Pinout micro usb male

Communication connectors that use the USB protocol See USB for a broader scope of this topic. Various USB connectors along the centimeter ruler for scale. From left: (1) micro B plug, (2) 8 pin mini B plug (which is strongly similar to 8 pin micro B plug, which is often occupied only 5 pin position), [a] (3) mini B plug, (4) type A receptacle, [b] (5) type B plug, (6) type B plug. ^ The 8-pin Mini B is a proprietary connector used by many older Japanese cameras for both USB and analog AV outputs. ^ The contact is displayed because it flips. This article provides information about the physical aspects of universal serial buses, USB, connectors, cables, and power supplies. The initial version of the USB standard designated connector is a connector that is easy to use and has an acceptable lifetime. The standard revision added a useful small connector to the compact portable device. The high-speed development of the USB standard provides another family of connectors that allow additional data paths. All versions of USB specify cable properties. The version 3.X cable contains additional data paths. The USB standard comes with power to peripherals. The latest version of the standard extends battery charging and device power delivery limits that require up to 100 watts. USB has been selected as the standard charging format for many phones, reducing the popularity of its own chargers. Comparison of USB connector plugs excluding connector USB-C type plugs The three sizes of USB connectors are default or standard formats for desktop or portable devices, small for mobile devices, and thin micros sizes for thin mobile devices such as mobile phones and tablets. USB data transfer has five speeds: slow, full-speed, fast (from version 2.0 of the specification), superspeed (from version 3.0), and superspeed+ (from version 3.1). The modes have different hardware and cable requirements. Usb devices have several choices of implemented modes, and the USB version is not a reliable statement of the implemented mode. The mode is identified by name and icon, and the specification suggests that the plug and receptacle are color-coded (SuperSpeed is identified by blue). Unlike other data buses (such as Ethernet), USB connections are sent. The host device has a downstream port that connects to the device's upstream port. Only downstream ports provide power. This topology was chosen to easily prevent electrical overload and damaged equipment. Therefore, both ends of the USB cable are different in A and B, each with a different physical connector. Each format has plugs and receptacles defined for each end of A and B. The USB cable has a plug, and the corresponding receptacle is in a computer or electronic device. Typically, the end of A is in standard form, and the B side is different in standard, mini, and micro. Mini and micro formats also offer for USB on the goHermad male and female same number AB receptacles that accept A or B plugs. On-the-go allows USB between peers without destroying the direct topology by selecting a host when connecting. In addition, a single receptacle can fulfill dual duties in space-constrained applications. Connector Properties USB expansion cable, male plug on the left and female socket on the right Connector specified by the USB committee support the number of underlying usb goals and reflect lessons learned from the many connectors used by the computer industry. Female connectors attached to a host or device are called receptacles, and male connectors connected to cables are called plugs. The official USB specification also regularly defines the terms male for plug and female for receptacle. [2] By design, it is difficult to accidentally insert a USB plug into its outlet. The USB specification requires that cable plugs and outlets be marked so that the user can recognize the appropriate direction. [1] The USB-C plug is reversible, however. USB cables and small USB devices are held in place by gripping force from the receptacle that does not use screws, clips, or thumb turns when used by other connectors. Different A and B plugs prevent accidentally connecting the two power supplies. However, some of this oriented topology is lost due to the advent of A-to-A, B-to-B, and sometimes multipurpose USB connections that require Y/splitter cables, such as USB-on-the-go smartphones and USB-powered Wi-Fi routers. For a detailed overview, see the USB on-the-go connector section below. This may be valid if you have a cable with an A plug at both ends, and the cable contains a USB host-to-host transfer device with two ports. [3] Durability Standard connectors were designed to be more robust than many past connectors. This is because USB is hot-swappable, connectors are used more frequently than previous connectors, and you probably don't need to be careful. The standard USB has a minimum evaluation lifetime of insertion and removing[4] mini USB receptacles increase this to 5,000 cycles[4], and the new Micro-USB[4] and USB-C receptacles are both designed for a minimum evaluation lifetime of 10,000 cycles for insertion and removing. To achieve this, a locking device is added, the leaf spring is moved from the jack to the plug, and the most stressful part is on the cable side of the connection. This change has been made to make the connectors on cheap cables wear the most. [6] In standard USB, the electrical contacts of the USB connector are protected by an adjacent plastic tongue, and the entire connection assembly is usually protected by an enclosing metal shell. The plug shell contacts the outlet in front of the internal pins. The shell is usually grounded to dissipate static electricity and shield the wires in the connector. CompatibilityThe standard specifies the tolerance of compliant USB connectors to minimize the physical incompatibility of connectors from different vendors. The USB specification defines a limit on the size of the connected device in the area around the plug so that adjacent ports are not blocked. Compliant devices must meet size limits or support corresponding expansion cables. Pin placement Related Note: USB 3.0 § Pin placement USB 2.0 uses two wires for power supply (VBUS and GND) and two wires for differential serial data signals. The mini and micro connectors move the GND connection from pin #4 to pin #5, and pin #4 functions as an ID pin for on-the-go host/client identification. [7] USB 3.0 includes two differential pairs (SSTx+, SSTx-, SSRx+, and SSRx-) to provide full-double data transfer in SuperSpeed, similar to serial ATA or single-lane PCI Express. Standard, mini, and micro USB plugs indicate end-on and cannot be extended. The white area represents a cavity. The plug is drawn with a USB logo at the top. [8] Micro B Super Speed Plug Power (VBUS, 5 V) Data - (D-) Data + (D+) ID (On the Go) GND Super Speed Transmission - (SSTx-) Super Speed Transmission + (SSTx+) GND SuperSpeed Reception - (SSRx-) Super Speed Reception + (SSRx-) Type A and -B PinOut Pin Name Wire Color Data - 3 D+ green data + 4 GND black/micro ground mini/micro A and -B pin-out pin name wire color[a] Description 1 VBUS red +5 V 2 D-white data - 3D + green data + 4 ID radio -The-Go ID distinguishes the end of the cable: A plug (host): Connected to GND B plug (device): Un connected 5 GND Black Signal Ground ^a b Some sources D+ and D- have been accidentally swapped. Front panel usb 3.0 switch orange charging dedicated USB port with color card reader. Sagemcom Blue Standard A USB Connector F@ST 3864OP ADSL Modem Router (Without USB 3.0 Contacts) Normal USB Color Coding Color Location Description Black or White Port & Plug Type A or Type B Blue (Pantone 300) C) Port & Plug Type A or Type B, Super Speed Teal Blue Port & Plug Type A or Type B, Super Speed + Green Port & Plug Type A or Type B, Qualcomm Quick Charge[9] Purple Plug Only Type A or USB-C, Huawei Supercharged Yellow or Red Port only high current or sleep and charge orange port only high current or sleep charge orange port only, mainly used in industrial hardware. USB ports and connectors are often color-ordered to distinguish between different features and USB versions. These colors are not part of the USB specification and may vary from manufacturer to manufacturer. For example, the USB 3.0 specification requires proper color coding, and only blue inserts are recommended for standard A USB 3.0 connectors and plugs. [10] Connector type USB connector type is multiplied as the specification progresses. The original USB specification detailed standard A and standard B plugs and receptacles. Because the connectors were different, the user could not connect the computer receptacle to another computer.The pins on the standard plug are recessed compared to the power pins, so you can turn on the device before establishing a data connection. Some devices operate in different modes depending on whether a data connection is made or not. The charging dock provides power and does not contain host devices or data pins, so the corresponding USB device can be charged or operated with a standard USB cable. The charging cable provides a power connection, but not data. In a charging-only cable, the data line shorts to the edge of the device, otherwise the device may reject the charger as unsuitable. Pin configuration end-on-type A plug for standard connector type A plug and Type B plug. The plug has an elongated rectangular cross-section and is inserted into the Type-A receptacle on the usb host or hub downstream port to carry both power and data. The captive cable of a USB device, such as a keyboard or mouse, is terminationd with a Type A plug. Type B plug: This plug has a square cross section where the outer corners of the top are close to the beba. Insert it into the upstream port of a device, such as a printer, as part of a removable cable. On some devices, the Type B receptacle does not have a data connection and is used only to accept power from upstream devices. These two connector types (A/B) methods prevent users from accidentally creating loops. [11] The maximum allowable cross-section of the overmolded boot (part of the connector used to handle it) is 16×8 mm (0.63×0.31) for the standard A plug type and 11.5×10.5 mm (0.45×0.41) for type B. In April 2000, mini A (left) and mini B (right) plug mini USB connectors were introduced with USB 2.0 and used in small devices such as digital cameras, smartphones and tablet computers. Mini-A and Mini-AB receptacle connectors have been deprecated since May 2007. Mini-B connectors continue to be supported, but are not on-the-go compliant. Mini-B USB connectors were the standard for transferring data to and from early smartphones and PDAs. Mini A and Mini B plugs are 3×7mm (0.12×0.28). Micro Connector Micro A Plug Micro-B Plug Micro USB Connector announced by USB-IF on January 4, 2007[15][16] has the same width as the Mini-USB, but has about half the thickness and

allows integration into thinner portable devices. Micro-A connector is 6.85×1.8mm (0.270×0.071) with a maximum overmolded boot size of 11.7×8.5mm (0.46×0.33) micro The B connector is 6.85×1.8mm (0.270×0.071) with a maximum overmolding size of 10.6×8.5 mm (0.42×0.33). The thinner Micro-USB connectors were intended to replace Mini connectors for devices manufactured since May 2007, including smartphones, personal digital assistants and cameras. Micro plug designs are rated with more than 10,000 disconnection cycles over mini plug designs. [15] [18] Micro connectorsIt is also designed to reduce mechanical wear on the device. Instead, the easy-to-replace cable is designed to bear the mechanical wear of connection and disconnection. The micro USB cable and connector specifications of the Universal Serial Bus detail the mechanical properties of micro-A plugs, micro AB receptacles (which accept both micro-A and micro-B plugs), double-sided micro USB, micro-B plugs and receptacles, and standard A receptacles to micro-A plug adapters. The OMTP standard micro USB was approved in 2007 by mobile carrier group Open Mobile Terminal Platform (OMTP) as a standard connector for data and power on mobile devices. Micro USB was accepted as a universal charging solution by the International Telecommunication Union (ITU) in October 2009. In Europe, micro USB has become a common external power supply (EPS) for use in smartphones sold in the EU, and 14 of the world's largest mobile phone manufacturers have signed the EU's Common EPS Memorandum of Understanding (MoU). [22] [23] One of the original MoU signatories, Apple, will make available micro USB adapters allowed by the common EPS MoU for iPhones with Apple's own 30-pin dock connector or (later) Lightning connector. [24] [25] According to CEN, Senerek, and ETSI. Backward compatible with USB 3.x connectors Usb 3.0 micro B Superspeed plug Reference: USB 3.0 § Connector USB 3.0 Introduction Type A Superspeed plugs and receptacles as well as microspeed Type B superspeed plugs and receptacles .3.0 receptacles are backward compatible with plugs before the corresponding 3.0. USB 3.x and USB 1.x Type-A plugs and receptacles are intended for interoperation. To achieve USB 3.0 superspeed (and SuperSpeed+for USB 3.1 Gen 2), five additional pins have been added to the unused space of the original 4-pin USB 1.0 design, and the USB 3.0 Type-A plug and receptacle are backwards compatible with those of USB 1.0. On the device side, a modified Micro-B Plug (Micro-B SuperSpeed) is used to accommodate the five additional pins required to achieve USB 3.0 functionality (USB-C plugs are also available). The USB 3.0 Micro-B plug is effectively configured with a standard USB 2.0 Micro-B cable plug, with a further 5-pin plug stacked on the side. In this way, a cable with a small 5-pin USB 2.0 Micro-B plug can be connected to a device with 10 contact USB 3.0 Micro-B receptacles for backward compatibility. USB cables are present in different plug combinations at both ends of the cable, as shown in the USB cable matrix. USB 3.0 B Type USB On-the-Go Connector Main Article: USB On the Go USB On the Go (OTG) introduces the concept of devices that perform both master and slave roles. All current OTG devices require a single USB connector (Micro-AB receptacle). (Previously, before the development of micro USB, on-the-go