

Introduction

Holtek Semiconductor was established in 1983 and to the present day the company has released an unceasing stream of competitive semiconductor devices onto the global market. While the Holtek design teams continue to focus their development efforts in the 8-bit and 32-bit microcontroller development area, it would be easy to ignore the wide range of peripheral semiconductor products also present within Holtek's design sphere. Underpinning these successful product developments is of course the many years of semiconductor design experience accumulated by the company's professional engineering design teams. These efforts have resulted in providing Holtek customers with a wide range of high quality industrial grade semiconductor devices. Many of today's popular global brand consumer appliances and industrial products are major users of Holtek's devices, which in today's highly competitive semiconductor market illustrates their confidence in the company's products. Holtek remains fully committed to the continuous expansion of its high quality and superior price-performance semiconductor devices well into the future.

Product Device Range

The Holtek product development focus will remain firmly in the microcontroller region for both 8-bit and Arm® core based 32-bit microcontrollers. Internal functions of these microcontrollers includes an extensive range of fully integrated digital and analog features such as A/D converters, comparators, LCD drivers, PWM generators, high current LED drivers, touch switches, SPI/I²C, UART and USB interfaces, voice functions, RF functions etc. Its 32-bit and 8-bit microcontroller devices meet with full industry specifications in having a wide voltage and temperature operating range. Complementing its microcontrollers are a wide range of peripheral devices such as stand alone touch switch ICs, LCD drivers, power management devices, video processors etc. The company is also expanding its range of functional modules such as PIR modules, infrared modules, temperature/humidity modules etc further expanding the diversity of the Holtek range and opening up the application areas into a wider market area.

Product Development Strategy

In line with market trends and customer requirements, Holtek's commitment to new product development and innovation can be seen through its continuously expanding device functionality. As the Internet of Things – IOT – continues to reach into society's demands for an increasingly connected lifestyle, the Holtek multi-function product range stands well placed to embed itself into this fast expanding market area. The integration of features such as RF functions, voice, touch key and power management functions into its microcontroller range show this commitment to IOT product trends. Holtek's range of standard microcontroller products will continue to expand but along with it will be the design of application specific products such as those for motor control, personal health care, home appliances etc. With its long history of working together with customers to design their custom microcontrollers, Holtek welcomes product manufacturers to discuss possible new custom microcontroller design possibilities. Additionally and as no functionally rich microcontroller is useful without a suitable development platform, all of Holtek's products are fully supported by a comprehensive range of hardware and software development tools to simplify the designer's product development process. 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

Holtek's range of semiconductor products is fully complemented by its extensive global marketing network with a sales presence in most parts of the world. Having an established large number of worldwide sales offices and agents, Holtek's global marketing structure is well placed to take advantage of any new market opportunities and trends as they 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. With Holtek continually releasing new products onto the market, 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.

General Purpose MCU	Display MCU	1.8V~5.5V MCU
32-Bit Flash MCU 3 8-Bit Flash MCU 5 High Supply Voltage Flash MCU 6	8-Bit LCD Display Flash MCU 7 8-Bit LCD / LED Flash MCU 8	1.8V~5.5V Flash MCU 9
USB MCU	Motor MCU & Peripheral	OPA MCU
USB Interface Flash MCU 10	DC Motor Flash MCU 11 Motor Driver Peripheral 11	OPA Flash MCU 12
Health & Measurement	Security & Safety	Touch MCU & Peripheral
24-Bit Delta Sigma A/D MCU 13 24-Bit Delta Sigma Peripheral 13 Health Care Flash MCU 14 Measurement Flash MCU 15 R to F MCU 15	Security & Safety MCU 16 Security & Safety IC 17	Touch Flash MCU 18 Ultra-Low Power Touch MCU 21 High Supply Voltage Touch MCU 21 Touch Key IC 22
Voice & Music MCU	Wireless	Communication
Cortex-M0+ 32-Bit Voice / Music MCU 23 Voice & Music Flash MCU 23 Voice Record / Playback Flash MCU 23 Sound Effect Flash MCU 23 Voice & Music MCU 24	Bluetooth Low Energy (BLE) 25 2.4GHz RF Transceiver 25 Transparent Transmission MCU 25 Sub-1GHz RF Transceiver 26 Sub-1GHz RF Transmitter 26 Sub-1GHz RF Receiver 26 NFC Flash MCU 27 FRS Flash MCU 27 Infrared / Encoder / Decoder 27	Earphone Interface Bridge MCU 28 Interface Bridge 28 Telecom IC 28
Battery & Power Management	Display Driver	Special Purpose MCU
Battery Management MCU 29 Battery & Power Management Peripheral 29 AC Power Management 29 LDO & Detector 30 DC to DC Converter 31 AC to DC Converter 31	LCD Controller & Driver 32 LED Controller & Driver 33 White LED Backlight Driver 33 AC / DC LED Lighting Driver 33 VFD Controller & Driver 34 EPD Controller & Driver 34	Bank & Commercial MCU 35 Special Purpose MCU 36
Module	EEPROM Memory	Analog
Bluetooth Low Energy (BLE) Module 37 PIR Module 37	3-Wire EEPROM 38 I ² C EEPROM 38	General OP Amplifier 39 Audio Amplifier 39 24-Bit Delta Sigma A/D Peripheral 39
Video	Miscellaneous	MCU Programming Tools
CCD / CIS Analog Signal Processor 40 Currency Recognition Processor 40 Image Signal Processor 40	Miscellaneous 41	32-Bit MCU Programming Tools 42 8-Bit MCU Programming Tools 43
Part Number Index		
Part Number Index 50		

32-Bit Flash MCU
Cortex-M0+ 32-Bit Standard MCU

Part No.	Max. Freq.	VDD	Flash	SRAM	PDMA	ADC	Timers ¹	Cap. ² or PWM	Cpm. PWM ³	RTC	Interface	Others	I/O	Package
HT32F52220	40MHz	2.0V ~ 3.6V	16KB	4KB	—	1 Msps 12-bit ×8	BFTM×1 SCTM×2 GPTM×1	6	—	—	USART×1 UART×1 SPI×1 I ² C×1	—	19	24SSOP
HT32F52230			32KB	4KB									23	28SSOP
HT32F52231	40MHz	2.0V ~ 3.6V	32KB	4KB	—	1 Msps 12-bit ×12	BFTM×2 SCTM×4 GPTM×1 MCTM×1	12	3	√	USART×1 UART×2 SPI×2 I ² C×2	CRC	19	24SSOP
HT32F52241			64KB	8KB									23	28SSOP
HT32F52243	40MHz	2.0V ~ 3.6V	64KB	8KB	6CH	1 Msps 12-bit ×12	BFTM×2 SCTM×4 GPTM×1 MCTM×1	12	3	√	USART×2 UART×4 SPI×2 I ² C×3	CRC DIV	26	33QFN
HT32F52253			128KB	16KB									38	46QFN
													40	48LQFP
													52	64LQFP

Cortex-M0+ 32-Bit Standard USB MCU

Part No.	Max. Freq.	VDD	Flash	SRAM	PDMA	ADC	CMP	DAC	Timers ¹	Cap. ² or PWM	Cpm. PWM ³	RTC	SCI ⁴	USB ⁵	EBI ⁶	I ² S	Interface	Others	I/O	Package
HT32F52331	48MHz	2.0V ~ 3.6V	32KB	4KB	—	1 Msps 12-bit ×12	—	—	BFTM×2 SCTM×4 GPTM×1 MCTM×1	12	3	√	1	√	—	—	USART×1 UART×2 SPI×2 I ² C×2	CRC	24	33QFN
HT32F52341			64KB	8KB															38	48LQFP
HT32F52342	48MHz	2.0V ~ 3.6V	64KB	8KB	6CH	1 Msps 12-bit ×12	2	—	BFTM×2 SCTM×2 GPTM×2 MCTM×1	14	3	√	2	√	√	√	USART×2 UART×2 SPI×2 I ² C×2	CRC	26	33QFN
HT32F52352			128KB	16KB															39	48LQFP
HT32F52344	60MHz	1.65V ~ 3.6V	64KB	8KB	6CH	1 Msps 12-bit ×12	2	—	BFTM×2 SCTM×2 GPTM×1 MCTM×1	10	3	√	—	√	√	—	UART×2 SPI×2 I ² C×1	CRC DIV	26	33QFN
HT32F52354			128KB	8KB															39	46QFN
HT32F52357*	60MHz	1.65V ~ 3.6V	128KB	16KB	6CH	1 Msps 12-bit ×12	2	500Ksps 12-bit×2	BFTM×2 SCTM×2 PWM×2 GPTM×1 MCTM×1	18	3	√	2	√	√	√	USART×2 UART×4 SPI×2 I ² C×2	AES CRC DIV	37	46QFN
HT32F52367*			256KB	32KB															53	64LQFP
																			53	64LQFP
																			67	80LQFP

Cortex-M0+ 32-Bit Standard LCD MCU

Part No.	Max. Freq.	VDD	Flash	SRAM	PDMA	ADC	CMP	DAC	Timers ¹	Cap. ² or PWM	RTC	SCI ⁴	USB ⁵	I ² S	LCD	Interface	Others	I/O	Package
HT32F57331*	60MHz	1.65V ~ 3.6V	32KB	4KB	—	1 Msps 12-bit ×10	—	—	BFTM×2 PWM×2 GPTM×1	12	√	1	√	—	29x4 ~ 25x8	USART×1 UART×2 SPI×2 I ² C×2	CRC DIV	39	48LQFP
HT32F57341*			64KB	8KB														53	64LQFP
HT32F57342*	60MHz	1.65V ~ 3.6V	64KB	8KB	6CH	1 Msps 12-bit ×10	2	500Ksps 12-bit×2	BFTM×2 SCTM×2 PWM×2 GPTM×1	14	√	2	√	√	37x4 ~ 33x8	USART×1 UART×2 SPI×2 I ² C×2	AES CRC DIV	39	48LQFP
HT32F57352*			128KB	16KB														53	64LQFP
																		67	80LQFP

Cortex-M0+ 32-Bit Standard 5V MCU

Part No.	Max. Freq.	VDD	Flash	SRAM	ADC	Timers ¹	Cap. ² or PWM	Cpm. PWM ³	RTC	Interface	Others	I/O	Package
HT32F50220	20MHz	2.5V ~ 5.5V	16KB	4KB	1 Msps 12-bit ×12	BFTM×1 PWM×2 GPTM×1	12	—	√	UART×2 SPI×2 I ² C×1	DIV	18	24QFN
HT32F50230			32KB	4KB								19	24SSOP
HT32F50231	20MHz	2.5V ~ 5.5V	32KB	4KB	1 Msps 12-bit ×12	BFTM×2 PWM×2 GPTM×1 MCTM×1	16	3	√	USART×1 UART×2 SPI×2 I ² C×2	CRC DIV	18	24QFN
HT32F50241			64KB	8KB								19	24SSOP
												22	28SOP
												26	33QFN
												38	46QFN
												36	44LQFP
												40	48LQFP

* Under development, available in 3Q, 2019.

