

Logic Families

Electrical Engineering

Five logic families on supply voltage, speed and where each is still used.

Voltage compatibility matters more than raw speed on most boards.

Family	Supply	Character
TTL, 74LS	5 V	Historic, sinks input current
CMOS, 4000	3 to 15 V	Very low static power, slow
HC and HCT	2 to 6 V	HCT accepts TTL levels
LVCMOS	1.8 to 3.3 V	Today's default on boards
LVDS	Differential pair	Fast, quiet, point to point

Mixing families means checking four numbers: V_{OH} , V_{IH} , V_{OL} and V_{IL} . A valid high on one part may not be one on the next.