

Antenna Coil (L1) CP-345UH-ID201

345 μ H, Ø24mm.

Critical: Matches the 4.7nF capacitor to resonate exactly at 125kHz.

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Resonant Cap (C1) FG14C0G2A472JNT062

4.7nF (4700pF), 100V, C0G/NP0.

Critical: Must be **100V+** because resonance creates high voltage spikes. **C0G** dielectric prevents tuning drift when warm.

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MOSFET (Q1) IRLZ44NPBF1

N-Ch, 55V, Logic Level.

Critical: The "**L**" in IRLZ means it opens fully at 5V logic. Standard "IRF" MOSFETs won't switch fast enough or fully.

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Comparator (U1) LM393N (or LM393P)1

Dual Differential, DIP-8.

Intent: Standard "Open Collector" comparator to digitize the analog signal ripples.

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Detector Diode (D1) 1N4148TR2**100V, 4ns Speed, Axial.**

Intent: Fast switching diode to demodulate the 125kHz carrier. Standard 1N400x rectifiers are too slow.

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Potentiometer (VR1) 3362P-1-103LF1**10k Ω , Cermet, "P" Style.**

Intent: Adjusts receiver sensitivity. "P" style has the triangle pin layout that fits your PCB.

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Filtering Cap (C2) K103K15X7RF5TL2**10nF (0.01 μ F), 50V.**

Intent: Filters noise from the power supply lines.

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Headers S1011EC-40-ND1**40-Pin Breakaway, 2.54mm.**

Intent: Snappable strip to connect your Nucleo, Antenna, and Power.

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IC Socket 1-2199298-2

DIP-8 Socket.

Intent: Protects the LM393. Solder this to the board, then plug the chip in.

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Resistors:

100

<https://www.digikey.ca/en/products/detail/vishay-beyschlag-dralloric-bc-components/MBB02070C1000FCT00/5062929>

4.7k <https://www.digikey.ca/en/products/detail/yageo/CFR-25JR-52-4K7/11990>

10k <https://www.digikey.ca/en/products/detail/yageo/MFR-25FRF52-10K/14626>

100k <https://www.digikey.ca/en/products/detail/vishay-dale/CPF1100K00FKEE6/2713070>