

Selection Guide



Introduction

Continual growth and a persistent stream of new product releases onto the global market has been the hallmark of Holtek Semiconductor since the establishment of the company in 1983 to the present date. Although remaining focused in the area of microcontroller devices, Holtek has also made substantial inroads into a wide range of peripheral products. Behind these products developments are the company's highly qualified engineering design teams, which have been extremely successful in providing Holtek customers with a wide range of high quality industrial grade semiconductor devices. This range of mature and high quality semiconductor devices can now be found among many of today's well known consumer appliances and industrial products and stands as a witness to Holtek products being able to offer customers one of today's best choices in the market in terms of both price and performance.

Product Device Range

Holtek continues to retain its product development focus in the area of microcontrollers and their peripheral products. The huge and continually expanding microcontroller range includes an extensive range of fully integrated digital and analog functions such as A/D converters, LCD drivers, PWM generators, high current LED drivers, touch switches, SPI/I²C interfaces, USB drivers, Voice functions, RF functions, Telecom functions etc. Microcontroller devices meet with full industry specifications in having a wide voltage and temperature operating range and are provided in Mask, OTP and increasingly Flash type versions. Complementing its microcontrollers are Holtek many peripheral products such as Touch Switch ICs, LED driver ICs, Power Management ICs, etc. diversifying further the total product range and opening up the application areas into a wider market area.

Product Development Strategy

The commitment of Holtek to new product development and innovation can be seen through its increasing device functionality. With its years of development experience in the microcontroller arena, Holtek has relentlessly striven to include market and customer functional demands in its new device releases. The integration of features such as voice, touch key and power management functions into its microcontroller range show this commitment to an ever increasing functional integration. While being rightly proud of its existing and ever expanding array of industrial quality 8-bit MCU devices, as well as its new range of 32-bit MCU devices, the company also provides a comprehensive range of hardware and software development tools to ease the designer's product development process. In addition to its 8-bit and 32-bit microcontroller device range, Holtek will also continue to develop and release other peripheral devices in the communication, remote control, computer peripheral, memory, touch switch, power management, display driver, video and other product areas. Holtek's obligation to ISO compliance and its string of innovation awards and intellectual properties provide further evidence of the company's commitment to product development excellence.

Marketing Service Network

The sustained commitment to research and development is fully complemented by the company's strong global marketing focus giving the company a presence in most parts of the world. With an established large number of worldwide sales offices and agents, Holtek's global marketing and promotional structure will see the company take an increasingly prominent role and be well placed to take advantage of any new market opportunities which may arise.

Selecting Your Holtek Device

As the range of both 8-bit and 32-bit microcontroller devices covers a vast range of types and functions, Holtek recommends that customers consult its on-line "Product Selector" to assist them in their selection of the best microcontroller for their specific application.

As Holtek is continually releasing new products, it should be noted that the website version, rather than the printed version of the selection guide, will contain the most up to date product information.

To use our MCU Product Selector, please visit : www.holtek.com

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General Purpose MCU

| Enhanced I/O Type MCU | | | | | | | | | | |
|-----------------------|----------------|-----------|--------------|----------------|-------------|-----|-------------|-----|-------|------------|
| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | 8-bit Timer | PFD | Stack | Package |
| HT48R016 | 8MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×14 | 64×8 | 14 | 1 | √ | 2 | 16DIP/NSOP |
| HT48R017 | 8MHz | 2.2V~5.5V | 32kHz~12MHz | 2K×15 | 96×8 | 14 | 1 | √ | 2 | 16DIP/NSOP |

Note: 1. These devices are only available in OTP versions.
 2. All devices include a fully integrated RC system oscillator.

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | Timer | | RTC | D/A | PWM | R-Type LCD | PFD | Inter-face | Stack | Package |
|-----------|-----------------------|-----------|--------------|----------------|-------------|-----|-------|--------|------|----------|---------|------------|-----|------------------------------|-------|---|
| | | | | | | | 8-bit | 16-bit | | | | | | | | |
| HT48R063B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×14 | 64×8 | 14 | 1 | — | √ | — | — | — | √ | — | 2 | 16DIP/NSOP |
| HT48R064B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×14 | 64×8 | 22 | 1 | — | √ | — | — | 4COM | √ | — | 4 | 16DIP/NSOP 20DIP/SOP/SSOP 24/28SKDIP/SOP/SSOP |
| HT48R065B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 2K×15 | 96×8 | 26 | 1 | — | √ | — | — | 4COM | √ | — | 4 | 16DIP/NSOP 20DIP/SOP/SSOP 24/28SKDIP/SOP/SSOP |
| HT48R066B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 4K×15 | 128×8 | 26 | 2 | — | √ | — | — | 4COM | √ | — | 4 | 16DIP/NSOP 20DIP/SOP/SSOP 24/28SKDIP/SOP/SSOP |
| HT48R0662 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 4K×15 | 224×8 | 42 | 2 | — | √(*) | — | 8-bit×2 | 4COM | √ | — | 6 | 24/28SKDIP/SOP/SSOP 44QFP |
| HT48R067 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 8K×16 | 384×8 | 42 | 3 | — | √(*) | — | 8-bit×3 | 4COM | √ | — | 8 | 24/28SKDIP/SOP/SSOP 44QFP |
| HT48R068B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 16K×16 | 512×8 | 50 | 2 | 1 | √(*) | 12-bit×1 | 8-bit×4 | 4COM | √ | SPI/I ² C, SPI | 8 | 28SKDIP/SOP/SSOP 44/52QFP |
| HT48R069B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 32K×16 | 1024×8 | 62 | 2 | 1 | √(*) | 12-bit×1 | 8-bit×4 | 4COM | √ | SPI/I ² C, SPI | 8 | 44/52QFP 64LQFP |

Note: 1. These devices are only available in OTP versions.
 2. All devices include a fully integrated RC system oscillator.
 3. * RTC is implemented by TinyPower structure.

Enhanced I/O Type MCU with OPA

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | 8-bit Timer | RTC | OPA | Comparator | R-Type LCD | PFD | Stack | Package |
|------------|-----------------------|-----------|--------------|----------------|-------------|-----|-------------|-----|-----|------------|------------|-----|-------|--|
| HT48R064G | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×14 | 64×8 | 18 | 1 | √ | 2 | 1 | — | √ | 4 | 16DIP/NSOP 20DIP/SOP/SSOP |
| HT48R065G | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 2K×15 | 96×8 | 22 | 1 | √ | 2 | 1 | 4COM | √ | 4 | 16DIP/NSOP 20DIP/SOP/SSOP 24SKDIP/SOP/SSOP |
| HT48R066G | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 4K×15 | 128×8 | 26 | 2 | √ | 2 | 1 | 4COM | √ | 4 | 20DIP/SOP/SSOP 24/28SKDIP/SOP/SSOP |
| HT48R0662G | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 4K×15 | 224×8 | 42 | 2 | √ | 2 | 1 | 4COM | √ | 6 | 24/28SKDIP/SOP/SSOP 44QFP |

Note: These devices are only available in OTP versions.

Enhanced I/O Type MCU with High Current LED Driver

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | LED Driver Output | LED Share I/O | Timer | | R-Type LCD | PFD | Stack | Package |
|-----------|-----------|--------------|----------------|-------------|-----|-------------------|---------------|-------|-----|------------|-----|-------|--|
| | | | | | | | | 8-bit | RTC | | | | |
| HT48R064D | 2.2V~5.5V | 32kHz~12MHz | 1K×14 | 64×8 | 18 | 8×4 | 12 | 1 | √ | — | √ | 4 | 16DIP/NSOP 20DIP/SOP |
| HT48R065D | 2.2V~5.5V | 32kHz~12MHz | 2K×15 | 96×8 | 22 | 8×8 | 16 | 1 | √ | 4COM | √ | 6 | 16DIP/NSOP 20DIP/SOP 24SKDIP/SOP |
| HT48R066D | 2.2V~5.5V | 32kHz~12MHz | 4K×15 | 128×8 | 26 | 8×8 | 16 | 2 | √ | 4COM | √ | 6 | 20DIP/SOP 24/28SKDIP/SOP |

Note: 1. These devices are only available in OTP versions.
 2. The RTC can be used as the system clock giving a typical operating current of 20µA at 3V.
 3. The standby current is 1µA at 3V with the RTC still running.

General Purpose MCU
A/D Type MCU

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | 8-bit Timer | A/D | PWM | PFD | Stack | Package |
|----------|-----------|--------------|----------------|-------------|-----|-------------|----------|---------|-----|-------|---------------------------|
| HT46R51A | 2.2V~5.5V | 400kHz~8MHz | 1K×15 | 96×8 | 14 | 1 | 12-bit×5 | 8-bit×1 | √ | 6 | 16NSOP, 18DIP, 20SOP/SSOP |
| HT46R52A | 2.2V~5.5V | 400kHz~8MHz | 2K×15 | 128×8 | 14 | 1 | 12-bit×5 | 8-bit×1 | √ | 6 | 16NSOP, 18DIP, 20SOP/SSOP |
| HT46R53A | 2.2V~5.5V | 400kHz~8MHz | 2K×15 | 192×8 | 22 | 1 | 12-bit×8 | 8-bit×1 | √ | 6 | 28SKDIP/SOP |
| HT46R54A | 2.2V~5.5V | 400kHz~8MHz | 4K×15 | 280×8 | 22 | 1 | 12-bit×8 | 8-bit×1 | √ | 6 | 28SKDIP/SOP |

Note: These devices are only available in OTP versions.

Enhanced A/D Type MCU

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | 8-bit Timer | A/D | PWM | PFD | Stack | Package |
|----------|----------------|-----------|--------------|----------------|-------------|-----|-------------|----------|---------|-----|-------|------------|
| HT46R016 | 8MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×14 | 64×8 | 14 | 1 | 12-bit×4 | 8-bit×1 | √ | 2 | 16DIP/NSOP |
| HT46R017 | 8MHz | 2.2V~5.5V | 32kHz~12MHz | 2K×15 | 96×8 | 14 | 2 | 12-bit×4 | 8-bit×1 | √ | 4 | 16DIP/NSOP |

Note: 1. These devices are only available in OTP versions.
2. All devices include a fully integrated RC system oscillator.

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | Timer | | RTC | A/D | D/A | PWM | R-Type LCD | PFD | Interface | Stack | Package |
|-----------|-----------------------|-----------|--------------|----------------|-------------|-----|-------|--------|------|-----------|----------|---------|--------------|-----|------------------------------|-------|---|
| | | | | | | | 8-bit | 16-bit | | | | | | | | | |
| HT46R064B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×14 | 64×8 | 18 | 1 | — | √ | 12-bit×4 | — | 8-bit×1 | — | √ | — | 4 | 16DIP/NSOP 20DIP/SOP/SSOP |
| HT46R065B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 2K×15 | 96×8 | 22 | 2 | — | √ | 12-bit×4 | — | 8-bit×1 | 4COM | √ | — | 6 | 16DIP/NSOP 20DIP/SOP/SSOP 24SKDIP/SOP/SSOP |
| HT46R066B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 4K×15 | 128×8 | 26 | 2 | — | √ | 12-bit×8 | — | 8-bit×2 | 4COM | √ | — | 6 | 16DIP/NSOP 20DIP/SOP/SSOP 24/28SKDIP/SOP/SSOP |
| HT46R0662 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 4K×15 | 224×8 | 42 | 2 | — | √(*) | 12-bit×8 | — | 8-bit×2 | 4COM | √ | — | 6 | 24/28SKDIP/SOP/SSOP 44QFP |
| HT46R0664 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 4K×16 | 224×8 | 42 | 2 | — | √(*) | 12-bit×12 | — | 8-bit×2 | 19×8 23×4 | √ | — | 6 | 44QFP |
| HT46R067 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 8K×16 | 384×8 | 42 | 3 | — | √(*) | 12-bit×8 | — | 8-bit×3 | 4COM | √ | — | 8 | 24/28SKDIP/SOP/SSOP 44QFP |
| HT46R068B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 16K×16 | 512×8 | 50 | 2 | 1 | √(*) | 12-bit×16 | 12-bit×1 | 8-bit×4 | 4COM | √ | SPI/I ² C, SPI | 8 | 28SKDIP/SOP/SSOP 44/52QFP |
| HT46R069B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 32K×16 | 1024×8 | 62 | 2 | 1 | √(*) | 12-bit×16 | 12-bit×1 | 8-bit×4 | 4COM | √ | SPI/I ² C, SPI | 8 | 44/52QFP 64LQFP |

Note: 1. These devices are only available in OTP versions.
2. All devices include a fully integrated RC system oscillator.
3. * RTC is implemented by TinyPower structure.
4. The HT46R0664 includes a complete LCD driver function - pin compatible with Samsung S3F9488.

Enhanced A/D Type MCU with OPA

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | 8-bit Timer | RTC | A/D | PWM | R-Type LCD | OPA | Comp. | PFD | Stack | Package |
|------------|-----------------------|-----------|--------------|----------------|-------------|-----|-------------|-----|----------|---------|------------|-----|-------|-----|-------|--|
| HT46R064G | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×14 | 64×8 | 18 | 1 | √ | 12-bit×2 | 8-bit×1 | — | 2 | 1 | √ | 4 | 16DIP/NSOP 20DIP/SOP/SSOP |
| HT46R065G | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 2K×15 | 96×8 | 22 | 1 | √ | 12-bit×4 | 8-bit×1 | 4COM | 2 | 1 | √ | 4 | 16DIP/NSOP 20DIP/SOP/SSOP 24SKDIP/SOP/SSOP |
| HT46R0662G | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 4K×15 | 224×8 | 42 | 2 | √ | 12-bit×8 | 8-bit×2 | 4COM | 2 | 1 | √ | 6 | 24/28SKDIP/SOP/SSOP 44QFP |

Note: These devices are only available in OTP versions.

General Purpose MCU

Enhanced A/D Type MCU with High Current LED Driver

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | LED Driver Output | LED Share I/O | Timer | | A/D | PWM | R-Type LCD | PFD | Stack | Package |
|-----------|-----------|--------------|----------------|-------------|-----|-------------------|---------------|-------|-----|----------|---------|------------|-----|-------|--|
| | | | | | | | | 8-bit | RTC | | | | | | |
| HT46R064D | 2.2V~5.5V | 32kHz~12MHz | 1K×14 | 64×8 | 18 | 8×4 | 12 | 1 | √ | 12-bit×4 | 8-bit×1 | — | √ | 4 | 16DIP/NSOP 20DIP/SOP |
| HT46R065D | 2.2V~5.5V | 32kHz~12MHz | 2K×15 | 96×8 | 22 | 8×8 | 16 | 2 | √ | 12-bit×4 | 8-bit×1 | 4COM | √ | 6 | 16DIP/NSOP 20DIP/SOP 24SKDIP/SOP |
| HT46R066D | 2.2V~5.5V | 32kHz~12MHz | 4K×15 | 128×8 | 26 | 8×8 | 16 | 2 | √ | 12-bit×8 | 8-bit×2 | 4COM | √ | 6 | 20DIP/SOP 24/28SKDIP/SOP |

Note: 1. These devices are only available in OTP versions.
 2. The RTC can be used as the system clock giving a typical operating current of 20µA at 3V.
 3. The standby current is 1µA at 3V with the RTC still running.

Dual Slope A/D Type MCU with Touch Key

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | LCD | Timer | | | LCD Type | | Dual Slope ADC | Touch Key | Vibration Amplifier | Stack | Package |
|------------|-----------|-------------------------|----------------|-------------|-----|-----------|-------|--------|-----|----------|---|----------------|-----------|---------------------|-------|---------|
| | | | | | | | 8-bit | 16-bit | RTC | R | C | | | | | |
| HT46R73D-3 | 2.2V~5.5V | 400kHz~8MHz | 4K×15 | 128×8 | 16 | 16×4 | 1 | 2 | √ | √ | — | √ | 4 | √ | 4 | 52QFP |
| HT46R75D-3 | 2.2V~5.5V | 400kHz~12MHz or 32768Hz | 8K×16 | 192×8 | 22 | 24×8~28×4 | 1 | 2 | √ | √ | √ | √ | 4 | √ | 8 | 64LQFP |
| HT45R2K-B | 2.2V~5.5V | 400kHz~12MHz or 32768Hz | 8K×16 | 256×8 | 22 | 24×8~28×4 | 1 | 2 | √ | √ | √ | √ | 4 | √ | 8 | 80LQFP |
| HT45R2K-C | | | 16K×16 | | | | | | | | | | | | | |

Note: These devices are only available in OTP versions.

Small Package MCU

Small Package I/O Type MCU

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | 8-bit Timer | RTC | Time Base | PFD | Stack | Package |
|------------|-----------------------|-----------|--------------|----------------|-------------|-----|-------------|-----|-----------|-----|-------|---------|
| HT48R005 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 0.5K×14 | 32×8 | 6 | 1 | — | — | √ | 2 | 10MSOP |
| HT48R006 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×14 | 64×8 | 6 | 1 | — | √ | √ | 2 | 10MSOP |
| HT48R01B-1 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×15 | 96×8 | 8 | 2 | √ | √ | √ | 6 | 10MSOP |
| HT48R01N-1 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×15 | 96×8 | 10 | 2 | √ | √ | √ | 6 | 16NSOP |
| HT48R02B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 2K×15 | 96×8 | 8 | 2 | √ | √ | √ | 6 | 10MSOP |

Note: 1. These devices are only available in OTP versions.
 2. The internal clock in the table is a fully integrated RC oscillator requiring no external components which can be used as the system clock.

Small Package A/D Type MCU

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | 8-bit Timer | RTC | Time Base | A/D | PWM | PFD | Stack | Package |
|------------|-----------------------|-----------|--------------|----------------|-------------|-----|-------------|-----|-----------|----------|---------|-----|-------|---------|
| HT46R005 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 0.5K×14 | 32×8 | 6 | 1 | — | — | 12-bit×3 | — | √ | 2 | 10MSOP |
| HT46R006 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×15 | 96×8 | 6 | 1 | — | √ | 12-bit×3 | 8-bit×1 | √ | 6 | 10MSOP |
| HT46R01B-1 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×15 | 96×8 | 8 | 2 | √ | √ | 12-bit×4 | 8-bit×1 | √ | 6 | 10MSOP |
| HT46R01N-1 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×15 | 96×8 | 10 | 2 | √ | √ | 12-bit×4 | 8-bit×1 | √ | 6 | 16NSOP |
| HT46R02B | 4MHz 8MHz 12MHz | 2.2V~5.5V | 32kHz~12MHz | 2K×15 | 96×8 | 8 | 2 | √ | √ | 12-bit×4 | 8-bit×1 | √ | 6 | 10MSOP |

Note: 1. These devices are only available in OTP versions.
 2. The internal clock in the table is a fully integrated RC oscillator requiring no external components which can be used as the system clock.

Display MCU
I/O Type MCU with 16x16 High Current LED Driver

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | LED Driver Output | LED Share I/O | LED Share Output | Timer | | PFD | Stack | Package |
|----------|-----------|------------------------|----------------|-------------|-----|-------------------|---------------|------------------|-------|-----|-----|-------|--------------------|
| | | | | | | | | | 8-bit | RTC | | | |
| HT48R52A | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 2K×14 | 88×8 | 8 | 16×16 | 8 | 24 | 1 | √ | — | 4 | 44/52QFP 44LQFP |
| HT48R54A | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 4K×15 | 192×8 | 8 | 16×16 | 8 | 24 | 2 | √ | √ | 6 | 44/52QFP 44LQFP |

Note: 1. These devices are only available in OTP versions.
 2. The RTC can be used as the system clock giving a typical operating current of 20µA at 3V.
 3. The standby current is 1µA at 3V with the RTC still running.

A/D Type MCU with 16x16 High Current LED Driver

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | LED Driver Output | LED Share I/O | LED Share Output | Timer | | A/D | PWM | R-Type LCD | PFD | Stack | Package |
|----------|-----------|------------------------|----------------|-------------|-----|-------------------|---------------|------------------|-------|-----|----------|---------|------------|-----|-------|----------|
| | | | | | | | | | 8-bit | RTC | | | | | | |
| HT46R92 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 2K×14 | 88×8 | 8 | 16×16 | 8 | 24 | 1 | √ | 12-bit×6 | 8-bit×2 | 4COM | — | 6 | 44/52QFP |
| HT46R94 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 4K×15 | 192×8 | 8 | 16×16 | 8 | 24 | 2 | √ | 12-bit×8 | 8-bit×3 | 4COM | √ | 8 | 44/52QFP |

Note: 1. These devices are only available in OTP versions.
 2. The RTC can be used as the system clock giving a typical operating current of 20µA at 3V.
 3. The standby current is 1µA at 3V with the RTC still running.
 4. The LED driver output pins can also be used to drive LCDs with a 28×4, 1/2 bias drive type.