Note: 1. BFTM: Basic Function Timer, SCTM: Single-Channel Timers, GPTM: General-Purpose Timers, MCTM: Motor Control Timer.

- Cap.: Input Capture.
- Cpm. PWM: Complementary PWM for 3-phase motor control or inverter application.
- SCI: ISO7816-3 Smart Card Interface.
- USB 2.0 Full Speed device.
- EBI: External Bus Interface for NOR Flash / SRAM / LCD.
- Operational Amplifier with optional Comparator function.
- CSIF: CMOS Sensor Interface.

32-Bit Flash MCU

Cortex-M3 32-Bit Standard MCU

Part No.	Max. Freq.	VDD	Flash	SRAM	PDMA	ADC	CMP	Timers ¹	Cap. ² or PWM	Cpm. PWM ³	RTC	SCI ⁴	USB ⁵	EBI ⁶	I ² S	Interface	Others	I/O	Package
HT32F1653	72MHz	2.7V ~ 3.6V	32KB	8KB	8CH	1 Msps 12-bit x12	2	BFTMx2 GPTMx2 MCTMx2	16	6	✓	1	✓	✓	✓	USARTx2 UARTx2 SPIx2 I ² Cx2	CRC	37 51	48LQFP 64LQFP
HT32F1654		64KB	16KB																
HT32F12345	96MHz	2.0V ~ 3.6V	64KB	16KB	12CH	1 Msps 12-bit x12	2	BFTMx2 GPTMx2 MCTMx2	16	6	✓	—	✓	✓	✓	SDIOx1 USARTx2 UARTx2 SPIx2 I ² Cx2	CRC	37 37 51	46QFN 48LQFP 64LQFP
HT32F12365	96MHz	2.0V ~ 3.6V	256KB	64KB	12CH	1 Msps 12-bit x16	2	BFTMx2 GPTMx2 MCTMx2	16	6	✓	2	✓	✓	✓	SDIOx1 USARTx2 UARTx2 SPIx2 I ² Cx2	CRC AES	37 37 51 80	46QFN 48LQFP 64LQFP 100LQFP
HT32F12366		256KB	128KB																

Cortex-M3 32-Bit Special-Purpose MCU

Part No.	Max. Freq.	VDD	Flash	SRAM	PDMA	ADC	CMP	Timers ¹	Cap. ² or PWM	Cpm. PWM ³	RTC	SCI ⁴	USB ⁵	EBI ⁶	I ² S	Interface	Others	I/O	Package
HT32F22366	96MHz	2.0V ~ 3.6V	256KB	128KB	12CH	1 Msps 12-bit x16	2	BFTMx2 GPTMx2 MCTMx2	16	6	✓	2	✓	✓	✓	SDIOx1 USARTx2 UARTx2 SPIx2 I ² Cx2	CRC AES CSIF ⁸	37 37 51 80	46QFN 48LQFP 64LQFP 100LQFP

Note: 1. BFTM: Basic Function Timer, SCTM: Single-Channel Timers, GPTM: General-Purpose Timers, MCTM: Motor Control Timer.
 2. Cap.: Input Capture.
 3. Cpm. PWM: Complementary PWM for 3-phase motor control or inverter application.
 4. SCI: ISO7816-3 Smart Card Interface.
 5. USB 2.0 Full Speed device.
 6. EBI: External Bus Interface for NOR Flash / SRAM / LCD.
 7. Operational Amplifier with optional Comparator function.
 8. CSIF: CMOS Sensor Interface.

Cortex-M0 32-Bit USB Type-C PD MCU

Part No.	Max. Freq.	VCC (HV)	VDD	SRAM	MTP	ADC	PWM Controller	PFM	Timer	High Voltage Gate Driver	VCONN Current-Limit	CCn Rp/Rd	CV/CC	OVP/UVP	Current Sense	LDO	PD 3.0	I/O	Package
HT32FP2350	21.6MHz	6V~36V	4.25V~5.5V	2KB	16KB	10-bit x5	Buck Only 150~600kHz	✓	✓	✓	400mA	✓	✓	✓	✓	1.8V	✓	10	40QFN
HT32FP2450							Buck/Boost 300~600kHz												

Cortex-M0+ 32-Bit Music Synthesizer MCU

Part No.	Max. Freq.	VDD	Flash	Ext. Flash	SRAM	PDMA	Audio D/A	ADC	Timers ¹	WDT	RTC	USB ²	MIDI Engine ³	Voice	Sound Effect	Interface	I/O	Package
HT32F0006	48MHz	2.0V~3.6V	128KB	SPI	16KB	6CH	16-bit x2	1 Msps 12-bit x16	BFTMx2 SCTMx4 GPTMx1	✓	✓	✓	✓	SB Coding	Echo	USARTx1 UARTx1 SPIx1 QSPIx1 I ² Cx1 I ² Sx1	52	48/64LQFP

Note: 1. BFTM: Basic Function Timer, SCTM: Single-Channel Timers, GPTM: General-Purpose Timers.
 2. USB 2.0 Full Speed device.
 3. 32-CH Music Synthesis Engine.

Cortex-M0+ 32-Bit Data Bridge MCU

Part No.	Max. Freq.	VDD	Flash	SRAM	PDMA	Timers ¹	WDT	RTC	USB ²	Interface	Others	I/O	Package
HT32F0008	60MHz	1.65V~3.6V	64KB	16KB	6CH	BFTMx2 PWMx2 GPTMx1	✓	✓	✓	USARTx1 UARTx1 SPIx1 I ² Cx1	CRC AES DIV	19 28 40 42	24QFN 33QFN 46QFN 48LQFP

Note: 1. BFTM: Basic Function Timer, SCTM: Single-Channel Timers, GPTM: General-Purpose Timers, MCTM: Motor Control Timer.
 2. USB 2.0 Full Speed device.

BLE Transparent Transmission Flash MCU

Part No.	Max. Freq.	VDD	Flash	SRAM	ADC	Timers ¹	Interface	Others	I/O	Data Rate	Output Power	Sensitivity	Package
BC32F7611	40MHz	2.2V~3.6V	64KB	8KB	1 Msps 12-bit x6	RTCx1, WDTx1 BFTMx2, SCTMx4 GPTMx1	USARTx1, UARTx2 SPIx1, I ² Cx2	CRC	22	1Mbps	+3dBm	-90dBm	46QFN

Note: BFTM: Basic Function Timer, SCTM: Single-Channel Timers, GPTM: General-Purpose Timers, MCTM: Motor Control Timer.

8-Bit Flash MCU
Small Package Flash MCU with EEPROM

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Timer	PWM	Comparator	Stack	Package
HT66F302	4MHz 8MHz	1.8V~ 5.5V	4MHz, 8MHz or 32kHz	1K×14	64×8	32×8	8	12-bit×4	10-bit STM×1 10-bit PTM×1	—	—	2	8/10SOP
HT66F002	8MHz	2.2V~ 5.5V	8MHz or 32kHz	1K×14	64×8	32×8	8	—	10-bit STM×1	—	—	2	8SOP, 10MSOP
HT66F0021		1.8V~ 5.5V				32×14#	6	10-bit×4	8-bit×1	8-bit×1			8SOP
HT66F002		2.2V~ 5.5V				—	—	—	—	8SOP, 10MSOP			
HT66F0025		2.2V~ 5.5V		2K×14		8	—	10-bit STM×1	—	4		8/10SOP	
HT66F0025													12-bit×4
HT66F007	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	2K×16	160×8	512×8	8	12-bit×5	10-bit CTM×2 16-bit STM×1	—	1	8	8DIP/SOP 10MSOP
HT66F008	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	4K×16	256×8	1024×8	8	12-bit×5	10-bit CTM×2 16-bit STM×1	—	1	8	8DIP/SOP 10MSOP

Note: # Emulated EEPROM.

A/D Flash MCU

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

A/D Flash MCU with High Current LED Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	LED Driver	Timer	High Current LED Driver	Stack	Package
HT66F25D	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	4K×16	192×8	64×8	26	12-bit×8	8×8	10-bit CTM×1 10-bit ETM×1	16	8	20/24/28SOP
HT66F26D	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	8K×16	384×8	64×8	26	12-bit×8	8×8	10-bit CTM×1 10-bit STM×1 10-bit ETM×1	16	8	24/28SOP

Flash MCU with EEPROM

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Timer	Comparator	RTC	Interface	Stack	Package
HT66F40	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	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×1	8	24/28SOP/SSOP 32/48QFN
HT66F40								—						
HT66F50	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	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×1	8	28SOP/SSOP 48QFN
HT66F60A	8MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	16K×16	1024×8	128×8	61	12-bit×12	10-bit CTM×2 10-bit ETM×1 16-bit STM×3	2	√	SPI/I ² C×1	16	48/64LQFP
HT66F70A	8MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	32K×16	2048×8	128×8	61	12-bit×12	10-bit CTM×2 10-bit ETM×1 16-bit STM×3	2	√	SPI/I ² C×1	16	48/64LQFP

Note: 1. All devices include a fully integrated RC system oscillator.
 2. Four I/O lines on each device can be configured as software LCD COM driver pins.
 3. HT66F60A/70A are U.S. standard UL 60730 certified.

