

Upper Amp rating range for bus staples used as end to end current shunts based on bare copper in free air

[AmpacityStapleBusBars.xlsx](#)

© IHI Connectors ® 2020

Part No.	Thickness	Width	Cross section CSA Inch^2	Continuous current Round Fuse wire (UK) Tin plated copper High temperature rise Not recommended =2206*D6^(-0.3656)*D6	Continuous Current				Reference
					GENERAL AMP RANGE see 1-7		Amps Per 20C rise Comparison		
					ModestHeatRise Low Max Amp 25% Derating factor	HighHeatRise High Max Amp 48% Derating factor	A/in2 Low Moderate Temp Rise	A/in2 High High Temp Rise	IPC 2152 Cu traces** 20C rise only if PCB foil =770.97*D7^(-0.429)*D7
14257	0.05	0.24	0.012	157	39	76	3281	6299	62
14307	0.06	0.14	0.0084	126	31	60	3738	7177	50
14259	0.062	0.38	0.02356	242	60	116	2564	4922	91
15812	0.05	0.20	0.01	140	35	67	3507	6734	56
15810	0.063	0.30	0.0189	210	53	101	2779	5335	80
15723	0.078	0.34	0.026832	262	66	126	2445	4694	98

1. Actual heat rise depends on the width and weight of copper foil in the PCB, and the power in and power out power cable sizes.
2. ** "Flat" wires, cool better than round wires due to the increased surface area per cross section area, for cooling.
3. Since staples are flat but not foil-like thin, cooling is better than round wire but worse than wide trace width foils.
4. Resistivity of copper staple buses is about 0.00000176 ohm-cm at 20C partially cold worked. 98% IACS.
5. It is imperative to test actual heat rise at the desired current flow and cooling conditions and ambient temperatures.
6. Life of PCB solder joints have been shown to be halved (50%) for each 10 degree C rise in operating/ cycling temperature.
7. cycle testing for projecting the life of soldered high current components is a requirement to capture all the variables.