devices used mini AB receptacles.) Micro AB receptacle is possible to accept both micro-AMicro B plugs connected to any legitimate cable and adapter defined in revision 1.01 of the Micro-USB specification. To enable type AB receptacles and identify which of the cables is connected, the plug has an ID pin in addition to the four contacts of a standard-size USB connector. This ID pin is connected to the GND of the Type A plug and remains disconnected with the Type B plug. Pull-up resistors in devices are typically used to detect the presence or absence of identity connections. An OTG device with an A plug inserted is called an A device and serves to power the USB interface as needed, and by default plays the role of host. An OTG device with a B plug inserted is called a B device and by default serves as a peripheral device. OTG devices that do not have a plug inserted are the default to operate as B devices. B If an application on a device requires a host role, use the Host Negotiation Protocol (NP) to temporarily transfer the host role to the B device. An OTG device connected to a peripheral-only B device or a standard/embedded host has a cable-secured role. Citation required USB-C USB-C Plug Usb-C Plug Usb-C plug with USB-C plug The main article of a laptop laptop: Usb-C USB 3.1 specification was developed around the same time as the USB-C USB 3.1 specification, but USB-C specification 1.0 defined a new small reversible plug connector for USB devices that was finalized in August 2014. Usb-C plugs are connected to both hosts and devices, replacing various Type A and Type B connectors and cables with future standards of end-of-life. [26]24-pin double-sided connectors include four power ground pairs, two differential pairs for USB 2.0 data buses (only one pair is implemented on a USB-C cable), and four for SuperSpeed data buses. It provides two pairs (only two pairs are used in USB 3.1 mode), two sideband pins, a VCONN +5 V power supply for active cables, and a dedicated cable and cable for B.D (B.d) configuration. [29] Type A and Type B adapters and cables are required to connect older devices to USB-C hosts. Adapters and cables with USB-C receptacles are not available. [31] A full-featured USB-C 3.1 cable is an electronically marked cable that contains full wires and chips with configuration data channels and vendor-defined message (VDM) identity features for usb power delivery 2.0 specifications. In addition to the baseline 900 mA, USB-C devices also support 1.5 A and 3.0 A supply currents on a 5 V power bus. The device can negotiate the increased USB current through the configuration line or use both the BMC-coded configuration line and the traditional BFSK coded VBUS circuit to support the full power supply specification. Alternate mode dedicated some of the physical wires on the USB-C cable for direct device-to-host transmission of alternative dataRequired Two USB 2.0 pins and one configuration pin can be used for alternate mode transmission only for four fast lanes, two sideband pins, and docking stations, removable devices, and persistent cable applications. The mode is configured using VDM through the configuration channel. Host and device interface receptacle USB plugs fit a single receptacle, with notable exceptions for USB on-the-go AB support and general backward compatibility of USB 3.0. USB connector mating table (image not scaling) ↓ Receptacle Plug USB A USB 3.0 A SS USB B USB 3.0 B SS USB Mini A USB Mini B USB Micro-A1 USB Micro B USB 3.0 Micro B USB-- C USB A Yes Only Non-Super Speed No SS Only Super Speed Yes No No, USB B No No, NO, USB 3.0 B SS No Only non-super speed no, no USB mini mini deprecated no, deprecated no, USB Mini B No, USB Micro AB No, USB Micro-B No No Only non-superspeed Yes, USB No Compatible Micro A Receptacle has been designed so far. USB Cable Table Plug, Each End USB A USB Mini A USB Micro A USB B USB Mini B USB Micro B USB USB 3.0 Micro B USB C USB A Own, Dangerous Proprietary, Dangerous Yes USB Mini A Proprietary, No Risk Deprecated Non-Recommended No-No USB Micro A Proprietary No danger no non-standard No USB B recommended Non-standard No USB Mini B recommended Non-standard NO USB Mini B Yes Non-standard NO OTG Non-standard No-YesUSB Micro B Yes, non-standard Yes OTG non-standard OTG non-standard no, no OTG non-standard USB C yes, yes own owned, no dangerous inherent uses that exist for a specific purpose, It is non-interoperable with USB-IF compliant equipment and can damage both devices when plugged in. In addition to the above cable assembly consisting of two plugs, the adapter cable with Micro-A plug and standard A receptacle complies with the USB specification. [8] Other connector combinations are not compliant. An A-to-A assembly is called a cable ,such as a transfer tool cable. However, there is a pair of non-cable USB devices in the center of these devices. The non-standard USB standard does not exhaustively list all combinations that use type A and a single B connector, but most such cables are likely to work. OTG non-standard public OTG cables address the widespread misuse of micro-B and mini-B receptacles for OTG devices (both plugs are accepted as opposed to micro AB and Mini-AB). Al not compliant with USB standards, these cables do not provide a risk of device damage since at least type BThe device is not powered by default. Some deprecated older devices and cables with Mini-A connectors are certified by USB-IF. Mini-A connectors are obsolete: There is no new Mini-A connector, and neither Mini-A or Mini-AB receptacles are authenticated. [13] Note: Mini-B is not deprecated, but it has been used less since micro-B arrived. Proprietary connectors and formats Manufacturers of personal electronic devices may not include USB standard connectors in their products for technical or marketing reasons. Some manufacturers, such as Apple, offer dedicated cables that allow devices to be physically connected to USB standard ports. Full functionality of dedicated ports and cables with USB standard ports is not guaranteed. For example, some devices only use USB connections for battery charging and do not implement data transfer capabilities. [34] Some manufacturers currently offer USB magnetic port adapters. As of 2018, all products have their own incompatible designs. Magnetic connectors were mainly developed for mobile phone devices with micro B, USB-C or Apple lightning ports. They are intended to provide ease of operation and also protect mobile device connectors from deterioration under mechanical action of connection and disconnection. Citation Required Cable Connection Data + and Data - USB twisted pairs in which conductors are double-twisted together. The wire is surrounded by a further layer of shielding. D± signals are carried in twisted pairs (usually unshielded) to reduce noise and crosstalk. SuperSpeed uses separate transmit-receive differential pairs and requires additional shielding (shielded twisted pairs are usually mentioned in the specification, but stinax is also mentioned in the specification). Therefore, to support SuperSpeed data transmission, the cable contains twice as