Temperature rise Vs trace width on PCB

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Background

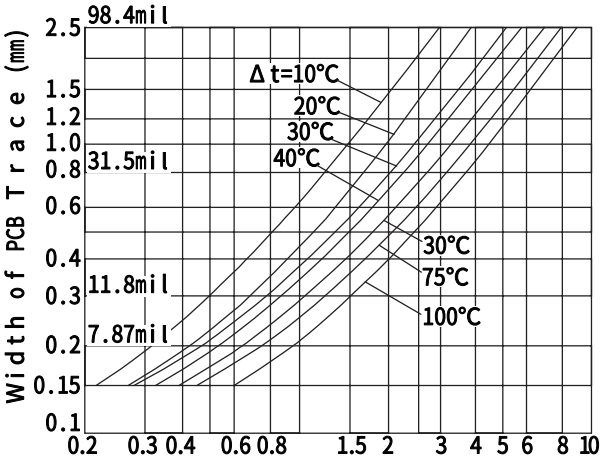
The design rule from IPC-2221 is widely used to estimate the temperature rise due to an electrical current. There are many online tools based on this rule can be found on internet. In recently years, this historical studies (the graphs in IPC-2221 was firstly published in 1956) has been doubted due to new materials, more trace layers, increasing power consumption, and new network topology on PCBs. Hence further theoretical and experimental investigations (e.g. IPC-2221A, IPC-2152) have been taken in both academic and industry area. Some of valuable investigation results have been taken into account in new version of the online calculator tools.

The data in the following diagrams are mainly come from the following four ways:

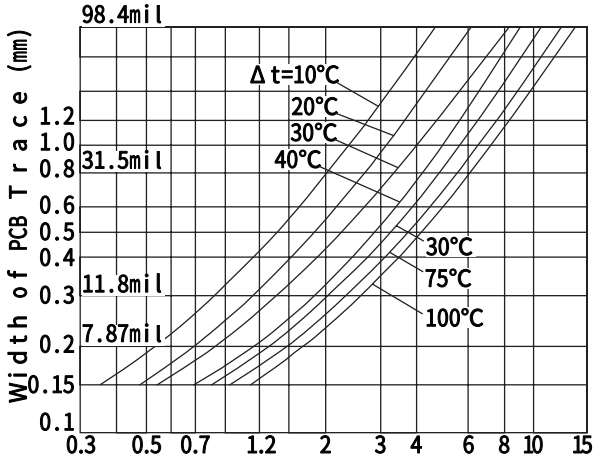
1. More than 10 years first-hand PCB design experience from Quick-teck engineers.
2. Simulation results from CAD tools.
3. Test result from our every days PCB check records.
4. Results from other online calculator software and formulas.

Experimental diagram

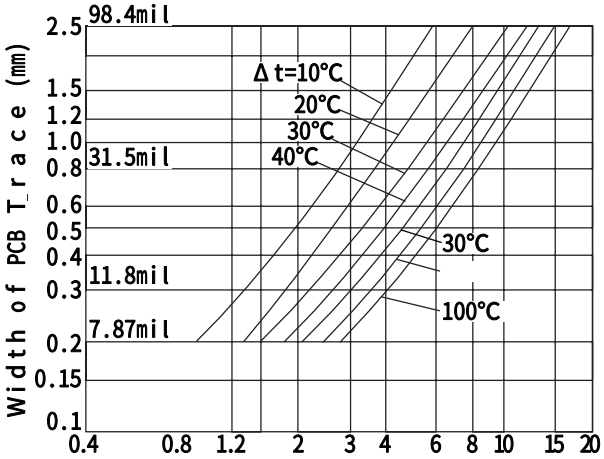
Temperature Rise Vs Current on 0.5oz copper



Temperature Rise Vs Current on 1.0oz copper



Temperature Rise Vs Current on 2.0oz copper



Temperature Rise Vs Current on 3.0oz copper