



ATX Board, Bill of Materials

Designator	Value	Description	Footprint
B101		Plastic battery holder	Axial
C1	15pF	Capacitor, NP0, +/- 5%, 50V	0603
C2	15pF	Capacitor, NP0, +/- 5%, 50V	0603
C3	2.2nF	Capacitor, X7R, +/- 10%, 50V	0603
C4	4.7pF	Capacitor, NP0, +/- 5%, 50V	0603
C5	1.0pF	Capacitor, NP0, +/- 0.1 pF, 50V	0603
C6	1.0pF	Capacitor, NP0, +/- 0.1 pF, 50V	0603
C7	3.3pF	Capacitor, NP0, +/- 0.1 pF, 50V	0603
C8		Not fitted	0603
C9	10nF	Capacitor, X7R, +/- 10%, 50V	0603
C10	1nF	Capacitor, X7R, +/- 10%, 50V	0603
C11	33nF	Capacitor, X7R, +/- 10%, 50V	0603
C12	0.8pF	Capacitor, NP0, +/- 0.1 pF, 50V	0603
C13	10nF	Capacitor, X7R, +/- 10%, 50V	0603
C14	4.7μF	Capacitor, Tantalum, +/- 20%, 6V	1206
C101	10μF	Capacitor, Tantalum, +/- 20%, 6V, ESR<3Ω	1206
C102	1μF	Capacitor, Tantalum, +/- 20%, 20V	1206
C103	10nF	Capacitor, X7R, +/- 10%, 50V	0603
C301	10μF	Capacitor, Tantalum, +/- 20%, 6V, ESR<3Ω	1206
C302	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C303	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C304	10μF	Capacitor, Tantalum, +/- 20%, 6V, ESR<3Ω	1206
C305	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C306	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C307	10μF	Capacitor, Tantalum, +/- 20%, 6V, ESR<3Ω	1206
C308	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C309	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C310	1μF	Capacitor, X7R, +/- 10%, 16V	1206
C311	220pF	Capacitor, NP0, +/- 5%, 50V	0603
C312	1μF	Capacitor, X7R, +/- 10%, 16V	1206
C313	220pF	Capacitor, NP0, +/- 5%, 50V	0603
C314	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C401	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C402	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C403	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C404	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C405	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C406	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C410	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
C411	0.1μF	Capacitor, X7R, +/- 10%, 16V	0603
D401		LED, red	1206
E1		Antenna, Fractus FR05-S1-N-0-102	SMD



nRF24Z1 Headphone Reference Design 1, nRF24Z1-HPR1

Designator	Value	Description	Footprint
J301		Audio telejack, 3.5mm stereo	Axial
L1	3.3nH	Chip inductor, +/- 0.3nH, TOKO LL1608-FSL3N3S ¹	0603
L2	10nH	Chip Inductor, +/- 5%	0603
L3	3.3nH	Chip inductor, +/- 0.3nH, TOKO LL1608-FSL3N3S ¹	0603
P501		Connector , Molex 54167-0208	SMD
R1	1M Ω	Resistor, 10%	0603
R2	22k Ω	Resistor, 1 %	0603
R3	10k Ω	Resistor, 5 %	0603
R4	10k Ω	Resistor, 5 %	0603
R5	10k Ω	Resistor, 5 %	0603
R101	0 Ω	Resistor	0603
R102	0 Ω	Resistor	0603
R103	0 Ω	Resistor	0603
R104	270k Ω	Resistor, 1 %	0603
R105	220k Ω	Resistor, 1 %	0603
R301	10k Ω	Resistor, 5 %	0603
R302	10k Ω	Resistor, 5 %	0603
R303	5.6k Ω	Resistor, 5 %	0603
R304	5.6k Ω	Resistor, 5 %	0603
R305	5.6k Ω	Resistor, 5 %	0603
R306	5.6k Ω	Resistor, 5 %	0603
R401	22k Ω	Resistor, 5 %	0603
R402	22k Ω	Resistor, 5 %	0603
R403	22k Ω	Resistor, 5 %	0603
R404	22k Ω	Resistor, 5 %	0603
R405	22k Ω	Resistor, 5 %	0603
R406	22k Ω	Resistor, 5 %	0603
R407	1k Ω	Resistor, 5 %	0603
R408	10k Ω	Resistor, 5 %	0603
S101		Power supply on/off switch	Axial
S401		User interface push button, ALPS SKQMBBE010	SMD
S402		User interface push button, ALPS SKQMBBE010	SMD
S403		User interface push button, ALPS SKQMBBE010	SMD
S404		User interface push button, ALPS SKQMBBE010	SMD
S405		User interface push button, ALPS SKQMBBE010	SMD
S406		User interface push button, ALPS SKQMBBE010	SMD

¹ Inductance vs. frequency may differ significantly in inductors with the same value but different part numbers and/or vendors! Inductor value is usually characterized at 100-250 MHz, but the actual value at 2.4 GHz may vary significantly even though the given inductance at 250 MHz is the same. Inductors from other TOKO series and other vendors may well be used, but antenna matching network performance MUST be verified as the inductor value may need to be changed.



nRF24Z1 Headphone Reference Design 1, nRF24Z1-HPR1

Designator	Value	Description	Footprint
U1	nRF24Z1	2.4GHz Transceiver for Audio Streaming	QFN36L/6x6
U2	EEPROM	Microchip 25AA640-I/SN, 64K 1.8V SPI Bus Serial EEPROM	SO-8
U101	Voltage regulator	Linear Technology LT1761ES5-BYP, 100mA Low Noise LDO	SOT-23
U301	ADC	Wolfson Microelectronics WM8951LGEFL, Stereo ADC with Microphone Input and Clock Generator	QFN5x5-28
U401	MCU	Atmel ATmega48V-10MI, 8 bit AVR Microcontroller with 8K Bytes Flash	QFN5x5-32
X1	16MHz	Crystal, $C_L = 9\text{pF}$, $C_0 < 7\text{pF}$, $\text{ESR} < 100\Omega$, Frequency tolerance + temperature stability $< \pm 30 \text{ ppm}$	SMD

Table 1 ATX Bill of Materials