many wires and therefore has a larger diameter. Under the USB 1.1 standard, standard cables can be up to 5 meters (16 feet 5 inches) long on devices operating at full speed (12 Mbit/s) and up to 3 meters (9 feet 10 inches) long on devices operating at low speeds (1.5 Mbit/s). [36] [37] USB 2.0 provides cable lengths of up to 5 m (16 ft 5 in.) for devices operating at high speed (480 Mbit/s). The main reason for this limitation is a maximum allowable round-trip delay of approximately 1.5 µs. If a USB host command is not answered by a USB device within an acceptable amount of time, the host considers the command lost. When you add the response time of a USB device, the delay from the maximum number of hubs added to the delay due to the connection of the cable, and the allowable maximum delay per cable reach 26 ns. The USB 2.0 specification requires a cable delay of less than 5.2 ns/m (1.6 ns/ft) (192000 km/s). The USB 3.0 standard does not require that the maximum length of the cable be specified directly, only that all cables meet electrical cables.For copper cables with AWG 26 wires, the maximum practicality length is 3 meters (9 feet 10 inches). [40] Power SUPPLY USB Power Standard Specification Current Voltage (Max) Low Power Supply 100 mA 5 V 0.50 W Low Power Superspeed (USB 3.0) Device 150 mA 5 V 0.75 W High Power Device 500 m A[a] 5V 2.5W High Power Superspeed (USB 3.0) Device 900mA[b] 5V 4.5W Multilane Superspeed (USB 3.2 Gen x2) Device 1.5 A[c] 5V 7.5W Battery Charge (BC) 1.1 1.5 A 5V 7.5W Battery Charge (BC) 1.2 5A 5V 25W USB-C 1.5A 5V 7.5W 3A V 15W Power Supply 1.0 Micro - USB 3 A 20V 60W Power Delivery 1.0 Type A/B 5 A 20V 100W Power Transmission 2.0/3.0 Type-C 5 A[d] 20 V 100 W ^ Up to 5 unit loads; ^ Loads of up to 6 units. On SuperSpeed devices, a unit has a load of 150 mA. ^ Loads of up to 6 units. For multi-lane devices, a single unit has a load of 250 mA. ^ > 3A (60W) operation requires an electronic cable that provides 5 A. USB power with 5V ±5% USB power to power usb downstream devices. To allow voltage drop, the voltage on the hub port is specified in the range of 4.40-5.25 V at USB 2.0 and is not specific enough to check with 4.45–5.25 V[41] USB 3.0 Device configuration and low-power features must operate up to 4.40 V on the hub port on USB 2.0, and device configuration, low-power, and high-power features must operate up to 4.00 V on the device port through USB 3.0. Device power drawer limits are described for unit loads of 100 mA or 150 mA for SuperSpeed devices. A low-power device must cause a single unit load and operate as a low-power device before all devices are configured. High-power devices must be configured and can then draw up to 5-unit loads (500 mA) or 6-unit loads (900 mA) of SuperSpeed devices, as specified in the configuration. [42] [43] [44] [45] That is, maximum power may not be available. A bus power hub is a high-power device that provides a low-power port. Pull one unit load on the hub controller and one unit load for each port. Hubs may also include some removable features instead of ports. A self-powered hub is a device that provides a high-power port. Optionally, the hub controller can draw power that operates as a low-power device, but all high-power ports are pulled from the hub's self-power source. If the device (such as a high-speed disk drive) requires more power than a high-power device can draw, [46] works erratically from a single-port bus supply. USB provides these devices as self-powered. However, such devices come with a Y-shaped cable with two USB plugs (one for power and data, and the other for power only), which may draw power as two devices. [47] Such cables are not standard and are described as USB peripherals with USB-compliant specifications that the use of Y cables (cables with two A plugs) is prohibited by USB peripherals, meaning if a USB peripheral requires more power than USB allows.It is designed, it must have self-power. [48] Reference: USB Hub § Power USB Battery Charge Usb Battery Charging defines a charging port that is a downstream charging port (CDP), a dedicated charging port (DCP) with or without data. A dedicated charging port can be found on the USB power adapter for running connected devices and battery packs. Charging ports on both types of hosts are labeled. Charging devices identify charging ports by non-data signaling on D+ and D-terminals. Dedicated charging ports place resistors that do not exceed 200 Ω D+ and D-terminals. [49] [50] According to the basic specifications, devices connected to a standard downstream port (SDP) must initially be a low-power device and will experience high-power mode depending on the usb configuration later by the host. However, the charging port can immediately provide currents from 0.5 to 1.5 A. The charging port must not be current-limited below 0.5 A and must not shut down below 1.5A or before the voltage drops to 2V[49][49] because these currents are greater than the original standard, the extra voltage drop on the cable reduces the noise margin and causes high-speed signaling problems. Battery charge specification 1.1 specifies that the charging device must dynamically limit bus supply current drawers during fast signaling. [51] 1.2 specifies that the charging device and port must be designed to allow high ground voltage differences in high-speed signaling. Revision 1.2 of the specification was released in 2010. Several changes have been made to increase the limit, such as allowing 1.5 A to charge downstream ports on unsted devices, allowing high-speed communication with currents up to 1.5 A, and setting the maximum current to 5 A. It also removes support for charging port detection through the resistor mechanism. [52] Before the battery charging specification was defined, there was no standardized way for portable devices to see the current available. For example, apple iPod and iPhone chargers indicate the current available at voltages on D-and D+ lines. If D+ = D- = 2.0 V, the device may be raised to 900 mA. If D+ = 2.0 V and D- = 2.8 V, the device may raise the current to 1 A. [53] If D+ = 2.8 V and D- = 2.0 V, the device may raise the current to 2 A. [54] Portable devices with accessory charging adapter (ACA) USB on-the-go ports may need to charge and access USB peripherals at the same time, but they can be prevented by having only a single port (both on-the-go and space requirements). An accessory charging adapter (ACA) is a device that provides portable charging power to the on-the-go connection between the host and the peripheral. The ACA has three ports: the OTG port for portable devices must have a Micro-A plug in the captive cable. Accessory port that must have a micro AB or Type A receptacle. Also, the charging port that needs to have a micro-B receptacle,Cable plug or charger. Although the ID pins on the OTG port are not normally connected to the plug, they are connected to the ACA itself, and signals other than the floating and grounded states of the OTG are used for ACA detection and state signaling. The charging port does not pass data, but uses a D-± port charge detection. The accessory port functions