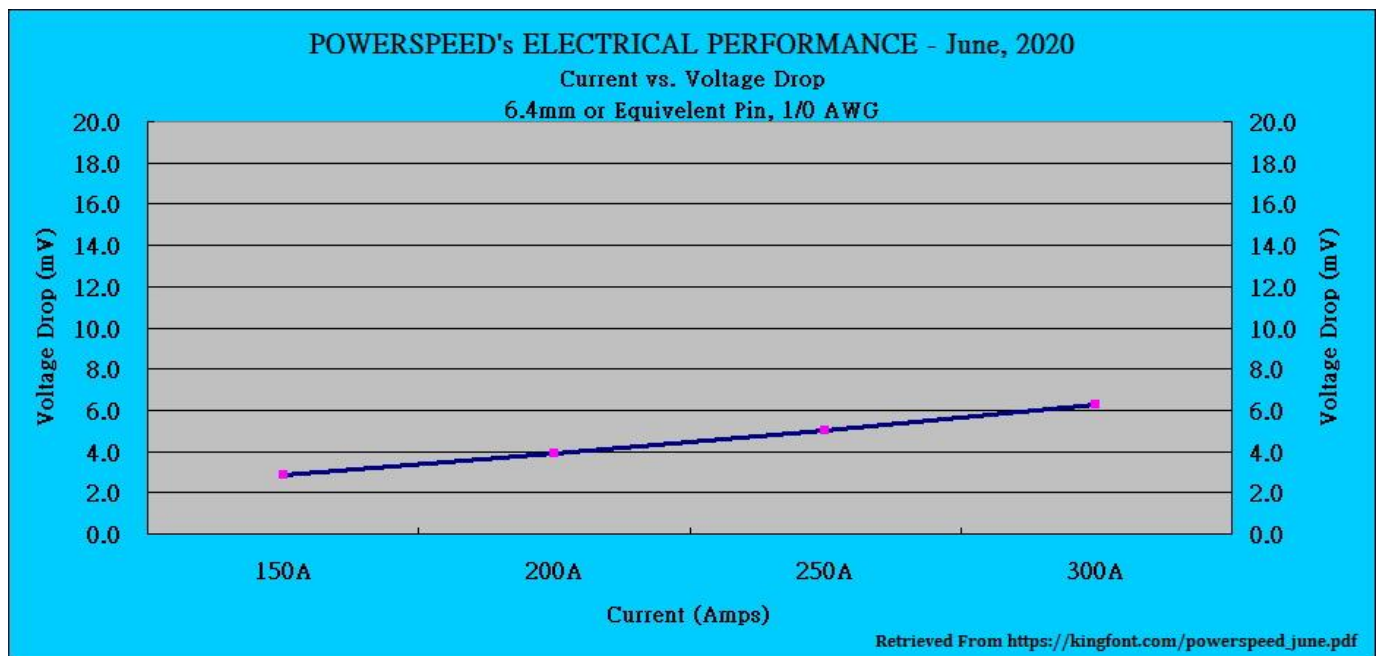
Distinctively, instead of using conventional mating part, PowerSpeed Contact Technology features its patented, spiral-shaped mating part that promises to maximize contact area to the degree of “plane contact”, making it a totally game changer. In addition, due to its structural innovation, PowerSpeed mating part is able to be made up of pure copper and thus has way better electrical performance than any other mating part out there.

In this article three prominent advantages of PowerSpeed Contact Technology were elaborated—the highest current capacity, the lowest temperature rise, and direct silver plating. The three features were verified by reports issued by Industrial Technology

Research Institute (ITRI) in Taiwan¹ in June² and August 2020³, where the testing sample were both a PowerSpeed 6.4mm copper mated pair— but were connected with lead wires of different specifications; for the June report a 1/0 AWG lead wire was applied to connect the sample, while for the August four lead wires of 4 AWG in parallel were employed.

