Raspberry Pi Pico

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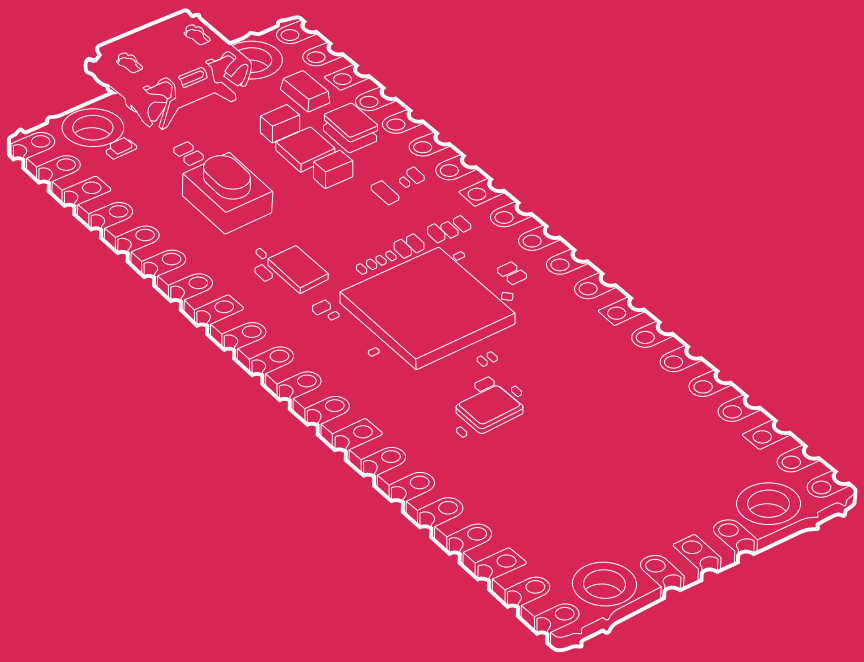

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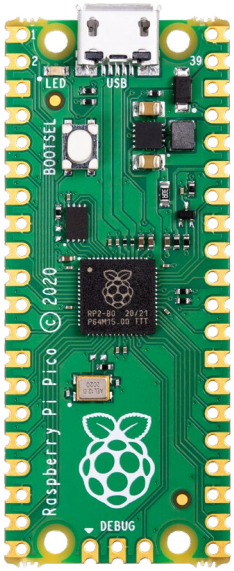
Overview



Raspberry Pi Pico is the debut microcontroller-class board from Raspberry Pi. Built around our RP2040 silicon platform, Pico brings our signature values of high performance, low cost, and ease of use to the microcontroller space.

With a large on-chip memory, symmetric dual-core processor complex, deterministic bus fabric, and rich peripheral set augmented with our unique Programmable I/O (PIO) subsystem, RP2040 provides professional users with unrivalled power and flexibility. With detailed documentation, a polished MicroPython port, and a UF2 bootloader in ROM, it has the lowest possible barrier to entry for beginner and hobbyist users.

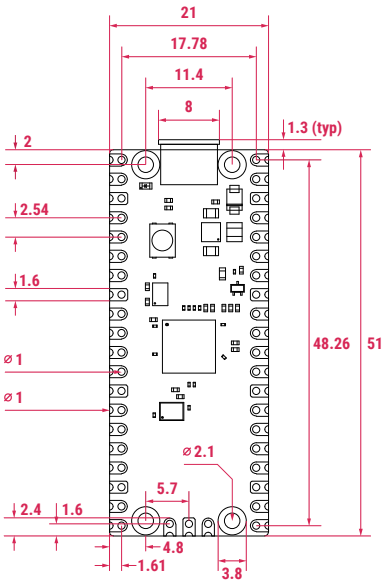
RP2040 is manufactured on a modern 40nm process node, delivering high performance, low dynamic power consumption, and low leakage, with a variety of low-power modes to support extended-duration operation on battery power.

Raspberry Pi Pico pairs RP2040 with 2MB of Flash memory, and a power supply chip supporting input voltages from 1.8-5.5V. It provides 26 GPIO pins, three of which can function as analogue inputs, on 0.1”-pitch through-hole pads with castellated edges. Raspberry Pi Pico is available as an individual unit, or in 480-unit reels for automated assembly.

Specification

Form factor:	21 mm × 51 mm
CPU:	Dual-core Arm Cortex-M0+ @ 133MHz
Memory:	264KB on-chip SRAM; 2MB on-board QSPI flash
Interfacing:	26 GPIO pins, including 3 analogue inputs
Peripherals:	• 2 × UART • 2 × SPI controllers • 2 × I2C controllers • 16 × PWM channels • 1 × USB 1.1 controller and PHY, with host and device support • 8 × PIO state machines
Input power:	1.8–5.5V DC
Operating temperature:	-20°C to +85°C
Production lifetime:	Raspberry Pi Pico will remain in production until at least January 2036
Compliance:	For a full list of local and regional product approvals, please visit pip.raspberrypi.com