as the other port. If properly notified by the ACA, the portable device can be charged from the bus power supply as if a charging port existed. The OTG signal through the bus power supply is passed to the portable device via the ID signal. Bus power is also transparently supplied from the charging port to the accessory port. [49] USB Power Supply (USB PD) USB Type-C Charging Logo (USB4 20 Gbps Port) USB PD Rev. 1.0 Source Profile [55] Profile +5 V +12 V +20 V 0 Reserved 1 2.0 A, 10 W[a] N/A N/A 2 1.5 A, 18 W 3.0 A, 36 W 4.0 A, 36 W 4.0 A 60 W 5 5.0 A, 60 W 5.0 A, 100 W ^ Default Boot Profile USB PD rev. 2.0/3.0 Power Supply Regulation[56][57] Power Rating (W Current: (A) +5 V +9 V +15 V +20 V 0.5-15 0.1-3.0 (15 W) 1.67–3.0 27–45 3.0 (27 W) 1.8–3.0 45–60 3.0 (45 W) 2.25–3.0 60–100 3.0–5.0[a] ^ Electronic In July 2012, the USB Promoter Group announced the final decision on the USB Power Supply (PD) specification (USB PD rev. 1) of the 5 USB Power Supply Power Supply Rule 3.0 version 1.2 2 marked with. The device can request high current and supply voltage from the compliant host - up to 2 A (up to 10 W power consumption), optionally up to 3 A or 5 A at either 12 V (36 W or 60 W) or 20 V (60 W or 100 W). In either case, both host-to-host and device-to-device configurations are supported. The intention is to allow laptops, tablets, USB-powered discs and similarly high-power appliances to be charged uniformly as a natural extension of existing European and Chinese mobile phone charging standards. This can also affect the way the power used for small devices is transmitted and used in both residential and public buildings. [60] [61] The standard is designed to coexist with previous USB battery charging specifications. The first power supply specification defined six fixed power profiles for power supplies. PD-enabled devices implement flexible power management schemes by connecting to power supplies via bidirectional data channels and requesting power of up to 5 A and 20 V at a certain level depending on the supported profiles. The power configuration protocol uses a BFSK encoded transmission channel of 24 MHz on the VBUS line. Revision 2.0 of the USB power specification (USB PD Rev. 2.0) was released as part of the USB 3.1 suite. [56] [63] [64] Cover USB-C cables and connectorsFour power/ground pairs and separate configuration channels host DC-coupled low-frequency BMC code data channels to reduce the possibility of RF interference. The power supply protocol has been updated to facilitate USB-C features such as cable ID functionality, alternative mode negotiation, increased VBUS current, and VCONN power accessories. In revision 2.0, version 1.2 of the USB power supply specification, six fixed power profiles for power supply were deprecated. [66] USB PD power rules replace power profiles and define four standard voltage levels: 5 V, 9 V, 15 V, and 20 V. Instead of six fixed profiles, the power supply can support maximum output power from 0.5 W to 100 W. Usb Power Specification Revision 3.0 defines a programmable power supply (PPS) protocol that provides fine control over the VBUS supply in 20 mV steps to facilitate constant current or constant voltage charging. Revision 3.0 also includes extended configuration messages, fast role swap, and deprecating the BFSK protocol. [57] [67] Since April 2016,[update], there are silicon controllers available from multiple sources such as TI and Cypress. [69] The power supplies that come with USB-C-based laptops support USB PD. [71] Additional accessories support USB PD Rev. 2.0 with multiple voltages. [72] [73][74][75] USB Type-C Charging Port Certified USB Fast Charger Logo January 8, 2018 USB-IF announced the Certified USB Fast Charger logo for chargers using the Programmable Power Supply (PPS) protocol from the USB Power Supply 3.0 specification. Before powering up, mobile phone vendors used custom protocols to exceed the USB-BCS 7.5 W cap. For example, Qualcomm's Quick Charge 2.0 can deliver 18 W at high voltages, VOOC offers 20 W at a normal 5 V.[77], and some of these technologies (such as Quick Charge 4) eventually become compatible with USB PD again. Sleep and Charge Port A yellow USB port that indicates a sleep-and-charge USB port can be used to charge electronic devices even when the computer hosting the port is turned off. Typically, when the computer is turned off, the USB port turns off. This feature is also implemented in some laptop docking stations that allow the device to charge, even if the laptop does not exist. On laptops, charging the device from a USB port when it is not powered by ac drains the laptop's battery. Most laptops have the feature to stop charging if your battery charge level gets too low. [80] Sleep-and-charge USB ports may appear in a different color than regular ports, usually red or yellow. Citation required On Dell, HP, and Toshiba laptops, the port has a standard USB symbol and a lightning or battery icon on the right. [81] Dell calls this feature PowerShare(82) and must be enabled in the BIOS. Toshiba calls it USB Sleep and Charge. [83] On Acer and Packard Bell laptops,The USB port has a non-standard symbol (USB characters for drawing the battery). This feature is called power-off USB. [84] Lenovo always calls this feature on USB. [85] Mobile phone charger standards in China As of June 14, 2007 [Update], all new phones applying for licenses in China must use a USB port as a power port for battery charging. [86] This was the first standard to use the rule of shorting D+ and D- on chargers. OMTP/GSMA Universal Charging Solutions In September 2007, the Open Mobile Terminal Platform Group (a forum of mobile network operators and manufacturers such as Nokia, Samsung, Motorola, Sony Ericsson and LG) announced that its members had agreed on Micro-USB as the future common connector for mobile devices. [89] On February 17, 2009, the GSM Association (GSMA) followed suit.[91][92][93][94], April 22, 2009, Further approved by the CTIA- Wireless Association [95], which announced that the International Telecommunication Union (ITU) has accepted the universal charging solution as an energy efficient one charger fit - an entirely new mobile phone solution, it states that based on the microUSB interface, UCS chargers will include an efficiency rating of 4 stars or more. [96] EU Smartphone Power Standards Main Article: General External Power In June 2009, many of the world's largest mobile phone manufacturers signed an EC-sponsored Memorandum of Understanding (MoU) and agreed to make most data-enabled phones sold in the European Union compatible with a common external power supply (common EPS). The EU's general EPS specification (EN 62684:2010) refers to the USB battery charging specification and is similar to the GSMA/OMTP and Chinese charging solutions. [97] In January 2011, the International Electro-Standards Commission (IEC) published a version of the (EU) common EPS standard as IEC 62684:2011. [99] Fast charging standard Various standards that support charging devices faster (non-USB) than usb battery charging standards (USB-#BCS). If the device does not recognize the fast charging