1. The Lowest Resistance/the Highest Current Capacity

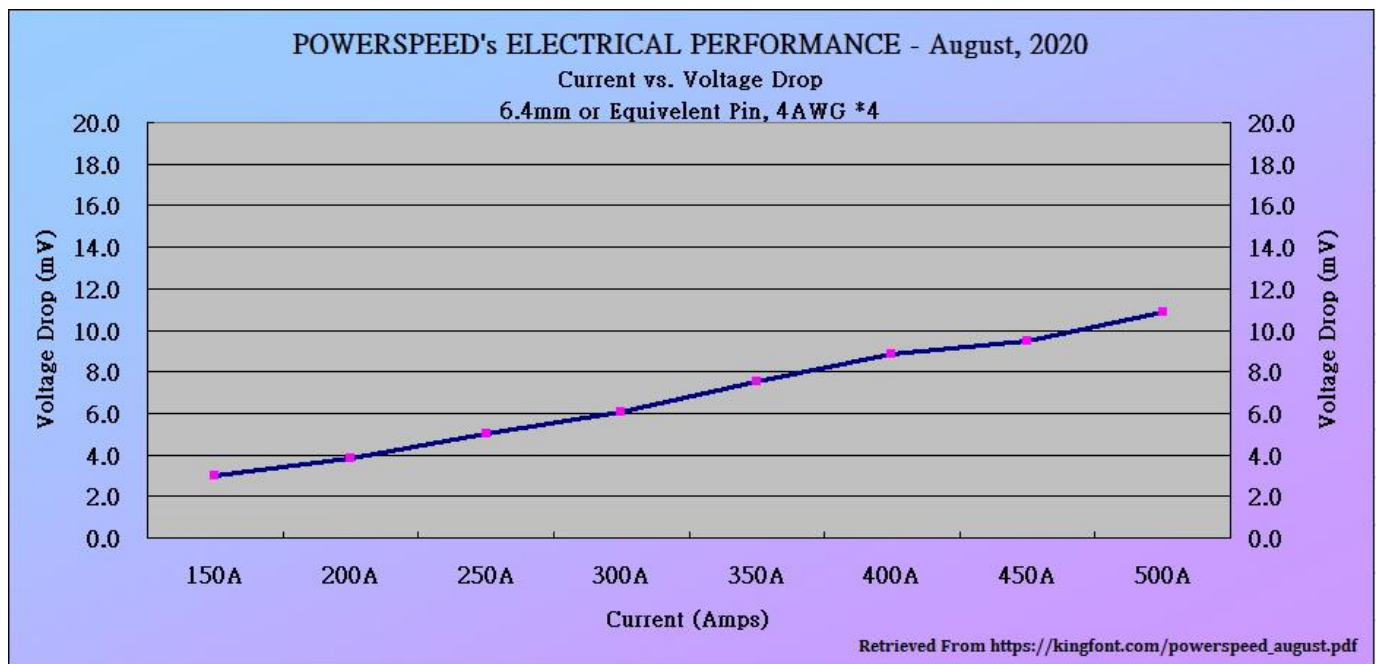
PowerSpeed technology's most outstanding characteristic is enabling connectors to conduct with the least resistance and thus with the highest current capacity in the industry. The following graph demonstrates PowerSpeed's electrical performance for voltage drop from 150 A to 300 A with 1/0 AWG lead wire and also from 150A to 500A with four lead wires of 4 AWG.