I/O Type MCU with LCD

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | Input | LCD | Segment Share Output | Timer | | | PFD | UART | Stack | Package |
|-------------------------|-----------|--------------------------|----------------|-------------|-----|-------|--------------|----------------------|-------|--------|-----|-----|------|-------|-----------------------------|
| | | | | | | | | | 8-bit | 16-bit | RTC | | | | |
| HT49R10A-1 HT49C10-1 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 1K×14 | 64×8 | 8 | 2 | 14×4 or 15×3 | — | 1 | — | √ | √ | — | 2 | 44QFP 44LQFP |
| HT49R30A-1 HT49C30-1 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 2K×14 | 96×8 | 8 | 6 | 18×4 or 19×3 | — | 1 | — | √ | √ | — | 4 | 48SSOP |
| HT49C30L | 1.2V~2.2V | 400kHz~500kHz or 32768Hz | | | | | | | | | | | | | |
| HT49R50A-1 HT49C50-1 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 4K×15 | 160×8 | 12 | 8 | 32×4 or 33×3 | — | 2 | — | √ | √ | — | 6 | 48SSOP 64LQFP 100LQFP |
| HT49C50L | 1.2V~2.2V | 400kHz~500kHz or 32768Hz | | | | | | | | | | | | | |
| HT49R70A-1 HT49C70-1 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 8K×16 | 224×8 | 16 | 8 | 40×4 or 41×3 | — | 1 | 1 | √ | √ | — | 16 | 64LQFP 100LQFP |
| HT49C70L | 1.2V~2.2V | 400kHz~500kHz or 32768Hz | | | | | | | | | | | | | |
| HT49RU80 HT49CU80 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 16K×16 | 576×8 | 16 | 8 | 47×4 or 48×3 | 7 | 1 | 2 | √ | √ | √ | 16 | 64LQFP 100LQFP |

Note: 1. Part numbers including a "C" are mask version devices, "R" are OTP devices, while part numbers suffixed with an "L" are low voltage mask version devices.
 2. For the low voltage mask version devices, note that the HT49R30A-1, HT49R50A-1 and HT49R70A-1 devices can be used as corresponding OTP devices.

A/D Type MCU with LCD

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | LCD | Timer | | | A/D | PWM | PFD | UART | SPI | Stack | Package |
|----------------------|-----------|------------------------|----------------|-------------|-----|--------------|-------|--------|-----|----------|---------|-----|------|-----|-------|----------------------------|
| | | | | | | | 8-bit | 16-bit | RTC | | | | | | | |
| HT46R62 HT46C62 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 2K×14 | 88×8 | 20 | 19×4 or 20×3 | 1 | — | √ | 9-bit×6 | 8-bit×3 | √ | — | — | 6 | 52QFP 56SSOP |
| HT46R64 HT46C64 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 4K×15 | 192×8 | 24 | 32×4 or 33×3 | 1 | 1 | √ | 10-bit×8 | 8-bit×4 | √ | — | — | 8 | 52QFP 56SSOP 100LQFP |
| HT46R65 HT46C65 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 8K×16 | 384×8 | 24 | 40×4 or 41×3 | — | 2 | √ | 10-bit×8 | 8-bit×4 | √ | — | — | 16 | 52QFP 56SSOP 100LQFP |
| HT46RU66 HT46CU66 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 16K×16 | 576×8 | 32 | 46×4 or 47×3 | 1 | 2 | √ | 12-bit×8 | 8-bit×4 | √ | √ | — | 16 | 52QFP 56SSOP 100LQFP |
| HT46RU67 HT46CU67 | 2.2V~5.5V | 400kHz~8MHz or 32768Hz | 32K×16 | 768×8 | 32 | 46×4 or 47×3 | 1 | 2 | √ | 12-bit×8 | 8-bit×4 | √ | √ | √ | 16 | 52QFP 56SSOP 100LQFP |

Note: Part numbers including a "C" are mask version devices while "R" are OTP devices.

24V VFD MCU

| Part No. | VCC | System Clock | Int. OSC | Program Memory | Data Memory | I/O | 8-bit Timer | A/D | PWM | LDO | Segment/ Grid | Filament Driving | Buzzer Driving | Stack | Package |
|-----------|---------|--------------|----------|----------------|-------------|-----|-------------|----------|---------|-----|---------------|------------------|----------------|-------|---------|
| HT48R065V | 12V~24V | 400kHz~12MHz | √ | 2K×15 | 96×8 | 17 | 1 | — | — | √ | 24 | √ | √ | 4 | 52QFP |
| HT46R065V | 12V~24V | 400kHz~12MHz | √ | 2K×15 | 96×8 | 17 | 2 | 12-bit×4 | 8-bit×1 | √ | 24 | √ | √ | 6 | 52QFP |

Note: These devices are only available in OTP versions.

TinyPower™ MCU
TinyPower™ A/D Type MCU with DAC

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | Timer | | | Inter- face | A/D | D/A | PWM | R-Type LCD | PFD | Stack | Package |
|----------|-----------------------|---------------|--------------------------------|----------------|-------------|-----|-------|--------|-----|------------------------------|----------|----------|----------|---------------|-----|-------|---|
| | | | | | | | 8-bit | 16-bit | RTC | | | | | | | | |
| HT56R22 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 2K×14 | 128×8 | 22 | 2 | — | √ | SPI/I ² C, SPI | 12-bit×8 | 12-bit×1 | 12-bit×3 | 4COM | √ | 6 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP 24SKDIP/SOP/SSOP |
| HT56R23 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 4K×15 | 256×8 | 42 | 2 | 1 | √ | SPI/I ² C, SPI | 12-bit×8 | 12-bit×1 | 12-bit×4 | 4COM | √ | 12 | 28SKDIP/SOP/SSOP 44QFP |
| HT56R24 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 8K×16 | 640×8 | 42 | 2 | 1 | √ | SPI/I ² C, SPI | 12-bit×8 | 12-bit×1 | 12-bit×4 | 4COM | √ | 12 | 28SKDIP/SOP/SSOP 44QFP |
| HT56R25 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 16K×16 | 1152×8 | 50 | 3 | 1 | √ | SPI/I ² C, SPI | 12-bit×8 | 12-bit×1 | 12-bit×4 | 4COM | √ | 12 | 28SKDIP/SOP 28SSOP(209mil) 44/52QFP |
| HT56R26 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 32K×16 | 2304×8 | 50 | 3 | 1 | √ | SPI/I ² C, SPI | 12-bit×8 | 12-bit×1 | 12-bit×4 | 4COM | √ | 12 | 28SKDIP/SOP 28SSOP(209mil) 44/52QFP |

Note: These devices are only available in OTP versions.

TinyPower™ A/D Type MCU with LCD

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | LCD | Segment Share Output | Timer | | | A/D | PWM | PFD | Inter- face | Stack | Package |
|----------|---------------|--------------------------------|----------------|-------------|-----|--------------------|----------------------------|-------|--------|-----|----------|----------|-----|----------------------|-------|----------------------------|
| | | | | | | | | 8-bit | 16-bit | RTC | | | | | | |
| HT56R62 | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 2K×14 | 128×8 | 20 | 24×4 or 25×3 | 16 | 2 | — | √ | 12-bit×6 | 12-bit×3 | √ | SPI/I ² C | 6 | 52QFP 64LQFP |
| HT56R64 | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 4K×15 | 192×8 | 24 | 32×4 or 33×3 | 24 | 1 | 1 | √ | 12-bit×8 | 12-bit×4 | √ | SPI/I ² C | 8 | 52QFP 64LQFP 100LQFP |
| HT56R65 | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 8K×16 | 576×8 | 24 | 40×4 or 41×3 | 24 | 2 | 1 | √ | 12-bit×8 | 12-bit×4 | √ | SPI/I ² C | 12 | 52QFP 64LQFP 100LQFP |
| HT56R66 | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 16K×16 | 1152×8 | 32 | 48×4 or 49×3 | 24 | 3 | 1 | √ | 12-bit×8 | 12-bit×4 | √ | SPI/I ² C | 12 | 52QFP 64LQFP 100LQFP |
| HT56R67 | 2.2V~ 5.5V | 400kHz~ 12MHz | 32K×16 | 2304×8 | 32 | 48×4 or 49×3 | 24 | 3 | 1 | √ | 12-bit×8 | 12-bit×4 | √ | SPI/I ² C | 12 | 52QFP 64LQFP 100LQFP |

Note: These devices are only available in OTP versions.

TinyPower™ A/D Type MCU with LCD

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | LCD | Segment Share Output | Timer | | | A/D | PWM | PFD | Interface | Stack | Package |
|----------------------|---------------|--------------------------------|----------------|-------------|-----|---------------------|----------------------------|-------|--------|-----|----------|----------|-----|----------------------|-------|-------------------|
| | | | | | | | | 8-bit | 16-bit | RTC | | | | | | |
| HT56R642 | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 4K×15 | 384×8 | 24 | 16×16 or 24×8 | 16 | 1 | 1 | √ | 12-bit×8 | 12-bit×4 | √ | SPI/I ² C | 8 | 64LQFP |
| HT56R644 | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 4K×15 | 576×8 | 24 | 32×16 or 40×8 | 24 | 1 | 1 | √ | 12-bit×8 | 12-bit×4 | √ | SPI/I ² C | 8 | 100LQFP |
| HT56R654 | | | 8K×16 | 1152×8 | | | | 2 | | | | | | | 12 | |
| HT56R656 | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 8K×16 | 1152×8 | 24 | 48×16 or 56×8 | 24 | 2 | 1 | √ | 12-bit×8 | 12-bit×4 | √ | SPI/I ² C | 12 | 100LQFP |
| HT56R666 | | | 16K×16 | | | | | 3 | | | | | | | | |
| HT56R668 HT56C668 | 2.2V~ 5.5V | 400kHz~ 12MHz | 16K×16 | 2304×8 | 24 | 64×16 or 72×8 | 24 | 3 | 1 | √ | 12-bit×8 | 12-bit×4 | √ | SPI/I ² C | 12 | 100LQFP 128QFP |
| HT56R678 HT56C678 | | | 32K×16 | | | | | | | | | | | | | |
| HT56R688 | | | 48K×16 | | | | | | | | | | | | | |

Note: Part numbers including a "C" are mask version devices while "R" are OTP devices.

TinyPower™ A/D type MCU with USB & ISO7816 Interface

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | LCD | SEG. Shared Output | Timer | | | A/D | PWM | USB | LDO | ISO 7816 | Audio DAC | Inter- face | Stack | Package |
|-----------|-----------------------|---------------|--------------------------------|----------------|-------------|-----|---------------------|--------------------------|-------|--------|-----|----------|----------|-----|----------------------|-------------|--------------|----------------------------|-------|-----------------|
| | | | | | | | | | 8-bit | 16-bit | RTC | | | | | | | | | |
| HT56RB27 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 48K×16 | 3840×8 | 24 | — | — | 3 | 1 | √ | 12-bit×8 | 12-bit×4 | √ | 1.8V 3.0V 5.0V | √ | √ | SPI/I ² C ×2 | 12 | 40QFN 44LQFP |
| HT56RB688 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 400kHz~ 12MHz or 32768Hz | 48K×16 | 3840×8 | 24 | 80×16 or 88×8 | 24 | 3 | 1 | √ | 12-bit×8 | 12-bit×4 | √ | 1.8V 3.0V 5.0V | √ | √ | SPI/I ² C ×2 | 12 | 144LQFP |

Note: These devices are only available in OTP versions.

UART/USB Interface MCU
A/D Type MCU with UART Interface

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | Timer | | I ² C | A/D | PWM | PFD | UART | SPI | Stack | Package |
|----------------------|-----------|--------------|----------------|-------------|-----|-------|--------|------------------|----------|---------|-----|------|-----|-------|--------------------|
| | | | | | | 8-bit | 16-bit | | | | | | | | |
| HT46RU22 | 2.2V~5.5V | 400kHz~8MHz | 2K×14 | 64×8 | 19 | 1 | — | √ | 9-bit×8 | 8-bit×1 | √ | √ | — | 6 | 24SKDIP/SOP 24SSOP |
| HT46RU232 | 2.2V~5.5V | 400kHz~8MHz | 4K×16 | 192×8 | 40 | 1 | 2 | √ | 12-bit×8 | 8-bit×4 | √ | √ | — | 8 | 28SKDIP/SOP 48SSOP |
| HT46RU24 | 2.2V~5.5V | 400kHz~8MHz | 8K×16 | 384×8 | 40 | 1 | 2 | √ | 12-bit×8 | 8-bit×4 | √ | √ | — | 16 | 28SKDIP/SOP 48SSOP |
| HT46RU25 HT46CU25 | 2.2V~5.5V | 400kHz~8MHz | 16K×16 | 576×8 | 48 | 1 | 2 | √ | 12-bit×8 | 8-bit×4 | √ | √ | — | 16 | 48/56SSOP |
| HT46RU26 HT46CU26 | 2.2V~5.5V | 400kHz~8MHz | 32K×16 | 768×8 | 48 | 1 | 2 | √ | 12-bit×8 | 8-bit×4 | √ | √ | √ | 16 | 48/56SSOP |

Note: Part numbers including a "C" are mask version devices while "R" are OTP devices.

I/O Type MCU with USB Interface (USB 2.0 Low Speed)

| Part No. | VDD | System Clock | Program Memory | Data Memory | | I/O | Timer | | End-points | Stack | Package |
|------------------------|-----------|---------------|----------------|-------------|--------|-----|-------|--------|------------|-------|----------------------------------|
| | | | | SRAM | EEPROM | | 8-bit | 16-bit | | | |
| HT82M99E HT82M99A | 3.3V~5.5V | 6MHz or 12MHz | 2K×14 | 96×8 | — | 12 | — | 1 | 2 | 4 | 16NSOP, 18DIP/SOP 20DIP/SOP/SSOP |
| HT82M99EE HT82M99AE | | | | | | | | | | | 20SSOP |
| HT82M9AE HT82M9AA | 3.3V~5.5V | 6MHz or 12MHz | 4K×15 | 224×8 | — | 16 | — | 1 | 3 | 4 | 20SOP/SSOP 24SSOP, 32QFN |
| HT82M9AEE HT82M9AAE | | | | | | | | | | | 20/24SSOP |
| HT82M9BE HT82M9BA | 3.3V~5.5V | 6MHz or 12MHz | 8K×16 | 224×8 | — | 20 | 1 | 1 | 4 | 8 | 24/28SSOP, 32QFN |
| HT82M9BEE HT82M9BAE | | | | | | | | | | | 28SOP |

Note: 1. Part numbers with a single "A" suffix are mask version devices, and with a single "E" suffix are OTP devices.
2. Part numbers with an "AE" suffix are mask version devices with EEPROM, and with an "EE" suffix are OTP devices with EEPROM.

| Part No. | VDD | System Clock | Program Memory | Data Memory | | I/O | Timer | | End-points | Built-in OSC | LDO 70mA | I/O VDD Option | SPI | R-type LCD | Stack | Package |
|------------------------|-----------|---------------|----------------|-------------|--------|-----|-------|--------|------------|--------------|----------|----------------|-----|------------|-------|------------------------------|
| | | | | SRAM | EEPROM | | 8-bit | 16-bit | | | | | | | | |
| HT82K94E HT82K94A | 2.2V~5.5V | 6MHz or 12MHz | 6K×16 | 224×8 | — | 40 | 1 | 1 | 4 | — | — | — | — | — | 8 | 32QFN 48SSOP/LQFP |
| HT82K95E HT82K95A | 3.3V~5.5V | 6MHz or 12MHz | 4K×15 | 160×8 | — | 32 | 1 | 1 | 3 | — | — | — | — | — | 8 | 28SOP, 32QFN 48SSOP/LQFP |
| HT82K95EE HT82K95AE | | | | | | | | | | | | | | | | 20QFN, 28SOP |
| HT82B40R HT82B40A | 3.3V~5.5V | 6MHz or 12MHz | 4K×15 | 160×8 | — | 34 | 1 | 1 | 3 | √ | √ | √ | 1 | — | 8 | 28SSOP, 32QFN 48SSOP/LQFP |
| HT82B42R | | | | | | 15 | | | | | | | | | | 16NSOP, 20SSOP 20QFN |
| HT82B42RE | | | | | | 13 | | | | | | | | | | 20QFN |
| HT82B60R | 3.3V~5.5V | 6MHz or 12MHz | 8K×16 | 216×8 | — | 42 | 1 | 1 | 4 | √ | √ | √ | 1 | 4COM | 8 | 20/28SSOP, 32QFN 48SSOP/LQFP |

Note: 1. Part numbers with a single "A" suffix are mask version devices, and with a single "E" and "R" suffix are OTP devices.
2. Part numbers with an "AE" suffix are mask version devices with EEPROM, and with an "EE" and "RE" suffix are OTP devices with EEPROM.

I/O Type USB MCU with SPI (USB 2.0 Full Speed)

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | Timer | | End-points | Built-in OSC | LVR | PWM | I/O VDD Option | SPI | R-Type LCD | Stack | Package |
|-----------|-----------|---------------|----------------|-------------|-----|-------|--------|------------|--------------|-----|----------|----------------|-----|------------|-------|-------------------------|
| | | | | | | 8-bit | 16-bit | | | | | | | | | |
| HT82A525R | 3.3V~5.5V | 6MHz or 12MHz | 4K×15 | 192×8 | 42 | 1 | 1 | 4 | √ | √ | 12-bit×3 | √ | 2 | 4COM | 6 | 24SSOP, 32QFN 48/64LQFP |

Note: The device is only available in an OTP version.

A/D Type USB MCU with SPI (USB 2.0 Full Speed)

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | Timer | | | End-points | A/D | PWM | I/O VDD Option | SPI | Stack | Package |
|-----------|-----------|---------------|----------------|-------------|-----|-------|--------|-----|------------|-----------|---------|----------------|-----|-------|--------------------|
| | | | | | | 8-bit | 16-bit | RTC | | | | | | | |
| HT46RB50 | 2.2V~5.5V | 6MHz or 12MHz | 4K×15 | 192×8 | 38 | 1 | 1 | — | 4 | 10-bit×8 | 8-bit×2 | — | 1 | 6 | 28SKDIP/SOP 48SSOP |
| HT46RB70 | 2.2V~5.5V | 6MHz or 12MHz | 8K×16 | 384×8 | 38 | — | 2 | — | 6 | 10-bit×8 | 8-bit×4 | — | 1 | 16 | 28SKDIP/SOP 48SSOP |
| HT82A623R | 2.2V~5.5V | 6MHz or 12MHz | 4K×15 | 160×8 | 32 | — | 2 | √ | 4 | 12-bit×16 | 8-bit×2 | √ | 2 | 6 | 28SOP/SSOP 48QFN |

Note: These devices are only available in OTP versions.

| UART/USB Interface MCU | | | | | | | | | | | | | |
|-------------------------------|------------|----------------------|-------------------|-----------------|--------------------|-----------------------|--------------------------|------------|--------------|----------------------|------------------|---|------------------|
| USB Audio MCU | | | | | | | | | | | | | |
| Part No. | VDD | System Clock | End-points | Transfer | FIFO (Byte) | Program Memory | Data Memory | I/O | A/D | D/A | Power AMP | Other | Package |
| HT82A821R | 3.3V~5.5V | 6MHz or 12MHz | EP0 | CTL | 8 | 2K×15 | 192×8 | 8 | — | 48kHz 16-bit ×2 | 4Ω ×2 | — | 24SOP 24SSOP |
| | | | EP1 | INT | 8 | | | | | | | | |
| | | | EP2 | ISO(O) | 384 | | | | | | | | |
| HT82A822R | 3.3V~5.5V | 6MHz or 12MHz | EP0 | CTL | 8 | 4K×15 | 704×8 + 512×8(read only) | 24 | — | 48kHz 16-bit ×2 | 4Ω ×2 | — | 48SSOP |
| | | | EP1 | INT | 8 | | | | | | | | |
| | | | EP2 | ISO(O) | 384 | | | | | | | | |
| HT82A824R | 3.3V~5.5V | 6MHz, 12MHz or 16MHz | EP0 | CTL | 8 | 8K×16 | 864×8 + 512×8(read only) | 21 | — | 44.1/48kHz 16-bit ×2 | 32Ω ×2 | ADC×6, SPI, PFD, UART, Attenuator×2, AUDIO_IN×2 | 48LQFP |
| | | | EP1, EP4 | INT | 8, 32 | | | | | | | | |
| | | | EP2 | ISO(O) | 384 | | | | | | | | |
| | | | EP5, EP6 | BUK | 32, 64 | | | | | | | | |
| HT82A834R | 3.3V~5.5V | 6MHz, 12MHz or 16MHz | EP0 | CTL | 8 | 4K×15 | 192×8 | 24 | 16kHz 16-bit | 48kHz 16-bit ×2 | 4Ω ×2 | SPI, PFD, MUSIC_IN | 48SSOP 48LQFP |
| | | | EP1, EP4 | INT | 8, 32 | | | | | | | | |
| | | | EP2 | ISO(O) | 384 | | | | | | | | |
| | | | EP3 | ISO(I) | 64 | | | | | | | | |
| HT82A836R | 3.3V~5.5V | 6MHz, 12MHz or 16MHz | EP0 | CTL | 8 | 8K×16 | 384×8 | 44 | 16kHz 16-bit | 48kHz 16-bit ×2 | 4Ω ×2 | ADC×6, PWM×2, SPI, PFD, MUSIC_IN | 80LQFP |
| | | | EP1, EP4 | INT | 8, 32 | | | | | | | | |
| | | | EP2 | ISO(O) | 384 | | | | | | | | |
| | | | EP3 | ISO(I) | 64 | | | | | | | | |
| HT82A850R | 3.3V~5.5V | 6MHz, 12MHz or 16MHz | — | — | — | 4K×15 | 384×8 | 24 | 8kHz 16-bit | 8kHz 16-bit ×2 | 4Ω ×2 | SPI, PFD, MUSIC_IN | 48LQFP |
| HT82A851R | 3.3V~5.5V | 6MHz, 12MHz or 16MHz | EP0 | CTL | 8 | 4K×15 | 384×8 | 16 | — | — | — | SPI, PFD | 24SSOP |
| | | | EP1, EP4 | INT | 8, 32 | | | | | | | | |
| | | | EP2 | ISO(O) | 384 | | | | | | | | |
| | | | EP3 | ISO(I) | 32 | | | | | | | | |

Note: These devices are only available in OTP versions.

