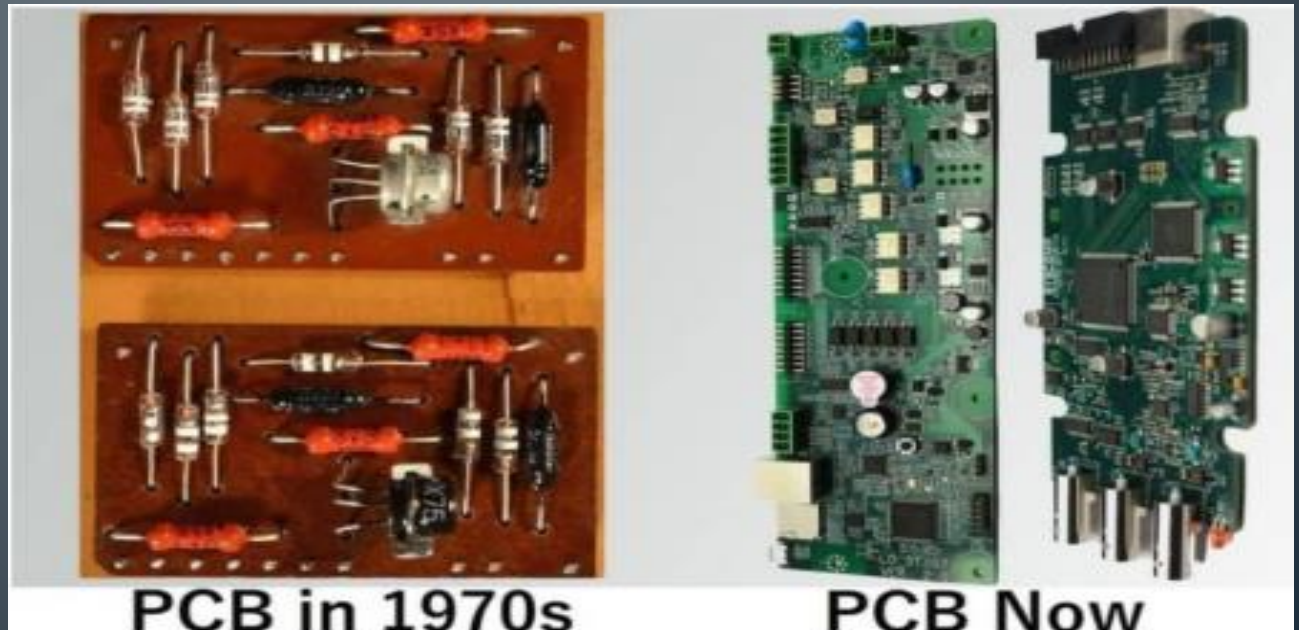


The background image is a close-up of a green printed circuit board (PCB). It features a complex network of white conductive traces. Various electronic components are visible, including several integrated circuits (chips) with labels like 'C512', 'C514', 'C522', 'C525', 'C527', 'C535', 'C536', 'C537', 'C539', 'C540', 'C541', 'C542', 'C543', 'C544', 'C545', 'C546', 'C547', 'C548', 'C549', 'C550', 'C551', 'C552', 'C553', 'C554', 'C555', 'C556', 'C557', 'C558', 'C559', 'C560', 'C561', 'C562', 'C563', 'C564', 'C565', 'C566', 'C567', 'C568', 'C569', 'C570', 'C571', 'C572', 'C573', 'C574', 'C575', 'C576', 'C577', 'C578', 'C579', 'C580', 'C581', 'C582', 'C583', 'C584', 'C585', 'C586', 'C587', 'C588', 'C589', 'C590', 'C591', 'C592', 'C593', 'C594', 'C595', 'C596', 'C597', 'C598', 'C599', 'C600', 'C601', 'C602', 'C603', 'C604', 'C605', 'C606', 'C607', 'C608', 'C609', 'C610', 'C611', 'C612', 'C613', 'C614', 'C615', 'C616', 'C617', 'C618', 'C619', 'C620', 'C621', 'C622', 'C623', 'C624', 'C625', 'C626', 'C627', 'C628', 'C629', 'C630', 'C631', 'C632', 'C633', 'C634', 'C635', 'C636', 'C637', 'C638', 'C639', 'C640', 'C641', 'C642', 'C643', 'C644', 'C645', 'C646', 'C647', 'C648', 'C649', 'C650', 'C651', 'C652', 'C653', 'C654', 'C655', 'C656', 'C657', 'C658', 'C659', 'C660', 'C661', 'C662', 'C663', 'C664', 'C665', 'C666', 'C667', 'C668', 'C669', 'C670', 'C671', 'C672', 'C673', 'C674', 'C675', 'C676', 'C677', 'C678', 'C679', 'C680', 'C681', 'C682', 'C683', 'C684', 'C685', 'C686', 'C687', 'C688', 'C689', 'C690', 'C691', 'C692', 'C693', 'C694', 'C695', 'C696', 'C697', 'C698', 'C699', 'C700', 'C701', 'C702', 'C703', 'C704', 'C705', 'C706', 'C707', 'C708', 'C709', 'C710', 'C711', 'C712', 'C713', 'C714', 'C715', 'C716', 'C717', 'C718', 'C719', 'C720', 'C721', 'C722', 'C723', 'C724', 'C725', 'C726', 'C727', 'C728', 'C729', 'C730', 'C731', 'C732', 'C733', 'C734', 'C735', 'C736', 'C737', 'C738', 'C739', 'C740', 'C741', 'C742', 'C743', 'C744', 'C745', 'C746', 'C747', 'C748', 'C749', 'C750', 'C751', 'C752', 'C753', 'C754', 'C755', 'C756', 'C757', 'C758', 'C759', 'C760', 'C761', 'C762', 'C763', 'C764', 'C765', 'C766', 'C767', 'C768', 'C769', 'C770', 'C771', 'C772', 'C773', 'C774', 'C775', 'C776', 'C777', 'C778', 'C779', 'C780', 'C781', 'C782', 'C783', 'C784', 'C785', 'C786', 'C787', 'C788', 'C789', 'C790', 'C791', 'C792', 'C793', 'C794', 'C795', 'C796', 'C797', 'C798', 'C799', 'C800', 'C801', 'C802', 'C803', 'C804', 