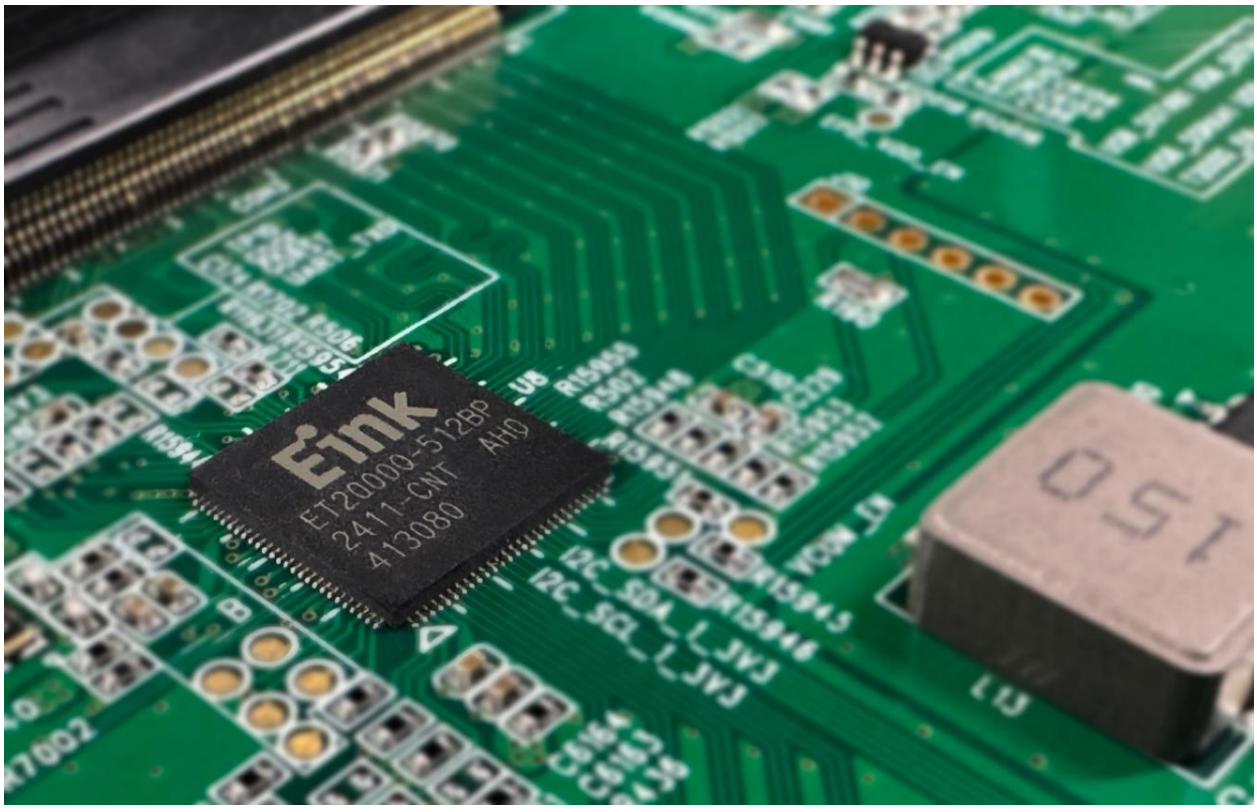
E Ink and Himax Unveil Advanced Color ePaper Timing Controller ASIC T2000

Enhanced Refresh Rate, Lower Power Consumption and Fluid Handwriting Input to Revolutionize Color ePaper Platforms

HSINCHU and TAINAN, Taiwan – July 31, 2024 – E Ink Holdings Inc. (8069.TWO) ("E Ink"), an originator, pioneer and commercial leader in ePaper technology and Himax Technologies, Inc. (Nasdaq: HIMX) ("Himax"), a leading supplier and fabless manufacturer of display drivers and other semiconductor products, today announced the joint debut of next generation color ePaper timing controller ASIC ("TCON"), the T2000. The new TCON design drives screen updates at a faster speed with lower power consumption, supporting a broad spectrum of color ePaper technology platforms aimed at eReaders, digital signages, and other ePaper platforms. The T2000 eNote handwriting function eliminates the need for a system-on-chip ("SoC"), simplifying the development process and significantly enhancing screen refresh speed to provide a smooth writing experience.



“The latest T2000 is optimized for color ePaper, significantly enhancing the display performance to deliver a superb user experience. The advancements enhance screen transitions and optimize system power consumption, while offering a handwriting feature that boosts the operational experience of ePaper products,” said JM Hung, Vice President of Business Center at E Ink. “We are grateful for the unwavering support of our long-term partner, Himax, in supporting E Ink's commitment to advancing color ePaper technology by delivering high-quality ASICs. The synergy created from E Ink’s advanced color ePaper and the T2000 maximizes the potential of color ePaper across diverse applications and significantly enhances user interactions,” concluded JM.

The T2000 represents a significant advancement in TCON technology compared to E Ink's predecessor TCON, the T1000, which was introduced in 2019. The T2000 integrates E Ink’s proprietary color imaging algorithm, which supports E Ink’s latest full color ePaper display technologies, including E Ink Kaleido™ 3, E Ink Gallery™ 3, and E Ink Spectra™ 6. In addition to delivering high-quality image colors, the T2000 processes color rendering more than ten times faster compared to the previous generation.