RF Remote MCU
315MHz/433MHz Remote RF TX MCU

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | 8-bit Timer | A/D | PWM | PFD | Built-in RF Block | | Stack | Package |
|-----------|-----------|--------------|----------------|-------------|-----|-------------|----------|---------|-----|-------------------|--------|-------|---------|
| | | | | | | | | | | Carrier Frequency | Type | | |
| HT48R01T3 | 2.2V~3.6V | 32kHz~8MHz | 1K×15 | 96×8 | 8 | 2 | — | — | √ | 300MHz~450MHz | ASK TX | 6 | 16NSOP |
| HT46R01T3 | 2.2V~3.6V | 32kHz~8MHz | 1K×15 | 96×8 | 8 | 2 | 12-bit×4 | 8-bit×1 | √ | 300MHz~450MHz | ASK TX | 6 | 16NSOP |

Note: These devices are only available in OTP versions.

IR Remote MCU
Remote Type MCU

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | Timer | | IR Carrier | LVR | PFD | Stack | Package |
|--------------------|----------------|-----------|----------------|----------------|-------------|-----|-------|--------|------------|-----|-----|-------|-------------------------|
| | | | | | | | 8-bit | 16-bit | | | | | |
| HT48RA0-6 | 4095kHz | 1.8V~3.6V | 400kHz~4095kHz | 1K×14 | 32×8 | 17 | — | — | √ | √ | — | 1 | 16NSOP, 20SSOP |
| HT48RA1 HT48CA1 | — | 2.0V~5.5V | 400kHz~8MHz | 8K×16 | 224×8 | 23 | 1 | 1 | — | √ | √ | 8 | 28SOP 28SSOP(209mil) |
| HT48RA3 HT48CA3 | — | 2.0V~3.6V | 400kHz~8MHz | 24K×16 | 224×8 | 23 | 1 | 1 | — | √ | √ | 8 | 28SOP 28SSOP(209mil) |
| HT48RA5 HT48CA5 | — | 2.0V~5.5V | 400kHz~4MHz | 40K×16 | 224×8 | 23 | 1 | 1 | — | √ | √ | 8 | 28SOP 28SSOP(209mil) |

Note: Part numbers including a "C" are mask version devices while "R" are OTP devices.

Remote Type MCU with LCD

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | Input | LCD | Segment Share | | Timer | | | IR Carrier | LVR | Stack | Package |
|--------------------|----------------|-----------|----------------|----------------|-------------|-----|-------|----------------------|---------------|--------|-------|--------|-----|------------|-----|-------|-----------------|
| | | | | | | | | | I/O | Output | 8-bit | 16-bit | RTC | | | | |
| HT49RA0-6 | 4095kHz | 2.0V~3.6V | 400kHz~4095kHz | 2K×16 | 96×8 | 16 | — | 21×4 | 8 | — | 1 | — | √ | √ | √ | 4 | 48LQFP |
| HT49RA0 HT49CA0 | — | 2.0V~3.6V | 4MHz | 2K×14 | 96×8 | 8 | 8 | 21×2 21×3 20×4 | 0 | 8 | 1 | — | √ | √ | √ | 4 | 52QFP |
| HT49RA1 HT49CA1 | — | 2.0V~3.6V | 4MHz | 4K×15 | 160×8 | 8 | 8 | 32×4 33×3 33×2 | 4 | 8 | 1 | 1 | √ | √ | √ | 4 | 52QFP 64LQFP |

Note: Part numbers including a "C" are mask version devices while "R" are OTP devices.

Remote Type MCU with EEPROM/OPA

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | 8-bit Timer | RTC | OPA | Comparator | PFD | Stack | Package |
|----------|----------------|-----------|---------------|----------------|-------------|-------------|-----|-------------|-----|-----|------------|-----|-------|----------|
| HT45R22E | 4095kHz | 2.2V~3.6V | 32kHz~4095kHz | 4K×15 | 128×8 | 1K×8 | 22 | 2 | √ | 2 | 1 | √ | 4 | 20/24SOP |

Note: The device is only available in an OTP version.

Phone MCU

| Phone MCU | | | | | | | | |
|-----------|-----------|----------------|-------------|-------------|----------|----------------|-------|---------|
| Part No. | VDD | Program Memory | Data Memory | General I/O | Timer | DTMF Generator | Stack | Package |
| HT95R22 | 2.2V~5.5V | 4K×16 | 576×8 | 20 | 16-bit×2 | √ | 8 | 28SOP |
| HT95R23 | 2.2V~5.5V | 4K×16 | 1152×8 | 36 | 16-bit×2 | √ | 8 | 48SSOP |
| HT95R24 | 2.2V~5.5V | 8K×16 | 2112×8 | 36 | 16-bit×2 | √ | 8 | 48SSOP |
| HT95R25 | 2.2V~5.5V | 16K×16 | 2112×8 | 52 | 16-bit×2 | √ | 8 | 64LQFP |

Note: These devices are only available in OTP versions.

| Part No. | VDD | Program Memory | Data Memory | General I/O | Timer | D/A | I ² C/SPI | DTMF Generator | DTMF Receiver | Stack | Package |
|----------|-----------|----------------|-------------|-------------|----------|----------|----------------------|----------------|---------------|-------|---------|
| HT95R33 | 2.2V~5.5V | 4K×16 | 1152×8 | 28 | 16-bit×2 | — | — | √ | √ | 8 | 48SSOP |
| HT95R34 | 2.2V~5.5V | 8K×16 | 2112×8 | 28 | 16-bit×2 | — | — | √ | √ | 8 | 48SSOP |
| HT95R35 | 2.2V~5.5V | 16K×16 | 2112×8 | 44 | 16-bit×3 | 12-bit×1 | √ | √ | √ | 8 | 64LQFP |

Note: These devices are only available in OTP versions.

Phone MCU with CPT

| Part No. | VDD | Program Memory | Data Memory | General I/O | Timer | D/A | I ² C/SPI | DTMF Generator | DTMF Receiver | CPT | Stack | Package |
|----------|-----------|----------------|-------------|-------------|----------|----------|----------------------|----------------|---------------|-----|-------|-----------|
| HT95R43 | 2.2V~5.5V | 4K×16 | 1152×8 | 28 | 16-bit×2 | — | — | √ | √ | √ | 8 | 64LQFP |
| HT95R44 | 2.2V~5.5V | 8K×16 | 2112×8 | 28 | 16-bit×2 | — | — | √ | √ | √ | 8 | 64LQFP |
| HT95R45 | 2.2V~5.5V | 16K×16 | 2112×8 | 44 | 16-bit×3 | 12-bit×1 | √ | √ | √ | √ | 8 | 64/80LQFP |

Note: These devices are only available in OTP versions.

Phone MCU with CID

| Part No. | VDD | Program Memory | Data Memory | General I/O | Timer | R-Type LCD | I ² C/SPI | D/A | DTMF Generator | DTMF Receiver | FSK Receiver | Stack | Package |
|----------|-----------|----------------|-------------|-------------|----------|------------|----------------------|----------|----------------|---------------|--------------|-------|---------|
| HT95R54 | 2.2V~5.5V | 8K×16 | 2112×8 | 40 | 16-bit×3 | 4SCOM | √ | 12-bit×1 | √ | √ | √ | 8 | 64LQFP |
| HT95R55 | 2.2V~5.5V | 16K×16 | 2112×8 | 40 | 16-bit×3 | 4SCOM | √ | 12-bit×1 | √ | √ | √ | 8 | 64LQFP |

Note: These devices are only available in OTP versions.

Phone MCU with CPT & CID

| Part No. | VDD | Program Memory | Data Memory | General I/O | Timer | R-Type LCD | I ² C/SPI | D/A | DTMF Generator | DTMF Receiver | FSK Receiver | CPT | Stack | Package |
|----------|-----------|----------------|-------------|-------------|----------|------------|----------------------|----------|----------------|---------------|--------------|-----|-------|-----------|
| HT95R64 | 2.2V~5.5V | 8K×16 | 2112×8 | 40 | 16-bit×3 | 4SCOM | √ | 12-bit×1 | √ | √ | √ | √ | 8 | 64/80LQFP |
| HT95R65 | 2.2V~5.5V | 16K×16 | 2112×8 | 40 | 16-bit×3 | 4SCOM | √ | 12-bit×1 | √ | √ | √ | √ | 8 | 64/80LQFP |

Note: These devices are only available in OTP versions.

Two Way Radio MCU

| Two Way Radio MCU | | | | | | | | | | | | | | | | |
|-------------------|-----------|--------------|----------------|-------------|-----|-------|--------|-----|----------|---------|-----------|--------------------------|-----------|----------|-------|-----------|
| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | Timer | | RTC | A/D | D/A | CTCSS/DCS | Pre-emphasis/De-emphasis | Compander | Scramble | Stack | Package |
| | | | | | | 8-bit | 16-bit | | | | | | | | | |
| HT98R068-1 | 3.0V~5.5V | 32kHz~12MHz | 16K×16 | 1K×8 | 34 | 2 | 1 | √ | 12-bit×8 | 8-bit×4 | √ | √ | √ | √ | 10 | 48/64LQFP |

Voice & Music MCU
Enhanced Voice MCU

| Part No. | VDD | Program Memory | Data Memory | Voice ROM | Voice Capacity | I/O | Timer | | Audio Output | | Stack | Package |
|----------|-----------|----------------|-------------|-----------|----------------|-----|-------|--------|--------------|-----|-------|------------------------------------|
| | | | | | | | 8-bit | 16-bit | DAC | PWM | | |
| HT86B03 | 2.2V~5.5V | 4K×16 | 192×8 | 96K×8 | 36sec | 12 | 3 | — | 12-bit×1 | — | 8 | 16NSOP 24SSOP(150/209mil) |
| HT86BR10 | 2.2V~5.5V | 8K×16 | 192×8 | 192K×8 | 72sec | 16 | 3 | — | 12-bit×1 | √ | 8 | 24SSOP(209mil) 28SOP, 44QFP |
| HT86B10 | | | | | | | | | | | | 24SSOP(150/209mil) 28SOP, 44QFP |
| HT86B20 | 2.2V~5.5V | 8K×16 | 192×8 | 256K×8 | 96sec | 16 | 3 | — | 12-bit×1 | √ | 8 | 28SOP, 44QFP |
| HT86BR30 | 2.2V~5.5V | 8K×16 | 192×8 | 384K×8 | 144sec | 16 | 3 | — | 12-bit×1 | √ | 8 | 28SOP, 44QFP |
| HT86B30 | | | | | | | | | | | | 28SOP, 44QFP |
| HT86B40 | 2.2V~5.5V | 8K×16 | 384×8 | 512K×8 | 192sec | 20 | 3 | 1 | 12-bit×1 | √ | 8 | 28SOP, 44QFP |
| HT86B50 | 2.2V~5.5V | 8K×16 | 384×8 | 768K×8 | 288sec | 20 | 3 | 1 | 12-bit×1 | √ | 8 | 28SOP, 44QFP |
| HT86BR60 | 2.2V~5.5V | 8K×16 | 384×8 | 1024K×8 | 384sec | 20 | 3 | 1 | 12-bit×1 | √ | 8 | 28SOP |
| HT86B60 | | | | | | | | | | | | 28SOP, 44QFP |
| HT86B70 | 2.2V~5.5V | 8K×16 | 384×8 | 1536K×8 | 576sec | 24 | 3 | 1 | 12-bit×1 | √ | 8 | 44QFP |
| HT86B80 | 2.2V~5.5V | 8K×16 | 384×8 | 2048K×8 | 768sec | 24 | 3 | 1 | 12-bit×1 | √ | 8 | 44QFP |
| HT86B90 | 2.2V~5.5V | 8K×16 | 384×8 | 3072K×8 | 1152sec | 24 | 3 | 1 | 12-bit×1 | √ | 8 | 100LQFP |

Note: 1. Part numbers including an "R" are OTP devices, all others are mask version devices.
 2. Evaluation kits are available for product development and verification purposes, please contact Holtek for further information.
 3. For the HT86B90, the operating voltage is 2.2V~5.5V at f_{sys}=4MHz and 3.3V~5.5V at f_{sys}=8MHz.
 4. The quoted Voice Capacity is based on a 21Kbps data rate.

Voice MCU with SPI

| Part No. | Internal Clock | VDD | Program Memory | Data Memory | Voice ROM | I/O | Timer Module | I ² C/SPI | Audio Output | | Stack | Package |
|----------|-----------------------|---------------|----------------|-------------|-----------|-----|--------------|----------------------|--------------|-----|-------|---------|
| | | | | | | | | | DAC | PWM | | |
| HT83B60 | 4MHz 8MHz 12MHz | 2.4V~ 5.5V | 2K×16 | 208×8 | 1024×8 | 19 | 8-bit×2 | √ | 12-bit×1 | √ | 8 | 28SOP |

Note: Mask version type of the HT83F02 - includes an 8M bits Voice ROM.

A/D Type Voice MCU

| Part No. | VDD | Program Memory | Data Memory | Voice ROM | Voice Capacity | I/O | Timer | | D/A | A/D | Power AMP | Stack | Package |
|----------|-----------|----------------|-------------|-----------|----------------|-----|-------|-----|----------|----------|-----------|-------|--------------------------|
| | | | | | | | 8-bit | RTC | | | | | |
| HT86A36 | 2.0V~5.5V | 8K×16 | 384×8 | 96K×8 | 36sec | 40 | 4 | √ | 12-bit×1 | 12-bit×4 | √ | 8 | 44QFP 64LQFP(10x10mm) |
| HT86AR72 | 2.2V~5.5V | 8K×16 | 384×8 | 192K×8 | 72sec | 40 | 4 | √ | 12-bit×1 | 12-bit×4 | √ | 8 | 44QFP 64LQFP(10x10mm) |
| HT86A72 | 2.0V~5.5V | | | | | | | | | | | | |

Note: 1. Part numbers including an "R" are OTP devices, all others are mask version devices.
 2. Evaluation kits are available for product development and verification purposes, please contact Holtek for further information.
 3. Built-in 1W power amplifier for 8Ω speaker.
 4. The quoted Voice Capacity is based on a 21Kbps data rate.

Q-Voice™ MCU

| Part No. | VDD | Program Memory | Data Memory | Voice ROM | Voice Capacity | I/O | D/A | Package |
|----------|-----------|----------------|-------------|-----------|----------------|-----|-----|------------------------------|
| HT83004 | 2.4V~5.0V | 2K×15 | 80×8 | 8K×8 | 3sec | 12 | PWM | 28SOP, 20SSOP(150mil/209mil) |
| HT83007 | 2.4V~5.0V | 2K×15 | 80×8 | 16K×8 | 6sec | 12 | PWM | 28SOP, 20SSOP(150mil/209mil) |
| HT83010 | 2.4V~5.0V | 2K×15 | 80×8 | 24K×8 | 9sec | 12 | PWM | 28SOP, 20SSOP(150mil/209mil) |
| HT83020 | 2.4V~5.0V | 2K×15 | 80×8 | 48K×8 | 18sec | 12 | PWM | 28SOP, 20SSOP(150mil/209mil) |
| HT83038 | 2.4V~5.0V | 2K×15 | 80×8 | 96K×8 | 36sec | 12 | PWM | 28SOP, 20SSOP(150mil/209mil) |
| HT83050 | 2.4V~5.0V | 2K×15 | 80×8 | 128K×8 | 48sec | 12 | PWM | 28SOP, 20SSOP(150mil/209mil) |
| HT83R074 | 2.4V~5.0V | 2K×15 | 80×8 | 192K×8 | 72sec | 12 | PWM | 28SOP, 20SSOP(209mil) |
| HT83074 | | | | | | | | 28SOP, 20SSOP(150mil/209mil) |

Note: 1. Part numbers including an "R" are OTP devices, all others are mask version devices.
 2. Evaluation kits are available for product development and verification purposes, please contact Holtek for further information.
 3. The PWM output is capable of directly driving an 8Ω speaker.
 4. Q-Voice™ is a trademark of Holtek Semiconductor Inc.
 5. The quoted Voice Capacity is based on a 21Kbps data rate.

Voice & Music MCU

Enhanced Music MCU (4 Polyphony)

| Part No. | VDD | Program Memory | Data Memory | I/O | Timer | | D/A | A/D | Speech | Power AMP | Package |
|----------|-----------|----------------|-------------|-----|-------|--------|----------|-----|-----------|-----------|----------------------|
| | | | | | 8-bit | 16-bit | | | | | |
| HT37Q20 | 2.4V~5.5V | 32K×16 | 320×8 | 16 | 2 | 1 | 16-bit×1 | — | PCM/ADPCM | — | 20/28SOP |
| HT37Q30 | 2.4V~5.5V | 64K×16 | 320×8 | 20 | 2 | 1 | 16-bit×1 | — | PCM/ADPCM | √ | 28SOP, 48SSOP |
| HT37Q40 | 3.3V~5.5V | 96K×16 | 320×8 | 28 | 2 | 1 | 16-bit×1 | — | PCM/ADPCM | √ | 28SOP, 64QFP, 80LQFP |
| HT37Q50 | 3.3V~5.5V | 128K×16 | 320×8 | 28 | 2 | 1 | 16-bit×1 | — | PCM/ADPCM | √ | 28SOP, 64QFP, 80LQFP |
| HT37Q60 | 3.6V~5.5V | 192K×16 | 320×8 | 28 | 2 | 1 | 16-bit×1 | — | PCM/ADPCM | √ | 28SOP, 64QFP, 80LQFP |
| HT37Q70 | 3.6V~5.5V | 256K×16 | 320×8 | 28 | 2 | 1 | 16-bit×1 | — | PCM/ADPCM | √ | 28SOP, 64QFP, 80LQFP |

Note: The waveform data and program code share the same memory space.

Enhanced Music MCU (8 Polyphony)

| Part No. | VDD | Program Memory | Data Memory | I/O | Timer | | D/A | A/D | Speech | Power AMP | Package |
|----------|-----------|----------------|-------------|-----|-------|--------|----------|----------|-----------|-----------|----------------------|
| | | | | | 8-bit | 16-bit | | | | | |
| HT37A20 | 2.4V~5.5V | 32K×16 | 320×8 | 16 | 2 | 1 | 16-bit×1 | — | PCM/ADPCM | — | 20/28SOP |
| HT37A30 | 2.4V~5.5V | 64K×16 | 320×8 | 20 | 2 | 1 | 16-bit×2 | — | PCM/ADPCM | √ | 28SOP, 48SSOP |
| HT37A40 | 3.3V~5.5V | 96K×16 | 320×8 | 28 | 2 | 1 | 16-bit×2 | 12-bit×8 | PCM/ADPCM | √ | 28SOP, 64QFP, 80LQFP |
| HT37A50 | 3.3V~5.5V | 128K×16 | 320×8 | 28 | 2 | 1 | 16-bit×2 | 12-bit×8 | PCM/ADPCM | √ | 28SOP, 64QFP, 80LQFP |
| HT37A60 | 3.6V~5.5V | 192K×16 | 320×8 | 28 | 2 | 1 | 16-bit×2 | 12-bit×8 | PCM/ADPCM | √ | 28SOP, 64QFP, 80LQFP |
| HT37A70 | 3.6V~5.5V | 256K×16 | 320×8 | 28 | 2 | 1 | 16-bit×2 | 12-bit×8 | PCM/ADPCM | √ | 28SOP, 64QFP, 80LQFP |

Note: The waveform data and program code share the same memory space.