'C805', 'C806', 'C807', 'C808', 'C809', 'C810', 'C811', 'C812', 'C813', 'C814', 'C815', 'C816', 'C817', 'C818', 'C819', 'C820', 'C821', 'C822', 'C823', 'C824', 'C825', 'C826', 'C827', 'C828', 'C829', 'C830', 'C831', 'C832', 'C833', 'C834', 'C835', 'C836', 'C837', 'C838', 'C839', 'C840', 'C841', 'C842', 'C843', 'C844', 'C845', 'C846', 'C847', 'C848', 'C849', 'C850', 'C851', 'C852', 'C853', 'C854', 'C855', 'C856', 'C857', 'C858', 'C859', 'C860', 'C861', 'C862', 'C863', 'C864', 'C865', 'C866', 'C867', 'C868', 'C869', 'C870', 'C871', 'C872', 'C873', 'C874', 'C875', 'C876', 'C877', 'C878', 'C879', 'C880', 'C881', 'C882', 'C883', 'C884', 'C885', 'C886', 'C887', 'C888', 'C889', 'C890', 'C891', 'C892', 'C893', 'C894', 'C895', 'C896', 'C897', 'C898', 'C899', 'C900', 'C901', 'C902', 'C903', 'C904', 'C905', 'C906', 'C907', 'C908', 'C909', 'C910', 'C911', 'C912', 'C913', 'C914', 'C915', 'C916', 'C917', 'C918', 'C919', 'C920', 'C921', 'C922', 'C923', 'C924', 'C925', 'C926', 'C927', 'C928', 'C929', 'C930', 'C931', 'C932', 'C933', 'C934', 'C935', 'C936', 'C937', 'C938', 'C939', 'C940', 'C941', 'C942', 'C943', 'C944', 'C945', 'C946', 'C947', 'C948', 'C949', 'C950', 'C951', 'C952', 'C953', 'C954', 'C955', 'C956', 'C957', 'C958', 'C959', 'C960', 'C961', 'C962', 'C963', 'C964', 'C965', 'C966', 'C967', 'C968', 'C969', 'C970', 'C971', 'C972', 'C973', 'C974', 'C975', 'C976', 'C977', 'C978', 'C979', 'C980', 'C981', 'C982', 'C983', 'C984', 'C985', 'C986', 'C987', 'C988', 'C989', 'C990', 'C991', 'C992', 'C993', 'C994', 'C995', 'C996', 'C997', 'C998', 'C999'.

Printed Circuit Board Introduction & PCB Types

Introduction to PCB:

- A printed circuit board (PCB; also printed wiring board or PWB) is a medium used in electrical and electronic engineering to connect electronic components to one another in a controlled manner.



PCB Manufacturing Process:

- ❖ PCB Development: PCB development can be defined as taking a circuit board design from the design to the production.
- ❖ PCB Manufacturing: PCB manufacturing is the construction of your board design. This two-step process begins with board fabrication and ends with printed circuit board assembly (PCBA).
- ❖ PCB Assembly: PCB assembly or PCBA is the second step or stage of PCB manufacturing in which the board components are mounted to the bare board through a soldering process.
- ❖ PCB Testing: PCB testing, sometimes referred to as bring up, is the third stage of PCB development, performed after manufacturing.