8-Bit Flash MCU																
Flash MCU with EEPROM																
Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Timer	PWM	SCOM	Stack	Package			
HT68F003	8MHz	2.2V~5.5V	8MHz or 32kHz	1K×14	64×8	32×8	14	—	10-bit STM×1 10-bit PTM×1	—	—	2	16NSOP			
HT66F0031		1.8V~5.5V				32×14 [#]	14	10-bit×4	8-bit×1	8-bit×1						
HT68F0036		2.2V~5.5V				32×8	14	12-bit×4							10-bit STM×1 10-bit PTM×1	
HT66F003	2.2V~5.5V	8MHz or 32kHz	2K×15	96×8	32×8	18	12-bit×8	10-bit PTM×2	—	4	4	16NSOP 20DIP/SOP/SSOP/NSOP				
HT66F004	2.2V~5.5V						10-bit×4	8-bit×1	8-bit×1	—		16/20NSOP, 20SSOP				
HT66F0041	1.8V~5.5V						10-bit×4	8-bit×1	8-bit×1							
Note: # Emulated EEPROM.																
A/D Flash MCU with EEPROM																
Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	RTC	A/D	Timer	Comparator	SCOM/SSEG	High Current LED Driver	Interface	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×1	1	—	—	—	4	16NSOP
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	16NSOP
HT66F0172	8MHz	2.2V~5.5V	400kHz~20MHz or 32kHz	2K×16	128×8	—	18	—	12-bit×8	10-bit PTM×2	—	SCOM×6 SSEG×14	22	SPI/I ² C×1 UART×1	8	20SOP/SSOP
HT66F0174						—	—	—								—
HT66F0175	8MHz 12MHz 16MHz	2.2V~5.5V	400kHz~20MHz or 32kHz	2K×16	128×8	64×8	22	√	12-bit×8	10-bit PTM×2	—	SCOM×6 SSEG×14	22	SPI/I ² C×1 UART×1	8	16/20NSOP 24SOP/SSOP
HT66F0176																—
HT66F0181	8MHz	1.8V~5.5V	8MHz or 32kHz	4K×15	128×8	32×15 [#]	18	—	10-bit×8	10-bit PTM×1 10-bit STM×1	—	—	18	—	6	16NSOP 20NSOP/SSOP 20SOP
HT66F0182					—	—	—	—	—	—	—	—	—	—	—	—
HT66F018	8MHz 12MHz 16MHz	2.2V~5.5V	400kHz~20MHz or 32kHz	4K×16	192×8	64×8	18	√	12-bit×8	10-bit PTM×1 16-bit CTM×1 16-bit STM×1	1	SCOM×6 SSEG×18	26	SPI/I ² C×1 UART×1	8	16/20NSOP 20SOP/SSOP 20QFN
HT66F0185					256×8	128×8	26									24SOP/SSOP 28SOP/SSOP
HT66F0186					1024×8	4096×8	26									20NSOP 24SOP/SSOP 28SOP/SSOP
HT66F0187	256×8	64×8	46	—	—	—	—	—	—	—	—	—	—	—	44/48LQFP	
HT66F019	8MHz 12MHz 16MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	8K×16	256×8	64×8	18	√	12-bit×8	10-bit PTM×1 16-bit CTM×1 16-bit STM×1	1	SCOM×6 SSEG×18	26	SPI/I ² C×1 UART×1	8	20NSOP
HT66F0195					512×8	128×8	26		12-bit×12	10-bit CTM×1 16-bit STM×1 10-bit PTM×2						—
HT66F489	8MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	8K×16	384×8	64×8	26	√	12-bit×8	10-bit CTM×1 16-bit STM×1 10-bit PTM×2	—	SCOM×6 SSEG×20	26	SPI/I ² C×1 UART×1	8	28SOP 28SSOP
Note: # Emulated EEPROM.																
Note: SCOM/SSEG: Software Control LCD Common/Segment.																
Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Timer	Stack	Package					
HT66F2630	2MHz 4MHz 8MHz	1.8V~5.5V	400kHz~8MHz or 32kHz	2K×16	128×8	64×8	18	12-bit×4	16-bit PTM×1	8	8SOP, 10MSOP 16SSOP, 16/20NSOP					

8-Bit Flash MCU
Advanced A/D Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	SCOM	RTC	A/D	Timer	Comparator	Interface	CRC	Stack	Package
HT66F2350	8MHz 12MHz 16MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	8K×16	768×8	256×8	44	4	√	12-bit ×12	10-bit PTM×2 16-bit PTM×2 16-bit STM×3	2	SPI/I ² C×1 SPIA×1 UART×2	√	16	48LQFP
HT66F2360	8MHz 12MHz 16MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	16K×16	1536×8	256×8	58	4	√	12-bit ×16	10-bit PTM×2 16-bit PTM×2 16-bit STM×3	2	SPI/I ² C×1 SPIA×1 UART×2	√	16	48/64LQFP
HT66F2370	8MHz 12MHz 16MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	32K×16	3072×8	512×8	58	4	√	12-bit ×16	10-bit PTM×2 16-bit PTM×2 16-bit STM×3	2	SPI/I ² C×1 SPIA×1 UART×3	√	16	48/64LQFP
HT66F2390	8MHz 12MHz 16MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	64K×16	4096×8	1024×8	58	4	√	12-bit ×16	10-bit PTM×2 16-bit PTM×2 16-bit STM×3	2	SPI/I ² C×1 SPIA×1 UART×3	√	16	48/64LQFP

Note: These devices are European standard IEC 60730 and U.S. standard UL 60730 certified.

High Supply Voltage Flash MCU
12V High Current A/D Flash MCU

Part No.	Internal Clock	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	HVIO	Timer	A/D	LDO Output Voltage	OVP	Interface	Stack	Package
HT66F2730	8/12/16MHz	7.5V~ 12V	4.5V~ 5.5V	32kHz~ 16MHz	2K×16	128×8	64×8	10	10	10-bit STM×1 10-bit PTM×1	12-bit ×4	5.0V	—	SPI/I ² C/ UART×1	4	16NSOP-EP 20NSOP 24SOP/SSOP-EP
HT66F2740					4K×16	256×8	128×8	14		10-bit STM×1 10-bit PTM×1 10-bit CTM×1	12-bit ×8		1		8	16NSOP-EP 24SSOP-EP 24/28SOP

8-Bit LCD Display Flash MCU
A/D Flash MCU with LCD Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	Timer	RTC	A/D	IAP	Comparator	Interface	Stack	Package
HT67F30	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	2K×15	128×8	64×8	32	20×4 21×3	10-bit CTM×1 10-bit ETM×1	√	12-bit ×8	—	2	SPI/I ² C×1 SPIA×1	4	48LQFP
HT67F40	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	4K×15	256×8	128×8	44	32×4 33×3	10-bit CTM×1 10-bit ETM×1 16-bit STM×1	√	12-bit ×8	—	2	SPI/I ² C×1 SPIA×1	8	48/64LQFP
HT67F50	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	8K×16	384×8	256×8	52	40×4 41×3	10-bit CTM×2 10-bit ETM×1 16-bit STM×1	√	12-bit ×8	—	2	SPI/I ² C×1 SPIA×1	8	48/64/80 LQFP
HT67F60A	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	16K×16	1024×8	128×8	47	56×4	10-bit CTM×2 10-bit ETM×1 16-bit STM×3	√	12-bit ×12	√	2	SPI/I ² C×1 SPIA×1	16	48/64/80 LQFP
HT67F70A	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	32K×16	2048×8	128×8	47	56×4	10-bit CTM×2 10-bit ETM×1 16-bit STM×3	√	12-bit ×12	√	2	SPI/I ² C×1 SPIA×1	16	48/64/80 LQFP
HT67F86A	8MHz 12MHz 16MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	48K×16	2304×8	128×8	20	64×16	10-bit PTM×3 16-bit STM×1	√	12-bit ×12	√	—	SPI/I ² C×1 SPIA×1 UART×1	16	Dice

Advanced A/D Flash MCU with LCD Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	RTC	A/D	Timer	Comparator	Interface	CRC	Stack	Package
HT67F2350	8MHz 12MHz 16MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	8K×16	768×8	256×8	57	46×4 44×6 42×8	√	12-bit ×12	10-bit PTM×6 16-bit PTM×2 16-bit STM×3	2	SPI/I ² C×1 SPIA×1 UART×2	√	16	48/64LQFP
HT67F2360	8MHz 12MHz 16MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	16K×16	1536×8	256×8	71	56×4 54×6 52×8	√	12-bit ×16	10-bit PTM×6 16-bit PTM×2 16-bit STM×3	2	SPI/I ² C×1 SPIA×1 UART×2	√	16	64/80LQFP
HT67F2370	8MHz 12MHz 16MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	32K×16	3072×8	512×8	71	56×4 54×6 52×8	√	12-bit ×16	10-bit PTM×6 16-bit PTM×2 16-bit STM×3	2	SPI/I ² C×1 SPIA×1 UART×3	√	16	64/80LQFP
HT67F2390	8MHz 12MHz 16MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	64K×16	4096×8	1024×8	71	56×4 54×6 52×8	√	12-bit ×16	10-bit PTM×6 16-bit PTM×2 16-bit STM×3	2	SPI/I ² C×1 SPIA×1 UART×3	√	16	64/80LQFP

Note: These devices are European standard IEC 60730 and U.S. standard UL 60730 certified.

24-Bit Delta Sigma A/D Flash MCU with LCD Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	Timer	RTC	A/D	Comparator	Interface	Stack	Package
HT67F5630	4.91MHz 9.83MHz 14.74MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	2K×16	128×8	32×8	27	15×4	10-bit CTM×1 10-bit PTM×1	—	24-bit ×4	1	—	6	48LQFP
HT67F5640	4.91MHz 9.83MHz 14.74MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	4K×16	256×8	64×8	41	28×4	10-bit CTM×1 10-bit PTM×2	√	20-bit ×8	2	SPI/I ² C×1 UART×1	8	64LQFP
HT67F5650	4.91MHz 9.83MHz 14.74MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	8K×16	512×8	128×8	32	40×4	10-bit CTM×1 16-bit STM×1 10-bit PTM×2	√	24-bit ×8	2	SPI/I ² C×1 UART×1	8	64/80LQFP
HT67F5660	4.91MHz 9.83MHz 14.74MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	16K×16	1024×8	256×8	32	48×4	10-bit CTM×1 16-bit STM×1 10-bit PTM×2	√	24-bit ×8	2	SPI/I ² C×1 UART×1	8	64/80LQFP

8-Bit LCD / LED Flash MCU
A/D Flash MCU with six Timer & High Current LED Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	RTC	A/D	Timer	SCOM	High Current LED Driver	Interface	Stack	Package
HT66F0042	8MHz 12MHz 16MHz	2.2V~ 5.5V	32kHz~ 16MHz	2K×15	96×8	32×8	22	√	12-bit ×8	10-bit PTM×4 10-bit CTM×2	4	22	SPI/I ² C×1	6	20SOP/SSOP 24SOP/SSOP
HT66F0082				4K×16	128×8	64×8	26					26			24SOP/SSOP 28SOP/SSOP

Note: The HT66F0042/0082 devices include 6 Timer Modules and are suitable for use in products requiring multiple PWM functions such as RGB lighting.

RGB LED Controller Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	I/O	Timer	Multiple RGB LED	Constant Current	Interface	Stack	Package
HT45F0060	8MHz	2.2V~5.5V	8MHz	1K×14	64×8	8	10-bit CTM×3	—	3	Cascading Transceiver	2	8SOP/DFN 10SOP
HT45F0062	8MHz	2.2V~5.5V	8MHz	2K×16	128×8	14	10-bit CTM×1	√	12	I ² C×1, Cascading Transceiver	4	16NSOP-EP 16QFN
HT45F0063*	8MHz	2.2V~5.5V	8MHz	4K×16	256×8	20	10-bit CTM×1	√	15	I ² C×1, Cascading Transceiver	4	24SSOP/QFN

* Under development, available in 3Q, 2019.