Enhanced Music MCU (16 Polyphony)

| Part No. | VDD | Program Memory | Data Memory | I/O | Timer | | D/A | A/D | Speech | Power AMP | Package |
|----------|-----------|----------------|-------------|-----|-------|--------|----------|----------|-----------|-----------|---------------|
| | | | | | 8-bit | 16-bit | | | | | |
| HT37B30 | 2.4V~5.5V | 64K×16 | 640×8 | 32 | 2 | 1 | 16-bit×2 | 12-bit×8 | PCM/ADPCM | √ | 28SOP, 80LQFP |
| HT37B50 | 2.4V~5.5V | 128K×16 | 640×8 | 32 | 2 | 1 | 16-bit×2 | 12-bit×8 | PCM/ADPCM | √ | 28SOP, 80LQFP |
| HT37B70 | 3.0V~5.5V | 256K×16 | 640×8 | 40 | 2 | 1 | 16-bit×2 | 12-bit×8 | PCM/ADPCM | √ | 80LQFP |
| HT37B90 | 3.0V~5.5V | 512K×16 | 1280×8 | 40 | 2 | 1 | 16-bit×2 | 12-bit×8 | PCM/ADPCM | √ | 100LQFP |

Note: The waveform data and program code share the same memory space.

Enhanced ROMless Music MCU (16 Polyphony)

| Part No. | VDD | Program Memory | Data Memory | I/O | Timer | | D/A | A/D | Speech | Power AMP | Package |
|----------|-----------|----------------|-------------|-----|-------|--------|----------|-----------|-----------|-----------|---------|
| | | | | | 8-bit | 16-bit | | | | | |
| HT37P00 | 2.4V~5.5V | — | 4096×8 | 56 | 3 | 1 | 16-bit×2 | 12-bit×16 | PCM/ADPCM | √ | 128QFP |

Note: The waveform data and program code share the same memory space.

Mouse & Keyboard MCU

I/O Type MCU

| Part No. | VDD | System Clock | Program Memory | Data Memory | Interface | I/O | Timer | | LVD for Battery-in | SPI | Stack | Package |
|--|-----------|--------------|----------------|-------------|-----------|-----|-------|--------|--------------------|-----|-------|--------------------------------|
| | | | | | | | 8-bit | 16-bit | | | | |
| HT82K68E-L HT82K68A-L | 1.8V~5.5V | RC/Crystal | 3K×16 | 160×8 | PS/2 | 37 | 1 | — | — | — | 6 | 20/28SOP, 32QFN 48SSOP/LQFP |
| HT82K70E-L HT82K70A-L HT82K76E-L | 1.8V~5.5V | RC/Crystal | 4K×16 8K×16 | 216×8 | PS/2 | 43 | — | 2 | √ | √ | 8 | 28SSOP, 32QFN 48SSOP/LQFP |

Note: 1. Part numbers including an "A" are mask version devices, and including an "E" are OTP devices.
2. Part numbers including an "L" are low voltage devices.

| Part No. | VDD | System Clock | Program Memory | Data Memory | | I/O | 16-bit Timer | Built-in DC/DC | SPI | Built-in OSC | Stack | Package |
|-----------|-----------|--------------|----------------|-------------|--------|-----|--------------|----------------|-----|--------------|-------|--------------------|
| | | | | SRAM | EEPROM | | | | | | | |
| HT82M75R | 2.0V~3.6V | 6MHz | 4K×15 | 128×8 | — | 24 | 1 | √ | 1 | √ | 6 | 20/28SSOP 32QFN |
| HT82K75R | 2.0V~3.6V | 6MHz | 4K×15 | 160×8 | — | 40 | 1 | √ | 1 | √ | 6 | 48SSOP |
| HT82M75RE | 2.0V~3.6V | 6MHz | 4K×15 | 128×8 | 128×8 | 22 | 1 | √ | 1 | √ | 6 | 32QFN |
| HT82K75RE | 2.0V~3.6V | 6MHz | 4K×15 | 160×8 | 128×8 | 36 | 1 | √ | 1 | √ | 6 | 48SSOP |

Note: 1. These devices are only available in OTP versions.
2. Part numbers with an "E" suffix are devices with an EEPROM.

General Purpose MCU
I/O Flash Type MCU with EEPROM

| Part No. | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | Timer | | PFD | Stack | Package |
|----------|-----------|--------------|----------------|-------------|-------------|-----|-------|--------|-----|-------|-----------------------------------|
| | | | | | | | 8-bit | 16-bit | | | |
| HT48F06E | 2.2V~5.5V | 400kHz~12MHz | 1K×14 | 64×8 | 128×8 | 13 | 1 | — | √ | 2 | 16NSOP, 18DIP/SOP 20SSOP |
| HT48F10E | 2.2V~5.5V | 400kHz~12MHz | 1K×14 | 64×8 | 128×8 | 19 | 1 | — | √ | 4 | 24SKDIP/SOP/SSOP |
| HT48F30E | 2.2V~5.5V | 400kHz~12MHz | 2K×14 | 96×8 | 128×8 | 23 | 1 | — | √ | 4 | 24SKDIP/SOP/SSOP 28SKDIP/SOP/SSOP |
| HT48F50E | 2.2V~5.5V | 400kHz~12MHz | 4K×15 | 160×8 | 256×8 | 33 | 1 | 1 | √ | 6 | 28SKDIP/SOP/SSOP 48SSOP |
| HT48F70E | 2.2V~5.5V | 400kHz~12MHz | 8K×16 | 224×8 | 256×8 | 56 | — | 2 | √ | 16 | 48SSOP, 64LQFP |

Enhanced I/O Flash Type MCU

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | Timer Module | Comp. | PFD | Stack | Package |
|----------|----------------|-----------|-----------------------|----------------|-------------|-------------|-----|--------------|-------|-----|-------|-----------------|
| HT68F016 | 8MHz | 2.2V~5.5V | 400kHz~20MHz or 32kHz | 1K×16 | 64×8 | 64×8 | 14 | 16-bit STM×1 | 1 | √ | 4 | 16DIP/NSOP/SSOP |
| HT68F017 | 8MHz | 2.2V~5.5V | 400kHz~20MHz or 32kHz | 2K×16 | 96×8 | 64×8 | 14 | 16-bit STM×1 | 1 | √ | 6 | 16DIP/NSOP/SSOP |

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | Timer Module | PFD | Stack | Package |
|----------|-----------------------|-----------|-----------------------|----------------|-------------|-----|------------------------------|-----|-------|--|
| HT68F13 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32kHz | 1K×14 | 64×8 | 18 | 10-bit STM x 1 | √ | 4 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP |
| HT68F14 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32kHz | 2K×15 | 96×8 | 22 | 10-bit CTM×1 10-bit STM×1 | √ | 4 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP 24SKDIP/SOP/SSOP |
| HT68F15 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32kHz | 4K×15 | 192×8 | 26 | 10-bit CTM×1 10-bit ETM×1 | √ | 8 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP 24/28SKDIP/SOP/SSOP |

Enhanced I/O Flash Type MCU with EEPROM

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | RTC | Timer Module | PFD | Comp. | Interface | Stack | Package * |
|----------|-----------------------|-----------|-------------------------|----------------|-------------|-------------|-----|-----|--|-----|-------|----------------------|-------|---|
| HT68F20 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 1K×14 | 64×8 | 32×8 | 18 | √ | 10-bit CTM×1 10-bit STM×1 | √ | 2 | SPI/I ² C | 4 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP |
| HT68F30A | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 2K×14 | 96×8 | 64×8 | 22 | √ | 10-bit CTM×1 10-bit ETM×1 | √ | 2 | SPI/I ² C | 4 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP 24SKDIP/SOP/SSOP |
| UART | | | | | | | | | | | | | | |
| USB | | | | | | | | | | | | | | |
| HT68F40 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 4K×15 | 192×8 | 128×8 | 42 | √ | 10-bit CTM×1 10-bit ETM×1 16-bit STM×1 | √ | 2 | SPI/I ² C | 8 | 24SKDIP/SOP/SSOP 28SKDIP/SOP/SSOP 32/40QFN, 44LQFP 48QFN/SSOP |
| UART | | | | | | | | | | | | | | |
| USB | | | | | | | | | | | | | | |
| HT68F50 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 8K×16 | 384×8 | 256×8 | 42 | √ | 10-bit CTM×2 10-bit ETM×1 16-bit STM×1 | √ | 2 | SPI/I ² C | 8 | 28SKDIP/SOP/SSOP 40QFN, 44LQFP 48QFN/SSOP |
| UART | | | | | | | | | | | | | | |
| USB | | | | | | | | | | | | | | |
| HT68F60 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 12K×16 | 576×8 | 256×8 | 50 | √ | 10-bit CTM×2 10-bit ETM×1 16-bit STM×1 | √ | 2 | SPI/I ² C | 12 | 40QFN, 44LQFP 48SSOP/LQFP/QFN 52QFP |
| UART | | | | | | | | | | | | | | |
| USB | | | | | | | | | | | | | | |

Note: 1. Part numbers which include a "U" have an internal UART function; part numbers which include a "B" have a USB interface.
 2. All devices include a fully integrated RC system oscillator.
 3. Four I/O lines on each device can be configured as software LCD COM driver pins.
 4. "*" As not all package types are available for the HT68FUx0 and HT68FBx0 devices, consult the datasheet for exact package details.

A/D Flash Type MCU with EEPROM

| Part No. | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | 8-bit Timer | A/D | PWM | PFD | Stack | Package |
|----------|-----------|--------------|----------------|-------------|-------------|-----|-------------|---------|---------|-----|-------|-----------------------------------|
| HT46F46E | 2.2V~5.5V | 400kHz~12MHz | 1K×14 | 64×8 | 128×8 | 13 | 1 | 8-bit×4 | 8-bit×1 | √ | 4 | 16NSOP 18DIP/SOP |
| HT46F47E | 2.2V~5.5V | 400kHz~12MHz | 2K×14 | 64×8 | 128×8 | 13 | 1 | 9-bit×4 | 8-bit×1 | √ | 6 | 16NSOP, 18DIP/SOP 20SSOP |
| HT46F48E | 2.2V~5.5V | 400kHz~12MHz | 2K×14 | 88×8 | 128×8 | 19 | 1 | 9-bit×4 | 8-bit×1 | √ | 6 | 24SKDIP/SOP/SSOP |
| HT46F49E | 2.2V~5.5V | 400kHz~12MHz | 4K×15 | 128×8 | 256×8 | 23 | 1 | 9-bit×4 | 8-bit×2 | √ | 6 | 24SKDIP/SOP/SSOP 28SKDIP/SOP/SSOP |

General Purpose MCU
Enhanced A/D Flash Type MCU

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | A/D | Timer Module | Comp. | PFD | Stack | Package |
|----------|-----------------------|-----------|-----------------------|----------------|-------------|-------------|----------|------------------------------|------------------------------|-------|--|-------|-----------------|
| HT66F016 | 8MHz | 2.2V~5.5V | 400kHz~20MHz or 32kHz | 1K×16 | 64×8 | 64×8 | 14 | 12-bit×4 | 16-bit STM x 1 | 1 | √ | 4 | 16DIP/NSOP/SSOP |
| HT66F017 | 8MHz | 2.2V~5.5V | 400kHz~20MHz or 32kHz | 2K×16 | 128×8 | 64×8 | 14 | 12-bit×4 | 16-bit CTM×1 16-bit STM×1 | 1 | √ | 8 | 16DIP/NSOP/SSOP |
| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | A/D | Timer Module | PFD | Stack | Package | | |
| HT66F13 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32kHz | 1K×14 | 64×8 | 18 | 12-bit×4 | 10-bit STM x 1 | √ | 4 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP | | |
| HT66F14 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32kHz | 2K×15 | 96×8 | 22 | 12-bit×4 | 10-bit CTM×1 10-bit STM×1 | √ | 4 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP 24SKDIP/SOP/SSOP | | |
| HT66F15 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32kHz | 4K×15 | 192×8 | 26 | 12-bit×4 | 10-bit CTM×1 10-bit ETM×1 | √ | 8 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP 24/28SKDIP/SOP/SSOP | | |

Enhanced A/D Flash Type MCU with High Current LED Driver

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | LED Driver Output | LED Share I/O | A/D | Timer Module | Stack | Package |
|----------|-----------------------|-----------|-------------------------|----------------|-------------|-------------|-----|-------------------|---------------|----------|------------------------------|-------|---|
| HT66F24D | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 2K×16 | 96×8 | 64×8 | 22 | 8×6 | 14 | 12-bit×8 | 10-bit CTM×1 10-bit STM×1 | 8 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP 24SKDIP/SOP/SSOP |
| HT66F25D | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 4K×16 | 192×8 | 64×8 | 26 | 8×8 | 16 | 12-bit×8 | 10-bit CTM×1 10-bit ETM×1 | 8 | 20DIP/SOP/SSOP 24/28SKDIP/SOP/SSOP |

Enhanced A/D Flash Type MCU with EEPROM

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | RTC | A/D | Timer Module | PFD | Comp. | Interface | Stack | Package * |
|-----------|-----------------------|-----------|-------------------------|----------------|-------------|-------------|-----|-----|-----------|--|-----|-------|----------------------|-------|--|
| HT66F20 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 1K×14 | 64×8 | 32×8 | 18 | √ | 12-bit×8 | 10-bit CTM×1 10-bit STM×1 | √ | 2 | SPI/I ² C | 4 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP |
| HT66F30A | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 2K×14 | 96×8 | 64×8 | 22 | √ | 12-bit×8 | 10-bit CTM×1 10-bit ETM×1 | √ | 2 | SPI/I ² C | 4 | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP 24SKDIP/SOP/SSOP |
| HT66FU30A | | | | | | | | | | | | | UART | | |
| HT66FB30A | | | | | | | | | | | | | USB | | |
| HT66F40 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 4K×15 | 192×8 | 128×8 | 42 | √ | 12-bit×8 | 10-bit CTM×1 10-bit ETM×1 16-bit STM×1 | √ | 2 | SPI/I ² C | 8 | 24SKDIP/SOP/SSOP 28SKDIP/SOP/SSOP 32/40QFN, 44LQFP 48QFN/SSOP |
| HT66FU40 | | | | | | | | | | | | | UART | | |
| HT66FB40 | | | | | | | | | | | | | USB | | |
| HT66F50 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 8K×16 | 384×8 | 256×8 | 42 | √ | 12-bit×8 | 10-bit CTM×2 10-bit ETM×1 16-bit STM×1 | √ | 2 | SPI/I ² C | 8 | 28SKDIP/SOP/SSOP 40QFN, 44LQFP 48QFN/SSOP |
| HT66FU50 | | | | | | | | | | | | | UART | | |
| HT66FB50 | | | | | | | | | | | | | USB | | |
| HT66F60 | 4MHz 8MHz 12MHz | 2.2V~5.5V | 400kHz~20MHz or 32768Hz | 12K×16 | 576×8 | 256×8 | 50 | √ | 12-bit×12 | 10-bit CTM×2 10-bit ETM×1 16-bit STM×1 | √ | 2 | SPI/I ² C | 12 | 40QFN, 44LQFP 48SSOP/LQFP/QFN 52QFP |
| HT66FU60 | | | | | | | | | | | | | UART | | |
| HT66FB60 | | | | | | | | | | | | | USB | | |

Note: 1. Part numbers which include a "U" have an internal UART function; part numbers which include a "B" have a USB interface.
 2. All devices include a fully integrated RC system oscillator.
 3. Four I/O lines on each device can be configured as software LCD COM driver pins.
 4. "*" As not all package types are available for the HT66FUx0 and HT66FBx0 devices, consult the datasheet for exact package details.

TinyPower™ Flash Type MCU with OPA

| Part No. | Internal Clock | Input Voltage | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | Timer | | RTC | A/D | PWM | PFD | OPA | Comp. | Interface | Stack | Package |
|---------------------|--------------------------------|---------------|-------------------------|----------------|-------------|-------------|-----|-------|--------|-----|----------|---------|-----|-----|-------|----------------------|-------|---------------------|
| | | | | | | | | 8-bit | 16-bit | | | | | | | | | |
| HT45F12 | 910kHz 2MHz 4MHz 8MHz | 2.2V~5.5V | 32kHz~12MHz | 1K×15 | 96×8 | 32×8 | 18 | 1 | — | — | — | — | √ | 2 | 2 | — | 4 | 16NSOP 18/20SOP |
| HT45F23A HT45F43 | 910kHz 2MHz 4MHz 8MHz | 2.2V~5.5V | 400kHz~12MHz or 32768Hz | 2K×15 | 128×8 | 64×8 | 22 | 1 | 1 | √ | 12-bit×6 | 8-bit×2 | √ | 2 | 2 | SPI/I ² C | 6 | 16NSOP 20/24SSOP |

Note: 1. The internal clock in the table is a fully integrated RC oscillator requiring no external components which can be used as the system clock.
 2. The HT45F43 is functionally similar to the HT45F23, however its internal operational amplifiers and comparators are low power types.

Small Package MCU
Small Package I/O Flash Type MCU

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | RTC | Timer Module | PFD | Comp. | Stack | Package |
|----------|-----------------------|---------------|-----------------|----------------|-------------|-------------|-----|-----|------------------------------|-----|-------|-------|------------------|
| HT68F03 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 32kHz~ 20MHz | 1K×14 | 64×8 | 64×8 | 8 | √ | CTM 10-bit×1 STM 10-bit×1 | √ | 1 | 4 | 10MSOP 16NSOP |
| HT68F04 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 32kHz~ 20MHz | 2K×15 | 96×8 | 64×8 | 8 | √ | CTM 10-bit×1 STM 10-bit×1 | √ | 1 | 8 | 10MSOP 16NSOP |

Note: The internal clock in the table is a fully integrated RC oscillator requiring no external components which can be used as the system clock.

Small Package A/D Flash Type MCU

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | RTC | A/D | Timer Module | PFD | Comp. | Stack | Package |
|----------|-----------------------|---------------|-----------------|----------------|-------------|-------------|-----|-----|----------|--|-----|-------|-------|------------------|
| HT66F03 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 32kHz~ 20MHz | 1K×14 | 64×8 | 64×8 | 8 | √ | 12-bit×4 | CTM 10-bit×1 STM 10-bit×1 | √ | 1 | 4 | 10MSOP 16NSOP |
| HT66F04 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 32kHz~ 20MHz | 2K×15 | 96×8 | 64×8 | 8 | √ | 12-bit×4 | CTM 10-bit×1 STM 10-bit×1 ETM 10-bit×1 | √ | 1 | 8 | 10MSOP 16NSOP |

Note: The internal clock in the table is a fully integrated RC oscillator requiring no external components which can be used as the system clock.

Display MCU
TinyPower™ A/D Flash Type MCU with LCD & EEPROM

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | LCD | Segment Shared I/O | Timer Module | RTC | A/D | PFD | Comp. | Interface | Stack | Package |
|----------|-----------------------|---------------|--------------------------------|----------------|-------------|-------------|-----|--------------|--------------------|--|-----|-----------|-----|-------|------------------------------|-------|---------------------|
| HT67F30 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 400kHz~ 20MHz or 32768Hz | 2K×15 | 128×8 | 64×8 | 28 | 24×4 25×3 | 16 | CTM 10-bit×1 ETM 10-bit×1 | √ | 12-bit×8 | √ | 2 | SPI/I ² C, SPI | 4 | 48LQFP |
| HT67F40 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 400kHz~ 20MHz or 32768Hz | 4K×15 | 256×8 | 128×8 | 44 | 32×4 33×3 | 24 | CTM 10-bit×1 ETM 10-bit×1 STM 16-bit×1 | √ | 12-bit×8 | √ | 2 | SPI/I ² C, SPI | 8 | 48/64LQFP |
| HT67F50 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 400kHz~ 20MHz or 32768Hz | 8K×16 | 384×8 | 256×8 | 50 | 40×4 41×3 | 24 | CTM 10-bit×2 ETM 10-bit×1 STM 16-bit×1 | √ | 12-bit×8 | √ | 2 | SPI/I ² C, SPI | 8 | 48/64/80 LQFP |
| HT67F60 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 400kHz~ 20MHz or 32768Hz | 12K×16 | 640×8 | 256×8 | 64 | 56×4 57×3 | 32 | CTM 10-bit×2 ETM 10-bit×1 STM 16-bit×1 | √ | 12-bit×12 | √ | 2 | SPI/I ² C, SPI | 12 | 48/64/80 100LQFP |

1.5V Battery MCU
1.5V Battery Flash Type MCU

| Part No. | Internal Clock | Input Voltage | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | A/D | Timer Module | PFD | Comp. | Stack | Package |
|-----------|----------------|---------------|-----------------|----------------|-------------|-------------|-----|----------|------------------------------|-----|-------|-------|---------------------------|
| HT68F016L | 8MHz | 0.9V~ 1.8V | 32kHz~ 12MHz | 1K×16 | 64×8 | 64×8 | 13 | — | CTM 16-bit×1 STM 16-bit×1 | √ | 1 | 8 | 10MSOP 16DIP/NSOP/SSOP |
| HT68F017L | 8MHz | 0.9V~ 1.8V | 32kHz~ 12MHz | 2K×16 | 96×8 | 64×8 | 13 | — | CTM 16-bit×1 STM 16-bit×1 | √ | 1 | 8 | 10MSOP 16DIP/NSOP/SSOP |
| HT66F016L | 8MHz | 0.9V~ 1.8V | 32kHz~ 12MHz | 1K×16 | 64×8 | 64×8 | 13 | 12-bit×4 | CTM 16-bit×1 STM 16-bit×1 | √ | 1 | 8 | 10MSOP 16DIP/NSOP/SSOP |
| HT66F017L | 8MHz | 0.9V~ 1.8V | 32kHz~ 12MHz | 2K×16 | 128×8 | 64×8 | 13 | 12-bit×4 | CTM 16-bit×1 STM 16-bit×1 | √ | 1 | 8 | 10MSOP 16DIP/NSOP/SSOP |

Note: The internal clock in the table is a fully integrated RC oscillator requiring no external components which can be used as the system clock.