Types of PCB :

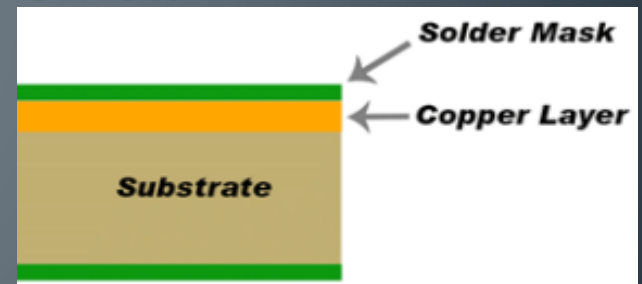
- ❑ Single-Sided PCBs
- ❑ Double-Sided PCBs
- ❑ Multilayer PCBs

Single-Sided PCBs

- A single-sided PCB is the most common type of printed circuit board. It has a single conductive copper layer above the substrate. The electrical components are soldered or placed on one side of the board, and the entire etched circuit is visible on the other.

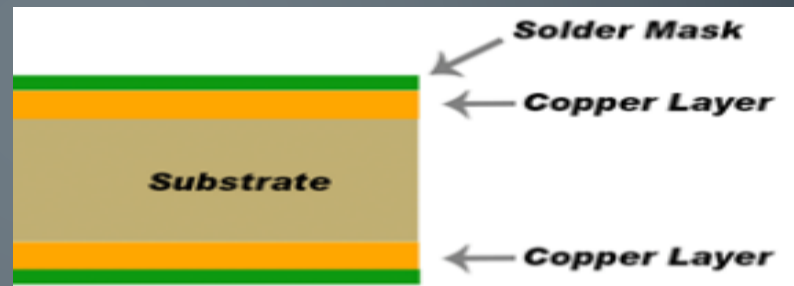
➤ Advantages

- Easy to manufacture
- Suitable for low-density designs
- Easy to repair if in case something goes wrong
- Easy to design
- Cost-effective



Double-Sided PCBs

- A thin layer of conducting material, such as copper, is added to the board's top and bottom sides in a double-sided PCB. Holes in the circuit board allow metal parts to be connected from one side to the other.

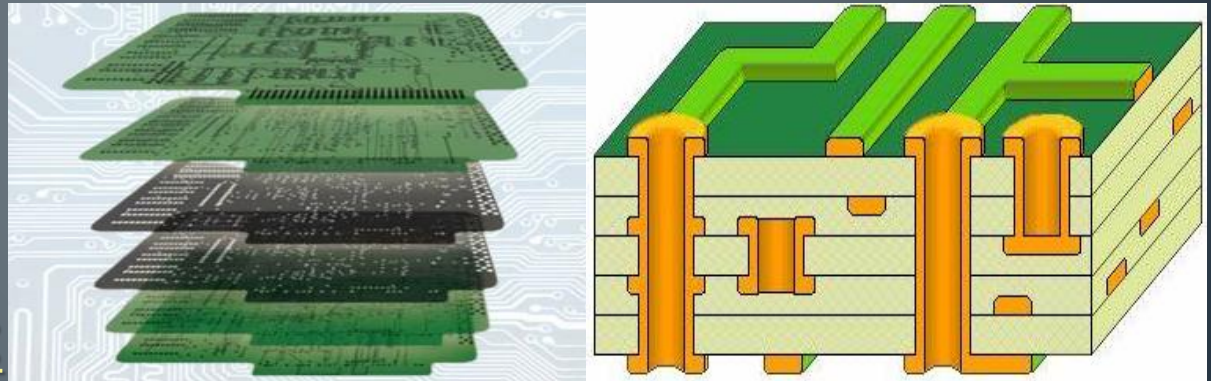


➤ Advantages :

- The reduced size makes the circuit compact
- More flexible
- Increased circuit density
- Suitable for advanced electronic systems.

Multilayer PCBs

- Multilayer PCBs have more than two copper layers. These are designed in a 'sandwich' fashion, with several double-sided conductive layers divided by an equal number of insulating material sheets.



➤ Advantages :

- Compact in size.
- High level of design flexibility
- Suitable for high-speed circuits

Applications of PCB:

❖ Medical Devices- Medical imaging systems



Applications of PCB:

❖ LED's-Residential, Medical Lighting



Applications of PCB:

- ❖ Consumer Electronics-Communication Devices, Home Appliances



Applications of PCB:

- ❖ Industrial Equipment- Manufacturing, Measuring Equipment



Applications of PCB:

- ❖ Automotive Components-Entertainment, Navigation System