A/D Flash MCU with LCD & High Current LED Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	High Current LED Driver	Timer	RTC	A/D	Interface	Stack	Package
HT67F489	8MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	8K×16	256×8	64×8	42	20×8 20×4	8	10-bit CTM×3 10-bit PTM×1	√	12-bit ×10	UART×1	8	44LQFP
HT67F4892					384×8		50	32×4/32×8 28×4/28×8					SPI/I ² C×1 UART×1		48/52LQFP

1.8V~5.5V Flash MCU
1.8V~5.5V A/D Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Timer	Stack	Package
HT66F302	4MHz 8MHz	1.8V~ 5.5V	4MHz, 8MHz or 32kHz	1K×14	64×8	32×8	8	12-bit×4	10-bit STM×1 10-bit PTM×1	2	8/10SOP
HT66F303							14				16NSOP

1.8V~5.5V Advanced A/D Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	RTC	A/D	Timer	SCOM	Comparator	High Current LED Driver	Interface	Stack	Package
HT66F317	4MHz 8MHz 12MHz	1.8V~ 5.5V	400kHz~ 16MHz or 32kHz	2K×16	128×8	64×8	22	√	12-bit ×8	10-bit PTM×2	4	—	22	—	8	16NSOP 20/24SOP/SSOP
HT66F318	4MHz 8MHz 12MHz	1.8V~ 5.5V	400kHz~ 16MHz or 32kHz	4K×16	192×8	64×8	26	√	12-bit ×8	10-bit PTM×1 16-bit CTM×1 16-bit STM×1	4	1	26	I ² C×1 UART×1	8	20/24/28 SOP/SSOP
HT66F319	4MHz 8MHz 12MHz	1.8V~ 5.5V	400kHz~ 16MHz or 32kHz	8K×16	256×8	64×8	26	√	12-bit ×8	10-bit PTM×1 16-bit CTM×1 16-bit STM×1	4	1	26	I ² C×1 UART×1	8	16NSOP 20/24/28 SOP/SSOP

1.8V~5.5V Flash MCU with LCD Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	Timer	RTC	A/D	IAP	Interface	Stack	Package
HT69F340	4MHz 8MHz 12MHz	1.8V~ 5.5V	400kHz~ 16MHz or 32kHz	4K×16	256×8	64×8	39	24×4 25×3	10-bit PTM×1 10-bit CTM×1	√	—	√	SPI/I ² C×1	8	48LQFP
HT69F350	4MHz 8MHz 12MHz	1.8V~ 5.5V	400kHz~ 16MHz or 32kHz	8K×16	512×8	64×8	55	36×4 37×3	10-bit PTM×1 10-bit CTM×1 16-bit STM×1	√	—	√	SPI/I ² C×1	8	48/64LQFP
HT69F360	4MHz 8MHz 12MHz	1.8V~ 5.5V	400kHz~ 16MHz or 32kHz	16K×16	1024×8	128×8	63	48×4 49×3	10-bit PTM×2 10-bit CTM×1 16-bit STM×1	√	—	√	SPI/I ² C×1 UART×1	8	64/80LQFP
HT67F370	4MHz 8MHz 12MHz	1.8V~ 5.5V	400kHz~ 20MHz or 32kHz	32K×16	2048×8	256×8	63	48×4 49×3	10-bit PTM×2 10-bit CTM×1 16-bit STM×1	√	12-bit ×12	√	SPI/I ² C×1 UART×1	8	64/80LQFP

1.8V~5.5V Ultra-Low Power Flash MCU with LCD Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	RTC	A/D	Timer	Interface	Stack	Package
HT66F2560	1MHz 2MHz 4MHz 8MHz 12MHz 16MHz	1.8V~ 5.5V	400kHz~ 16MHz or 32kHz	16K×16	2048×8	256×8	42	SCOM×4	√	12-bit ×8	16-bit PTM×2 16-bit STM×3	SPI/I ² C×1 SPIA×1 UART×2	16	48LQFP
HT69F2562	4MHz 8MHz 12MHz	1.8V~ 5.5V	400kHz~ 12MHz or 32kHz	16K×16	2304×8	128×8	19	32×4	√	—	10-bit CTM×2 16-bit STM×1	SPI×1 SPI/I ² C/UART×1	16	64LQFP

Note: # MDU: Multiplier Divider Unit.
The power consumption of the RTC on standby current is less than 200nA at 3V.

1.8V~5.5V Ultra-Low Power Flash MCU with EPD Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	EPD*	RTC	A/D	Timer	Interface	Stack	Package
HT67F2567	4MHz 8MHz 12MHz	1.8V~ 5.5V	400kHz~ 12MHz or 32kHz	16K×16	2304×8	128×8	19	SEG×64 COM×1 BG×1	√	12-bit ×8	10-bit CTM×2 16-bit STM×1	SPI×1 SPI/I ² C/UART×1	16	100LQFP Gold Bump

Note: # EPD: Electronic Paper Displays.
The power consumption of the RTC on standby current is less than 200nA at 3V.

USB Interface Flash MCU
I/O Flash USB MCU (USB 2.0 Low Speed)

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	I/O	Timer	End-points	Built-in OSC	LDO Driving Current	PWM	Interface	Stack	Package
HT68FB240	12MHz	2.2V~5.5V	32kHz~16MHz	4K×16	160×8	34	10-bit CTM×2	3	√	20mA	3	SPI/I ² C×1	8	48LQFP

I/O Flash USB MCU (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 Driving Current	I/O VDD Option	Interface	Stack	Package
HT68FB540	12MHz	2.2V~5.5V	32kHz~16MHz	4K×16	256×8	17	10-bit CTM×2 10-bit STM×1 16-bit STM×1	4	√	70mA	√	SPI/I ² C×1 SPIA×1	8	20QFN 20/24SSOP
HT68FB550	12MHz	2.2V~5.5V	32kHz~16MHz	8K×16	512×8	25	10-bit CTM×2 10-bit STM×1 16-bit STM×1	6	√	70mA	√	SPI/I ² C×1 SPIA×1	8	24/28SSOP 48LQFP
HT68FB560	12MHz	2.2V~5.5V	32kHz~16MHz	16K×16	768×8	37	10-bit CTM×2 10-bit STM×1 16-bit STM×1	8	√	70mA	√	SPI/I ² C×1 SPIA×1	12	24/28SSOP 48LQFP

A/D Flash USB MCU (USB 2.0 Full Speed)

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	RTC	A/D	Timer	MDU [#]	End-points	Built-in OSC	LDO Driving Current	I/O VDD Option	Comparator	Interface	Stack	Package
HT66FB540	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	4K×16	512×8	—	25	√	12-bit ×8	10-bit CTM×2 10-bit STM×1 16-bit STM×1	—	4	√	70mA	√	2	SPI/I ² C×1 SPIA×1	8	28SSOP 48LQFP
HT66FB542	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	4K×16	256×8	—	17	—	12-bit ×4	10-bit CTM×2 10-bit STM×1 16-bit STM×1	—	4	√	70mA	√	1	SPI/I ² C×1 SPIA×1	8	24SSOP
HT66FB550	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	8K×16	768×8	—	37	√	12-bit ×16	10-bit CTM×2 10-bit STM×1 16-bit STM×1	—	6	√	70mA	√	2	SPI/I ² C×1 SPIA×1	8	28SSOP 48LQFP
HT66FB560	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	16K×16	1024×8	—	45	√	12-bit ×16	10-bit CTM×2 10-bit STM×1 16-bit STM×1	—	8	√	70mA	√	2	SPI/I ² C×1 SPIA×1	12	48/64 LQFP
HT66FB570	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	32K×16	1024×8	256×8	55	√	12-bit ×24	10-bit PTM×5 16-bit STM×1	—	8	√	70mA	√	2	SPI/I ² C×1 SPIA×1 UART×1	12	48/64 LQFP
HT66FB582	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	48K×16	1024×8	16K×8	41	√	12-bit ×16	10-bit PTM×5 16-bit STM×1	16-bit	8	√	70mA	√	2	SPI/I ² C×1 SPIA×1 UART×1	12	46QFN 48LQFP

Note: # MDU: Multiplier Divider Unit.

USB Flash RGB LED MCU (USB 2.0 Full Speed)

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Timer	End-points	Built-in OSC	LDO Driving Current	I/O VDD Option	Interface	RGB LED Driver	Const. Current	Stack	Package
HT68FB571	12MHz	3.0V~5.5V	400kHz~16MHz or 32kHz	8K×16	512×8	64×8	41	—	16-bit×2	4	√	70mA	√	SPI×1	8×16	—	8	28SSOP 48LQFP
HT66FB572	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	8K×16	1024×8	256×8	34	12-bit ×8	10-bit PTM×3 16-bit STM×1	8	√	70mA	√	SPI/I ² C×1 SPIA×1 UART×1	40	15	12	48/64LQFP
HT66FB574	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	16K×16	1024×8	256×8	38	12-bit ×12	10-bit PTM×3 16-bit STM×1	8	√	70mA	√	SPI/I ² C×1 SPIA×1 UART×1	64	24	12	48/64/80 LQFP
HT66FB576	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	32K×16	1024×8	256×8	52	12-bit ×16	10-bit PTM×3 16-bit STM×1	8	√	70mA	√	SPI/I ² C×1 SPIA×1 UART×1	128	48	12	80LQFP 128LQFP-EP

DC Motor Flash MCU

Power Tool Controller Flash MCU

Part No.	Internal Clock	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	OCP	Interface	Level Shift	Stack	Package
HT45F3630	8MHz 32kHz	12V	2.2V~ 5.5V	400kHz~ 8MHz or 32kHz	2K×16	64×8	32×8	12	10-bit PTM×2	12-bit×8	1	I ² C×1	1	6	16SSOP

Servo Motor Flash MCU with H-Bridge Driver

Part No.	Internal Clock	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	H-Bridge Driver	LDO	Stack	Package
HT45F4830	8MHz	3.5V~ 10V	3.0V	32kHz~ 8MHz	2K×16	128×8	32×8	4	10-bit PTM×1 16-bit PTM×1	12-bit ×4	600mA Min.	3V	4	8SOP-EP

DC Motor Flash MCU with H-Bridge Driver

Part No.	Internal Clock	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	OCP	OPA	H-Bridge Driver	LDO	Battery Voltage Detector	Interface	Stack	Package
HT45F4630	8MHz 12MHz 16MHz	3V~ 12V	2.2V~ 5.5V	32kHz~ 16MHz	2K×16	128×8	512×8	18	10-bit PTM×2 16-bit PTM×2	12-bit ×7	1	1	3A [#]	—	√	I ² C×1	6	24SSOP
HT45F4833	8MHz	6V~ 12V	2.2V~ 5.5V	32kHz~ 8MHz	2K×16	128×8	32×8	13	10-bit PTM×1 16-bit PTM×1	12-bit ×6	—	—	600mA Min.	5V	—	—	4	20NSOP

Note: # The driving time with a driving current of 3A must be less than 10μs.

BLDC Motor Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	OCP	PWM	Comparator	OPA	Interface	Stack	Package
HT66FM5230	20MHz	4.5V~ 5.5V	32kHz~ 20MHz	2K×16	256×8	32×8	18	10-bit CTM×1 10-bit STM×1 16-bit CAPTM×1 16-bit CTM×1	10-bit ×6	1	10-bit ×3	3	—	I ² C×1	6	16NSOP 20SSOP
HT66FM5240	20MHz	4.5V~ 5.5V	32kHz~ 20MHz	4K×16	256×8	64×8	26	10-bit PTM×2 16-bit PTM×2 16-bit CAPTM×1	12-bit ×8	1	10-bit ×3	3	—	I ² C×1 UART×1	8	20SSOP 28SSOP
HT66FM5242	20MHz	4.5V~ 5.5V	32kHz~ 20MHz	4K×16	256×8	—	18	10-bit PTM×2 16-bit PTM×2 16-bit CAPTM×1	12-bit ×7	1	10-bit ×3	—	—	—	8	16NSOP 20SSOP
HT66FM5440	16MHz	4.5V~ 5.5V	32kHz~ 16MHz	4K×16	384×8	—	26	10-bit PTM×2 16-bit PTM×2 16-bit CAPTM×1	12-bit ×9	1	10-bit ×3	3	2	I ² C×1 UART×1	8	28SSOP

Note: HT66FM5440 is a new HT8-1T architecture MCU which takes one clock cycle to execute one instruction. It improves 4 times the CPU performance of the original HT8-4T architecture MCU which takes four clock cycles to execute one instruction.

