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# Radxa ROCK Pi E Product Brief

Compact Networking SBC

Revision 1.0

2023-07-10



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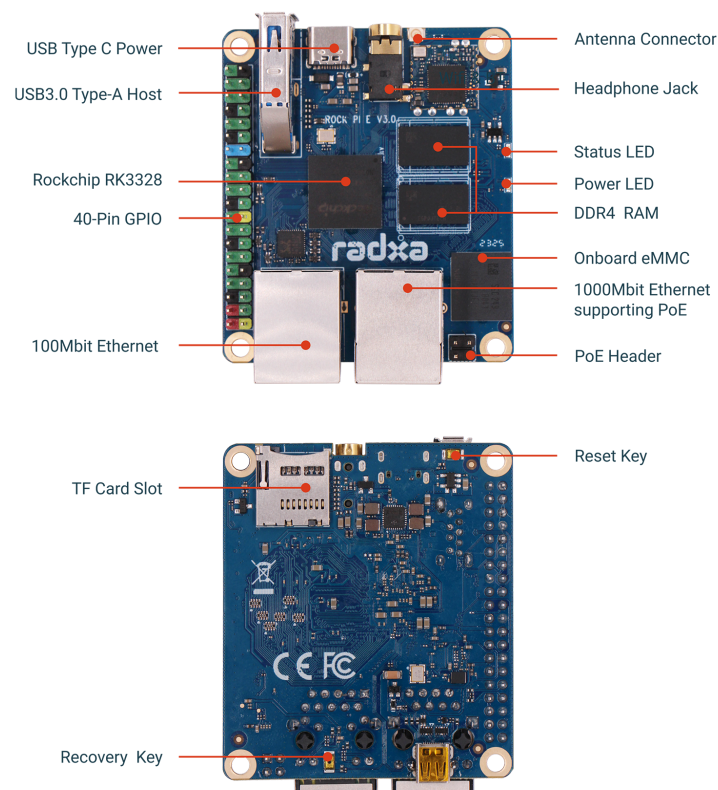
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## 1 Revision Control Table

| Version | Date       | Changes from previous version |
|---------|------------|-------------------------------|
| 1.0     | 10/07/2023 | First version                 |

## 2 Introduction

Radxa ROCK Pi E is a Rockchip RK3328 based SBC(Single Board Computer) by Radxa. It equips a 64bits quad core processor, USB 3.0, dual ethernets, wireless connectivity at the size of 2.5x2.2 inch(56x65mm), making it perfect for IoT and network applications. ROCK Pi E comes in various ram sizes from 512MB to 2GB RAM, and uses uSD card for OS and storage as well as supporting on board eMMC. Optionally, ROCK Pi E supports PoE, additional HAT is required.



*Note:* The actual board layout or components' location may change during the time but the main connectors type and location will remain the same.

## 3 Features

### 3.1 Hardware

- Rockchip RK3328 SoC

- Quad Cortex-A53 ARM 64bits processor, frequency up to 1.3GHz
- Dual-Channel DDR4: 1 / 2GB optional
- Optional 8G / 16G / 32G / 64G / 128G high performance eMMC
- MicroSD(TF) up to 512GB
- 1x USB3.0 Type-A HOST
- Optional WiFi 4 / BT 4 or WiFi 5 / BT 5 choices
- 1x 1000Mbit ethernet supporting PoE with add-on PoE HAT
- 1x 100Mbit ethernet
- 1x 4-ring 3.5mm headphone jack with AV out
- 40x user GPIO supporting various interface options:
  - 1x USB 2.0 OTG
  - 1x I2C
  - 1x SPI
  - 2x UART
  - 1x I2S
  - 2x 5V DC power in
  - 2x 3.3V DC power in