Physical Specification



Note: all dimensions in mm

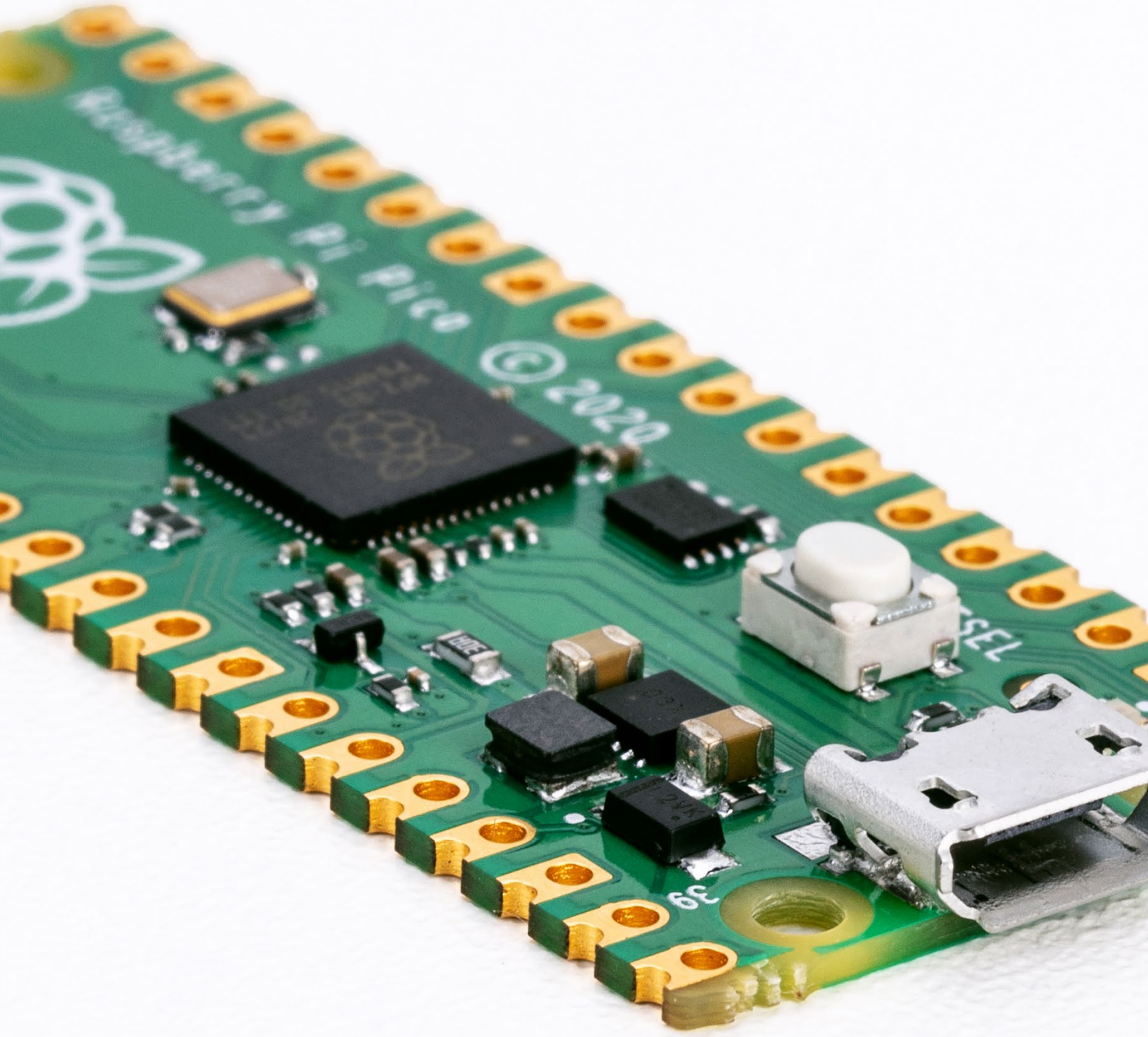
WARNINGS

- Any external power supply used with Raspberry Pi Pico shall comply with relevant regulations and standards applicable in the country of intended use.
- This product should be operated in a well-ventilated environment, and if used inside a case, the case should not be covered.
- Whilst in use, this product should be placed on a stable, flat, non-conductive surface, and should not be contacted by conductive items.
- The connection of incompatible devices to Raspberry Pi Pico may affect compliance, result in damage to the unit, and invalidate the warranty.
- All accessories used with this product should comply with relevant standards for the country of use and be marked accordingly to ensure that safety and performance requirements are met.
- The cables and connectors of all peripherals used with this product must have adequate insulation so that relevant safety requirements are met.

SAFETY INSTRUCTIONS

To avoid malfunction or damage to this product, please observe the following:

- Do not expose to water or moisture, or place on a conductive surface whilst in operation.
- Do not expose to heat from any source; Raspberry Pi Pico is designed for reliable operation at normal ambient temperatures.
- Take care whilst handling to avoid mechanical or electrical damage to the printed circuit board and connectors.
- Whilst it is powered, avoid handling the printed circuit board, or only handle it by the corners to minimise the risk of electrostatic discharge damage.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