USB Interface MCU
I/O Flash Type USB MCU with SPI (USB 2.0 Full Speed)

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | Timer | End-points | Built-in OSC | LDO 70mA | I/O VDD Option | Interface | Stack | Package |
|-----------|----------------|-----------|--------------|----------------|-------------|-----|--|------------|--------------|----------|----------------|------------------------------|-------|---------------------------|
| HT82F543* | 12MHz | 2.2V~5.5V | 32kHz~16MHz | 4K×16 | 256×8 | 17 | CTM 10-bit×2 STM 10-bit×1 STM 16-bit×1 | 4 | √ | √ | √ | SPI/I ² C, SPI | 8 | 16NSOP 20QFN 24SSOP |
| HT82F553 | 12MHz | 2.2V~5.5V | 32kHz~16MHz | 8K×16 | 512×8 | 25 | CTM 10-bit×2 STM 10-bit×1 STM 16-bit×1 | 6 | √ | √ | √ | SPI/I ² C, SPI | 8 | 24/28SSOP 32QFN |
| HT82F563* | 12MHz | 2.2V~5.5V | 32kHz~16MHz | 16K×16 | 768×8 | 37 | CTM 10-bit×2 STM 10-bit×1 STM 16-bit×1 | 8 | √ | √ | √ | SPI/I ² C, SPI | 12 | 28SSOP 32QFN 48LQFP |

* Under development, available in 3Q, 2012.

A/D Flash Type USB MCU with SPI (USB 2.0 Full Speed)

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | RTC | A/D | Timer | End-points | Built-in OSC | LDO 70mA | I/O VDD Option | Comp. | Interface | Stack | Package |
|-----------|----------------|-----------|--------------|----------------|-------------|-----|-----|-----------|--|------------|--------------|----------|----------------|-------|------------------------------|-------|---------------------------|
| HT82F645* | 12MHz | 2.2V~5.5V | 32kHz~16MHz | 4K×16 | 512×8 | 25 | √ | 12-bit×8 | CTM 10-bit×2 STM 10-bit×1 STM 16-bit×1 | 4 | √ | √ | √ | 2 | SPI/I ² C, SPI | 8 | 24/28SSOP 32QFN |
| HT82F655 | 12MHz | 2.2V~5.5V | 32kHz~16MHz | 8K×16 | 768×8 | 37 | √ | 12-bit×16 | CTM 10-bit×2 STM 10-bit×1 STM 16-bit×1 | 6 | √ | √ | √ | 2 | SPI/I ² C, SPI | 8 | 28SSOP 32QFN 48LQFP |
| HT82F665* | 12MHz | 2.2V~5.5V | 32kHz~16MHz | 16K×16 | 1024×8 | 45 | √ | 12-bit×24 | CTM 10-bit×2 STM 10-bit×1 STM 16-bit×1 | 8 | √ | √ | √ | 2 | SPI/I ² C, SPI | 12 | 32QFN 48/64LQFP |

* Under development, available in 3Q, 2012.

RF Remote MCU
Remote RF Flash Type TX MCU

| Part No. | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | 10-bit Timer | A/D | PFD | Built-in RF Block | | Stack | Package |
|-----------|-----------|--------------|----------------|-------------|-------------|-----|--------------|----------|-----|-------------------|--------|-------|---------|
| | | | | | | | | | | Carrier Frequency | Type | | |
| HT68F03T3 | 2.2V~3.6V | 32kHz~12MHz | 1K×14 | 64×8 | 64×8 | 7 | 2 | — | √ | 300MHz~450MHz | ASK TX | 4 | 16NSOP |
| HT66F03T3 | 2.2V~3.6V | 32kHz~12MHz | 1K×14 | 64×8 | 64×8 | 7 | 2 | 12-bit×4 | √ | 300MHz~450MHz | ASK TX | 4 | 16NSOP |

Touch Key MCU

Touch Key Flash MCU

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | Timer | | Touch Key | SPI/I ² C | Stack | Package |
|-------------------------|------------------------|---------------|----------------|----------------|-------------|-------------|-----|-------|--------|-----------|----------------------|-------|-------------------------|
| | | | | | | | | 8-bit | 16-bit | | | | |
| BS83B08-3 | 8MHz 12MHz 16MHz | 2.7V~ 5.5V | 8MHz~ 16MHz | 2K×15 | 160×8 | 64×8 | 13 | 1 | — | 8 | 1 | 4 | 16NSOP |
| BS83B12-3 | 8MHz 12MHz 16MHz | 2.7V~ 5.5V | 8MHz~ 16MHz | 2K×15 | 288×8 | 64×8 | 17 | 1 | — | 12 | 1 | 4 | 20SOP/SSOP |
| BS83B16-3 BS83B16G-3 | 8MHz 12MHz 16MHz | 2.7V~ 5.5V | 8MHz~ 16MHz | 2K×15 | 288×8 | 64×8 | 21 | 1 | — | 16 | 1 | 4 | 24SOP/SSOP Gold Bump |
| BS83C24-3 | 8MHz 12MHz 16MHz | 2.7V~ 5.5V | 8MHz~ 16MHz | 4K×16 | 512×8 | 128×8 | 41 | 1 | 1 | 24 | 1 | 8 | 28SOP/SSOP 44QFP |

Touch Key Flash MCU with LED/LCD Driver

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | LCD | 10-bit Timer | Touch Key | High Current LED Output | SPI/I ² C | Stack | Package |
|-----------|------------------------|---------------|-----------------|----------------|-------------|-------------|-----|------|--------------|-----------|-------------------------|----------------------|-------|------------------------------|
| BS85B12-3 | 8MHz 12MHz 16MHz | 2.7V~ 5.5V | 32kHz~ 16MHz | 2K×15 | 224×8 | 64×8 | 22 | 14×4 | 2 | 12 | 8×6 | 1 | 4 | 24/28SKDIP/SOP 24/28SSOP |
| BS85C20-3 | 8MHz 12MHz 16MHz | 2.7V~ 5.5V | 32kHz~ 16MHz | 4K×15 | 384×8 | 128×8 | 38 | 22×4 | 3 | 20 | 14×8 | 1 | 6 | 28SKDIP/SOP 28SSOP, 44QFP |

Touch Key A/D Flash MCU with LED/LCD Driver

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | Data EEPROM | I/O | LCD | Timer | | A/D | Touch Key | High Current LED Output | SPI/I ² C | Stack | Package |
|------------|------------------------|---------------|-----------------|----------------|-------------|-------------|-----|------|--------|--------|----------|-----------|-------------------------|----------------------|-------|-----------------------------|
| | | | | | | | | | 10-bit | 16-bit | | | | | | |
| BS87C12-3* | 8MHz 12MHz 16MHz | 2.7V~ 5.5V | 32kHz~ 16MHz | 4K×16 | 384×8 | 128×8 | 26 | 14×4 | 2 | 1 | 12-bit×8 | 12 | 8×6 | 1 | 8 | 24/28SKDIP/SOP 24/28SSOP |
| BS87C24-3* | 8MHz 12MHz 16MHz | 2.7V~ 5.5V | 32kHz~ 16MHz | 4K×16 | 512×8 | 128×8 | 46 | 26×4 | 3 | 1 | 12-bit×8 | 24 | 14×8 | 1 | 8 | 44QFP 48LQFP |

* Under development, available in 3Q, 2012.

Brushless DC Motor MCU

Brushless DC Motor Flash Type MCU

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | | I/O | Timer | | | A/D | D/A | PWM | PFD | OPA | Comp. | Stack | Package |
|-----------|-------------------------|---------------|------------------|----------------|-------------|--------|-----|----------------|-----------------|--------------------------------------|----------|---------|----------|-----|-----|-------|-------|--------------------------|
| | | | | | SRAM | EEPROM | | 8-bit | 10-bit | 16-bit | | | | | | | | |
| HT45FM03B | 12MHz 16MHz 20MHz | 4.5V~ 5.5V | 400kHz~ 20MHz | 4K×15 | 192×8 | — | 26 | 1 | — | 1 | 12-bit×8 | — | 10-bit×3 | √ | 1 | 1 | 8 | 28SOP |
| HT45FM2C | 20MHz | 4.5V~ 5.5V | 20MHz | 4K×15 | 256×8 | 128×8 | 28 | RMT 8-bit×2 | CTM 10-bit×4 | CAPT 16-bit×1, CTM 16-bit×1 | 10-bit×9 | 8-bit×2 | 10-bit×3 | — | 1 | 2 | 8 | 28SOP 28SSOP 44QFP |

Voice MCU

Flash Type Voice MCU

| Part No. | Internal Clock | VDD | Program Memory | Data Memory | I/O | RTC | A/D | Timer Module | I ² C/SPI | Audio Output | | | Stack | Package |
|----------|-----------------------|---------------|----------------|-------------|-----|-----|----------|------------------------------|----------------------|--------------|-----|----|-------|---------|
| | | | | | | | | | | DAC | PWM | PA | | |
| HT83F02 | 4MHz 8MHz 12MHz | 2.4V~ 5.5V | 2K×16 | 208×8 | 19 | — | — | 8-bit×2 | √ | 12-bit×1 | √ | — | 8 | 28SOP |
| HT83F22 | 4MHz 8MHz 12MHz | 2.2V~ 5.5V | 4K×16 | 384×8 | 24 | √ | 12-bit×8 | CTM 10-bit×1 ETM 10-bit×1 | √ | 12-bit×1 | — | √ | 8 | 48LQFP |

Note: The HT83F02 is a voice playing MCU while the HT83F22 is both a voice playing and voice recording MCU.

General Purpose MCU
Standard 8051 Flash MCU

| Part No. | Internal Clock | VDD | System Clock | Program Memory | Data Memory | I/O | 16-bit Timer | A/D | Temp. Sensor | PCA | D/A | Interface | Comp. | Package |
|-----------|----------------|-----------|--------------|----------------|-------------|-----|--------------|----------|--------------|----------|----------|---------------------------|-------|------------------------------------|
| HT85F221* | 3.68MHz | 2.2V~5.5V | 3.68~25MHz | 2K×8 | 256×8 | 17 | 3 | 12-bit×9 | 1 | 16-bit×1 | — | — | — | 16DIP/NSOP/SSOP 20DIP/SOP/SSOP |
| HT85F222* | 3.68MHz | 2.2V~5.5V | 3.68~25MHz | 4K×8 | 256×8 | 21 | 3 | 12-bit×9 | 1 | 16-bit×1 | — | — | — | 20DIP/SOP/SSOP 24SKDIP/SOP/SSOP |
| HT85F223* | 3.68MHz | 2.2V~5.5V | 3.68~25MHz | 8K×8 | 768×8 | 25 | 3 | 12-bit×9 | 1 | 16-bit×4 | 12-bit×1 | SPI/I ² C/UART | 1 | 24/28SKDIP/SOP/SSOP |
| HT85F224* | 3.68MHz | 2.2V~5.5V | 3.68~25MHz | 16K×8 | 768×8 | 25 | 3 | 12-bit×9 | 1 | 16-bit×4 | 12-bit×1 | SPI/I ² C/UART | 1 | 24/28SKDIP/SOP/SSOP |
| HT85F225 | 3.68MHz | 2.2V~5.5V | 3.68~25MHz | 16K×8 | 1K×8 | 32 | 4 | 12-bit×7 | 1 | 16-bit×4 | 12-bit×1 | SPI/I ² C/UART | 2 | 48LQFP |
| HT85F226 | 3.68MHz | 2.2V~5.5V | 3.68~25MHz | 32K×8 | 2K×8 | 48 | 4 | 12-bit×9 | 1 | 16-bit×4 | 12-bit×1 | SPI/I ² C/UART | 2 | 48/64LQFP |
| HT85F227 | 3.68MHz | 2.2V~5.5V | 3.68~25MHz | 64K×8 | 2K×8 | 48 | 4 | 12-bit×9 | 1 | 16-bit×4 | 12-bit×1 | SPI/I ² C/UART | 2 | 48/64LQFP |

* Under development, available in 1Q, 2013.

USB Audio MCU
USB Audio Flash Type MCU

| Part No. | VDD | System Clock | Program Memory | Data Memory | I/O | A/D | 16-bit Timer | Interface | End-points | Transfer | FIFO (Byte) | Package |
|-----------|-----------|--------------|----------------|-------------|-----|-----------|--------------|--|------------|----------|-------------|--------------------|
| HT85F566* | 2.2V~3.6V | 6~32MHz | 32K×8 | 4K×8 | 51 | 12-bit×12 | 4 | SPI/I ² C/UART/I ² S | EP0 | CTL | 8~64 | 32QFN 48/64LQFP |
| | | | | | | | | | EP1~5 | INT/BULK | 448~504 | |
| | | | | | | | | | EP6~7 | ISO(I/O) | 768 | |

* Under development, available in 4Q, 2012.

General Purpose MCU
32-Bit Standard MCU

| Part No. | Internal Clock | VDD | System Clock | Flash Memory | SRAM | I/O | RTC | A/D | 16-Bit Timer | OP/CMP | PWM | Interface | LDO 1.8V | Package |
|------------|----------------|---------------|----------------|--------------|------|-----|-----|----------|--------------|--------|-----|----------------------------|----------|---------|
| HT32F1251B | 32kHz 8MHz | 2.7V~ 3.6V | Up to 72MHz | 8K×8 | 2K×8 | 30 | — | 12-bit×8 | GPTM×2 | 2 | √ | SPI/I ² C/USART | √ | 48LQFP |
| HT32F1251 | | | | | | 32 | √ | | | | | | | |
| HT32F1252 | 32kHz 8MHz | 2.7V~ 3.6V | Up to 72MHz | 16K×8 | 4K×8 | 32 | √ | 12-bit×8 | GPTM×2 | 2 | √ | SPI/I ² C/USART | √ | 48LQFP |
| HT32F1253 | 32kHz 8MHz | 2.7V~ 3.6V | Up to 72MHz | 32K×8 | 8K×8 | 32 | √ | 12-bit×8 | GPTM×2 | 2 | √ | SPI/I ² C/USART | √ | 48LQFP |

Note: As the HT32F1251B has no VBAT, XTAL32KIN and XTAL32KOUT pins, it does not include a battery backup domain and real time clock functions.

| Part No. | Internal Clock | VDD | System Clock | Flash Memory | SRAM | I/O | A/D | 16-Bit Timer | SCI (ISO7816-3) | USB 2.0 FS | OP/CMP | QEI/Hall | RTC/PDMA/PWM | Interface | Package |
|-----------|----------------|---------------|----------------|--------------|-------|-------|----------|----------------------------|-----------------|------------|--------|----------|--------------|----------------------------|-------------------|
| HT32F1755 | 32kHz 8MHz | 2.7V~ 3.6V | Up to 72MHz | 128K×8 | 32K×8 | 33~80 | 12-bit×8 | BFTM×2 GPTM×2 MCTM×1 | √ | √ | 2 | 3 | √ | SPI/I ² C/USART | 48/64/100 LQFP |

32-Bit Special-Purpose MCU

| Part No. | Internal Clock | VDD | System Clock | Flash Memory | SRAM | I/O | A/D | 16-Bit Timer | CSIF * | SCI (ISO7816-3) | USB 2.0 FS | OP/CMP | QEI/Hall | RTC/PDMA/PWM | Interface | Package |
|-----------|----------------|---------------|----------------|--------------|-------|-------|----------|----------------------------|--------|-----------------|------------|--------|----------|--------------|----------------------------|-------------------|
| HT32F2755 | 32kHz 8MHz | 2.7V~ 3.6V | Up to 72MHz | 128K×8 | 64K×8 | 33~80 | 12-bit×8 | BFTM×2 GPTM×2 MCTM×1 | √ | √ | √ | 2 | 3 | √ | SPI/I ² C/USART | 48/64/100 LQFP |

Note: * CSIF: CMOS sensor interface

LCD Controller & Driver

RAM Mapping LCD Controller & Driver

| Part No. | VDD | Segment | Common | LCD Voltage | Duty | Bias | Gray Scale | Serial Data | Built-in OSC. | Ext. Crystal | Package |
|---------------------|-----------|---------|--------|-------------|---------------|----------|------------|-------------|---------------|--------------|--|
| HT1620 HT1620G | 2.4V~3.3V | 32 | 4 | 3/2VDD | 1/2, 1/3, 1/4 | 1/2, 1/3 | — | 1 | — | √ | 64LQFP Gold Bump |
| HT1621 HT1621G | 2.4V~5.2V | 32 | 4 | ≤ VDD | 1/2, 1/3, 1/4 | 1/2, 1/3 | — | 1 | √ | √ | 44QFP/LQFP 48SSOP/LQFP Gold Bump |
| HT1622 HT1622G | 2.7V~5.2V | 32 | 8 | ≤ VDD | 1/8 | 1/4 | — | 1 | √ | — | 44/52QFP, 44/64LQFP Gold Bump |
| HT16220 HT16220G | 2.7V~5.2V | 32 | 8 | ≤ VDD | 1/8 | 1/4 | — | 1 | — | √ | 64LQFP Gold Bump |
| HT1623 | 2.7V~5.2V | 48 | 8 | ≤ VDD | 1/8 | 1/4 | — | 1 | √ | √ | 100LQFP |
| HT1625 | 2.7V~5.2V | 64 | 8 | ≤ VDD | 1/8 | 1/4 | — | 1 | √ | √ | 100LQFP |
| HT1626 | 2.7V~5.2V | 48 | 16 | ≤ VDD | 1/16 | 1/5 | — | 1 | √ | √ | 100LQFP |
| HT1647 HT1647A | 2.7V~5.2V | 64 | 16 | ≤ VDD | 1/16 | 1/4, 1/5 | 4 | 4 | √ | √ | 100LQFP |
| — | | | | | | | | | | | |
| HT1650 | 2.7V~5.2V | 64 | 32 | ≤ 7V | 1/16, 1/32 | 1/5, 1/6 | — | 4 | √ | √ | 128QFP |
| HT1660 | 2.7V~5.2V | 96 | 32 | ≤ 7V | 1/16, 1/32 | 1/5, 1/6 | — | 4 | √ | √ | 208QFP |
| HT1670 | 2.7V~5.2V | 128 | 32 | ≤ 7V | 1/16, 1/32 | 1/5, 1/6 | — | 4 | √ | √ | 208QFP |

High Noise Immunity LCD Controller & Driver Series

| Part No. | VDD | Segment | Common | LCD Voltage | Pixels | Duty | Bias | Interface | Built-in OSC. | Keyscan | Package |
|---------------------|-----------|---------|--------|-------------|--------|------|---------------|------------------|---------------|---------|----------------------------|
| HT16C21 | 2.4V~5.5V | 20 | 4 | ≤ VDD | 80 | 1/4 | 1/3, 1/4 | I ² C | √ | — | 16NSOP 20/24/28SOP |
| | | 16 | 8 | | 128 | 1/8 | | | | | |
| HT16C22 HT16C22G | 2.4V~5.5V | 44 | 4 | ≤ VDD | 176 | 1/4 | 1/2, 1/3 | I ² C | √ | — | 48LQFP, 52QFP Gold Bump |
| HT16C23 HT16C23G | 2.4V~5.5V | 56 | 4 | 2.4V~5.5V | 224 | 1/4 | 1/3, 1/4 | I ² C | √ | — | 48/64LQFP Gold Bump |
| | | 52 | 8 | | 416 | 1/8 | | | | | |
| HT16C24 HT16C24G | 2.4V~5.5V | 72 | 4 | 2.4V~5.5V | 288 | 1/4 | 1/3, 1/4, 1/5 | I ² C | √ | — | 64/80LQFP Gold Bump |
| | | 68 | 8 | | 544 | 1/8 | | | | | |
| | | 60 | 16 | | 960 | 1/16 | | | | | |
| HT16K23 | 2.4V~5.5V | 20 | 4 | = VDD | 80 | 1/4 | 1/3 | I ² C | √ | 16×1 | 28SOP |
| | | 16 | 8 | | 128 | 1/8 | 1/4 | | | 20×1 | |