BLDC Motor Flash MCU with Pre-driver / Driver

Part No.	Internal Clock	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	I/O	Timer	A/D	OCP	PWM	Comparator	Pre-driver	LDO	Stack	Package
HT66FM5340	20MHz	6V~ 15V	4.5V~ 5.5V	32kHz~ 20MHz	4K×16	256×8	19	10-bit PTM×2 16-bit PTM×2 16-bit CAPTM×1	12-bit ×8	1	10-bit ×3	3	√	5V	8	24SSOP

Motor Driver Peripheral

H-Bridge Driver

Part No.	Supply Voltage	Max. Motor Voltage	Typ. Motor Peak Current (A)	Typ. Motor RMS Current (A)	Max. Sleep Current (μA)	Max. PWM Frequency (Hz)	# of H-Bridge	Protections	Package
HT7K1201	1.8V~6.0V	6V	1.3	0.8	0.1	200K	1	UVLO, OCP, OTP, OSP	SOT23-6
HT7K1211		7.5V	2.1	1.5					8SOP-EP
HT7K1311*	2.5V~5.5V	15V	3.0	2.4	0.1	200K	1	UVLO, OCP, OTP, OSP	8SOP-EP
HT7K1312*									8DFN
HT7K1401**	2.5V~5.5V	24V	2.4	1.8	0.1	200K	1	UVLO, OCP, OTP, OSP	8SOP-EP
HT7K1411**			3.2	2.5					

* Under development, available in 4Q, 2019.
 ** Under development, available in 3Q, 2019.

OPA Flash MCU
Flash MCU with OPA

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	RTC	A/D	D/A	PWM	PFD	OPA	Comparator	Interface	Stack	Package
HT45F23A	910kHz 2MHz 4MHz 8MHz	2.2V~ 5.5V	400kHz~ 8MHz or 32kHz	2K×15	128×8	64×8	22	8-bit×1 16-bit×1	√	12-bit×6	12-bit ×1	8-bit ×2	√	2	2	SPI/I ² C ×1	6	16NSOP 20/24SSOP
HT45F24A	910kHz 2MHz 4MHz 8MHz	2.2V~ 5.5V	400kHz~ 8MHz or 32kHz	4K×16	192×8	64×8	26	8-bit×1 16-bit×1	√	12-bit×8	12-bit ×1	8-bit ×2	√	2	2	SPI/I ² C ×1	6	20/24/28 SSOP

Advanced Flash MCU with OPA

Part No.	Internal Clock	Input Voltage	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	RTC	Timer	A/D	D/A	Voice D/A	Comparator	OPA	Interface	Stack	Package
HT66F4530	2MHz 4MHz 8MHz	2.2V~ 5.5V	32kHz~ 12MHz	2K×16	128×8	32×8	18	√	10-bit STM×1 10-bit PTM×1	12-bit ×5	8-bit ×3	—	2	2	SPI/I ² C×1	6	16NSOP 20SSOP
HT66F4540	2MHz 4MHz 8MHz	2.2V~ 5.5V	32kHz~ 12MHz	4K×16	256×8	64×8	26	√	10-bit STM×1 10-bit PTM×2	12-bit ×8	8-bit ×3	—	2	2	SPI/I ² C×1 UART×1	8	24/28SSOP
HT66F4550	2MHz 4MHz 8MHz	2.2V~ 5.5V	32kHz~ 12MHz	8K×16	384×8	64×8	26	√	10-bit STM×2 10-bit PTM×2	12-bit ×8	8-bit ×3	16-bit ×1	2	2	SPI/I ² C×1 UART×1	8	24/28SSOP
HT66F4560*	2MHz 4MHz 8MHz	2.2V~ 5.5V	32kHz~ 12MHz	16K×16	512×8	128×8	46	√	10-bit STM×2 10-bit PTM×2	12-bit ×8	8-bit ×3	16-bit ×1	2	2	SPI/I ² C×1 UART×1	16	28SSOP 48LQFP

* Under development, available in 4Q, 2019.

Note: The MCUs internal OPA gain bandwidth are software programmable.

24-Bit Delta Sigma A/D MCU
24-Bit Delta Sigma A/D Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	IAP	MDU [#]	Timer	RTC	A/D	OPA	Interface	Stack	Package
BH66F5232	4MHz 8MHz 12MHz	2.2V~ 5.5V	4/8/12MHz or 32kHz	2K×16	128×8	32×8	4	—	—	10-bit CTM×1	—	24-bit ×2	—	SPI/I ² C×1 UART×1	4	10SOP
BH66F5233	4MHz 8MHz 12MHz	2.2V~ 5.5V	4/8/12MHz or 32kHz	2K×16	96×8	32×8	14	—	—	10-bit CTM×1	—	24-bit ×2	—	SPI/I ² C×1	4	10SOP 16/20NSOP
BH66F5242	4MHz 8MHz 12MHz	2.2V~ 5.5V	4/8/12MHz or 32kHz	4K×16	256×8	64×8	14	—	—	10-bit CTM×1 16-bit PTM×1	—	24-bit ×12	1	SPI/I ² C/UART×1	6	16NSOP/SSOP 20NSOP/QFN
BH66F5250	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	8K×16	512×8	128×8	37	√	16-bit	16-bit STM×1 10-bit PTM×3	√	24-bit ×16	1	SPI/I ² C/UART×1 SPI×1	8	48LQFP
BH66F5252	8MHz	2.2V~ 5.5V	8MHz or 32kHz	8K×16	256×8	32×8	23	—	—	10-bit CTM×1 16-bit PTM×1	—	24-bit ×4	—	SPI/I ² C/UART×1	8	24/28SSOP

Note: # MDU: Multiplier Divider Unit.

24-Bit Delta Sigma A/D Flash MCU with LCD Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	Timer	RTC	A/D	Comp- arator	Touch Key	Interface	Stack	Package	
HT67F5630	4.91MHz 9.83MHz 14.74MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	2K×16	128×8	32×8	27	15×4	10-bit CTM×1 10-bit PTM×1	—	24-bit ×4	1	—	—	6	48LQFP	
HT67F5640	4.91MHz 9.83MHz 14.74MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	4K×16	256×8	64×8	41	28×4	10-bit CTM×1 10-bit PTM×2	√	20-bit ×8	2	—	SPI/I ² C×1 UART×1	8	64LQFP	
HT67F5650	4.91MHz 9.83MHz 14.74MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	8K×16	512×8	128×8	32	40×4	10-bit CTM×1 16-bit STM×1 10-bit PTM×2	√	24-bit ×8	2	—	SPI/I ² C×1 UART×1	8	64/80LQFP	
HT67F5660	4.91MHz 9.83MHz 14.74MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	16K×16	1024×8	256×8	32	48×4	10-bit CTM×1 16-bit STM×1 10-bit PTM×2	√	24-bit ×8	2	—	SPI/I ² C×1 UART×1	8	64/80LQFP	
Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	Timer	RTC	A/D	IAP	MDU ##	Touch Key	Interface	Stack	Package
BH67F5235	8MHz	2.2V~ 5.5V	8MHz or 32kHz	3K×16	192×8	32×16 [#]	5	16×4	10-bit CTM×1	—	24-bit ×2	—	—	2	—	4	24/28SSOP 32QFN
BH67F5245	4MHz 8MHz 12MHz	2.2V~ 5.5V	4/8/12MHz or 32kHz	4K×16	256×8	32×8	21	17×4	10-bit CTM×1	—	24-bit ×4	—	—	4	UART×1	6	24/28SSOP
BH67F5250	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	8K×16	512×8	128×8	46	28×4 26×6 24×8	10-bit PTM×3 16-bit STM×1	√	24-bit ×16	√	16-bit	—	SPI/I ² C/UART×1, SPI×1	8	64LQFP
BH67F5260	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	16K×16	1024×8	256×8	46	42×4 40×6 38×8	10-bit PTM×3 16-bit STM×1	√	24-bit ×16	√	16-bit	—	SPI/I ² C/UART×1, SPI×1	8	64/80LQFP
BH67F5270	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	32K×16	2048×8	512×8	46	42×4 40×6 38×8	10-bit PTM×3 16-bit STM×1	√	24-bit ×16	√	16-bit	—	SPI/I ² C/UART×1, SPI×1	16	64/80LQFP

Note: # Emulated EEPROM.

MDU: Multiplier Divider Unit.

24-Bit Delta Sigma Peripheral
24-Bit Delta Sigma A/D Peripheral

Part No.	Internal Clock	VDD	A/D	ENOB	Data Rate	PGA	Interface	Package
BH45B1225*	4.91MHz	2.4V~5.5V	24-bit×4	19.5 (10Hz, 128x)	5Hz~1.6kHz	1~128	I ² C×1	8SOP/16NSOP

* Under development, available in 3Q, 2019.

Health Care Flash MCU
Ear Thermometer Flash MCU with Delta Sigma A/D

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	IAP	LCD	Timer	A/D	OPA	Interface	Stack	Package
BH67F2742	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	4K×16	256×8	32×8	21	—	17×4 15×6	10-bit CTM×1	24-bit ×8	1	SPI/I ² C/ UART×1	6	28SSOP 32QFN
BH67F2752	8MHz	2.2V~ 5.5V	8MHz or 32kHz	8K×16	384×8	128×8	17	—	32×4 30×6	10-bit CTM×2	24-bit ×8	2	SPI×1 UART×1	6	48/64LQFP
BH67F2762	4MHz 8MHz 12MHz	2.2V~ 5.5V	4/8/12MHz or 32kHz	16K×16	1024×8	256×8	38	√	39×4 37×6	10-bit CTM×2 16-bit PTM×1	24-bit ×8	2	SPI/I ² C/ UART×1	8	48/64LQFP
HT67F5652	4.91MHz 9.83MHz 14.74MHz	2.2V~ 5.5V	400kHz~ 20MHz or 32kHz	8K×16	512×8	128×8	32	√	40×4	10-bit CTM×1 16-bit STM×1 10-bit PTM×2	24-bit ×8	1	SPI/I ² C×1 UART×1	8	64/80LQFP

Glucose Meter Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	IAP	MDU [#]	Timer	RTC	LCD	A/D	Interface	OPA	D/A	Audio D/A	Stack	Package
HT45F67	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	32K×16	512×8	—	59	√	—	10-bit CTM×2 16-bit STM×1 10-bit ETM×1	√	32×4 30×6	12-bit ×8	SPI/I ² C×1 SPIA×1 UART×1	2	10-bit ×1	16-bit ×1	12	64/80 LQFP
BH45F68	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	32K×16	1024×8	64×8	57	√	—	10-bit CTM×2 16-bit STM×1	√	32×4 30×6 28×8	12-bit ×10	SPI/I ² C/ UART×1	2	12-bit ×1	—	12	64/80 LQFP
BH66F2470	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	32K×16	512×8	64×8	39	√	16-bit	10-bit PTM×3 16-bit STM×1	√	—	12-bit ×4	SPI/I ² C×1 SPIA×1 UART×2	1	10-bit ×1	—	8	48LQFP
BH67F2470	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	32K×16	768×8	64×8	34	√	16-bit	10-bit PTM×3 16-bit STM×1	√	48×4 46×6 44×8	12-bit ×4	SPI/I ² C×1 SPIA×1 UART×2	1	10-bit ×1	—	8	64/80 LQFP
BH67F2480	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	48K×16	1024×8	64×8	46	√	16-bit	10-bit PTM×3 16-bit STM×1	√	48×4 46×6 44×8	12-bit ×6	SPI/I ² C×1 SPIA×1 UART×2	2	12-bit ×1	—	12	64/80 LQFP

Note: # MDU: Multiplier Divider Unit.

