



IPC CLASS DEFINITIONS

	IPC Class 1	IPC Class 2	IPC Class 3
CATEGORY	General electronics	Dedicated service electronics	High-reliability electronics
LIFE CYCLE	Short	Long	Very long
QUALITY	Cheap	Good	Failproof
EXAMPLES	Toys, flashlights, smartphones	Laptops, microwaves, some mining equipment	Aerospace, military, & medical applications

CLASS 1 — GENERAL ELECTRONIC PRODUCTS

The first electronic products class is referred to as the “general electronics” category. This consists of boards with the lowest quality requirements and is mostly found in products with an expected short life cycle. Think of a superhero toy you’d buy your nephew at Target. It lights up and echoes the hero’s signature catchphrase with the push of a button. The toy works great for your nephew for weeks after you give it to him, but would you be surprised if the light or one of the buttons stops working after a year or two? Probably not.

This is basically the “get what you pay for” class. These electronics are held to the lowest standard of quality and thus are usually found in cheap, high-volume productions. Some electronics manufacturers don’t even bother with the class one category. Matric and Dynamic, for example, do not make electronics in class one. All boards manufactured through our facilities are either Class 2 or Class 3, both due to the nature of the markets we serve and our dedication to product quality.

CLASS 2 — DEDICATED SERVICE ELECTRONIC PRODUCTS

Class 2 electronic devices encompass all electronics where continued performance and an extended life cycle is required -- to a point. Uninterrupted service is desired, but not critical. Along with what’s in the chart above, IPC Class 2 examples include: Televisions, Air conditioners, Tablets

In other words, these are items where an early life cycle failure would have you red-faced and slamming your fist, but wouldn’t put your life at risk. Something to keep in mind: You’ll want to know which class you want to pursue prior to board design, as products must be specially designed for Class 2 and Class 3 specifications. A board designed for IPC Class 2 specifications can potentially achieve many of the same build requirements for Class 3, but rarely all of them.

CLASS 3 — HIGH-RELIABILITY ELECTRONIC PRODUCTS

The third class of circuit boards are subject to strict guidelines due to their importance in the field. While Class 1 electronics are usually cheap and easily replaceable items and Class 2 electronics are more important and require a longer life cycle, Class 3 electronics are mission-critical items.

Whether it’s a pacemaker or a military radar, a product that needs to meet IPC Class 3 requirements must use high-reliability electronic components to ensure uninterrupted service. These electronics are usually the highest of quality, and many OEM products that could pass as Class 2 opt for the IPC Class 3 standard because the benefits of higher-quality electronics outweigh the cost of additional testing and inspection.