Low Voltage LCD Controller & Driver Series

| Part No. | VDD | Segment | Common | LCD Voltage | Pixels | Duty | Bias | Interface | Built-in OSC. | LED | Package |
|----------|-----------|---------|--------|-------------|--------|------|----------|---------------------------------|---------------|-----|---------|
| HT16L21 | 1.8V~5.5V | 32 | 4 | 2.4V~6.0V | 128 | 1/4 | 1/2, 1/3 | I ² C, SPI 3-Wire | √ | 8 | 44LQFP |
| HT16L23 | 1.8V~5.5V | 52 | 4 | 2.4V~6.0V | 208 | 1/4 | 1/3, 1/4 | I ² C, SPI 3-Wire | √ | 8 | 64LQFP |
| | | 48 | 8 | | 384 | 1/8 | | | | | |

LED Controller & Driver

RAM Mapping LED Controller & Driver

| Part No. | VDD | Segment | Common | Row Source Current | Com Source Current | Interface | Keyscan | Package |
|----------|-----------|---------|--------|--------------------|--------------------|------------------|---------|---------|
| HT1632C | 2.4V~5.5V | 32 | 8 | 40mA | 250mA | 3-Wire | — | 52QFP |
| | | 24 | 16 | | | | | |
| HT16K33 | 4.5V~5.5V | 16 | 8 | 30mA | 200mA | I ² C | 13×3 | 28SOP |
| | | 12 | 8 | | | | 10×3 | 24SOP |
| | | 8 | 8 | | | | 8×3 | 20SOP |

Constant Current LED Driver

| Part No. | VDD | Output | Constant Current Range | Min. OE | Package |
|-----------|-----------|--------|------------------------|---------|---------|
| HT16D595 | 3.3V~5.5V | 8 | 48mA only | 300ns | 16NSOP |
| HT16D724* | 3.0V~5.0V | 16 | 5~45mA | 70ns | 24SSOP |

* Under development, available in 3Q, 2012.
Note: HT16D595 is pin-to-pin compatible with 74HC595 but provides constant current.

| VFD Controller & Driver | | | | | | | | | |
|---|-----------|----------------------|---------------|----------------|-------------|---------------|------------|----------------|------------|
| VFD Controller & Driver | | | | | | | | | |
| Part No. | VDD | Segment | Digit | Output Voltage | Key Matrix | General Input | LED Output | Dimming Step | Package |
| HT16511 | 3.0V~5.5V | 12~20 | 16~8 | VDD-35V | 12×4 | 4 | 5 | 8 | 52QFP |
| HT16512 | 3.0V~5.5V | 11~16 | 11~6 | VDD-35V | 6×4 | 4 | 4 | 8 | 44QFP/LQFP |
| HT16515 | 3.0V~5.5V | 16~24 | 12~4 | VDD-35V | 16×2 | — | 4 | 8 | 44QFP/LQFP |
| Dot Character VFD Controller & Driver | | | | | | | | | |
| Part No. | VDD | Segment | Digit | Output Voltage | Display RAM | CGROM | CGRAM | General Output | Package |
| HT16523-002 HT16523-003 | 2.7V~5.5V | 35+2AD | 16 | 40V | 16×8 bits | 248×5×7 bits | 8×5×7 bits | 2 | 64LQFP |
| HT16525-001 HT16525-002 | 2.7V~5.5V | 40+2AD | 24 | 60V | 24×8 bits | 248×5×8 bits | 8×5×8 bits | 2 | 80LQFP |
| HT16528-001 HT16528-002 HT16528-003 | 2.7V~5.5V | 80 | 24 | 80V | 80×8 bits | 240×5×8 bits | 8×5×8 bits | — | 144LQFP |
| Note: 1. The AD suffix in the Segment column represents additional data segment outputs. 2. The 001, 002 and 003 part number suffix represents different language and symbol character ROM code types. | | | | | | | | | |
| VFD Clock | | | | | | | | | |
| Part No. | VDD | Function Description | IDD Max. | Package | | | | | |
| HT16561 | 4V~16V | 1/1 Duty, 12Hr | 2mA | 44QFP | | | | | |
| HT16562 | 4V~18V | 1/2 Duty, 12Hr | 1mA | 30SSOP | | | | | |
| HT16565 | 4V~16V | 1/1 Duty, 24Hr | 2mA | 44QFP | | | | | |
| HT16566 | 4V~18V | 1/2 Duty, 24Hr | 1mA | 30SSOP | | | | | |
| Segment VFD Driver | | | | | | | | | |
| Part No. | VDD | Output Voltage | Output Driver | Output Current | Cascade | Package | | | |
| HT16506 | 3.0V~5.5V | 20V~80V | 64 | 20mA | √ | 80LQFP | | | |

3-Wire EEPROM

3-wire EEPROM

| Part No. | Capacity | VDD | Clock Rate (MHz) | Write Speed @2.4V (ms) | Operating Current @5V (mA) | Standby Current @5V (µA) | Package |
|----------|--------------|-----------|------------------|------------------------|----------------------------|--------------------------|----------------|
| HT93LC46 | 64×16/128×8 | 2.2V~5.5V | 2 | 5 | 5 | 2 | 8DIP/SOP/TSSOP |
| HT93LC66 | 256×16/512×8 | 2.2V~5.5V | 2 | 5 | 5 | 2 | 8DIP/SOP/TSSOP |

Note: Operating temperature range -40°C ~ +85°C

I²C EEPROM

I²C EEPROM

| Part No. | Capacity | VDD | Clock Rate (kHz) | Write Speed @2.4V (ms) | Operating Current @5V (mA) | Standby Current @5V (µA) | Package |
|-----------|----------|-----------|------------------|------------------------|----------------------------|--------------------------|-------------------------|
| HT24LC02 | 256×8 | 2.2V~5.5V | 400 | 5 | 5 | 2 | 8DIP/SOP/TSSOP, SOT23-5 |
| HT24LC04 | 512×8 | 2.2V~5.5V | 400 | 5 | 5 | 2 | 8DIP/SOP/TSSOP |
| HT24LC08 | 1024×8 | 2.2V~5.5V | 400 | 5 | 5 | 2 | 8DIP/SOP/TSSOP |
| HT24LC16 | 2048×8 | 2.2V~5.5V | 400 | 5 | 5 | 2 | 8DIP/SOP/TSSOP |
| HT24LC32 | 4096×8 | 2.2V~5.5V | 400 | 5 | 5 | 2 | 8DIP/SOP/TSSOP |
| HT24LC64 | 8192×8 | 2.2V~5.5V | 400 | 5 | 5 | 2 | 8DIP/SOP/TSSOP |
| HT24LC128 | 16384×8 | 2.2V~5.5V | 400 | 5 | 5 | 2 | 8DIP/SOP/TSSOP |
| HT24LC256 | 32768×8 | 2.2V~5.5V | 400 | 5 | 5 | 2 | 8DIP/SOP/TSSOP |

Note: Operating temperature range -40°C ~ +85°C

| Part No. | Capacity | VDD | Clock Rate (kHz) | Write Speed @2.4V (ms) | Operating Current @5V (mA) | Standby Current @5V (µA) | Package |
|----------|----------|-----------|------------------|------------------------|----------------------------|--------------------------|---------|
| HT2201 | 128×8 | 2.2V~5.5V | 400 | 5 | 5 | 4 | SOT23-5 |

Note: Operating temperature range -40°C ~ +85°C

Encoder/Decoder
2¹² Encoder/Decoder

| Part No. | Encoder/Decoder | VDD | Addr. No. | Addr./Data No. | Data No. | Data Type | Trig. | Check Times | Package | Pair |
|----------|-----------------|----------|-----------|----------------|----------|-----------|-----------------|-------------|--------------|-----------|
| HT12E | Encoder | 2.4V~12V | 8 | 4 | 0 | — | \overline{TE} | — | 18DIP, 20SOP | HT12D/12F |
| HT12D | Decoder | 2.4V~12V | 8 | 0 | 4 | Latch | — | 3 | 18DIP, 20SOP | HT12A/12E |
| HT12F | Decoder | 2.4V~12V | 12 | 0 | 0 | — | — | 3 | 18DIP, 20SOP | HT12A/12E |

3⁹ Encoder

| Part No. | Encoder/Decoder | VDD | Addr. No. | Addr./Data No. | Trig. | Package |
|----------|-----------------|--------|-----------|----------------|-----------------|------------|
| HT6026 | Encoder | 4V~18V | 0 | 9 | \overline{TE} | 16DIP/NSOP |

3¹² Encoder/Decoder

| Part No. | Encoder/Decoder | VDD | Addr. No. | Addr./Data No. | Data No. | Data Type | Trig. | Check Times | Package | Pair |
|----------|-----------------|----------|-----------|----------------|----------|-----------|-----------------|-------------|--------------|--------------|
| HT6010 | Encoder | 2.4V~12V | 8 | 4 | 0 | — | \overline{TE} | — | 18DIP, 20SOP | HT6030/32/34 |
| HT6012 | Encoder | 2.4V~12V | 10 | 0 | 2 | — | Data | — | 18DIP, 20SOP | HT6032 |
| HT6014 | Encoder | 2.4V~12V | 8 | 0 | 4 | — | Data | — | 18DIP, 20SOP | HT6034 |
| HT6030 | Decoder | 2.4V~12V | 12 | 0 | 0 | — | — | 2 | 18DIP, 20SOP | HT6010 |
| HT6032 | Decoder | 2.4V~12V | 10 | 0 | 2 | Latch | — | 2 | 18DIP, 20SOP | HT6010/12 |
| HT6034 | Decoder | 2.4V~12V | 8 | 0 | 4 | Latch | — | 2 | 18DIP, 20SOP | HT6010/14 |

RF Encoder
2¹² RF Encoder

| Part No. | VDD | Addr. No. | Data No. | Compound Data No. | Trig. | Frequency Band | RF Type | Package |
|----------|-----------|-----------|----------|-------------------|-------|----------------|---------|---------|
| HT12C2T3 | 2.0V~3.6V | 6 | 6 | 2 | Data | 300MHz~365MHz | ASK TX | 20SSOP |
| HT12E2T3 | 2.0V~3.6V | 8 | 4 | 2 | Data | 300MHz~365MHz | ASK TX | 20SSOP |
| HT12C2T4 | 2.0V~3.6V | 6 | 6 | 2 | Data | 365MHz~450MHz | ASK TX | 20SSOP |
| HT12E2T4 | 2.0V~3.6V | 8 | 4 | 2 | Data | 365MHz~450MHz | ASK TX | 20SSOP |

2¹⁶ RF Encoder

| Part No. | VDD | Addr. No. | Data No. | Trig. | Frequency Band | RF Type | Package |
|----------|-----------|-----------|----------|-------|----------------|---------|---------|
| HT16C2T3 | 2.0V~3.6V | 6 | 8 | Data | 300MHz~365MHz | ASK TX | 20SSOP |
| HT16E2T3 | 2.0V~3.6V | 8 | 6 | Data | 300MHz~365MHz | ASK TX | 20SSOP |
| HT16G2T3 | 2.0V~3.6V | 10 | 4 | Data | 300MHz~365MHz | ASK TX | 20SSOP |
| HT16C2T4 | 2.0V~3.6V | 6 | 8 | Data | 365MHz~450MHz | ASK TX | 20SSOP |
| HT16E2T4 | 2.0V~3.6V | 8 | 6 | Data | 365MHz~450MHz | ASK TX | 20SSOP |
| HT16G2T4 | 2.0V~3.6V | 10 | 4 | Data | 365MHz~450MHz | ASK TX | 20SSOP |

Learning Encoder

Learning Encoder

| Part No. | VDD | Addr. No. | Data No. | Trig. | Package |
|----------|--------|-----------|----------|-------|----------|
| HT6P20B2 | 2V~12V | 22 | 2 | Data | 8DIP/SOP |
| HT6P20D2 | 2V~12V | 20 | 4 | Data | 8SOP |
| HT6P20F2 | 2V~12V | 19 | 5 | Data | 8SOP |

Learning RF Encoder

Learning RF Encoder

| Part No. | VDD | Addr. No. | Data No. | Trig. | Frequency Band | RF Type | Package |
|------------|-----------|-----------|----------|-------|----------------|---------|---------|
| HT6P20B2T3 | 2.0V~3.6V | 22 | 2 | Data | 300MHz~450MHz | ASK TX | 16NSOP |
| HT6P20D2T3 | 2.0V~3.6V | 20 | 4 | Data | 300MHz~450MHz | ASK TX | 16NSOP |
| HT6P20F2T3 | 2.0V~3.6V | 19 | 5 | Data | 300MHz~450MHz | ASK TX | 16NSOP |

IR Remote Controller

IR Remote Controller

| Part No. | Encoder/Decoder | VDD | Addr. No. | Data No. | Key No. | Signal Gap Time | 38kHz Carrier | Package |
|----------|-----------------|-----------|-----------|----------|---------|-----------------|---------------|--------------------|
| HT62104 | Encoder | 2.0V~3.6V | 2 | 7 | 10 | 4T | √ | 16DIP/NSOP |
| HT62104A | | | | | | 20T | | |
| Part No. | Encoder/Decoder | VDD | Addr. No. | Data No. | Key No. | 38kHz Carrier | | Package |
| HT6220A | Encoder | 2.0V~3.6V | 16 | 8 | 6 | √ | | 8SOP |
| | | | | | 30 | | | 16NSOP |
| HT6221A | Encoder | 2.0V~3.6V | 16 | 8 | 32 | √ | | 20SOP |
| HT6221B | | | | | 48 | | | |
| HT6222A | Encoder | 2.0V~3.6V | 16 | 8 | 64 | √ | | 24SOP, Chip, Wafer |

LDO & Detector
TinyPower™ LDO

| Part No. | Maximum Input Voltage | Output Voltage | Typical Output Current (mA) | Typical Current Consumption (μA) | Tolerance | Package |
|----------|-----------------------|---|-----------------------------|----------------------------------|-----------|------------------------------|
| HT1015-1 | 12V | 1.5V | 18 | 2.2 | ±3% | TO92, SOT23-5, SOT89 |
| HT71xx-1 | 24V | 2.1V/2.3V/2.5V/2.7V/3.0V/3.3V/3.6V/4.4V/5.0V | 30 | 2.5 | ±3% | TO92, SOT23-5, SOT89 |
| HT71xx-2 | 24V | 2.1V/2.3V/2.5V/2.7V/3.0V/3.3V/3.6V/4.4V/5.0V | 30 | 2.5 | ±1% | TO92, SOT23-5, SOT89 |
| HT75xx-1 | 24V | 2.1V/2.3V/2.5V/2.7V/3.0V/3.3V/3.6V/4.0V/4.4V/5.0V/6.0V/7.0V/8.0V/9.0V/10.0V/12.0V | 100 150 | 2.5 | ±3% | TO92, SOT23-5, SOT89 |
| HT75xx-2 | 24V | 2.1V/2.3V/2.5V/2.7V/3.0V/3.3V/3.6V/4.0V/4.4V/5.0V/6.0V/7.0V/8.0V/9.0V/10.0V/12.0V | 100 150 | 2.5 | ±1% | TO92, SOT23-5, SOT89 |
| | | 4.15V | 100 | | | SOT23-5 |
| HT73xx | 12V | 1.8V 2.5V 2.7V 3.0V/3.3V/3.5V/5.0V | 150 180 200 250 | 3.5 | ±3% | TO92, SOT89 |
| HT72xx | 8V | 1.8V/2.5V/2.7V/3.0V/3.3V/5.0V | 300 | 4 | ±2% | TO92, SOT23, SOT23-5, SOT89 |
| HT78xx | 8V | 1.8V/2.5V/2.7V/3.0V/3.3V/5.0V | 500 | 4 | ±2% | TO92, SOT223, SOT23-5, SOT89 |

Note: The XX in the part number is the LDO output voltage.

TinyPower™ LDO with Detector

| Part No. | Maximum Input Voltage | Regulator Voltage | Detector Voltage | LDO Output Current (mA) | Typical Current Consumption (μA) | Tolerance | Package |
|-----------|-----------------------|-------------------|--|-------------------------|----------------------------------|-----------|---------|
| HT71Axxxx | 12V | 3.3V 5.0V | 2.4V/2.7V/4.4V 2.4V/2.7V/3.3V/4.2V/4.4V | 30 | 6 | ±3% | SOT89-5 |

Note: The first two XX in the part number is the LDO regulator voltage; the last two XX is the detector voltage.

TinyPower™ LDO with Detector & Data Transceiver

| Part No. | Maximum Input Voltage | Regulator Voltage | Detector Voltage | LDO Output Current (mA) | Typical Current Consumption (μA) | Tolerance | Data Interface | Package |
|----------|-----------------------|-------------------|------------------|-------------------------|----------------------------------|-----------|----------------|---------|
| HT71D02 | 30V | 3.3V | 9.0V | 60 | 30 | ±3% | √ | 8SOP |
| HT71D04 | 30V | 5.0V | 9.0V | 60 | 30 | ±3% | √ | 8SOP |

High PSRR LDO

| Part No. | Maximum Input Voltage | Output Voltage | Typical Output Current (mA) | Typical Current Consumption (μA) | Tolerance | Package |
|----------|-----------------------|------------------------------------|-----------------------------|----------------------------------|-----------|-------------------------|
| HT75Bxx | 7V | 1.5V/1.8V/2.5V/2.8V/3.0V/3.3V/5.0V | 150 | 10 | ±2% | SOT23-5, SOT89 |
| HT72Bxx | 7V | 1.5V/1.8V/2.5V/2.8V/3.0V/3.3V/5.0V | 300 | 18 | ±2% | SOT23-5, SOT89 |
| HT78Bxx | 7V | 1.5V/1.8V/2.5V/2.8V/3.0V/3.3V/5.0V | 500 | 18 | ±2% | SOT223, SOT23-5, SOT89, |

Note: The XX in the part number is the LDO output voltage.

High PSRR LDO (Dual Channel Output, 300mA+300mA)

| Part No. | Maximum Input Voltage | Output Voltage | | Typical Output Current (mA) | Typical Current Consumption (μA) | Tolerance | Package |
|-----------|-----------------------|-------------------|---------------------|--|----------------------------------|-----------|---------|
| | | V _{OUT1} | V _{OUT2} | | | | |
| HT72Dxxxx | 7V | 1.5V | 1.8V/2.5V/2.8V/3.3V | I _{OUT1} =300mA I _{OUT2} =300mA | 30 | ±2% | SOT23-6 |
| | | 1.8V | 2.5V/2.8V/3.0V/3.3V | | | | |
| | | 2.5V | 2.8V/3.3V | | | | |
| | | 2.8V | 3.3V | | | | |
| | | 3.0V | 3.3V | | | | |

Note: The first two XX in the part number is LDO output voltage #1; the last two XX is LDO output voltage #2.

TinyPower™ Voltage Detector

| Part No. | Maximum Input Voltage | Detect Voltage | Hysteresis Width (V) | Typical Current Consumption (μA) | Tolerance | Package |
|----------|-----------------------|---|-------------------------|----------------------------------|-----------|-----------------------------|
| HT70xA-1 | 24V | 2.2V/2.4V/2.7V/3.3V/3.9V/4.4V/5.0V | 0.05 × V _{DET} | 4 | ±3% | TO92, SOT23, SOT23-5, SOT89 |
| HT70xA-2 | 24V | 2.2V/2.4V/2.7V/3.3V/3.9V/4.4V/5.0V/8.2V | 0.05 × V _{DET} | 4 | ±1% | TO92, SOT23-5, SOT89 |

Note: The XX in the part number is the LDO output voltage.

DC to DC Converter
Step-Down DC to DC Converter

| Part No. | Input Voltage | Output Current | Frequency | V _{out} Min. | V _{out} Max. | I _{shutDown} | I _q | Package |
|----------|---------------|----------------|-----------|-----------------------|-----------------------|-----------------------|----------------|--------------|
| HT7465 | 24V | 2A | 380kHz | 0.92V | 20V | 20μA | 1.1mA | 8SOP, 10MSOP |
| HT7466 | 24V | 3A | 380kHz | 1.23V | 20V | 20μA | 1.1mA | 8SOP |

PFM Asynchronous Step-up DC to DC Converter

| Part No. | Input Voltage | Output Voltage | Output Current | Switching Frequency (kHz) | Typical Current Consumption I _{DD2} (μA) | Typical Efficiency | Package |
|----------|---------------|--------------------------|----------------|---------------------------|---|--------------------|-----------------------------|
| HT77xx | 0.7V~6.0V | 1.8V/2.2V | 100mA | 115 | 4 | 80% | TO92, SOT23, SOT23-5, SOT89 |
| | | 2.7V/3.0V/3.3V/3.7V/5.0V | | | | 85% | |
| HT77xxA | 0.7V~6.0V | 2.7V/3.0V/3.3V/5.0V | 200mA | 200 | 5 | 85% | TO92, SOT23, SOT23-5, SOT89 |

Note: The XX in the part number is the output voltage.