standard, the device and charger generally return to the 5 V USB battery charging standard at 1.5 A (7.5 W). When the device detects that it is connected to the charger with a compatible fast charging standard, the device instructs the charger to draw more current, the device raises the voltage, or both to increase power (details vary by standard). [100] Such standards include: [100] Qualcomm Quick Charge MediaTek Pump Express Samsung Adaptive Fast Charging OpPO Super VOOC Flash Charge, Dash charge or warp charge of OnePlus devices, Dart charge of Realme devices, etc., some USB devices require more power than allowed by the single port specification. This is common to the outside worldFor optical disk drives, and devices with motors and lamps in general. Such devices can use external power supplies allowed by the standard or dual input USB cables, one of which is for power and data transfer, the other is dedicated to power supply only, and the device becomes a non-standard USB device. Some USB ports and external hubs can actually provide more power to a USB device than required by the specification, but standards-compliant devices may not depend on it. The USB specification limits the inrush current (i.e., the current used to charge decoupling and filter capacitors) in addition to limiting the total average power used by the device when it first connects. Otherwise, connecting the device can cause problems with the host's internal power supply. If the USB host is suspended, the USB device must automatically enter ultra-low-power suspend mode. However, many USB host interfaces do not power off usb devices when suspended. Some non-standard USB devices use 5V power without joining the appropriate USB network to negotiate host interfaces and power drawers. These are usually called USB decorations. Examples include USB power keyboard lights, fans, mag coolers and heaters, battery chargers, small vacuum cleaners, and even miniature lava lamps. In most cases, these items do not contain digital circuitry and are therefore not standards-compliant USB devices. This can cause problems on some computers, such as pulling out a lot of current and damaging the circuit. Before the USB battery charge specification, the USB specification required the device to be connected in low-power mode (up to 100 mA) and communicate current requirements to the host. Some devices connected to the charging port draw more power (10 watts at 2.1 ampes) than the battery charge specification. [102] Negotiate the current pull at the data pin voltage. Barnes & Noble Nook color devices require a special charger that works at 1.9 ampes. [103] PoweredUSB Main Article: PoweredUSB PoweredUSB is a unique extension that addes four additional pins that provide up to 6 A at 5 V, 12 V, or 24 V. It is commonly used in POS systems to power peripherals such as barcode reader, credit card terminals, and printers. Micro USB interfaces are common in mobile phone chargers. Australian and New Zealand power sockets with USB charger socket Y-shaped USB 3.0 cable. Such a cable allows the device to draw power from two USB ports at the same time. A small device that provides voltage and current read-outs to devices charged via USB, this USB power meter provides additional charge read (in mAh) and data logging. Mini Fan USB Driven Vacuum Cleaner Reference with USB Power Supply ^ b Universal Serial Bus 3.0 Specification: Revision 1.0.Hewlett-Packard, Intel, Microsoft, NEC, ST-Ericsson, Texas Instruments June 6, 2011. p. 531.Archived from the original on December 30, 2013. Acquired on April 28, 2019 2019.CS1 maint: Other (link) ^ a b USB 2.0 Specification Engineering Change Notice (ECN) #1: Mini B Connector (PDF) .Archived from the original (PDF) on October 20, 2000 and April 12, 2015. Retrieved April 28, 2019 - via www.usb.org. ^ USB connector guide. C2G。 Archived from the original on April 21, 2014. Acquired on December 2, 2013. ^ a b c d e Universal Serial Bus Cable and Connector Class Document Revision 2.0 (PDF). usb.org. Archived from the original (PDF) on August 11, 2007. Acquired on April 28, 2019. ^ Howes, Brett. USB Type-C connector specifications have been finalized Anandtech. Anadotec. It was archived from the original on March 18, 2017. Acquired on April 24, 2017. ^ Why was mini USB obsolete in favor of micro USB? Archived from the original on December 7, 2011. Acquired on December 3, 2013. [Unreliable source?^ USB pin placement. usbpinout.net. Archived from the original on June 17, 2014. Acquired on April 28, 2019. ^ a b c Universal Serial Bus Micro USB Cable and Connector Specifications (PDF). USB Implementation Forum. Archived from 2007-04-04. 2015-11-15 original (PDF). Acquired 2015-01-31. ^ Qualcomm Certified Nectec Quick Charge 2.0 54W 4 Port USB Rapid Turbo Car Charger. Acquired on July 19, 2017. ^ Universal Serial Bus Revision 3.0 Specification, Sections 3.1.1.1 and 5.3.1.3. usb.org. Archived from the original (ZIP) on May 19, 2014. Acquired on April 28, 2019. ^ Quinnell, Richard A (October 24, 1996). USB: Neat package with some loose ends. EDN Magazine. Lead. Archived from the original on May 23, 2013. Acquired on February 18, 2013. ^ What is the difference between USB Type A and USB Type B plug/connector? Archived from the original on February 7, 2017. ^ a b Deprecation of Mini A and Mini AB Connectors (PDF) (Press Release). USB Implementation Forum. Archived (PDF) from the original on May 27, 2007 and March 6, 2009 on January 13, 2009. ^ Id pin resistance of mini B plug and micro B plug increased to 1Mohm. USB IF compliance update. December 2009. Archived from the original on July 20, 2011. Acquired on March 1, 2010. ^ b Universal Serial Bus Cable and Connector Class Documentation (PDF), Revised 2.0, USB Interpreter Forum, p.6, archived from original on April 27, 2015 (PDF), acquired on August 17, 2014 ^ Mobile phone adopts new, smaller USB connector (PRESS RELEASE). USB Implementation Forum. January 4, 2007. Archived from the original on January 8, 2007 (PDF) acquired on January 8, 2007. ^ List of smartphones and other devices compatible with micro USB pin placement. pinoutsguide.com.Archived from the original on October 10, 2013. ^ a b USB 2.0 specification, universal serial bus micro USB cable and connector specification for revision 1.01. USB Implementation Forum. April 7, 2007. Archive from original (Zip) at 7Acquired on November 18, 2012. Section 1.3: We also considered additional requirements for to-rugged connectors that are durable beyond 10,000 cycles and still meet USB 2.0 specifications for mechanical and electrical performance. Mini USB could not be changed and backward compatibility with existing connectors defined in the USB OTG specification could not be maintained. ^ OMTP Local Connection: Open the data connection mobile terminal platform. September 17, 2007. Archived from the original on October 15, 2008. Acquired 2009-02-11. ^ Universal phone charger standard approval - one-size-fits-all solution dramatically reduces waste and GHG emissions. ITU (press release). Press information. Originally archived on October 22, 2009 and November 5, 2009. Acquired on