## 3.2 Software

- ArmV8 Instruction Set
- Debian/Ubuntu Linux support
- Armbian/Openwrt support

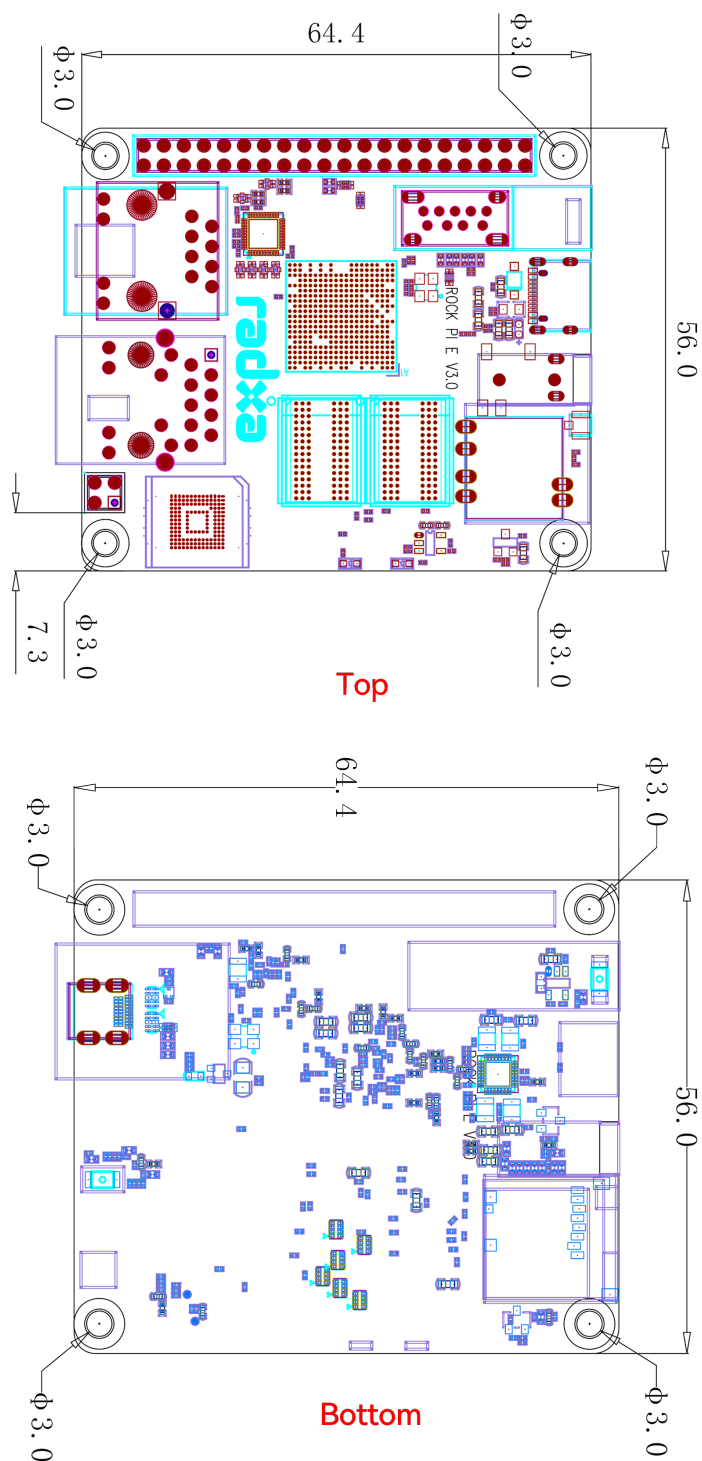
## 3.3 GPIO Interface

The Rock Pi E offers a 40 pin GPIO expansion header which provides extensive compatibility with a wide range of accessories developed for the SBC market.

| Function3 | Function2 | Function1 | Pin# | Pin# | Function1 | Function2 | Function3 |
|-----------|-----------|-----------|------|------|-----------|-----------|-----------|
|           |           | +3.3V     | 1    | 2    | +5.0V     |           |           |
|           | UART1_TX  | GPIO3_A4  | 3    | 4    | +5.0V     |           |           |
|           | UART1_RX  | GPIO3_A6  | 5    | 6    | GND       |           |           |
|           |           | GPIO1_D4  | 7    | 8    | GPIO2_A0  | UART2_TX  |           |
|           |           | GND       | 9    | 10   | GPIO2_A1  | UART2_RX  |           |
|           | PWM_IR    | GPIO2_A2  | 11   | 12   | GPIO2_C2  | PDM_CLK   | I2S1_SCLK |
|           |           | GPIO2_A3  | 13   | 14   | GND       |           |           |
|           |           | GPIO0_D3  | 15   | 16   | USB20DM   |           |           |
|           |           | +3.3V     | 17   | 18   | USB20DP   |           |           |

| Function3                | Function2    | Function1 | Pin# | Pin# | Function1 | Function2    | Function3 |
|--------------------------|--------------|-----------|------|------|-----------|--------------|-----------|
| I2S1_SDI01<br>I2S1_SDI02 | SPI0_TXD     | GPIO3_A1  | 19   | 20   | GND       |              |           |
|                          | SPI0_RXD     | GPIO3_A2  | 21   | 22   | ADC_IN1   |              |           |
|                          | SPI0_CLK     | GPIO3_A0  | 23   | 24   | GPIO3_B0  | SPI0_CSN0    |           |
|                          |              | GND       | 25   | 26   | GPIO2_B4  |              |           |
|                          | I2C1_SDA     | GPIO2_A4  | 27   | 28   | GPIO2_A5  | I2C1_SCL     |           |
|                          | PDM_SDI1     | GPIO2_C4  | 29   | 30   | GND       |              |           |
|                          | PDM_SDI2     | GPIO2_C5  | 31   | 32   | GPIO2_C0  | I2S1_LRCK_RX |           |
|                          | PWM2         | GPIO2_A6  | 33   | 34   | GND       |              |           |
|                          | I2S1_LRCK_TX | GPIO2_C1  | 35   | 36   | GPIO2_B7  | I2S1_MCLK    |           |
|                          | PDM_SDI3     | GPIO2_C6  | 37   | 38   | GPIO2_C3  | PDM_SDI0     | I2S1_SDI  |
|                          |              | GND       | 39   | 40   | GPIO2_C7  | PDM_FSYNC    | I2S1_SDO  |

## 4 Mechanical Specification



## 5 Electrical Specification

### 5.1 Power Requirements

Rock Pi E can only be powered by +5V.

- USB Type-C® 5V@2A - 5V Power from the GPIO PIN 2 & 4

### 5.2 GPIO Voltage

| GPIO     | Voltage Level | Tolerance |
|----------|---------------|-----------|
| All GPIO | 3.3V          | 3.63V     |

## 6 Operating Conditions

The ROCK Pi E has been designed to operate between 0°C to 50°C.

Radxa ROCK Pi E limits its SoC maximum internal temperature to 85°C before throttling the clock speeds to maintain reliability within the allowed temperature range. If the ROCK Pi E is intended to be used continuously in high performance applications, it may be necessary to use external cooling methods (for example, heat sink, fan, etc.) which will allow the SoC to continue running at maximum clock speed indefinitely below its predefined 85°C peak temperature limiter.

## 7 Availability

Radxa guarantees availability of the ROCK Pi E until at least September 2032.

## 8 Support

For support please see the hardware documentation section of the [Radxa Wiki](#) website and post questions to the [Radxa forum](#).