The jointly-engineered T2000 incorporates E Ink’s exclusive handwriting processing unit, enabling seamless handwriting on eNotes without requiring a SoC. This innovation streamlines system development, boosts prompt display responsiveness by leveraging Himax's distinctive pipeline accelerator technology, and results in a nearly lag-free handwriting experience on ePaper displays.

“We are delighted to engage in yet another collaboration with E Ink drawing on our decades of expertise in image display processing and TCON design to jointly create a new milestone in the color ePaper field,” said Pen Hsin Chen, Vice President of Image Processing SoC Operation Unit at Himax. “The chip architecture of T2000 is meticulously designed and customized specifically for E Ink’s color ePaper technology, delivering unparalleled performance and power efficiency. This opens up new possibilities for applications in eReaders, digital signages, and more, further demonstrating Himax’s commitment to pioneering advancements and offering state-of-the-art display technologies and solutions,” concluded Pen Hsin.

The T2000 TCON is a crucial component for color ePaper displays, responsible for generating and managing timing signals to drive the display and controlling the timing and duration of voltages for optimal display performance. Specifically designed for E Ink’s ePaper technologies, the T2000

features temperature compensation, ensuring precise color and image display under different environmental conditions. T2000's supported interfaces include MIPI-DSI, USB 3.0, and SPI, enabling Color ePaper devices to efficiently handle content data streams. Sequentially, using embedded hardware-accelerated image codec processing unit of T2000, the data streams are converted into mLVDS or TTL signal formats. This capacity allows the T2000 to support ePaper displays with resolutions up to 4K UHD (3840 x 2160) and frame rates up to 150Hz. Additionally, its MIPI interface has been enhanced to achieve a maximum transmission speed of 1Gbps, greatly expanding its application coverage.

ePaper is one of the most energy-efficient display technologies in the industry, consuming power only when updating the display. In devices incorporating ePaper displays, only a small amount of power is consumed from the semiconductor components. The T2000 ASIC deploys Himax's tailed low-power chip design structures and utilizes advanced semiconductor process to create an ultralow energy chip. Additionally, the T2000 integrates a Himax DRAM controller that interfaces with LPDDR (Low Power Double Data Rate) for high-performance and low-power data transmission. These advantages result in system power consumption being less than 300 mW in active mode and less than 2 mW in sleep mode, significantly extending the battery life of ePaper products.

According to E Ink's estimation, in the past five years, approximately 130 million eReader devices have been used worldwide, rapidly shifting consumer behavior from purchasing and reading printed books to digital alternatives. If each eReader downloads an average of ten books per year, using these devices significantly reduces carbon dioxide emissions compared to printed books, by a factor of 100,000, and LCD tablets, by a factor of 50.

About E Ink

E Ink Holdings Inc. (8069.TWO), based on technology from MIT's Media Lab, provides an ideal display medium for applications spanning eReaders and eNotes, retail, home, hospital, transportation, logistics, and more, enabling customers to put displays in locations previously impossible. E Ink's electrophoretic display products make it the worldwide leader for ePaper. Its low power displays enable customers to reach their sustainability goals, and E Ink has pledged using 100% renewable energy in 2030 and reaching net zero carbon emissions by 2040. E Ink has been recognized for their efforts by receiving, validation from Science-Based Targets (SBTi) and is listed in both the DJSI World and DJSI Emerging Indexes. Listed in Taiwan's Taipei Exchange (TPEx) and the Luxembourg market, E Ink Holdings is now the world's largest supplier of ePaper displays. For more information please visit www.eink.com. E Ink. We Make Surfaces Smart and Green.

About Himax Technologies, Inc.

Himax Technologies, Inc. (NASDAQ: HIMX) is a leading global fabless semiconductor solution provider dedicated to display imaging processing technologies. The Company's display driver ICs and timing controllers have been adopted at scale across multiple industries worldwide including TVs, PC monitors, laptops, mobile phones, tablets, automotive, ePaper devices, industrial displays, among others. As the global market share leader in automotive display technology, the Company offers innovative and comprehensive automotive IC solutions, including traditional driver ICs, advanced in-cell Touch and Display Driver Integration (TDDI), local dimming timing controllers (Local Dimming Tcon), Large Touch and Display Driver Integration (LTDI) and OLED display technologies. Himax is also a pioneer in tinyML visual-AI and optical technology related fields. The Company's industry-leading WiseEyeTM Ultralow Power AI Sensing technology which incorporates Himax proprietary ultralow power AI processor, always-on CMOS image sensor, and CNN-based AI algorithm has been widely deployed in consumer electronics and AIoT related applications. While Himax optics technologies, such as diffractive wafer level optics, LCoS microdisplays and 3D sensing solutions, are critical for facilitating emerging AR/VR/metaverse technologies. Additionally, Himax designs and provides touch controllers, OLED ICs, LED ICs, EPD ICs, power management ICs, and CMOS image sensors for diverse display application coverage. Founded in 2001 and headquartered in Tainan, Taiwan, Himax currently employs around 2,200 people from three Taiwan-based offices in Tainan, Hsinchu and Taipei and country offices in China, Korea, Japan, Germany, and the US. Himax has 2,727 patents granted and 399 patents pending approval worldwide as of June 30, 2024.

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