AC Impedance and Electrochemical Measurement Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	IAP	MDU [#]	Timer	RTC	LCD	A/D	Interface	OPA	HCT	D/A	Stack	Package
BH67F2485*	4MHz 8MHz 12MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	48K×16	1024×8	64×8	43	√	16-bit	10-bit PTM×3 16-bit STM×1	√	48×4 46×6 44×8	24-bit ×6	SPI/I ² C×1 SPIA×1 UART×2	4	√	12-bit ×1	12	64/80 LQFP

* Under development, available in 4Q, 2019.

Note: # MDU: Multiplier Divider Unit.

Body Fat Measurement Flash MCU with Delta Sigma A/D

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	IAP	MDU [#]	Timer	RTC	LCD	A/D	Interface	Electrode	Stack	Package
HT45F75	4.8MHz 9.6MHz 14.4MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	4K×16	256×8	64×8	27	√	—	10-bit CTM×1 10-bit PTM×2	√	—	20-bit ×4	SPI/I ² C×1 UART×1	4	8	48LQFP
HT45F77	4.8MHz 9.6MHz 14.4MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	8K×16	256×8	64×8	36	√	—	10-bit CTM×1 10-bit PTM×2	√	36×4	20-bit ×4	SPI/I ² C×1 UART×1	4	8	64/80LQFP

Body Fat Measurement Flash MCU with Delta Sigma A/D & MDU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	IAP	MDU [#]	Timer	RTC	LCD	A/D	Interface	Electrode	Stack	Package
BH66F2632	8MHz	2.2V~ 5.5V	8MHz or 32kHz	3K×16	256×8	32×8	9	—	—	10-bit CTM×1	—	—	24-bit ×2	SPI/I ² C/ UART×1	4	6	24QFN
BH66F2652	8MHz	2.2V~ 5.5V	8MHz or 32kHz	8K×16	384×8	32×8	17	—	—	10-bit CTM×1	—	—	24-bit ×4	SPI×1 UART×1	4	8	32QFN
BH66F2652-2				14	10-bit CTM×1	28SSOP											
BH66F2662				16K×16	512×8	64×8	17			10-bit CTM×1 10-bit STM×1							
BH67F2662	8MHz	2.2V~ 5.5V	8MHz or 32kHz	16K×16	512×8	64×8	12	—	—	10-bit CTM×1 10-bit STM×1	—	16×4 14×6	24-bit ×4	SPI×1 UART×1	4	8	48LQFP
BH66F2650	4MHz 8MHz	2.2V~ 5.5V	400kHz~ 16MHz or 32kHz	8K×16	256×8	64×8	28	√	16-bit	10-bit PTM×3 16-bit STM×1	√	—	24-bit ×4	SPI/I ² C×1 UART×1	8	8	48LQFP
BH66F2660	12MHz			16K×16	1024×8	256×8				10-bit PTM×3 16-bit STM×1							

Note: # MDU: Multiplier Divider Unit.

Health Care Flash MCU
R-Type Blood Pressure Meter Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	IAP	MDU [#]	Timer	RTC	LCD	A/D	Interface	PGA	Const. Current	Audio PWM	Stack	Package
BH66F2232	4MHz 8MHz 12MHz	2.2V~5.5V	4MHz 8MHz 12MHz or 32kHz	2K×16	128×8	32×8	4	√	—	10-bit PTM×1	—	—	12-bit ×6	SPI/I ² C×1 UART×1	3	1	—	4	16NSOP 16QFN
BH66F2260	4MHz 8MHz 12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	16K×16	512×8	64×8	35	√	16-bit	10-bit PTM×3 16-bit STM×1	√	—	12-bit ×4	SPI/I ² C×1 SPIA×1 UART×1	3	1	—	8	48LQFP
BH67F2260	4MHz 8MHz 12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	16K×16	512×8	64×8	32	√	16-bit	10-bit PTM×3 16-bit STM×1	√	32×4 30×6 28×8	12-bit ×4	SPI/I ² C×1 SPIA×1 UART×1	3	1	—	8	64LQFP
BH67F2261	8MHz	2.2V~5.5V	8MHz or 32kHz	12K×16	512×8	32×8	32	√	—	10-bit PTM×1 16-bit STM×1	√	31×4 29×6	12-bit ×4	—	3	1	—	8	64LQFP
BH67F2262	8MHz 12MHz 16MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	16K×16	512×8	64×8	52	√	16-bit	10-bit PTM×3 16-bit STM×1	√	45×4 43×6 41×8	12-bit ×4	SPI/I ² C/ UART×1, SPIA×1	3	1	√	8	64/80LQFP
BH67F2270	4MHz 8MHz 12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	32K×16	1024×8	64×8	43	√	16-bit	10-bit PTM×3 16-bit STM×1	√	46×4 44×6 42×8	12-bit ×4	SPI/I ² C×1 SPIA×1 UART×2	3	1	—	8	64/80LQFP

Note: # MDU: Multiplier Divider Unit.
The BH67F2262 device uses the PWM function together with the external SPI flash to implement the voice playing function.

Measurement Flash MCU
Ultrasonic Distance Measurement Flash MCU

Part No.	VDD	VIN	System Clock	Program Memory	Data Memory	I/O	Timer	A/D	OPA	SCF	IAP	AEP	Interface	Stack	Package
HT45F39	—	8V~16V	16MHz	2K×16	160×8	11	10-bit CTM×2	8-bit×8	2	1	√	1	BCU	4	16NSOP
HT45F391	4.5V~5.5V	—													

Note: 1. The HT45F39 device power, VDD, is internally regulated by an integrated shunt regulator.
2. An external resistor should be serially connected between the external power supply VIN and MCU VDD pins.

Proximity Sensing Flash MCU

Part No.	Internal Clock	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	IR LED Driver	IR Receiver	Battery Voltage Detector	DC Motor Driver	Interface	Stack	Package
BS45F3232	8MHz	—	2.2V~5.5V	8MHz or 32kHz	2K×14	64×8	32×8	11	10-bit STM×1	12-bit ×8	√	√	√	—	SPI/I ² C/ UART×1	4	8SOP 16NSOP 16QFN
BS45F3235																	√
HT45F3230	8MHz	3V~12V	2.2V~5.5V	8MHz	2K×16	128×8	64×8	16	10-bit PTM×3 10-bit CTM×1	12-bit ×8	√	√	√	√	—	8	16NSOP 24SSOP

R to F MCU
Ultra-Low Voltage R to F Flash MCU

Part No.	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	Timer	R to F	LVD	Stack	Package
BH67F2132	1.1V~2.2V	32kHz 64kHz 128kHz	2K×16	128×8	128×8	24	21×3 22×2	10-bit CTM×1	2CH	1.15V	4	48LQFP

R to F Mask MCU

Part No.	VDD	System Clock	Program Memory	Data Memory	I/O	LCD	Timer	R to F	BZ/BZ	Stack	Package
HT47C07L	1.2V~2.2V	32kHz~128kHz	1K×16	48×8	18	20×2, 19×3	16-bit×1	1CH	1	4	48LQFP
HT47C08L	1.2V~2.2V	32kHz~128kHz	2K×16	96×8	21	21×3	16-bit×1	2CH	1	4	48LQFP

Note: R to F: Resistance to Frequency.
These devices are only available in mask versions.

Security & Safety MCU
Shock Detector Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	D/A	Comparator	PGA/Gain	Stack	Package
HT45F56	8MHz	4.5V~5.5V	8MHz or 32kHz	1K×14	32×8	32×8	6	10-bit CTM×1	6-bit×1	1	1~1000	2	8SOP

PIR & Microwave Sensor Flash MCU

Part No.	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	Temp. Sensor	A/D	OPA	Interface	Stack	Package
BA45F6622*	2.2V~5.5V	8MHz or 32kHz	1K×14	64×8	32×14#	12	10-bit STM×1	—	10-bit×4	2	—	4	16NSOP/QFN
HT45F0027	2.2V~5.5V	1/2/4/8MHz or 32kHz	2K×16	256×8	32×8	9	8-bit×2	√	12-bit×6	2	SPI/I ² C×1	6	16NSOP/QFN
BA45F6630	2.2V~5.5V	2/4/8MHz or 32kHz	2K×16	256×8	32×8	20	10-bit STM×2	—	12-bit×8	2	SPI/I ² C/UART×1	6	24SSOP/QFN

* Under development, available in 3Q, 2019.
Note: # Emulated EEPROM.

Smoke Detector Flash MCU

Part No.	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Audio D/A	Timer	AFE	IR Driver	Interface	Stack	Package
BA45F5222	2.2V~5.5V	8MHz or 32kHz	1K×14	64×8	32×14#	4	10-bit×3	—	10-bit PTM×1	√	2	—	4	8/10SOP
BA45F5240	2.2V~5.5V	2/4/8MHz or 32kHz	4K×16	256×8	64×8	13	12-bit×4	—	10-bit PTM×1 10-bit STM×1	√	2	SPI/I ² C/UART×1	8	16NSOP, 20SSOP
BA45F5240-2						11								16NSOP
BA45F5250*	2.2V~5.5V	2/4/8MHz or 32kHz	8K×16	512×8	128×8	22	12-bit×8	16-bit×1	10-bit PTM×1 10-bit STM×2	√	2	SPI/I ² C×1 UART×1	8	16NSOP 20/24/28SSOP

* Under development, available in 3Q, 2019.
Note: # Emulated EEPROM.