PFM Synchronous Step-up DC to DC Converter

| Part No. | Input Voltage | Output Voltage | Output Current | Switching Frequency (kHz) | Typical Current Consumption I _{DD2} (μA) | Typical Efficiency | Package |
|----------|---------------|--------------------------|----------------|---------------------------|---|--------------------|-----------------------------|
| HT77xxS | 0.7V~6.0V | 1.8V/2.2V | 100mA | 500 | 4 | 80% | TO92, SOT23, SOT23-5, SOT89 |
| | | 2.7V/3.0V/3.3V/3.7V/5.0V | | | | 85% | |

Note: The XX in the part number is the output voltage.

| Part No. | Input Voltage | Output Voltage | Typical Output Current (V _{IN} =2.0V) | Typical Quiescent Consumption (μA) | Efficiency | Package |
|----------|---------------|-----------------|--|------------------------------------|------------|-----------|
| HT77S10 | 0.7V~5.5V | Adj. 3.3V, 5.0V | V _o =5.0V, I _o =230mA V _o =3.3V, I _o =350mA | 20 | 91% | 8MSOP/SOP |
| HT77S11 | 0.7V~5.5V | Adj. 3.3V, 5.0V | V _o =5.0V, I _o =160mA V _o =3.3V, I _o =300mA | 20 | 91% | 8MSOP/SOP |

Charge Pump DC to DC Converter

| Part No. | VDD | Conversion Voltage | Typical Output Current (mA) | Typical Standby Current (μA) | Output Impedance | Package |
|----------|--------|--------------------|-----------------------------|------------------------------|------------------|----------|
| HT7660 | 3V~12V | VDD ~ -VDD | 20 | 80 | 60Ω | 8DIP/SOP |

AC to DC Converter
AC to DC PWM Controller

| Part No. | Topology | | | Max. Input Voltage | Start-up Current | Operating Current | Soft Start | UVLO | | Green Mode | Internal Slop Comp. | Protection | | | | LEB (ns) | Freq. Jitter | Package |
|----------|-----------|------------------|---------------|--------------------|------------------|-------------------|------------|-------|------|------------|---------------------|---------------|-----|-----|----------|----------|--------------|---------|
| | Isolation | | Non-Isolation | | | | | On | Off | | | Current Limit | OVP | SCP | OTP | | | |
| | Flyback | Primary Feedback | | | | | | | | | | | | | | | | |
| HT7A3942 | — | √ | — | 30V | 20μA | 2mA | — | 14.0V | 8.0V | √ | √ | √ | — | √ | — | 350 | — | 8SOP |
| HT7A6003 | — | √ | — | 30V | 20μA | 2mA | √ | 14.0V | 8.0V | √ | √ | √ | 28V | √ | — | 350 | ±4% | 8SOP |
| HT7L2102 | — | √ | — | 30V | 20μA | 2mA | √ | 14.0V | 8.0V | √ | √ | √ | 28V | √ | External | 350 | ±4% | 8SOP |
| HT7A4016 | √ | √ | Buck Boost | 30V | 20μA | 2mA | — | 8.4V | 7.6V | Burst Mode | √ | √ | — | — | — | 350 | — | 8SOP |

Note: All devices have a Programmable Frequency up to 500kHz and operating temperature range -40°C ~ +85°C.

| White LED Backlight Driver | | | | | | | | | | | | |
|----------------------------|-------------|---------------|---------------------|------------------------------------|--------------------|--------------------------|-----------------------|-------------------|---|--------------------|-----------|---------|
| White LED Backlight Driver | | | | | | | | | | | | |
| Part No. | Topology | Input Voltage | Frequency | Output Voltage | Max. LED No. | Backlight Type | Brightness Control | Package | | | | |
| HT7936A | Charge Pump | 2.8V~5.0V | 1.0MHz | 5.0V | 4 | Parallel | PWM | SOT23-6 | | | | |
| HT7936B | | | | 4.5V | 6 | | | | | | | |
| Part No. | Topology | Input Voltage | Frequency | Typical OVP | Maximum Efficiency | Max. LED No. | Backlight Type | Dimming Frequency | Package | | | |
| HT7937 | boost | 2.5V~5.5V | 1.2MHz | 28V | 85% | 6 | Single Series WLED | — | SOT23-6 | | | |
| HT7938 | boost | 2.6V~5.5V | 1.2MHz | 39V | 88% | 10 | Single Series WLED | < 1kHz | SOT23-6 | | | |
| HT7938A | boost | 2.6V~5.5V | 1.2MHz | 39V | 88% | 10 | Single Series WLED | Up to 200kHz | SOT23-6 | | | |
| HT7939 | boost | 2.6V~5.5V | 1.2MHz | 32V | 90% | 40 | Series/Parallel Mixed | < 1kHz | SOT23-6 | | | |
| HT7939A | boost | 2.6V~5.5V | 1.2MHz | 17.6V | 90% | 40 | Series/Parallel Mixed | Up to 200kHz | SOT23-6 | | | |
| Part No. | Topology | Input Voltage | Switching Frequency | Protection | Maximum Efficiency | Channel Current Matching | Max. LED No. | LED If | Backlight Type | Brightness Control | LCD Power | Package |
| HT7943 | boost | 4.5V~26V | 500kHz/1MHz | LED Open/Short OVP, OCP, OTP, UVLO | 88% | ±1.5% | 66 | 20mA | Up to 11 Series 6ch Constant Current Sink | PWM | — | 20QFN |
| HT7945 | boost | 4.5V~26V | 500kHz/1MHz | LED Open/Short OVP, OCP, OTP, UVLO | 88% | ±1.5% | 88 | 20mA | Up to 11 Series 8ch Constant Current Sink | PWM | — | 24QFN |
| HT7953 | boost | 10V~26V | 200kHz/400kHz | LED Open/Short OVP, OCP, OTP, UVLO | 90% | ±2.0% | 60 | 80mA | Up to 10 Series 6ch Constant Current Sink | PWM | — | 48TQFP |
| HT7955 | boost | 10V~26V | 200kHz/400kHz | LED Open/Short OVP, OCP, OTP, UVLO | 90% | ±2.0% | 80 | 80mA | Up to 10 Series 8ch Constant Current Sink | PWM | — | 48TQFP |
| HT79T42* | boost | 4.5V~26V | 500kHz/1MHz | LED Open/Short OVP, OCP, OTP, UVLO | 88% | ±1.5% | 44 | 20mA | Up to 11 Series 4ch Constant Current Sink | PWM | √ | 40QFN |

* Under development, available in 2Q, 2012.

| Lighting Driver/Controller | | | | | | | | | | | | | | | | | |
|----------------------------|------------------|--------------------|---------------|----------------------|------------|------------|---------------|---------|---------|------------------|---------------|-----|-----|----------|--------------|---------|------|
| LED Lighting Driver | | | | | | | | | | | | | | | | | |
| Part No. | Topology | | | System Input Voltage | Soft Start | Green Mode | Input Voltage | Dimming | | | Protection | | | LED (ns) | Freq. Jitter | Package | |
| | Isolation | | Non-Isolation | | | | | PWM | Linear | Triac | Current Limit | OVP | SCP | | | | OTP |
| | Primary Feedback | Secondary Feedback | | | | | | | | | | | | | | | |
| HT7L4091 | — | — | Buck | 90~265V | — | — | 16~24V | 1~99% | 0~250mV | External Circuit | √ | — | √ | Internal | 300 | ±4% | 8SOP |
| HT7L2102 | — | √ | — | 90~265V | √ | √ | 14~30V | 1~99% | — | External Circuit | √ | 28V | √ | External | 350 | ±4% | 8SOP |
| HT7L2103 | √ | √ | Buck Boost | 90~265V | √ | √ | 14~30V | 1~99% | — | External Circuit | √ | 28V | √ | Internal | 350 | ±4% | 8SOP |

Note: All devices have a Programmable Frequency up to 500KHz and operating temperature range -40°C ~ +85°C.

Keyboard

Keyboard

| Part No. | Description | VDD | Oscillator | Interface | Package |
|-----------|-------------|-------------|------------|-----------|---------------|
| HT82K628A | WIN2000 KB | 4.75V~5.25V | RC | PS/2 | 40DIP, 48SSOP |
| HT82K629A | WIN2000 KB | 4.75V~5.25V | Crystal | USB+PS/2 | 40DIP, 48SSOP |

Bridge

Bridge

| Part No. | Description | VDD | Clock Input | Interface | USB | FIFO | UART Baud Rate | Package |
|----------|--------------------|-----------|---------------|-----------|------------|--------------------------|------------------|---------|
| HT45B0F | SPI to UART Bridge | 2.0V~5.5V | 400kHz~20MHz | SPI, UART | — | TX: 1 byte RX: 4 byte | Up to 115.2Kbaud | 16NSOP |
| HT45B0K | SPI to USB Bridge | 3.3V~5.5V | 6MHz or 12MHz | SPI, USB | Full Speed | 160 byte | — | 16NSOP |

Telecom Peripheral
Telecom Peripheral

| Part No. | Description | VDD | OSC Frequency | Package |
|--------------------|-----------------------------|-----------|---------------|-------------------|
| HT9200A HT9200B | DTMF generator | 2.5V~5.5V | 3.58MHz | 8DIP/SOP 14SOP |
| HT9170B HT9170D | DTMF receiver | 2.5V~5.5V | 3.58MHz | 18DIP 18SOP |
| HT9172 | DTMF receiver | 2.5V~5.5V | 3.58MHz | 18DIP/SOP |
| HT9020B | Call progress tone detector | 2.5V~5.5V | 32768Hz | 8DIP/SOP |
| HT9032C | FSK decoder | 3.5V~5.5V | 3.58MHz | 16DIP/SOP |

Note: The HT9172 has enhanced performance over the HT9170B/HT9170D devices.

Basic Dialer
Basic Dialer

| Part No. | VDD | Mem. No. | Hand Free | Hold Line | LCD Interface | Key-tone | Flash Mode | Package | Remark |
|-----------|-----------|----------|-----------|-----------|---------------|----------|------------|------------|--------------------------|
| HT93214A | 2.0V~5.5V | 1 | — | — | — | — | C | 16DIP/NSOP | Minimum flash time=300ms |
| HT93214B | 2.0V~5.5V | 1 | √ | — | — | — | C | 18DIP | Minimum flash time=300ms |
| HT93214AT | 2.0V~5.5V | 1 | — | — | — | √ | C | 18DIP | Minimum flash time=300ms |
| HT9302G | 2.0V~5.5V | 1 | — | — | — | — | D/C | 16DIP/NSOP | — |
| HT9302A | 2.0V~5.5V | 2 | — | — | — | — | D/C | 18DIP | — |
| HT9302B | 2.0V~5.5V | 2 | √ | √ | — | — | D/C | 22SKDIP | — |
| HT9302C | 2.0V~5.5V | 2 | — | — | √ | — | D/C | 20DIP | — |
| HT9302D | 2.0V~5.5V | 2 | √ | √ | √ | — | D/C | 24SKDIP | — |

D/A Converter
D/A Converter

| Part No. | Description | VDD | Package |
|----------|--|-----------|---------|
| HT82V731 | 16-bit stereo audio D/A converter | 2.4V~5.5V | 8SOP |
| HT82V737 | 16-bit stereo audio D/A converter with earphone driver | 2.4V~5.5V | 16NSOP |
| HT82V738 | 24-bit stereo audio D/A converter | 3V~5V | 16NSOP |

General OP Amplifier
General OP Amplifier

| Part No. | Description | OP No. | VDD | BW (Hz) | Current (μ A)/OP | Package |
|----------|---|--------|-----------|---------|-----------------------|-------------|
| HT9231 | 220 μ A, 2.3MHz Single OP amplifier | 1 | 2.0V~5.5V | 2.3M | 220 | TSOT23-5 |
| HT9232 | 220 μ A, 2.3MHz Dual OP amplifier | 2 | 2.0V~5.5V | 2.3M | 220 | 8DIP/SOP |
| HT9234 | 220 μ A, 2.3MHz Qual OP amplifier | 4 | 2.0V~5.5V | 2.3M | 220 | 14DIP/SOP |
| HT9251* | 50 μ A, 550kHz Single OP amplifier | 1 | 1.8V~5.5V | 550K | 50 | TSOT23-5 |
| HT9252* | 50 μ A, 550kHz Dual OP amplifier | 2 | 1.8V~5.5V | 550K | 50 | 8DIP/MSOP |
| HT9254* | 50 μ A, 550kHz Qual OP amplifier | 4 | 1.8V~5.5V | 550K | 50 | 14SOP/TSSOP |
| HT9274 | Quad micropower OP amplifier | 4 | 1.6V~5.5V | 100K | 3 | 14DIP/SOP |
| HT9291 | TinyPower™ Single OP amplifier | 1 | 1.4V~5.5V | 11K | 0.6 | TSOT23-5 |
| HT9292 | TinyPower™ Dual OP amplifier | 2 | 1.4V~5.5V | 11K | 0.6 | 8DIP/SOP |
| HT9294 | TinyPower™ Qual OP amplifier | 4 | 1.4V~5.5V | 11K | 0.6 | 14DIP/SOP |

* Under development, available in 3Q, 2012.

Audio Amplifier
Audio Amplifier

| Part No. | Description | VDD | Output Power | Mute/Shutdown Function | Package |
|----------|---|-----------|------------------------|------------------------|----------|
| HT82V732 | Stereo audio power amplifier | 3V~5.5V | 60mW into 32 Ω | — | 8SOP |
| HT82V733 | Mono audio power amplifier | 2.4V~5.5V | 400mW into 8 Ω | √ | 8DIP/SOP |
| HT82V735 | Stereo audio power amp with shutdown | 2.4V~6V | 330mW into 32 Ω | √ | 8SOP |
| HT82V736 | Stereo audio power amp with mute | 2.4V~6V | 65mW into 32 Ω | √ | 8SOP |
| HT82V739 | 1200mW Mono audio power amp with shutdown | 2.2V~5.5V | 1200mW into 8 Ω | √ | 8DIP/SOP |

CCD/CIS Analog Signal Processor

CCD/CIS Analog Signal Processor

| Part No. | Application Field | VDD | AVDD | Input Channel | A/D (Bit) | MSPS | A/D Full Scale | Power Consumption | Package |
|-----------|---------------------------------|-------------|-------------|---------------|-----------|------|----------------|-------------------|----------------------|
| HT82V26A | CCD/CIS Scanner / MFP | 3.0V~5.25V | 4.75V~5.25V | 3 (2/1) | 16 | 30 | 2.0V | 400mW | 28SOP/SSOP(209mil) |
| HT82V36 | Bus (USB) Power CIS Scanner | 3.0V~3.6V | 3.0V~3.6V | 1 | 16 | 6/10 | 1.4V | 56mW | 28SSOP(209mil) |
| HT82V38 | CCD/CIS Scanner / MFP | 3.15V~3.45V | 3.15V~3.45V | 3 (2/1) | 16 | 30 | 1.6V/2.0V | 350mW | 28SSOP(209mil) |
| HT82V42 | CIS Scanner / MFP | 3.0V~3.6V | 3.0V~3.6V | 1 | 16 | 15 | 2.0V | 188mW | 20TSSOP/SSOP(209mil) |
| HT82V46 | CCD/CIS Scanner / MFP | 3.0V~3.6V | 3.0V~3.6V | 3 (2/1) | 16 | 45 | 1.2V/2.0V | 400mW | 28SSOP(209mil) |
| HT82V842A | CCD Surveillance/Vehicle Camera | 2.7V~3.6V | 2.7V~3.6V | 1 | 10 | 20 | 1.0V | 70mW | 48LQFP |
| HT82V846 | CCD Surveillance/Vehicle Camera | 2.7V~3.6V | 2.7V~3.6V | 1 | 10 | 25 | 1.2V | 79mW | 32QFN |

CCD Vertical Driver

CCD Vertical Driver

| Part No. | Application Field | VDD | VH | VL | VH - VL (Max.) | Channel Output | | | Package |
|-----------|---------------------------------|-------------|---------------|---------------|----------------|----------------|---------|---------|--------------|
| | | | | | | 3-Level | 2-Level | Shutter | |
| HT82V805A | CCD Surveillance/Vehicle Camera | 3.0V ~ 5.5V | 14.5V ~ 15.5V | -9.5V ~ -7.5V | 24V | 2 | 2 | 1 | 16SSOP/TSSOP |

Image Signal Processor

Image Signal Processor

| Part No. | Application Field | VDD | CCD Sensor Input | Major Function | Video Output | Package |
|-----------|---------------------------------|-----------|--|---|---------------------------|-----------|
| HT82V863R | CCD Surveillance/Vehicle Camera | 3.0V~3.6V | NTSC/PAL 270K/320K/410K/470K pixels | Color image signal processor, TV encoder, video DAC, video amplifier, CCIR656 encoder | NTSC/PAL CVBS, CCIR656 | 64/80LQFP |

Remote RF TX
Remote RF TX

| Part No. | VDD | Description | Frequency Band | Output Power | Data Rate | Package |
|----------|-----------|-------------|----------------|--------------|-----------|------------|
| HT9831 | 2.0V~3.6V | ASK TX | 300MHz~450MHz | 9.5dBm at 3V | 10Kbps | 8SOP/TSSOP |

PIR Controller
PIR Controller

| Part No. | VDD | Operating Current | Standby Current | ZC Off/On for Override | Flash on Mode Auto-change | Comparator Window | Effective Trigger Width | CDS Debounce Time | Triac Drive | Relay Drive | LED | Buzzer | LVD | Package |
|----------|-----------|-------------------|-----------------|------------------------|---------------------------|--------------------------------|-------------------------|-------------------|-------------|-------------|-----|--------|-----|-----------------|
| HT7610A | 5V~12V | 100μA | — | 2 times | Flash | $\frac{1}{16}(V_{DD}-V_{EE})$ | >24ms | 5s | — | √ | — | — | — | 16DIP |
| HT7610B | | | | | | | | | √ | — | — | — | | |
| HT7611A | 5V~12V | 100μA | — | 1 time | No flash | $\frac{1}{16}(V_{DD}-V_{EE})$ | >24ms | 5s | — | √ | — | — | — | 16DIP |
| HT7611B | | | | | | | | | √ | — | — | — | | |
| HT7612 | 2.7V~5.5V | — | 17μA | 2 times | Flash | $V_{ref} \times (1/2 \pm 1/6)$ | >24ms | 15~20s | √ | √ | √ | √ | √ | 16DIP 16NSOP |
| HT7612B | | | 19μA | | | | | < 3s | | | | | | |

Note: Operating and standby current values are typical values.

Timepiece
Timepiece

| Part No. | VDD | Operating Current (μA) | Main Function | Standby Current (μA) | External X'tal Osc. | Package |
|------------------|-----------|------------------------|---|----------------------|---------------------|----------------------|
| HT1380 HT1381 | 2.0V~5.5V | 1.2 at 5V | Time Keeper | 0.1 | 32.768kHz | 8DIP |
| 8SOP | | | | | | |
| HT1382 | 2.0V~5.5V | 1.2 at 3V | Time Keeper | 0.1 | 32.768kHz | 8DIP/SOP 8/10MSOP |
| HT1585* | 2.2V~5.5V | 1.2 at 3V | Internal x'tal oscillator, Temperature compensation, $f \leq \pm 5\text{ppm}$ at 3V, -40~85°C | 0.1 | — | 14SOP |

* Under development, available in 3Q, 2012.

Camera Peripheral
Motor Driver

| Part No. | VDD | Drive Current | H Bridge RON | Standby Current | Package |
|--------------------|-----------|---------------|--------------|-----------------|---------|
| HT6751A HT6751B | 2.0V~6.0V | 500mA | 0.4Ω max. | <2μA at 5V | 8SOP |

Sound Effects
Sound Effects

| Part No. | Description | VDD | Command Input | Built-in VCO | Built-in RAM | Delay Time (ms) | Package |
|-------------------|---------------|-----------|---------------|--------------|--------------|-----------------|-----------|
| HT8950 HT8950A | Voice Changer | 2.4V~4.0V | Manual | √ | — | — | 16/18DIP |
| HT8970 | Voice Echo | 4.5V~5.5V | Manual | √ | 20kb | 30~330 | 16DIP/SOP |
| HT8972 | Voice Echo | 4.5V~5.5V | Manual | √ | 40kb | 30~330 | 16DIP/SOP |

MCU Programming Tools

Holtek is fully aware that success of their microcontroller device range also depends upon the availability of high quality development tools. As a result Holtek has developed a full suite of professional hardware and software tools to provide designers with an excellent set of development resources to ensure their applications are designed and debugged as efficiently as possible. In this section can be found details regarding which set of tools should be used for each microcontroller device.

| Hardware | | |
|-------------|---|---------------------------------|
| ICE | | |
| Model | Function | Support Software |
| HT-ICE | LPT Type in-circuit emulator | HT-IDE3000 |
| e-ICE | USB Type in-circuit emulator | HT-IDE3000 |
| e-Link | On Chip Debug Support(OCDS) Type MCU debug adapter | HT-IDE3000 |
| e-Link32 | On Chip Debug Support(OCDS) Type MCU debug adapter (for HT32Fxx Series MCU) | |
| Programmer | | |
| Model | Function | Support Software |
| e-WriterPro | Universal Writer for OTP/Flash MCU | HOPE3000 |
| EIC-300 | Slimmed-down ICP programmer for Flash MCU | HOPE3000 for EIC300 |
| Software* | | |
| Software | | |
| Model | Function | Support Hardware |
| HT-IDE3000 | Integrated development Environment software for all series of Holtek MCU | HT-ICE, e-ICE, e-Link, e-Link32 |
| HOPE3000 | Integrated software for Holtek e-Writer series Programmers. | e-WriterPro, e-Writer plus |

Note: * It is strongly recommended to download the latest version.

