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Holtek eBook

HOLTEK SEMICONDUCTOR INC.



About Holtek

Holtek Semiconductor is a leading professional IC design house in Taiwan having its major business activities focused in the area of microcontroller and peripheral component design and marketing. From its origins in 1998, the company has continuously focused its energies in

the advancement of new product development and skills innovation. The company's ability to keep in line with market trends, has given Holtek the means of releasing a wide range of highly successful and extremely competitive IC devices.

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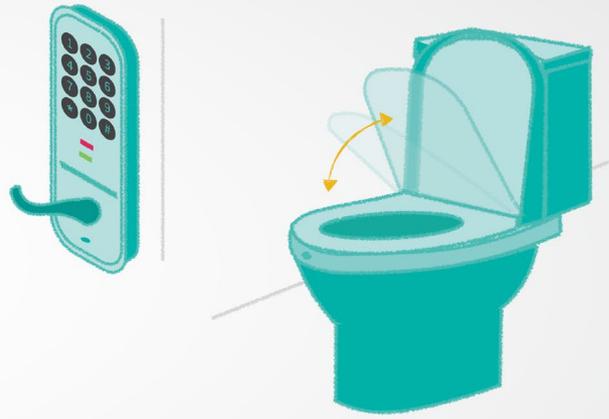
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PRODUCT NEWS

BS45F3340/45/46

Proximity Sensing MCUs



The release of the new BS45F3340/BS45F3345/BS45F3346 devices adds three new additions to Holtek's proximity sensor product series. As the updated products are based on the BS45F3232, the devices also include a fully integrated active IR proximity sensing circuit. In addition to increasing the program memory and data memory capacity, functions including touch keys, a UART communication interface and an internal temperature sensor have also been added. The UART communication interface includes control options for an external smart BLE/WIFI module. This set of powerful functions make the devices suitable for use in most proximity sensing related products, such as sanitary products, bathroom products, home appliances, security products, etc.

The BS45F334x series of devices includes an integrated active IR proximity sensor circuit which greatly reduces the number of usually required external components, such as operational amplifier, D/A converter, transistors, resistors and capacitors, thus reducing production BOM costs and PCB size. The devices' transmitting power and receiving sensitivity can also be controlled using the application program. By using the integrated EEPROM, application options, auto

adjustments and calibration parameter can be easily stored. Regarding the system resources, the devices include 4 touch keys, a Flash Program Memory capacity of 4K×16, a Data Memory capacity of 192×8, an EEPROM Memory capacity of 32×8, a UART communication interface, a 12-bit A/D converter with an internal VREF reference voltage and a temperature sensor, as well as a range of other functions. The BS45F3345/46 devices also provide an internal H-bridge function for driving motors or solenoid valves and other components.

The BS45F3340 is supplied in 16-pin QFN (4×4×0.75mm), 16-pin NSOP and 24-pin SSOP package types. The BS45F3345/46 are supplied in 16-pin NSOP and 24/28-pin SSOP package types.



PRODUCT NEWS

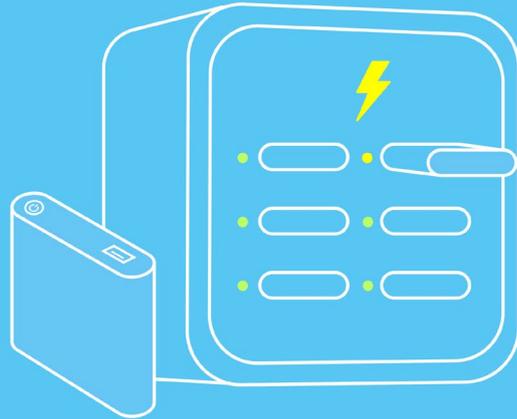
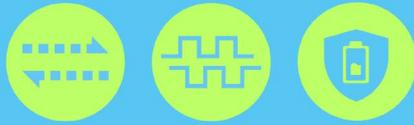
BP45F1430/1632 Two Cell Li-Battery MCUs with 12V Withstand Voltage

Holtek is delighted to announce the release of its new two cell li-battery charging and discharging management Flash MCUs, the BP45F1430/1632. Having a 12V withstand voltage these new devices also include an integrated LDO and four 12V gate drivers. This allows two complementary PWM outputs to implement the constant current and constant voltage charging management requirements for the 5V/3A synchronous boost circuits while the other two independent PWM outputs can be used for motor speed control and constant power control. Combined with voltage detection and OPA current detection, these new devices can meet li-battery product application requirements. Protective features such as over voltage and over current protection ensure safe charge and discharge operations as well as providing for large reductions in external circuitry.