Smoke Detector Flash MCU with Power Line Transceiver

Part No.	Internal Clock	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Timer	AFE	IR Driver	Power Line Transceiver	Interface	Stack	Package
HT45FH23A	910kHz 2MHz 4MHz 8MHz	10V~42V	2.2V~5.5V	400kHz~8MHz or 32kHz	2K×15	128×8	64×8	13	12-bit×3	10-bit×1 16-bit×1	√	—	√	—	6	20SOP
HT45FH24A					4K×16	192×8										
BA45F5542	2/4/8MHz	10V~42V	2.2V~5.5V	2/4/8MHz or 32kHz	4K×16	256×8	64×8	9	12-bit×4	10-bit PTM×1 10-bit STM×1	√	2	√	SPI/I ² C/UART×1	8	16NSOP 20SSOP
BA45F5542-2								7	12-bit×3							16NSOP

Fire Protection Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Timer	LVR/LVD	Stack	Package
BA45F0082	2MHz 4MHz	2.2V~5.5V	2/4MHz or 32kHz	2K×15	128×8	64×8	14	12-bit×8	16-bit STM×1 10-bit STM×1	√	6	16NSOP

Fire Protection Flash MCU with Power Line Transceiver

Part No.	Internal Clock	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Timer	Power Line Transceiver	LDO	Stack	Package
BA45FH0082	2MHz 4MHz	10V~42V	2.2V~5.5V	2/4MHz or 32kHz	2K×15	128×8	64×8	13	12-bit×8	16-bit STM×1 10-bit STM×1	√	√	6	16NSOP 20SSOP

CO/GAS Detector Flash MCU

Part No.	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Timer	CO/GAS Detector AFE	LVD	LVR	Stack	Package
BA45F0096	2.2V~5.5V	8MHz or 32kHz	1K×14	64×8	32×8	14	12-bit×4	10-bit PTM×1 10-bit STM×1	√	—	√	2	16NSOP
BA45F6720*	2.2V~5.5V	8MHz or 32kHz	1K×14	64×8	32×14#	4	10-bit×4	10-bit PTM×1	√	—	√	4	8/10SOP
BA45F6730	2.2V~5.5V	2/4/8MHz or 32kHz	2K×16	128×8	32×8	14	12-bit×5	10-bit PTM×1	√	√	√	6	10SOP, 16NSOP 20SSOP

* Under development, available in 1Q, 2020.
Note: # Emulated EEPROM.

Security & Safety IC
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	1/16 ($V_{DD}-V_{EE}$)	>24ms	5s	—	√	—	—	—	16DIP
HT7612B	2.7V~5.5V	—	19μA	2 Times	Flash	$V_{ref} \times (1/2 \pm 1/6)$	>24ms	< 3s	√	√	√	√	√	16DIP 16NSOP

Note: Operating and standby current values are typical values.

Touch Flash MCU															
Touch I/O Flash MCU															
Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	Touch Key	High Current LED Driver	Interface	LVR	Stack	Package	
BS83A02A-4	8MHz	2.2V~5.5V	8MHz	1K×16	96×8	—	4	8-bit×1	2	—	—	2.10V	4	6DFN SOT23-6, 8SOP	
BS83A04A-3	8MHz	2.7V~5.5V	8MHz	1K×16	96×8	—	8	8-bit×1	4	—	—	2.55V	4	8SOP, 10MSOP	
BS83A04A-4		2.2V~5.5V										2.10V			
BS83B04A-4	8MHz	2.2V~5.5V	8MHz	2K×16	128×8	32×8	8	8-bit×1	4	—	I ² C×1	2.10V	4	8SOP, 10MSOP	
BS83B08A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	2K×16	160×8	64×8	14	8-bit×1	8	—	SPI/I ² C×1	2.55V	4	16NSOP/SSOP	
BS83B08A-4		2.2V~5.5V										2.10V			
BS83B12A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	2K×16	288×8	64×8	18	8-bit×1	12	18	SPI/I ² C×1	2.55V	4	20SOP/SSOP	
BS83B12A-4		2.2V~5.5V										2.10V			
BS83B16A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	2K×16	288×8	64×8	22	8-bit×1	16	22	SPI/I ² C×1	2.55V	4	24SOP/SSOP	
BS83B16A-4		2.2V~5.5V										2.10V			
Note: "-4" V _{DD} : 2.2V~5.5V. Internal clock is 8/12/16MHz. For V _{DD} < 3V internal clock is 8/12MHz.															
Advanced Touch I/O Flash MCU															
Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	Touch Key	High Current LED Driver	Interface	LVR	RTC	Stack	Package
BS83A01C*	8MHz	2.2V~5.5V	8MHz	512×14	32×8	—	4	—	1	—	—	—	—	2	6DFN, 8SOP SOT23-6
BS83A02C	8MHz	2.2V~5.5V	8MHz	1K×16	96×8	—	4	8-bit×1	2	—	—	—	—	4	6DFN, 8SOP SOT23-6
BS83B04C	2MHz 4MHz 8MHz	1.8V~5.5V	2MHz~8MHz	2K×16	128×8	32×8	8	10-bit CTM×1	4	8	I ² C×1	1.7V 1.9V 2.55V 3.15V 3.8V	—	4	8SOP, 10DFN
BS83B08C	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	2K×16	288×8	64×8	14	10-bit PTM×1	8	14	SPI/I ² C×1	2.10V 2.55V 3.15V 3.8V	—	6	16NSOP/SSOP 16QFN
BS83B12C	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	2K×16	512×8	64×8	18	10-bit PTM×1	12	18	SPI/I ² C×1	2.10V 2.55V 3.15V 3.8V	—	6	20SOP/SSOP 20QFN
BS83B16C	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	2K×16	512×8	64×8	22	10-bit PTM×1	16	22	SPI/I ² C×1	2.10V 2.55V 3.15V 3.8V	—	6	24SOP/SSOP 24QFN
BS83B24C	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	3K×16	512×8	128×8	26	10-bit PTM×1	24	26	SPI/I ² C×1 UARTx1	2.10V 2.55V 3.15V 3.8V	√	6	28SOP/SSOP
BS83C40C	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	4K×16	768×8	128×8	42	10-bit CTM×1 10-bit PTM×1	40	42	SPI/I ² C×1 UARTx1	2.10V 2.55V 3.15V 3.8V	√	6	44LQFP
* Under development, available in 4Q, 2019. Note: V _{DD} : 2.2V~5.5V. Internal clock is 8/12/16MHz. For V _{DD} < 3V internal clock is 8/12MHz.															

Touch Flash MCU
Touch A/D Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	Touch Key	High Current LED Driver	Interface	LVR	Stack	Package
BS84B06A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	3K×16	288×8	64×8	18	8-bit×1	12-bit×4	6	18	SPI/I ² C×1	2.55V	6	16NSOP 20SOP
BS84B08A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	3K×16	288×8	64×8	22	8-bit×1	12-bit×8	8	22	SPI/I ² C×1	2.55V	6	16NSOP 20SOP/NSOP/SSOP 24SOP
BS84C12A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	4K×16	384×8	128×8	26	8-bit×1	12-bit×8	12	26	SPI/I ² C×1	2.55V	6	20/24/28SOP/SSOP
BS84B08C	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	3K×16	288×8	64×8	22	10-bit PTM×1	12-bit×8	8	22	SPI/I ² C×1	2.10V 2.55V 3.15V 3.80V	6	16NSOP/SSOP 20/24SOP/SSOP 20NSOP
BS84C12C	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	4K×16	512×8	128×8	26	10-bit CTM×1 10-bit PTM×1	12-bit×8	12	26	SPI/I ² C×1	2.10V 2.55V 3.15V 3.80V	6	20/24/28SOP/SSOP

Touch I/O Flash MCU with LED / LCD Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	Timer	Touch Key	High Current LED Driver	Interface	LVR	RTC	Stack	Package
BS82B12A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	2K×16	384×8	64×8	22	16×4	10-bit CTM×1 10-bit PTM×1	12	22	I ² C×1 UART×1	2.55V	—	6	20/24SOP 24QFN
BS82C16A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	4K×16	512×8	64×8	26	20×4	10-bit CTM×1 10-bit PTM×1	16	26	I ² C×1 UART×1	2.55V	√	6	24/28SOP 32QFN
BS82D20A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	8K×16	768×8	64×8	26	20×4	10-bit CTM×1 10-bit PTM×1	20	26	I ² C×1 UART×1	2.55V	√	8	28SOP 28SSOP

Touch 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 Driver	Interface	LVR	RTC	Stack	Package
BS86B12A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	2K×16	384×8	64×8	22	16×4	10-bit CTM×1 10-bit PTM×2	12-bit×8	12	22	SPI/I ² C×1 UART×1	2.55V	—	6	20/24SOP
BS86C16A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	4K×16	512×8	64×8	26	20×4	10-bit CTM×1 10-bit PTM×2	12-bit×8	16	26	SPI/I ² C×1 UART×1	2.55V	√	6	24/28SOP
BS86D20A-3	8MHz 12MHz 16MHz	2.7V~5.5V	8MHz~16MHz	8K×16	768×8	64×8	26	20×4	10-bit CTM×1 10-bit PTM×2	12-bit×8	20	26	SPI/I ² C×1 UART×1	2.55V	√	8	24/28SOP

Touch A/D Flash MCU with LED Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	Touch Key	High Current LED Driver	Interface	LVR/LVD	RTC	Stack	Package
BS86C08C	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	4K×16	384×8	32×8	26	10-bit CTM×1 10-bit PTM×1	12-bit×8	8	26	I ² C×1 UART×1	√	—	8	24/28SOP 24/28SSOP
BS86D12C	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	8K×16	512×8	64×8	26	10-bit CTM×1 10-bit PTM×1	12-bit×8	12	26	I ² C×1 UART×1	√	—	8	24/28SOP 24/28SSOP
BS86D20C	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	8K×16	768×8	64×8	26	10-bit CTM×1 10-bit PTM×2	12-bit×8	20	26	I ² C×1 SPI×1 UART×1	√	√	8	24/28SOP
BS86E16C	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	16K×16	768×8	64×8	42	10-bit CTM×1 10-bit PTM×2	12-bit×8	16	42	I ² C×1 UART×2	√	√	8	28SOP 28SSOP 44LQFP