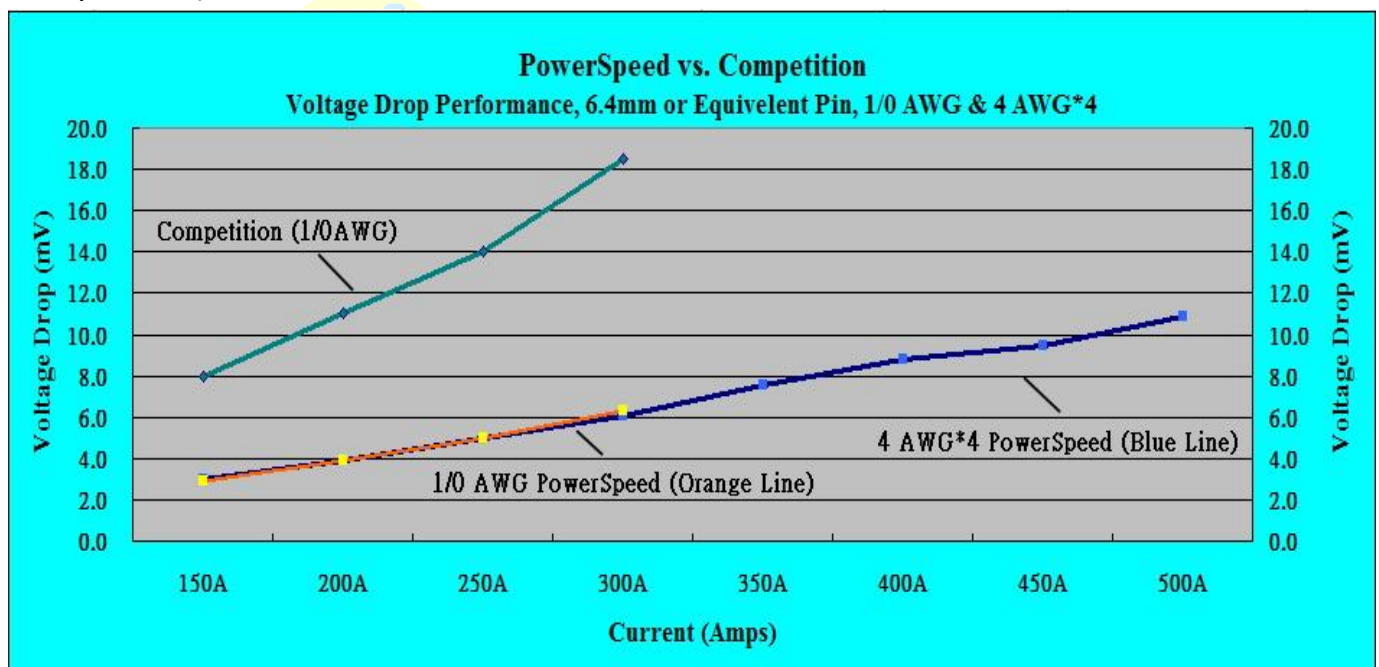
¹ Abbreviated as ITRI, Industrial Technology Research Institute is a non-profit, government-based research institute in Taiwan that aims to drive research and development of Taiwan's industrial technology and offers paid-service of independent laboratory testing.

² Please refer to https://kingfont.com/powerspeed_june.pdf for the report

³ Please refer to https://kingfont.com/powerspeed_august.pdf for the report



To illustrate further, let's contrast PowerSpeed's performance with an American power connector manufacturer who was the best Kingfont found in the industry (designated as Competition):



Voltage Drop Current	1/0 AWG PowerSpeed's Voltage Drop (mV)	1/0 AWG Competitor's Voltage Drop (mV)	4 AWG*4 PowerSpeed's Voltage Drop (mV)
150A	2.88	8	3.02
200A	3.93	11	3.86
250A	5.02	14	4.99

300A	6.28	18.5	6.03
350A	--	--	7.52
400A	--	--	8.83
450A	--	--	9.47
500A	--	--	10.85

Based on the voltage-drop figures above, the values of corresponding electrical resistance can be calculated⁴ as below:

Resistance Current	1/0 AWG PowerSpeed's Calculated Resistance (vΩ)	1/0 AWG Competitor's Calculated Resistance (vΩ)	1/0 AWG PowerSpeed's Calculated Resistance (vΩ)
150A	19.2	53.3	20.1
200A	19.7	55	19.3
250A	20.0	56	20
300A	20.9	61.7	20.1
350A	--	--	21.5
400A	--	--	22.1
450A	--	--	21
500A	--	--	21.7

As above charts show us, PowerSpeed 6.4mm mated pair has merely 21vΩ electrical resistance in average at 300A or smaller rated current, which is 64-66% lower⁵ than the strongest competition and thus the lowest resistance in the field. Besides, even under rated currents as high as 350A to 500A, PowerSpeed connector remains merely a resistance of 21-22vΩ, which is certainly unprecedented in the industry. As lower resistance means allowing higher currents to flow by per unit cross-sectional area, the above instance demonstrates PowerSpeed Contact Technology's great function to lower electrical resistance and enhance connectors' current capacity.