Both devices contain 2K×16 of Flash Program Memory and 128×8 of RAM. An internal 2.4V reference voltage source with a tolerance of $\pm 1\%$ is also provided for the 12-bit A/D converter, over voltage and over current detection. In

addition, the BP45F1632 device includes an integrated H-Bridge, which can directly drive DC brushed motors with a maximum current of 3.0A and can implement current detection using the MCU. It provides a wider range of protective features such as OCP, OSP, OTP, etc.

With regards to packaging, the BP45F1430 device is supplied in 24-pin SSOP/QFN (4mm×4mm) package types and the BP45F1632 device is supplied in a 24-pin SSOP package type, which together with a rich set MCU peripheral resources, makes these new devices extremely suitable for products powered by two cell li-batteries, such as handheld blenders, handheld vacuum cleaners, etc.



PRODUCT NEWS

BP45F4NB/BP45FH4NB Power Bank MCUs

Holtek is pleased to announce the release of its new power bank dedicated Flash MCUs, the BP45F4NB and BP45FH4NB. Using their internal complementary PWM drive function, the devices can implement full charge and discharge battery management operations. By using their fully integrated I²C, SPI and UART interfaces, the residual battery capacity and other parameters can be uploaded to a connected host controller. These features combine to make these new devices extremely suitable to meet the demands of shared power bank applications.

The devices include an integrated 2.4V reference voltage source which has a tolerance of $\pm 1\%$, over/under voltage protection (OUVP) function and over current protection (OCP) function. The A/D Converter works together with an internal voltage divider to read the battery voltage as well as the input/output voltage. There is a four stage programmable I/O output current which can directly drive LEDs, providing savings on external components and reducing

the product PCB area. The BP45FH4NB device also includes an integrated 5V LDO and two 28V Gate Drivers, which makes it suitable for use with two to six serially connected lithium batteries and for quick charging applications.

Both devices contain a flash program memory of 4K \times 16 and a data memory of 256 \times 8. With regards to packaging, the BP45F4NB is supplied in 24-pin SSOP and 28-pin SSOP/QFN(4mm \times 4mm) package types while the BP45FH4NB is supplied in a 28-pin SSOP package type. These devices have abundant MCU peripheral resources and are suitable for products such as shared power banks, quick charging power banks and car emergency jump starters.



PRODUCT NEWS

BP66FW124x series achieve WPC Wireless Charger Receiver Certification

This series of Holtek wireless charger receiver MCUs, the BP66FW124x, include a full range of functions such as an integrated high efficiency full-bridge synchronous rectifier circuit, an AM modulator, an LDO and a lithium battery linear charging management circuit. All of these features combine to provide great reductions in required external circuitry. The abundant MCU resources together with suitable external components ensure that product development can be implemented according to individual product requirements.

The BP66FW124x series of devices have now passed the WPC latest version V1.2.4 certification. This certification includes communication protocol, power error calculation, power receiving calculation, and interoperability testing for Qi-certified transmitter products. In addition, this reference design solution

also provides a development board and a complete set of development data which enables designers to develop their products more rapidly and efficiently.

WPC certification website:

<https://www.wirelesspowerconsortium.com/products/9926>

WPC certification:

<https://www.holtek.com.tw/documents/10179/103944/Qi-certificate-9926.pdf>



HT32F61355 HT32F61356 HT32F61357

PRODUCT NEWS

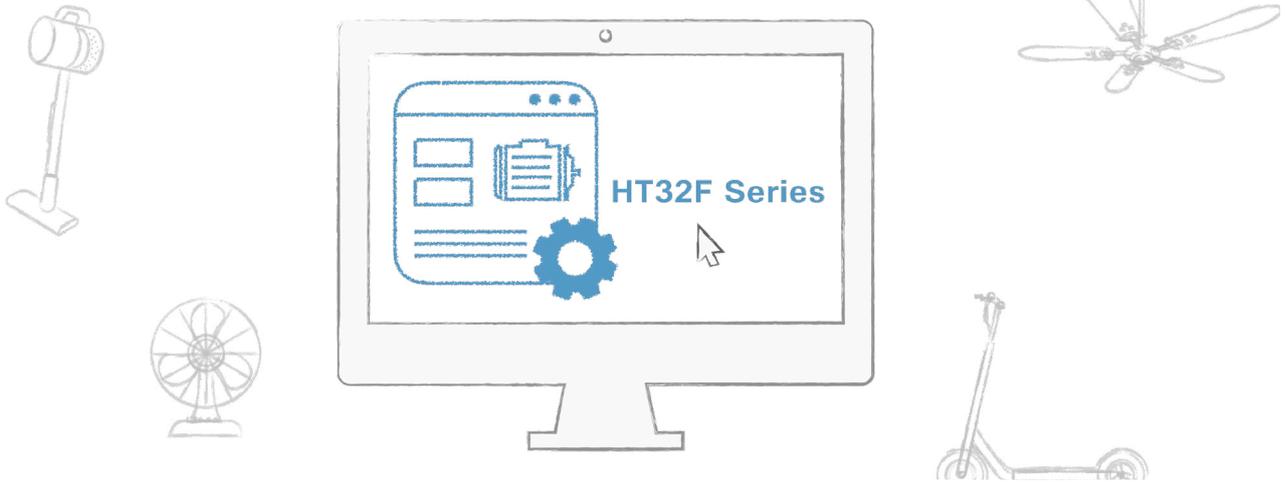
HT32F61355/61356/61357 32-Channel Music M0+ MCUs

Aimed at the music application field and based around an Arm® Cortex®-M0+ processor core, Holtek announces the release of its new 32-bit SoC Flash Music MCUs, the HT32F61355, HT32F61356 and HT32F61357. In having a 32-bit CPU for its music and voice processing, the devices offer both high performance and high quality audio and can be used to implement superior sound effect functions. This makes them suitable for use in products such as higher level voice and musical smart toys, electronic synthetic musical instruments and various smart creative products to name but a few.

The HT32F6135x devices include a 16-bit high performance D/A converter which provides a stereophonic output and an MIDI engine which supports up to 32 channels of music synthesis at one time under a maximum system frequency of 48MHz. Several standard communication interfaces, including USART, UART, SPI and I²C interfaces

are fully integrated providing a means of easy connection to various sensors and wireless modules, etc., thus increasing the application flexibility.

As the HT32F6135x devices contain 32, 64 and 128 Mbits of SPI Flash Data Memory, where the tone, voice and sound effect data are stored, there is no need to purchase separate Data Memory ICs. This provides component savings as well as reduced PCB areas. An Audio Workshop is also provided to assist customers with their product development.



PRODUCT NEWS

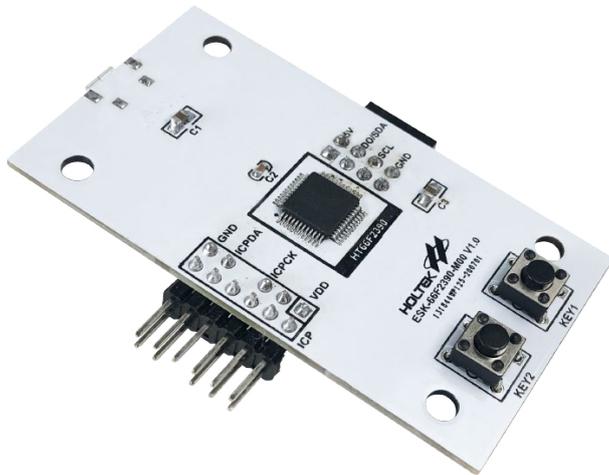
HT32F Series BLDC Motor Workshop Lowers the Technical Development Threshold for BLDC Motor Products

Holtek has released the HT32F Series BLDC Motor Workshop, which can greatly assist users to reduce their BLDC motor development time and lower the technical threshold to enter the BLDC Motor product field. The HT32F Series BLDC Motor Workshop supports both FOC Hall and FOC sensor-less algorithms and provides selectable speed control or torque control. Users can choose an appropriate algorithm and control method according to their different product requirements.