HT-IDE3000 Development Environment

The HT-IDE3000 is a fully integrated development system for the Holtek range of microcontrollers. Working in conjunction with the Holtek ICE hardware emulator, the HT-IDE3000 system provides a user friendly workbench to ensure the process of application program development and debug is as efficient and trouble free as possible. By combining all software tools, such as editor, cross assembler, linker, library manager, symbolic debuggers as well as hardware tools, application designers have all the tools required at their disposal to ensure rapid development and debug of their new designs. An HT-IDE3000 User's Guide is available for download from the Holtek website, which provides much more detailed information on the HT-IDE3000 development system.

The HT-IDE3000 development system software is available for free download from the Holtek website. To ensure that users are provided with the latest modifications and enhancements to the system and to support new device releases, Service Packs are regularly provided.

HT-ICE — Holtek In-Circuit Emulator

The HT-ICEs are multi-featured hardware emulators to assist designers with the rapid development of their Holtek MCU applications. Their expansive integrated hardware and software features, provide designers with a full suite of tools for rapid and easy product development. At the heart of the system is the hardware emulator, which can fully emulate Holtek 8-bit MCU devices in real time as well as providing full debug and trace integrated functions. The HT-ICE package includes the hardware mainboard platform, CD, flat cables, power adapter, power cord and printer cable.

HT-ICE USB cable allowing customers to connect the HT-ICE LPT connector to the computer USB port. The part number of this USB cable is CUSBICECABLE4A. Please contact us for purchasing details.

e-ICE

The e-ICE is Holtek’s new generation of MCU in-circuit emulators that uses a real chip EV for device emulation. In this way a more accurate emulation of device function and characteristics can be implemented. Together with the HT-IDE3000 software development system the user is provided with a suite of development tools for rapid MCU product development.

Holtek New Universal Writer – e-WriterPro

The e-WriterPro can be used not only as a programming tool for all of Holtek’s OTP and Flash devices during the development stage but can also be used for small to medium volume production purposes.

The e-WriterPro must be used together with a corresponding e-Socket according to the package type of the MCU that is to be programmed. Devices with the same package type require only a single e-Socket, thus reducing the problem of changing different adaptors for different IC part numbers.

For all available Holtek devices, the following e-Socket table shows which one should be used with which device package type.

| e-Socket | | |
|----------|---------------|--|
| No. | Product Name | Supported Package |
| 1 | ESKT40DIPA | 8DIP, 16DIP, 18DIP, 20DIP, 40DIP, 22SKDIP, 24SKDIP, 28SKDIP |
| 2 | ESKT16NSOPA | 8SOP, 16NSOP |
| 3 | ESKT28SSOPA | 16SSOP(150mil), 20SSOP(150mil), 24SSOP(150mil), 28SSOP(150mil) |
| 4 | ESKT28SOPA | 28SOP, 24SOP, 20SOP, 16SOP, 18SOP |
| 5 | ESKT20QFN4A | 20QFN(4mm×4mm) |
| 6 | ESKT30SSOPA | 28SSOP(209mil), 20SSOP(209mil), 24SSOP(209mil) |
| 7 | ESKT10MSOPA | 10MSOP, 8MSOP |
| 8 | ESKT32LQFPA | 32LQFP |
| 9 | ESKT44QFPA | 44QFP, 44LQFP(FP 3.2mm) |
| 10 | ESKT56SSOPA | 48SSOP, 56SSOP |
| 11 | ESKT32QFNA | 32QFN |
| 12 | ESKT52QFPA | 52QFP |
| 13 | ESKT64LQFP10A | 64LQFP(10mm×10mm) |
| 14 | ESKT48QFNA | 48QFN |
| 15 | ESKT128QFPA | 128QFP |
| 16 | ESKT40QFN6A | 40QFN(6mm×6mm) |
| 17 | ESKT100QFPA | 100QFP |
| 18 | ESKT100LQFPA | 100LQFP |
| 19 | ESKT80LQFPA | 80LQFP |
| 20 | ESKT64LQFP7A | 64LQFP(7mm×7mm) |
| 21 | ESKT48LQFPA | 48LQFP (except for HT32Fxx Series MCU) |
| 22 | ESKT48LQFPB | 48LQFP (for HT32Fxx Series MCU) |
| 23 | ESKT20QFN5A | 20QFN(5mm×5mm) |

Note: Data in parentheses next to each package type shows the actual width of the IC package.

8-Bit MCU Tools Indexing Table

The following table allows the correct tools to be quickly located against a device part number. In instances where tools are not listed for specific devices, this may infer that such tools are not required. Note that the "HT-ICE(S)" ICE type stands for the HT-ICE set and the corresponding I/O card.

| 8-Bit MCU Tools | | | | |
|--|---------------------------|---|--------------------|----------|
| Device Part No. | ICE Type | Tool Part No. | Programming Timing | ICP Type |
| BS83B08-3, BS83B12-3, BS83B16-3 | e-ICE | M1001C + D1023A | Flash Type-6 | ICP-2B |
| BS85B12-3 | e-ICE | M1001C + D1035A | Flash Type-6 | ICP-2B |
| BS85C20-3 | | M1001C + D1036A | | |
| HT37A20, HT37A30, HT37A40, HT37A50, HT37A60, HT37A70 | Demo Board | HT-VMS-MB | — | — |
| HT37B30, HT37B50, HT37B70 | Demo Board | HT-VMS-MB | — | — |
| HT37Q20, HT37Q30, HT37Q40, HT37Q50, HT37Q60, HT37Q70 | Demo Board | HT-VMS-MB | — | — |
| HT45F23, HT45F43 | e-ICE | M1001C + D1034A | Flash Type-6 | ICP-2B |
| HT45FM03B | HT-ICE(S) | CICE45FM03B08B | Flash Type-6 | ICP-2B |
| HT45R22E | e-ICE | M1001C + D1015A + P1002A | OTP Type-2 | ICP-1D |
| HT46R006, HT46R01B-1, HT46R01N-1, HT48R01B-1, HT48R01N-1 | HT-ICE I/O Card | CICE201A + CICE4XR06X009A + CPCB4XR06X009A | OTP Type-2A | ICP-1D |
| HT46R005, HT48R005, HT48R006 | e-ICE | M1001C + D1056A | OTP Type-2A | ICP-1D |
| HT46R62, HT46R64, HT46R65 | HT-ICE(S) | CICE46L000007A | OTP Type-0A | ICP-1A |
| HT46C62, HT46C64, HT46C65, HT46CU66, HT46CU67 | | | — | — |
| HT46RU66, HT46RU67 | | | OTP Type-0D | ICP-1A |
| HT46RU22, HT46RU232, HT46RU24, HT46RU25 | HT-ICE(S) | CICE46F000007A | OTP Type-0A | ICP-1A |
| HT46CU25, HT46CU26 | | | — | — |
| HT46RU26 | | | OTP Type-0D | ICP-1A |
| HT46F46E, HT46F47E, HT46F48E, HT46F49E | HT-ICE(S) | CICE46F000007A | Flash Type-3 | ICP-2A |
| HT46R01B, HT46R02B, HT48R01B, HT48R02B | HT-ICE I/O Card | CICE201A + CPCB4XR06X009A | OTP Type-2 | ICP-1D |
| HT46R0662, HT46R067, HT48R0662, HT48R067 | e-ICE | M1001C + D2005A | OTP Type-2 | ICP-1D |
| HT46R064B, HT46R065B, HT46R066B, HT48R063B, HT48R064B, HT48R065B, HT48R066B | | | OTP Type-2A | ICP-1D |
| HT46R068B, HT46R069B, HT48R068B, HT48R069B | | | OTP Type-6A | ICP-1C |
| HT46R064D, HT46R065D, HT46R066D, HT48R064D, HT48R065D, HT48R066D | e-ICE | M1001C + D1037B | OTP Type-2A | ICP-1D |
| HT46R064G, HT46R065G, HT48R064G, HT48R065G | e-ICE | M1001C + D1045B | OTP Type-2A | ICP-1D |
| HT48R066G | | M1001C + D1015A | OTP Type-2 | ICP-1D |
| HT46R0662G, HT48R0662G | | M1001C + D1030A | OTP Type-2A | ICP-1D |
| HT46R0664 | e-ICE | M1001C + D1064B | OTP Type-2B | ICP-1B |
| HT46R51A, HT46R52A, HT46R53A, HT46R54A | HT-ICE(S) | CICE46F000007A | OTP Type-0A | ICP-1A |
| HT46R73D-3 | e-ICE | M1001C + D1012A | OTP Type-6 | ICP-1C |
| HT46R75D-3 | e-ICE | M1001C + D2008B | OTP Type-6 | ICP-1C |
| HT46R92, HT46R94 | HT-ICE(S) | CICE46R940007A | OTP Type-0A | ICP-1A |
| HT46RB50, HT46RB70 | HT-ICE(S) | CICE46RB70005B | OTP Type-0B | ICP-1A |
| HT48CA1, HT48CA3, HT48CA5 | HT-ICE(S) | CICE48U000006A | — | — |
| HT48RA1, HT48RA3, HT48RA5 | | | OTP Type-0A | ICP-1A |
| HT48F06E, HT48F10E, HT48F30E, HT48F50E, HT48F70E | HT-ICE(S) | CICE48U000006A | Flash Type-1 | ICP-2A |
| HT48R01T3, HT46R01T3 | HT-ICE I/O Card | CICE201A + CPCB4XR06X009A + (Optional Receiver Module: CPCB983131509A/CPCB983143309A) | OTP Type-2 | ICP-1D |
| HT48R065V, HT46R065V | HT-ICE I/O Card VFD Board | CICE201A + CPCB4XR06X009A + EJ-QFP52F | OTP Type-2 | ICP-1D |
| HT48R52A, HT48R54A | HT-ICE(S) | CICE48R52A006A | OTP Type-0A | ICP-1A |
| HT48RA0-5 | e-ICE | M1001C + D1018A | OTP Type-2 | ICP-1B |
| HT49C10-1, HT49C30-1, HT49C30L, HT49C50-1, HT49C50L, HT49C70-1, HT49C70L, HT49CU80 | HT-ICE(S) | CICE49U000006A | — | — |
| HT49R10A-1, HT49R30A-1, HT49R50A-1, HT49R70A-1, HT49RU80 | | | OTP Type-0A | ICP-1A |
| HT49RA0 | HT-ICE(S) | CICE49A000006A | OTP Type-0A | ICP-1A |
| HT49CA0 | | | — | — |
| HT49RA1 | HT-ICE(S) | CICE49A10007A | OTP Type-0A | ICP-1A |
| HT49CA1 | | | — | — |

| 8-Bit MCU Tools | | | | |
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| Device Part No. | ICE Type | Tool Part No. | Programming Timing | ICP Type |
| HT56R62 | HT-ICE(S) | CICE56R620008B | OTP Type-1 | ICP-1A |
| HT56R64 | | CICE56R640007B | OTP Type-1E | ICP-1A |
| HT56R65 | | CICE56R650008B | OTP Type-1 | ICP-1A |
| HT56R66 | | CICE56R670008B | OTP Type-1 | ICP-1A |
| HT56R67 | | | OTP Type-1E | ICP-1A |
| HT56R642 | | CICE56R642008B | OTP Type-1 | ICP-1A |
| HT56R644, HT56R654 | | CICE56R654008B | OTP Type-1 | ICP-1A |
| HT56R656, HT56R666 | | CICE56R666008B | OTP Type-1 | ICP-1A |
| HT56R668, HT56R678 | | CICE56R678008C | OTP Type-1E | ICP-1A |
| HT56C668, HT56C678 | | | — | — |
| HT56R688 | — | OTP Type-0D | ICP-1A | |
| HT56R22, HT56R23, HT56R24, HT56R25, HT56R26 | e-ICE | M1001C + D1010A | OTP Type-6 | ICP-1C |
| HT56RB688 | e-ICE | M1001C + D2003A | OTP Type-6 | ICP-1C |
| HT66F03, HT66F04, HT68F03, HT68F04 | e-ICE | M1001C + D1006A | Flash Type-6 | ICP-2B |
| HT66F13, HT68F13 | e-ICE | M1001C + D1007B | Flash Type-6 | ICP-2B |
| HT66F14, HT68F14 | | M1001C + D1008B | | |
| HT66F15, HT68F15 | | M1001C + D1004B | | |
| HT66F20, HT68F20 | e-ICE | M1001C + D1005A | Flash Type-6 | ICP-2B |
| HT66F30, HT68F30 | | M1001C + D1001C | | |
| HT66F40, HT68F40 | | M1001C + D1002C | | |
| HT66F50, HT68F50 | | M1001C + D1003C | | |
| HT66F60, HT68F60 | | M1001C + D1009B | | |
| HT66FB30, HT66FU30, HT68FB30, HT68FU30 | | M1001C + D1001C + P1001B | | |
| HT66FB40, HT66FU40, HT68FB40, HT68FU40 | | M1001C + D1002C + P1001B | | |
| HT66FB50, HT66FU50, HT68FB50, HT68FU50 | | M1001C + D1003C + P1001B | | |
| HT66FB60, HT66FU60, HT68FB60, HT68FU60 | M1001C + D1009B + P1001B | | | |
| HT67F30, HT67F40, HT67F50, HT67F60 | e-ICE | M1001C + D2004C | Flash Type-6 | ICP-2B |
| HT68F03T3, HT66F03T3 | e-ICE | M1001C + D1006A + (Optional Receiver Module: CPCB983131509A/CPCB983143309A) | Flash Type-6 | ICP-2B |
| HT82A525R | e-ICE | M1001C + D1068A | OTP Type-0B | ICP-1A |
| HT82A623R | HT-ICE(S) | CICE82A620008B | OTP Type-0B | ICP-1A |
| HT82A821R, HT82A822R | HT-ICE(S) | CICE82A822005A | OTP Type-0B | ICP-1A |
| HT82A824R | | CICE82A824010A | | |
| HT82A834R, HT82A850R, HT82A851R | | CICE82A832005A | | |
| HT82A836R | | CICE82A836007A | | |
| HT82M99E, HT82M99EE, HT82M9AE, HT82M9AEE, HT82M9BE, HT82M9BEE | HT-ICE(S) | CICE82M990004B | OTP Type-0B | ICP-1A |
| HT82M99A, HT82M99AE, HT82M9AA, HT82M9AAE, HT82M9BA, HT82M9BAE | — | — | — | — |
| HT82K94E, HT82K95E, HT82K95EE | HT-ICE(S) | CICE82K960004A | OTP Type-0B | ICP-1A |
| HT82K94A, HT82K95A, HT82K95AE | | | — | — |
| HT82B40R, HT82B42R, HT82B60R | e-ICE | M1001C + D1081A | OTP Type-0B | ICP-1A |
| HT82B40A | | | — | — |
| HT82K68E-L | HT-ICE(S) | CICE82K680004A | OTP Type-0A | ICP-1A |
| HT82K68A-L | | | — | — |
| HT82K70E-L/HT82K76E-L, HT82M75R, HT82M75RE, HT82K75R, HT82K75RE | HT-ICE(S) | CICE82K760008C | OTP Type-0A | ICP-1A |
| HT82K70A-L | — | — | — | — |
| HT83004, HT83007, HT83010, HT83020, HT83038, HT83050, HT83074 | HT-ICE(S) | CICE860000004A | — | — |
| HT83R074 | | | OTP Type-0C | ICP-1A |
| HT83B60, HT83F02 | e-ICE | M1001C + D1026A | Flash Type-6 | ICP-2B |
| HT83F22 | | M1001C + D1020A | | |
| HT86A36, HT86A72 | HT-ICE(S) | CICE86AR72007A | — | — |
| HT86AR72 | | | OTP Type-0C | ICP-1A |
| HT86B03, HT86B10, HT86B20, HT86B30, HT86B40, HT86B50, HT86B60, HT86B70, HT86B80, HT86B90 | HT-ICE(S) | CICE86B000008A | — | — |
| HT86BR10, HT86BR30, HT86BR60 | | | OTP Type-0C | ICP-1A |
| HT95R22, HT95R23, HT95R24, HT95R33, HT95R34, HT95R43, HT95R44 | HT-ICE(S) | CICE95R3X0008B | OTP Type-0A | ICP-1A |
| HT95R25, HT95R35, HT95R45 | | CICE95R350008B | OTP Type-0A | ICP-1A |
| HT95R54, HT95R55, HT95R64, HT95R65 | | CICE95R550009A | OTP Type-0A | ICP-1A |
| HT98R068-1 | e-ICE | M1001C + D1044C | OTP Type-0C | ICP-1A |

32-Bit MCU Programming Tools

Holtek is fully aware that the success of their microcontroller device range also depends upon the availability of high quality development tools. As a result, Holtek has developed a full suite of professional hardware and software tools to provide designers with an excellent set of development resources to ensure their application are designed and debugged as efficiently as possible.

In this section can be found details regarding which set of tools should be used for the HT32 series microcontrollers.

| HT32 Series MCU | | | |
|-----------------|---------------|-----------------|--------------------------|
| Standard MCU | | | |
| Device Part No. | Debug Adapter | Development Kit | Writer, Socket |
| HT32F1251B | e-Link32 | ESK32-100 | e-WriterPro, ESKT48LQFPB |
| HT32F1251 | e-Link32 | ESK32-100 | e-WriterPro, ESKT48LQFPB |
| HT32F1252 | e-Link32 | ESK32-100 | e-WriterPro, ESKT48LQFPB |
| HT32F1253 | e-Link32 | ESK32-100 | e-WriterPro, ESKT48LQFPB |

| Software | | | |
|-----------------------|-------|---|------------------|
| Software | Model | Function | Support Hardware |
| HOPE3000For32Bits | | e-Writer programmer software for HT32 series MCUs | e-WriterPro |
| HT32 Flash Programmer | | In-System / In-Application programmer software for HT32 series MCUs | ESK32-100 |
| e-Link32 USB Driver | | USB driver for the e-Link32 debug adapter | e-Link32 |
| e-Link32 Keil Plugin | | Keil plugin software to enable the e-Link32 to be used with the the µgVision4 IDE V4.21 | e-Link32 |
| e-Link32 IAR Plugin | | IAR plugin software to enable the e-Link32 to be used with the EWARM IDE V6.21 | e-Link32 |

e-Link32 Debug Adapter

The e-Link32 is a debug adapter for Holtek’s series of 32-bit microcontrollers. It allows the programming and debug of embedded programs on the user target board. By using the e-Link32 together with the Keil µVision4 IDE or IAR EWARM IDE, the user is provided with a suite of development tools for rapid MCU product development.

The e-Link32 package includes the e-Link32 debug adapter, flat cable, CD and USB cable.

ESK32-100 Development Board

The ESK32-100 is a development board which together with the HT32F1253 device, provides a development platform for the HT32F152x series. This development board is equipped with peripherals such as buzzer, input keys, RS232 transceiver, EEPROM, Serial Flash, LED and potentiometer. This provides a means for users to easily and quickly understand and evaluate the features of the HT32F125x series. The ESK32-100 can be used with the e-Link32 providing users with a complete development environment kit.

The ESK32-100 package includes the ESK32-100 development board, CD and mini USB cable.

The HT-IDE3000 development system software is available for free download from the Holtek website. To ensure that users are provided with the latest modifications and enhancements to the system and to support new device releases, Service Packs are regularly provided.

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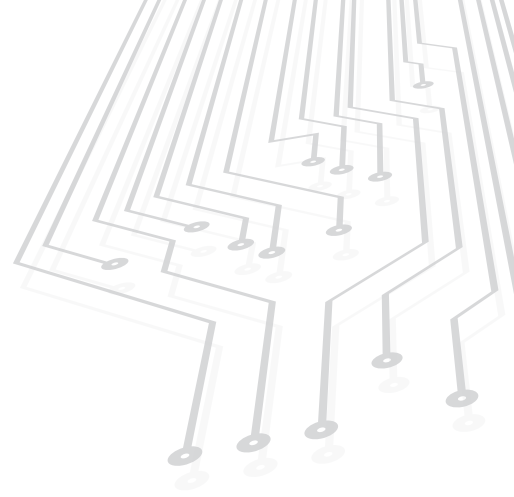
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