Notably, in the above diagram contrasting PowerSpeed with Competition one can find that

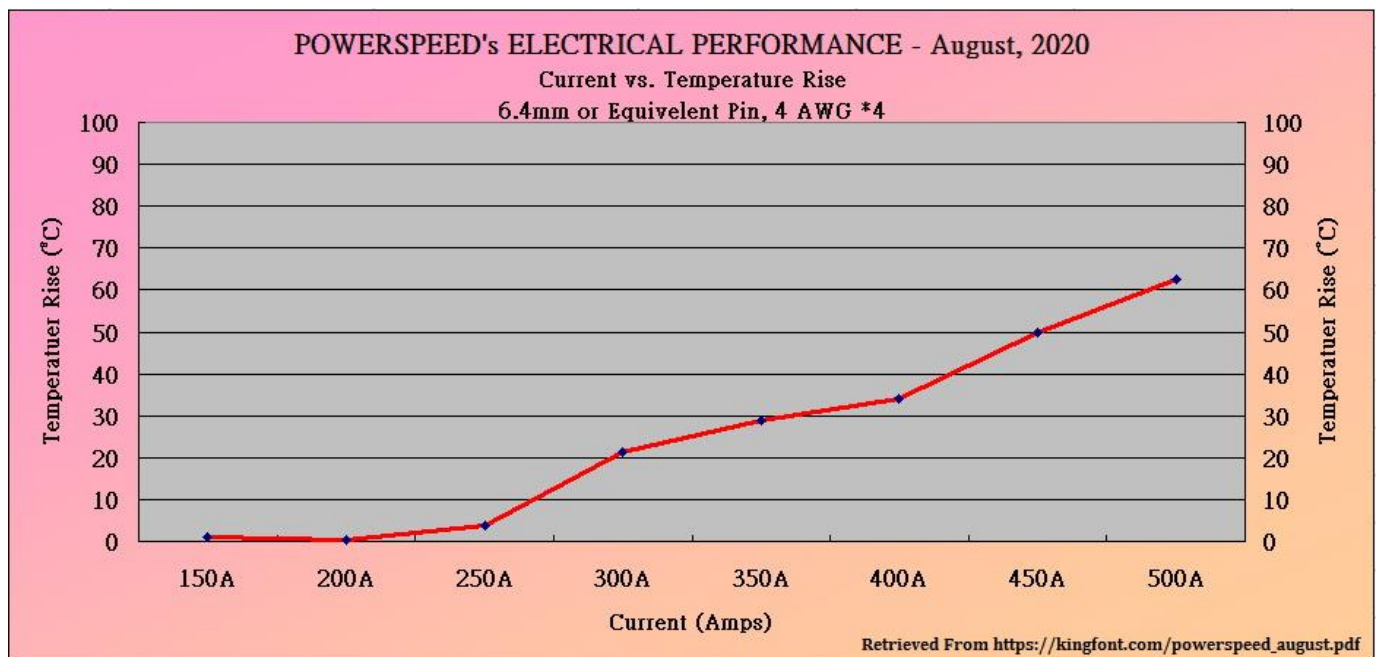
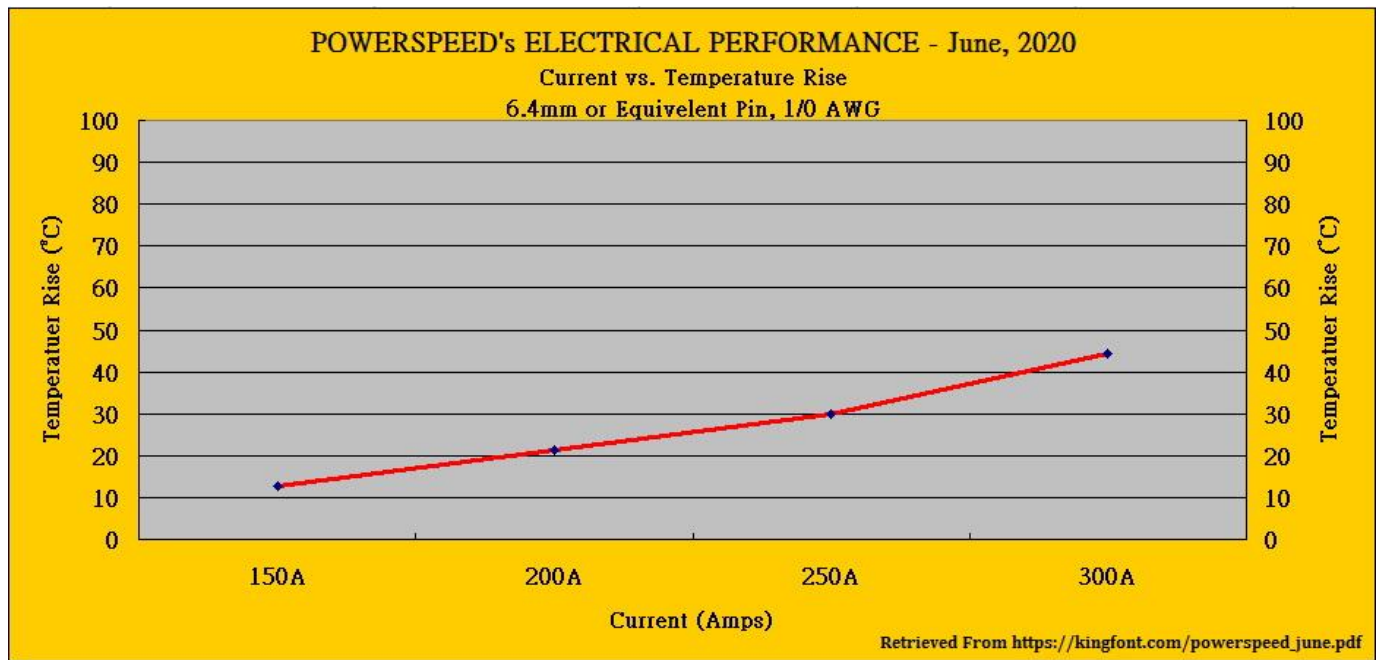
⁴ According to Ohm's Law, electrical resistance can be calculated by the formula $R=V/I$, which is voltage (in Volts) divide by current (in Amps), and is voltage-drop value divided by current value in our case. For instance, 1/0 AWG PowerSpeed's voltage drop under 150A is 2.88, so the calculated resistance will be $2.88/150=0.0192$ (Ω).

