

GPIO	Boot Safety	Direction	Notes
0	● Caution	I/O	● Used to enter bootloader (must be LOW at boot)
1	● Caution	I/O (TX)	● UART TX during flashing. Avoid using unless necessary
2	● Caution	I/O	● Must be LOW or floating at boot. Avoid strong pull-ups
3	● Caution	I/O (RX)	● UART RX during flashing. Avoid using unless necessary
4	● Safe	I/O	General-purpose, safe
5	● Safe	I/O	Safe, often used for SPI/I ² C
6	● Do not use	SPI Flash	Internal SPI flash. Must not be used
7	● Do not use	SPI Flash	Internal SPI flash. Must not be used
8	● Do not use	SPI Flash	Internal SPI flash. Must not be used
9	● Do not use	SPI Flash	Internal SPI flash. Must not be used
10	● Do not use	SPI Flash	Internal SPI flash. Must not be used
11	● Do not use	SPI Flash	Internal SPI flash. Must not be used
12	● Caution	I/O	● Must be LOW at boot. Avoid pull-ups; dangerous with 3.3 V
13	● Safe	I/O	General-purpose
14	● Safe	I/O	General-purpose
15	● Caution	I/O	● Must be LOW at boot. Often used with pull-down
16	● Safe	I/O	General-purpose
17	● Safe	I/O	General-purpose
18	● Safe	I/O	General-purpose
19	● Safe	I/O	General-purpose
20	● Not available	–	■ Not exposed on ESP32-WROOM-32
21	● Safe	I/O	General-purpose
22	● Safe	I/O	General-purpose
23	● Safe	I/O	General-purpose
24	● Not available	–	■ Not exposed
25	● Safe	I/O	General-purpose
26	● Safe	I/O	General-purpose
27	● Safe	I/O	General-purpose
28	● Not available	–	■ Not exposed
29	● Not available	–	■ Not exposed
30	● Not available	–	■ Not exposed
31	● Not available	–	■ Not exposed
32	● Safe	I/O	Often used for I ² S
33	● Safe	I/O	Often used for I ² S
34	● Input only	Input only	Analog-capable, good for microphone
35	● Input only	Input only	Analog-capable
36	● Input only	Input only (SVP)	Analog-capable
39	● Input only	Input only (SVN)	Analog-capable

- **Safe** – Fully safe for any use
- **Caution** – Can be used, but consider loading specifics
- **Do not use / Not available** – Either reserved or physically unavailable