The workshop uses a graphical interface, which includes an integrated motor, driver parameter setting, real-time control parameter adjustment and virtual oscilloscope functions. By means of a real-time control interface and virtual oscilloscope functions, the BLDC motor driver can be adjusted to obtain product optimisation. Additionally, the development of

product peripheral functions can be carried out using the project program generated by the workshop to assist with product commercialisation. The workshop also provides a development board and three types of power boards with different voltages and power specifications, which allows users to easily evaluate products with different motor specifications.

With this suite of Holtek HT32F Series BLDC Motor Workshop software and hardware development tools, users are provided with the tools to speed up the evaluation of their BLDC Motor products.



RGB LED pattern master controller **ESK-66F2390-M00**

The ESK-66F2390-M00 is an RGB LED pattern master controller, which has a built-in Holtek Advanced A/D Flash MCU HT66F2390. When ESK-66F2390-M00 is connected in series with the HT45F0060, HT45F0062 and HT45F0063 development boards, it can control the lighting effects of each board.

As a master controller, ESK-66F2390-M00 can change the sequence and the duration of lighting effects. There is also a lighting effect selection

button on the board, users can switch the lighting effects at any time.

Holtek provides an easy-to-use development platform, the RGB LED Lighting Pattern Workshop. With the Workshop, users only need to set the lighting effects, no need to write the program codes, the Workshop can generate the codes automatically. Users can do further developments with the source codes. It can be used after programming with e-Link.

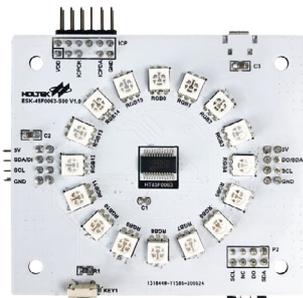


RGB LED pattern development boards

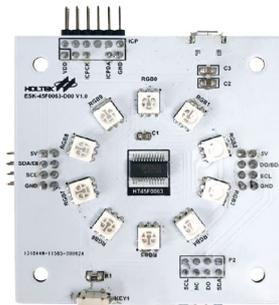
The ESK-45F0063-S00/D00, ESK-45F0062-S00/D00 and ESK-45F0060-D00 are RGB LED lighting pattern development boards, which has a built-in Holtek multi-channel RGB LED flash MCU HT45F0063/62/60. It can be used independently or connected with multiple development boards in series via ESK-66F2390-M00.

These development boards includes 1~24 RGB LEDs. With the Holtek RGB LED Lighting Pattern Workshop,

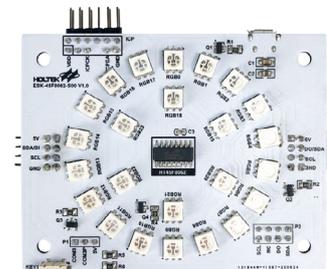
users do not need to write codes. The brightness and colors of LEDs are adjustable. There are five lighting effect modes : Always-on, Blinking, Breathing, Flowing and Colorful streamer modes. The Workshop has a built-in color palette, up to seven colors can be set. It can be used after programing with e-Link, Click the 'read more' button below to get more information.



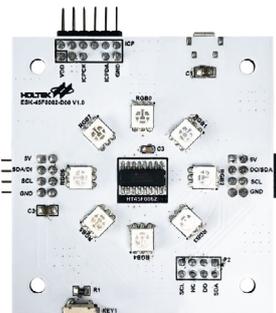
ESK-45F0063-S00



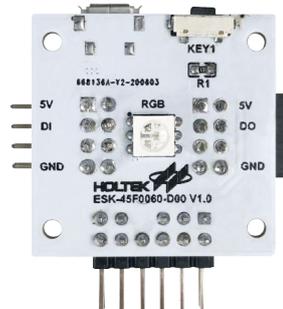
ESK-45F0063-D00



ESK-45F0062-S00



ESK-45F0062-D00



ESK-45F0060-D00

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