⁵ The value is calculated by dividing the difference of PowerSpeed and Competition's resistance by Competition's resistance. For example, in the case of 150A, PowerSpeed's resistance is $(53.3-19.2)/53.3=63.9\%$ lower than the Competitor's.

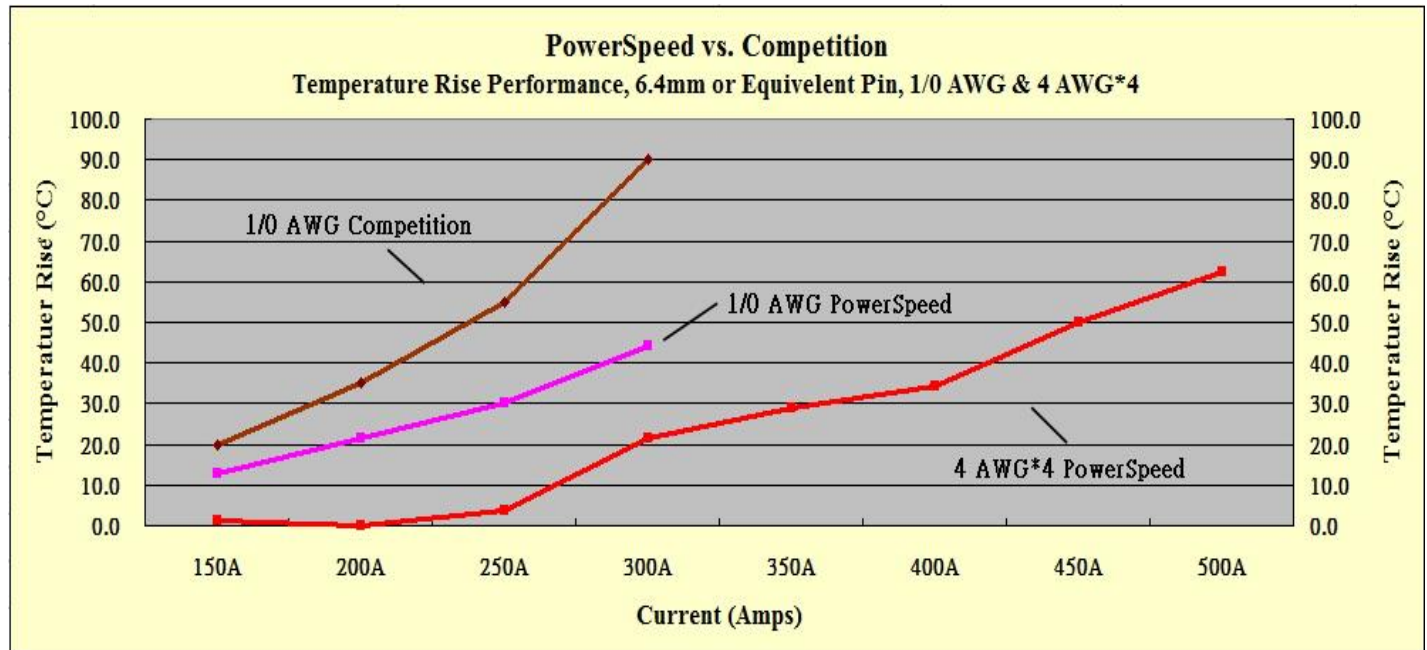
the mathematical slope of PowerSpeed's line segments remains almost the same, be it specifications of 1/0 AWG or four 4AWG, in spite of the fact that the rated currents increase by every 50 amps to as high as 300A and 500A. This gentle gradient might implies that PowerSpeed 6.4mm mated pair hasn't reach its current capacity limit and could have allowed even higher currents to pass through.

2. The Lowest Temperature Rise

Another striking advantage is PowerSpeed's super low temperature rise. The below graph is PowerSpeed's performance for current versus temperature rise from 150A to 300A with 1/0 AWG lead wire and from 150A to 500A with four lead wires of 4 AWG:



Likewise, if contrasted with the biggest competition in the industry, PowerSpeed's temperature rise is way lower and generally rises in a slower manner:



Temperature Rise Current	1/0 AWG PowerSpeed's Temperature Rise (°C)	1/0 AWG Competitor's Temperature Rise (°C)	4 AWG*4 PowerSpeed's Temperature Rise (°C)
150A	12.7	20	1.2
200A	21.4	35	0.2
250A	30	55	3.9
300A	44.4	90	21.3
350A	--	--	29
400A	--	--	34.1
450A	--	--	50
500A	--	--	62.6

(The ambient Temperature is 24°C.)

As the charts show, the temperature rise of PowerSpeed mated pair is lower than the competition by 36%-50%⁶ at 300A and smaller rated currents, making it the lowest in the industry. Besides, it is noteworthy that even at currents as high as 500A can PowerSpeed mated pair remain exceptionally low temperature rise, which is a very promising feature

⁶ The value is calculated by dividing the difference of PowerSpeed and Competition's temperature rise by Competition's temperature rise. For example, in the case of 150A, PowerSpeed's temperature rise is $(20-12.7)/20=36.5\%$ smaller than the Competitor's.

for high-current electronic applications.