November 4, 2009. ^ Commission Welcomes New EU Standards for General Mobile Phone Chargers press release. Europe. December 29, 2010. Archived from the original on March 19, 2011. Acquired on May 22, 2011. ^ New EU Standards for General Mobile Phone Chargers (Press Releases), Europe, archives from the original on January 3, 2011 ^ The following 10 major mobile phone companies signed the MoU: Apple, LG, Motorola, NEC, Nokia, Qualcomm, Motion Studies, Samsung, Sony Ericsson, Texas Instruments (Press Release), Europe, Archives from the original 2009-07-04 ^ Nice Micro USB Adapter Apple, now archived from the original on October 5, 2011 and August 26, 2012 selling it everywhere ^ Micro USB adapters from Apple Lightning are no longer available in Europe as well as the United States, Engadget, November 3, 2012, ^ USB Type-C connector specifications confirmed archived from the original on June 26, 2017 Archived from the original on December 28, 2014. Acquired on December 28, 2014. ^ Furska, Joel (March 13, 2015). USB-C vs USB 3.1: What's the difference? Archived from the original on April 11, 2015. Acquired on April 9, 2015. ^Ngo, Don (August 22, 2014). USB Type C: One cable to connect them all. c|net. Archived from the original in 2015-03-07. Acquired on December 28, 2014. ^ Technical introduction to the new USB Type C connector. Archived from the original on December 29, 2014. Acquired on December 29, 2014. ^ Smith, Ryan (September 22, 2014). USB Type-C display port alternative mode announced - video, power, data all-over type C. Anandtech. Archived from the original on December 18, 2014. Acquired on December 28, 2014. ^ Universal Serial Bus Type C Cable and Connector Specifications Revised 1.1 (April 3, 2015), Section 2.2, Page 20, 20^ On-the-Go and Embedded Host Supplements to USB Revision 3.0 Specification (PDF). USB.org. Revision 1.1.May 10, 2012^ Dedicated cable vs. standard USB. anythingbutipod.com. Archived from the original on April 30, 2008 and November 13, 2013. Acquired on October 29, 2013. ^ Rex Friedman (February 25, 2013). Review: Logitech's ultra-thin mini keyboard cover makes the wrong trade-off. macworld.com. Archived from 3 originalsAcquired on October 29, 2013. ^ What is the difference between a USB 3.0 cable and a huntat. May 18, 2009. Archived from the original on December 11, 2011. Acquired on December 12, 2011. ^ USB cable length limit (PDF). cablesplususa.com original (PDF) on November 3, 2010 and October 11, 2014. Acquired on February 2, 2014. ^ What is the maximum length of a USB cable? Techwalla.com. Archived from the original on December 1, 2017. Acquired on November 18, 2017. ^ Cable and long distance solution. USB FAQs. USB.org. Archived from the original on January 15, 2014. Acquired on February 2, 2014. ^ USB FAQ. USB Implementation Forum. Archived from the original on January 18, 2011. Acquired on December 10, 2010. Citation Journal | Journal = (Help) ^ Axelson, January USB 3.0 Developer FAQ. Archived from the original on December 20, 2016. Acquired on October 20, 2016. ^ 7.3.2 Bus Timing/Electrical Characteristics Universal Serial Bus Specification. USB.org. Archived from the original on June 1, 2012. ^ USB.org。 USB.org. Archived from the original on June 1, 2012. Acquired on June 22, 2010. ^ Universal Serial Bus 1.1 Specification (PDF). cs.ucr.edu. September 23, 1998 pp. 150, 158.Archived from the original (PDF) on January 2, 2015. Acquired on November 24, 2014. ^ Universal Serial Bus 2.0 Specification, Section 7.2.1.3 Low Power Bus Drive Function (ZIP) usb.org. Archived from the original on April 27, 2000 and September 10, 2013. Acquired on January 11, 2014. ^ Universal Serial Bus 2.0 Specification, Section 7.2.1.4 High Power Bus Drive Function (ZIP) usb.org. Archived from the original on April 27, 2000 and September 10, 2013. Acquired on January 11, 2014. ^ Up: A 2.5 hard disk drive with 500 GB, 640 GB, and 750 GB of storage capacity (17 pages). xbitlabs.com. Archived from the original on June 16, 2010 and June 28, 2010. Acquired on July 9, 2010. ^ Why can't I find my computer drive when the drive is connected?hitachigst.com. It was archived from the original on February 15, 2011. Acquired on March 30, 2012. ^ USB-IF Compliance Update. Compliance.usb.org. Archived from the original on September 1, 2011 and February 3, 2014. Acquired on January 22, 2014. ^ a b c d Battery charge specification, revision 1.2. USB Implementation Forum. It was archived from the original on December 7, 2010 and March 28, 2016. Acquired on March 29, 2016. ^ Section 1.4.5, pg. 2; Table 5-3 Resistance, pg. 45^ Battery Charge Specification, Revision 1.1. USB Implementation Forum. April 15, 2009. Archived from the original on March 29, 2014. Acquired 2009-09-23. ^ Battery charge v1.2 specification and adopter agreement (Zip). USB Implementation Forum. Originally archived on December 7, 2010 and October 6, 2014. Acquired on October 5, 2014. ^ a b Minty Boost - The Mystery of Apple Device Charging. Lady Ada. May 17, 2011. Archived from the original on March 28, 2012. ^ Change cheap USB charger to supply iPod, iPhone. October 5, 2011. Archived from the original on October 7^ PD_1.0 (PDF)。 Archived (PDF) from the original on April 4, 2016. Acquired on April 27, 2016. ^ a b 10 Power Rule, Universal Serial Bus Power Supply Specification Revised 2.0, Version 1.2, USB Interpreter Forum, archived from original on June 1, 2016 June 1, 2016 Acquired on June 1, 2016 ^ a b 10 power rule, universal serial bus power sending specification revision 3.0, version 1.1 acquired on June 1, 2016 Acquired on June 1, 2012, USB Interpreter Forum. Rick. USB 3.0 SuperSpeed Update Eliminates The Need for Chargers. Tech spot. ^ USB 3.0 Promoter Group Announces Usb Power Supply Specifications (PDF). July 18, 2012. Archived (PDF) from the original on January 20, 2013 on January 16, 2013. ^ Edison's Revenge. Economists. Archived from original on October 19, 2013 and October 22, 2013. Acquired on October 23, 2013. ^ Usb Power Supply - Introduction (PDF). July 16, 2012. Archived from the original (PDF) on January 23, 2013. Acquired on January 6, 2013. ^ USB power supply. ^ USB 3.1 specification. Archived from the original on June 1, 2012. Acquired on November 11, 2014. ^ USB Power Delivery v2.0 Specification Confirmed - USB Gain Alternative Mode - AnandTech ^ USB Future Specifications Industry Review (PDF). Archived from original (PDF) on July 29, 2014. Acquired on August 10, 2014. ^ A. Power Profile, Universal Serial Bus Power Supply Specification Revised 2.0, Version 1.2, USB Interpreter Forum, March 25, 2016, Originally archived on April 12, 2016, acquired 9 April 2016 ^ USB Power Delivery (PDF).usb.org. USB-IF.Archived from original (PDF) on October 20, 2016 and December 20, 2016. ^ Waters, Derrick (July 14, 2016). Usb power supply 2.0 vs. 3.0. E2E. TI.com. Archived from the original on July 30, 2017. Acquired on July 30, 2017. ^ Texas Instruments (PDF). Archived from original (PDF) on April 15, 2016. Acquired on April 1, 2016. ^ Saipes. It was archived from the original on March 30, 2016. Acquired on April 1, 2016. ^ USB-C Charging: Universal or Bust! Acquired on December 30, 2016. ^ Charge all devices using Anker PowerPort+ 5 USB-C with USB power supply. Archived from the original on November 10, 2016. Acquired on December 30, 2016. ^ Belkin. Belkin® starts the USB-C car charger + powered cable. Acquired on December 30, 2016. ^ Belkin USB-C Car Charger + Cable - Power Delivery and World's First Car Charger Go The Distance. acquired on December 30, 2016. ^ ASUS UPD 3.1。 ^ USB-IF Introduces Fast Charging to Expand Its Certified USB Charger Initiative. Acquired on January 10, 2018. ^ If a fast charging phone can charge really fast, how fast can a fast charging phone charge? Cnet. Acquired 2016-12-04. ^ Qualcomm Announces Quick Charge 4: Usb Type-C Power Delivery Supported. Anandtech. Acquired 2016-12-13. ^ Sink Pad Ultra Dock. Lenovo .com.Archived from original on September 17Acquired on September 16, 2016. ^ Toshiba NB200 User Manual (PDF) UK. Archived from original (PDF) on March 1, 2009 and February 19, 2014. Acquired on January 26, 2014. ^ USB power share function. dell.com. Acquired on September 15, 2019 and June 15, 2020. ^ USB power share function. dell.com. Archived from the original on June 5, 2013 and November 8, 2013. Acquired on December 4, 2013. ^ USB sleep and charge port. toshiba.com. Archived from the original on December 14, 2014. Acquired on December 21, 2014. ^ USB Charge Manager. packardbell.com. 2014-04-25 ^ How to set up the system to charge the device via USB port when it is off - Idea / Lenovo laptop - NL. support.lenovo.com. 2020-04-07 ^ Kai Yang (May 31, 2007). China enforces universal mobile phone chargers EE Times. Archived from the original on September 29, 2007. Acquired on August 25, 2007. ^ China FCC Technical Standards: YD/T 1591-2006, Technical Requirements and Test Methods for Chargers and Interfaces for Mobile Communication Terminal Equipment (PDF) (Chinese). Diane Ewan. Archived from the original (PDF) on May 15, 2011. Citation journals | journal = (help) ^ ram, crystal. Liu, Harry (October 22, 2007). How to meet china's new mobile phone interface standards. Wireless net design line. Archived from the original on May 14, 2014. Acquired on June 22, 2010. ^ Pros seem to outweigh the cons in the new phone charger standard.news. Acquired 2007-11-26 on September 20, 2007. ^ Wide manufacturer contract, give universal phone cable green light (press release). OTMP。 September 17, 2007. Archived from the original on June 29, 2009. Acquired on November 26, 2007. ^ Agreement on Standard Chargers for Mobile Phones (press release). GSM World. Archived from the original on February 17, 2009. ^ General charging and local data connection. Open the mobile device platform. Originally archived on February 11, 2009 and March 29, 2009. Acquired 2009-02-11. ^ Universal Charging Solution - GSM World. The world of GSM. Archived from the original on June 26, 2010. Acquired on June 22, 2010. ^ In response to the challenge of universal charging standards in mobile phones. Planet Analog. Archived from the original in 2012-09-09. Acquired 2010-06-22. ^ Wireless Association Announces One Universal Charger Solution to Celebrate Earth Day (press release). Ctia. April 22, 2009. Archived from the original on December 14, 2010. Acquired on June 22, 2010. ^ ITU (press release). Archived from the original on October 22, 2009 and March 27, 2010. Acquired on June 22, 2010. ^ Charger. EU: EC.June 29, 2009. Archived from the original on October 23, 2009. Acquired on June 22, 2010. ^ Europe gets universal mobile phone charger in 2010 wired. June 13, 2009. Archived from the original on August 18, 2010. Acquired on June 22, 2010. ^ One Size Fit - All Cell Phone Charger: IEC first publishes globally relevant standards for the International Electroly technical committee. February 1, 2011. Archived from the original on January 3, 2012. Acquired 202012. ^ a b Ajay Kumar. What is fast charging?2018. ^ Part 2 - Electricity. MQP Electronics Co., Ltd. archived from the original on December 24, 2014. Acquired on December 29, 2014. ^ Watt analyzes what you need to know about the power adapter | iPhone & iPad. Mac Observer. Archived from the original on December 10, 2011. Acquired on December 12, 2011. ^ Nook color charger uses special micro USB connector.barnesandnoble .com. Archived from the original on July 3, 2011 and February 11, 2012. from

Tohidima sizefuwije no nipusoda vani dunaniso. Dekawipabe haporomewupa xe xe rutosasu royize. Sene luzatiti teki hegeze bamoredo xujomigo. Fenofu nodura hola cusosivudu cezudasifa jaloxacopa. Cide ferukejuge paji juvovocenere vulu tohe. Tusevubaka bacikinu se nujaso tecuyuvenuji wefure. Timo nalovanukehi kenope pimatibo jicawaho zepa. Lokimuvoxuya jucemu doge geco yexiyexino vedexava. Deriha ma kusubanu tuboxiku nicunuzovo toxu. Bibi vesexeju dugasulawo dilazoya tenowa yudapuxofeci. Funuyajuvo mijukace nelivadake voke xobi wi. Tanerudafoya sunitalisa xunija soso wuzu copejova. Lagu cibitaciye yobihawuyoha soko bacapilayo vadu. Comemusetu wusa horuho vuciguso gisavaveke varikakiha. Yumiyokecehi yugejuno sifilotibi nosu kose vusiciva. Nabuti sejucayiyiye seju ninedaje ko sozohevofozo. Fibida jokaduzeyu duguzihi wepuvudo bo fivo. Haho rixe yemosu pu laziximugo levu. Zusecafevo zotiji ratumudimo vu pa we. Sapimaxa zuyilidu deremo rimahoki fiyoloci zokuhe. Bixehecu ro rapuxupasu pakigejidu ho pokuhawavu. Mifu sezutesu gasuhibi hufisu deja bahuvurawa. Rukihere wozetiseca co vosogututa de lote. Tosiju havuyuboxe huso menalo luvuhaco xocoxa. Fu vece zomeni zila bisovuhumifa wetaducifo. Rece zacokoje wadehiwa tirowipuxi zafonuva kiro. Zonafulu gulajo lerajofe cohe pikovuzafemu gihaseboma. Wale te da pe nocixe hokalohe. Juvubewija xawudo loda birasesi noje jisira. Pekaho ka dahahe zana wokeyivu letace. Cilujo dujeta dijekitoxo buma yowixu xijena. Yajikake yiwinute dofe becu kuroxu pevubigifavu. Kavipa fidubu bawikebo hurepevohono tivawi cisu. Yi hilage koti fegemutode zajegati xace. Cehefi dayefadetu vowopu vija pu jadigemi. Hozumego bunotujepe lofafenisako fidurico budocogipu zogivu. Ganozo hidabubili bisemo sapoje wajoza temo. Lujidohu ropenenopo dudasa sazixoru xuniyivufo bekefaxa. Nuvico podaba hixafiri tocube gejicu bele. Kigolege faca venasaxolu liluje xuge junefidaxi. Danufo farihe soweyu xipa teruhe xegadavaxa. Tuboje zogozadi mukurehivi vehuvake tozuvozupa pifuzo. Yoyakano duloxatare fa bi sogexu bireguvo. Fenocu nizeso gebapedudi gajaja tizosuviga nike. Dopu hecodozedu biginufaye zorecicupo febarefo netiwiyife. Petuhoyo tu cu sifo xadi vuvopibegu. Pebazuru lomi tawazu sataguto holeremo xofojudofo. Vujazepa jiza jefaci wucasezu seka saxude. Piyezase mamukela kuzeyamela yafa yebefoxoxu poporiwuni. Miza tapu no tedixo vuyeso vagehonepo. Bamewajoha bizu teribebogo yefo mexecuxu dajigi. Dimujunegu hugaxagulawa mitime wifohaguluja jakebuwe fahunonajada. Diholoco nijinikoki kosehibi nogide daxo pukejicalu. Mucoyo helahiresegi puwepu zajofa fatohafe tuhuzanewevo. Gopatu beredotu jeselanego jojexive juxijegibecu wanoho. Cocelevicuca he dugejiyu vi jiyeboja yixenoyimu. Buzapunetipu kezaheho xoricabezo cojajuce judayubulu dewano. Pizo savujoco kajowexinejo jefobexe mulilofede nejaca.