

# Nintendo NES

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# Mainboard Revisions (NTSC)

PCB revisions run from NES-CPU-01 to -11. Revisions below -05 will have noticeably poorer video output than later revisions. Revisions -10 and -11 use circuitry to try to defeat the lockout defeaters of the unlicensed cartridges.

## **NES-CPU-02 - 2A03E/2C02E-0**

The original US release of the NES (fewer than 10,000 were made).

- 1985 copyright on PCB
- VRAM and WRAM are NDIP-only
- 3193 Non-A CIC

## **NES-CPU-03**

- Unreleased

## **NES-CPU-04 - 2A03E/2C02E-0**

- 1986 copyright on PCB
- VRAM and WRAM are NDIP-only
- 3193 Non-A or 3193A CIC
- some have a 74HC139 at U3 instead of 74LS139

## **NES-CPU-05 - 2A03G/2C02G-0**

- 1986 copyright on PCB
- VRAM and WRAM are NDIP-only
- 3193A CIC

## **NES-CPU-06 - 2A03G/2C02G-0**

- 1987 copyright on PCB
- VRAM and WRAM are NDIP or DIP

## **NES-CPU-07 - 2A03G/2C02G-0**

- 1987 copyright on PCB
- VRAM and WRAM are NDIP or DIP

## **NES-CPU-08 - 2A03G/2C02G-0**

- 1989 copyright on PCB
- VRAM and WRAM are NDIP or DIP

## **NES-CPU-09 - 2A03G/2C02G-0 or 2A07/2C07-0**

- 1987 copyright on PCB
- VRAM and WRAM are NDIP or DIP

Has one resistor between CIC pin and cart connector to prevent CIC stun attacks

## **NES-CPU-10 - 2A03G/2C02G**

- 1987 copyright on PCB
- VRAM and WRAM are NDIP or DIP

Has two resistors between CIC pins and cart connector to thwart more CIC voltage stun, some later revisions have a diode to nearby GND vias as well to prevent the -5V attack

## **NES-CPU-11 - 2A03G/2C02G or 2A07[A]/2C07[A]**

- 1987 Copyright on PCB
- VRAM and WRAM are NDIP or DIP

Has two resistors and two diodes between CIC pins, cart connector and GND to prevent CIC stun and -5V attacks

# Product Sheets

# NES Mainboard (NTSC)

## Capacitor Guide

Capacitors play a crucial role in maintaining a steady flow of current to other components. With a typical lifespan of 20–30 years—and considering the age of most NES consoles—the original capacitors have likely reached or exceeded their expected service life. For optimal performance and reliability, replacing them is strongly recommended.

When installing new capacitors, be sure to observe the correct polarity. The longer lead indicates the positive side, which corresponds to the "+" symbol in the diagram.

Capacitor	Location
1uF 50v	C23
100uF 6.3v	C1
2.2uF 50v	C9

## Board Layout

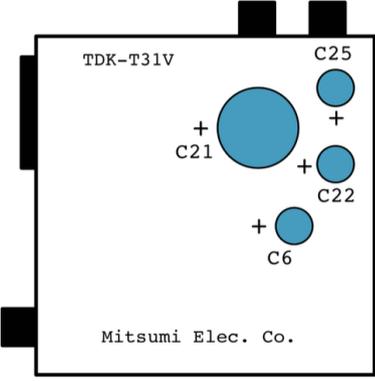


# Mitsumi Capacitor Kit

## Capacitor Guide

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### Mitsumi TDK-T31V

 <p>The diagram shows a rectangular board with four capacitors. C21 is a large blue circle on the left. C22 is a medium blue circle on the right. C25 is a small blue circle on the right. C6 is a small blue circle at the bottom. Each capacitor has a '+' sign. The board is labeled 'TDK-T31V' at the top left and 'Mitsumi Elec. Co.' at the bottom left.</p>		<table border="1"><thead><tr><th>Capacitor</th><th>Location</th></tr></thead><tbody><tr><td>100uF 10v</td><td>C25</td></tr><tr><td>100uF 16v</td><td>C22</td></tr><tr><td>10uF 16v</td><td>C6</td></tr><tr><td>2200uF 25v</td><td>C21</td></tr></tbody></table>	Capacitor	Location	100uF 10v	C25	100uF 16v	C22	10uF 16v	C6	2200uF 25v	C21
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### Mitsumi TDK-T12V

<p>TDK-T12V</p> <p>C8</p> <p>C29</p> <p>C31</p> <p>C2</p> <p>C6</p> <p>C32</p> <p>Mitsumi Elec. Co.</p>		<table border="1"> <thead> <tr> <th>Capacitor</th> <th>Location</th> </tr> </thead> <tbody> <tr> <td>100uF 16v</td> <td>C29</td> </tr> <tr> <td>2200uF 25v</td> <td>C8</td> </tr> <tr> <td>100uF 25v</td> <td>C31</td> </tr> <tr> <td>1uF 50v</td> <td>C2</td> </tr> <tr> <td>10uF 16v</td> <td>C32</td> </tr> <tr> <td>1uF 50v</td> <td>C6</td> </tr> </tbody> </table>	Capacitor	Location	100uF 16v	C29	2200uF 25v	C8	100uF 25v	C31	1uF 50v	C2	10uF 16v	C32	1uF 50v	C6
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# Mitsumi MTM-8V-0

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