Considering PowerSpeed's super low electrical resistance mentioned in the first section, it is not very surprising to see such a low-temperature-rise performance that PowerSpeed 6.4mm mated pair exhibits, as in physics produced heat or so-called loss power can be measured by the value of electrical resistance: the smaller value of electrical resistance is, the fewer heat will be produced⁷ in a circuit.

3. Direct Silver Plating = Safer and Greener

PowerSpeed mating part can be directly silver plated without a plating base as it's made up of *pure-copper*; in contrast, conventional mating parts which are usually composed of *copper alloys* need to be plated with a nickel base before silver plating. The fact that conventional copper-alloy connectors are silver-plated after nickel base makes them very dangerous when the silver plating comes off and the nickel base is exposed, because nickel and silver have huge conductivity difference; this big difference in electrical resistance could result in a rapid increase in temperature rise, leading to hazardous situations such that related components and wires could be burned out and thus stop functioning all together. Therefore, PowerSpeed's copper mating part is much safer since copper and silver possess similar conductivity. In addition to security, direct silver plating without nickel or other metal bases is more eco-friendly due to no additional electroplating effluent or waste is produced during the process. Therefore, PowerSpeed technology realizes safer and greener connection by means of direct silver plating.

PowerSpeed Contact Technology Is Your Ace in the Hole

In conclusion, PowerSpeed Contact Technology enables connectors to conduct much more effectively; it possesses unbeatable advantages of the least resistance/highest current capacity, the lowest temperature rise, safeness and eco-friendliness. Its inventor team, Kingfont, has obtained utility patents from Taiwan and the United States⁸, and has developed mass production system for the patented mating part, ready to work with clients' specific needs. PowerSpeed as an innovative technology can serve as a simple but powerful kind of solution for connector research and development. Kingfont looks forward to leveraging it to create future win-wins with you.

⁷ In physics Power Law is $W = VI$, where V is voltage and I is current as mentioned in footnote#4, and W is power dissipated in Watts. If combining Power Law with Ohm's Law ($V = IR$) mentioned in footnote#4, we can see that $W = (IR)I$ or I^2R . Therefore, the more resistance there is, the more dissipated power or heat is produced, and vice versa.

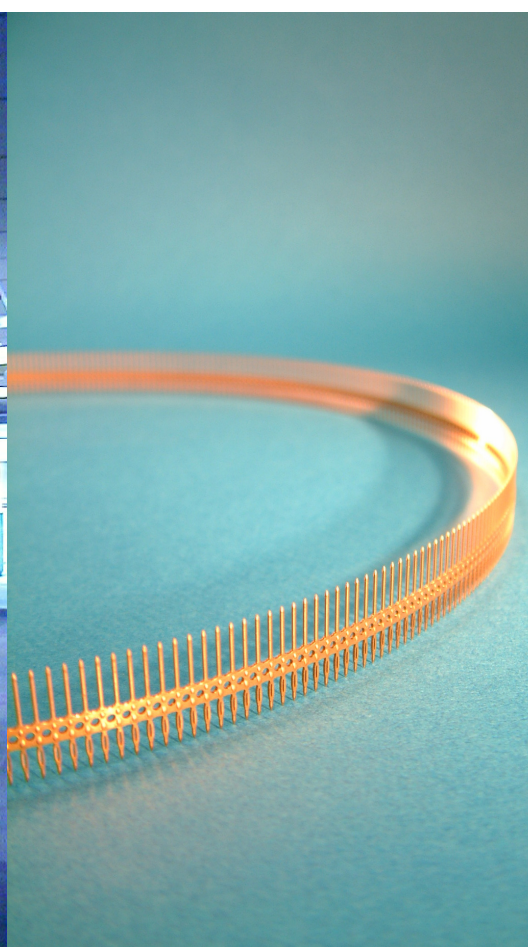
⁸ PowerSpeed's utility patent number from Taiwan is TWI616030 and from the U.S. is 10,270,196B2; other countries' applications such as Germany, Japan, Canada etc. are still in process as of press time.

HELLO!

KINGFONT



**-A professional connector
manufacturer in Taiwan with
over 37 years' expertise**



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