2· 項目簡介

Portable devices have become lighter, thinner, and more powerful with each generation. The latest phones, advanced tablets, hybrid laptops and "anybooks" support new consumer requirements for legacy laptop replacement and all-day productivity without charging. Depending on the type of application, several cable endings that deliver different transfer speeds or contents: Power supply, USB, Thunderbolt, DisplayPort, HDMI, VGA and Audio. However, most internal space for these devices is allocated to the battery, leaving little room for the other electronics. Therefore, system-on-chip (SoC) designers must integrate more functionality, reliability, minimize SoC pin counts and trim the number of connectors, optimize cost and PPA (Power/Performance/Area). No only mobility market, the fast-growing Internet of Things (IoT) and Automotive market are also looking for a universal interface that can help with everything from charging to data transfer. Thus, a new Type-C standard was announced, which provided the ever evolving ecosystem of new platforms with existing benefits of USB standard. Type-C is the preferred connector for these thin, powerful mobile devices, supporting data, audio, video, and power through a single connection. For the next wave of small powerful mobile devices and smart machines, manufacturers adopting Type-C port provide a differentiating feature that makes their product more attractive to buyers.

Type-C is the preferred connector to support data, audio, video, and power through a single connection. The connector interface has relatively smaller and thinner plug assembly with 24 pins. There is no host- or device-specific end of the cable and the connector can be flipped in the host or device USB Type-C receptacle. It supports for up to 10 Gbps data rates (USB 3.1) while maintaining backwards compatibility to USB 3.0, 2.0 and 1.1. The alternate mode allows TV sets, displays and docking stations to share or take over the USB cable. It also supports analog audio and can replace a standard headphone connector. The USB Power Delivery can provide up to 100 Watts of power through the USB Power Delivery Standard that allows products like laptops to be powered from a monitor.

From this applied R&D project, there are ~13 key advanced innovations have been developed. The innovations at both architectural and circuit-level perspectives have been well deployed for the Type-C PHY IP Platforms in different process nodes, that also introduced the industry's first USB IP solutions that support the Type-C (USB-C) connectivity specification as well as the USB 3.1, 3.0 and 2.0 specifications. Devices that have at least one Type-C port is forecast to reach nearly five billion devices in 2021, up from 300 million devices in 2016, growing at a five-year compound annual growth rate (CAGR) of more than 70 percent, according to the latest research from IHS Markit.

Being the world No. 1 USB PHY IP provider with about total world market share of 86% USB2.0 and 74% USB3.0 according to IP vendor market share ranking 2016 (IPnest). Such IP platform development enables directly around 201Million USD sales value (1609 Million MOP) for > 67 applying units which are all world leading electronics companies from USA, Europe, Japan, mainland China and Taiwan. Most of their products are in mass production and employed in market well-known consumer electronic devices and other brand-named Tablet, smart phone, computer and so on. The very conservative estimation of mass production chip volume is > 603 Million and the corresponding market value > 3017 Million USD (> 24.1 Billion MOP). The production of the advanced IP technology developed by Macau team by well-known national/international

brand-named customer bases at a cutting-edge semiconductor industry have created highest promotion and elevated world widely Macau high-technology development position.