Touch Flash MCU																		
Touch A/D Flash MCU with OPA / Comparator																		
Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	RTC	LCD	Timer	A/D	Touch Key	OPA/Comparator	High Current LED Driver	Interface	LVR	Stack	Package
BS87B12A-3	8MHz 12MHz 16MHz	2.7V~ 5.5V	8MHz~ 16MHz	3K×16	384×8	64×8	22	—	16×4	10-bit CTM×1 10-bit PTM×1	12-bit ×8	12	√	22	SPI/I ² C×1 UART×1	2.55V	6	20NSOP 24SOP
BS87C16A-3	8MHz 12MHz 16MHz	2.7V~ 5.5V	8MHz~ 16MHz	4K×16	512×8	64×8	30	√	20×4	10-bit CTM×1 10-bit PTM×2	12-bit ×8	16	√	30	SPI/I ² C×1 UART×1	2.55V	6	24/28SOP 44LQFP
BS87D20A-3	8MHz 12MHz 16MHz	2.7V~ 5.5V	8MHz~ 16MHz	8K×16	768×8	64×8	42	√	36×4	10-bit CTM×2 10-bit PTM×2	12-bit ×8	20	√	42	SPI/I ² C×1 UART×1	2.55V	8	28SOP 44LQFP
Enhanced Touch A/D Flash MCU																		
Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	RTC	A/D	High Current LED Driver	Touch Key	LVR/LVD	IAP	Interface	Stack	Package	
BS66F340	8MHz 12MHz 16MHz	2.2V~ 5.5V	8MHz~ 16MHz	4K×16	512×8	128×8	26	10-bit CTM×2 16-bit STM×1 10-bit PTM×1	√	12-bit ×8	26	12	√	√	SPI/I ² C×1 UART×1	8	28SSOP	
BS66F350	8MHz 12MHz 16MHz	2.2V~ 5.5V	8MHz~ 16MHz	8K×16	768×8	128×8	40	10-bit CTM×2 16-bit STM×1 10-bit PTM×1	√	12-bit ×8	40	20	√	√	SPI/I ² C×1 UART×1	8	44/48LQFP	
BS66F360	8MHz 12MHz 16MHz	2.2V~ 5.5V	8MHz~ 16MHz	16K×16	1024×8	128×8	46	10-bit CTM×2 16-bit STM×1 10-bit PTM×1	√	12-bit ×8	46	28	√	√	SPI/I ² C×1 UART×1	12	44/48LQFP	
BS66F370	8MHz 12MHz 16MHz	2.2V~ 5.5V	8MHz~ 16MHz	32K×16	1536×8	128×8	60	10-bit CTM×2 16-bit STM×1 10-bit PTM×1	√	12-bit ×8	60	36	√	√	SPI/I ² C×1 UART×1	16	44/48/64 LQFP	
Enhanced Touch A/D Flash MCU with LCD Driver																		
Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	Timer	RTC	A/D	Touch Key	IAP	LVR/LVD	Interface	Stack	Package	
BS67F340	8MHz 12MHz 16MHz	2.2V~ 5.5V	8MHz~ 16MHz	4K×16	512×8	128×8	31	24×4	10-bit CTM×2 16-bit STM×1 10-bit PTM×1	√	12-bit ×8	16	√	√	SPI/I ² C×1 UART×1	8	48LQFP	
BS67F350	8MHz 12MHz 16MHz	2.2V~ 5.5V	8MHz~ 16MHz	8K×16	768×8	128×8	39	32×4	10-bit CTM×2 16-bit STM×1 10-bit PTM×1	√	12-bit ×8	20	√	√	SPI/I ² C×1 UART×1	8	48/64 LQFP	
BS67F360	8MHz 12MHz 16MHz	2.2V~ 5.5V	8MHz~ 16MHz	16K×16	1024×8	128×8	43	40×4	10-bit CTM×2 16-bit STM×1 10-bit PTM×1	√	12-bit ×8	28	√	√	SPI/I ² C×1 UART×1	12	48/64 LQFP	
BS67F370	8MHz 12MHz 16MHz	2.2V~ 5.5V	8MHz~ 16MHz	32K×16	1536×8	128×8	59	48×4	10-bit CTM×2 16-bit STM×1 10-bit PTM×1	√	12-bit ×8	36	√	√	SPI/I ² C×1 UART×1	16	48/64/80 LQFP	
Enhanced Touch Voice A/D Flash MCU with Power Amplifier																		
Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	SCOM/SSEG	Timer	RTC	A/D	Audio D/A	Power Amp.	Touch Key	IAP	Interface	Stack	Package
BS66FV340	8MHz 12MHz 16MHz	2.2V~ 5.5V	8MHz~ 16MHz	4K×16	512×8	128×8	39	SCOM×6 SSEG×33	10-bit CTM×1 16-bit STM×1 10-bit PTM×2	√	12-bit ×8	16-bit ×1	1.5W	20	√	SPI/I ² C×1 SPIA×1 UART×1	8	44/48 LQFP
BS66FV350	8MHz 12MHz 16MHz	2.2V~ 5.5V	8MHz~ 16MHz	8K×16	768×8	128×8	39	SCOM×6 SSEG×33	10-bit CTM×2 16-bit STM×1 10-bit PTM×2	√	12-bit ×8	16-bit ×1	1.5W	24	√	SPI/I ² C×1 SPIA×1 UART×1	8	44/48 LQFP
BS66FV360	8MHz 12MHz 16MHz	2.2V~ 5.5V	8MHz~ 16MHz	16K×16	1024×8	256×8	39	SCOM×6 SSEG×33	10-bit CTM×2 16-bit STM×1 10-bit PTM×2	√	12-bit ×8	16-bit ×1	1.5W	28	√	SPI/I ² C×1 SPIA×1 UART×1	12	44/48 LQFP

Touch Flash MCU
Wearable Peripheral Integrated Flash MCU with Touch

Part No.	Internal Clock	VDD	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	Touch Key	High Current LED Driver	Interface	LDO	Linear Charger CV	Linear Charger CC	DC Motor Driver	Stack	Package
BS45F5830	4MHz 8MHz 12MHz	2.2V~5.5V	2K×16	128×8	32×8	16	10-bit CTM×1 10-bit STM×1	12-bit ×6	4	—	I ² C×1	3.3V	4.20V	40mA~400mA	150mA	4	24QFN
BS45F5831												3.3V	4.35V				
BS45F5832												3.0V	4.20V				
BS45F5833												3.0V	4.35V				
BS45F5840	8MHz	2.2V~5.5V	4K×16	256×8	64×8	18	10-bit CTM×5 10-bit STM×1	12-bit ×6	4	4	SPI/I ² C×1 UART×1	3.3V	—	40mA~400mA	150mA	8	24QFN
BS45F5842												3.0V					

Ultrasonic Atomiser Flash MCU with Touch

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	Timer	Atomiser Processor	Touch Key	Stack	Package
BS45F3832	12MHz	2.2V~5.5V	12MHz or 32kHz	2K×16	64×8	32×8	8	12-bit ×2	10-bit CTM×1 10-bit PTM×1	√	2	4	8/10SOP
BS45F3833	4MHz 8MHz 12MHz	2.2V~5.5V	4/8/12MHz or 32kHz	2K×16	128×8	32×8	18	12-bit ×4	10-bit CTM×3 10-bit STM×1 10-bit PTM×1	√	4	4	16/20NSOP

Ultra-Low Power Touch MCU
Ultra-Low Power Touch I/O Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	I/O	Timer	Touch Key	Stack	Package
BS83A02L	8MHz	1.8V~5.5V	8MHz	512×14	64×8	4	8-bit×1	2	2	6DFN

Note: The standby current is less than 150nA at 3.0V.

High Supply Voltage Touch MCU
9V Touch A/D Flash MCU with HVIO

Part No.	Internal Clock	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	RTC	Timer	A/D	Touch Key	HVIO	Interface	LVR/LVD	Stack	Package
BS86DH12C	8MHz 12MHz 16MHz	7V~10V	5.0V	8MHz~16MHz	8K×16	512×8	64×8	22	√	10-bit CTM×2 10-bit PTM×1	12-bit ×8	12	6	I ² C×1 UART×1	√	8	20/28SOP 44LQFP

12V High Current Driver Touch Flash MCU

Part No.	Internal Clock	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	I/O	Touch Key	OVP	Timer	PWM	HV PMOS Driver	LDO	Stack	Package
BS45F5930	8MHz	6V~13.2V	4.75V~5.52V	8MHz	2K×16	128×8	5	4	1	8-bit×1	8-bit×2	450mA×2	5V	4	8SOP 10SOP

Touch Key IC
Touch Key

Part No.	Touch Key	VDD	Standby Mode	Standby Current at 3V		Operating Current at 3V		Key Output Type	Package	Serial Interface
				One-key Wake-up	Any-key Wake-up	One-key State	Any-key State			
BS801B	1-Key	2.2V~5.5V	√	1.5μA	—	3.0μA		Level-Hold or Toggle	SOT23-6	—
BS801C			—	—						
BS802B	2-Key	2.2V~5.5V	√	—	2.0μA	5.0μA		Level-Hold or Toggle	8SOP	—
BS802C			—	—						
BS804B	4-Key	2.2V~5.5V	√	1.5μA	3.0μA	8.0μA		—	8SOP	√
BS804C			√			—		3.0μA	8.0μA	
			√					Level-Hold or Toggle	16NSOP	
			—					Level-Hold or Toggle	16NSOP	
BS806B	6-Key	2.2V~5.5V	√	1.5μA	4.0μA	14.0μA		Level-Hold	16NSOP	—
BS806C			—	—	3.0μA	14.0μA				
BS808B	8-Key	2.2V~5.5V	√	1.5μA	5.0μA	18.0μA		—	16NSOP	√
BS808C			√			—		3.0μA	18.0μA	Level-Hold
			√					—	16NSOP	√
			—					Level-Hold	20SOP/SSOP	—

Advanced Touch Key

Part No.	Touch Key	VDD	Standby Current at 3V		Key Output Type	Package	Serial Interface
			One-key Wake-up	Any-key Wake-up			
BS812A-1	2-Key	2.2V~5.5V	—	2.0μA	Active Low	SOT23-6	—
BS813A-1	3-Key	2.2V~5.5V	—	4.5μA	Active Low	8SOP	—
BS814A-1	4-Key	2.2V~5.5V	—	5.0μA	Active Low	10MSOP	—
BS814A-2	4-Key	2.2V~5.5V	—	5.0μA	—	8SOP	√
BS816A-1	6-Key	2.2V~5.5V	—	12μA/6.0μA*	Active Low/Active High*	16NSOP	—
BS818A-2	8-Key	2.2V~5.5V	—	12μA/6.0μA*	Binary*	16NSOP	√
BS8112A-3	12-Key	2.2V~5.5V	6.0μA/3.0μA**	13μA/6.5μA**	I ² C	16NSOP	√
BS8116A-3	16-Key	2.2V~5.5V	7.0μA/3.5μA**	17μA/9.0μA**	I ² C	20SSOP	√

Note: 1. The BS81x series devices have enhanced noise rejection performance.
 2. * pin selected option.
 3. ** option by I²C communication.

Cortex-M0+ 32-Bit Voice / Music MCU
Cortex-M0+ 32-Bit Music Synthesizer MCU

Part No.	Max. Freq.	VDD	Flash	Ext. Flash	SRAM	PDMA	Audio D/A	ADC	Timers ¹	WDT	RTC	USB ²	MIDI Engine ³	Voice	Sound Effect	Interface	I/O	Package
HT32F0006	48MHz	2.0V~3.6V	128KB	SPI	16KB	6CH	16-bit x2	1Msps 12-bitx16	BFTMx2 SCTMx4 GPTMx1	√	√	√	√	SB Coding	Echo	USARTx1 UARTx1 SPIx1 QSPIx1 I ² Cx1 I ² Sx1	52	48/64LQFP

Note: 1. BFTM: Basic Function Timer, SCTM: Single-Channel Timers, GPTM: General-Purpose Timers.
 2. USB 2.0 Full Speed device.
 3. 32-CH Music Synthesis Engine.

Voice & Music Flash MCU
Voice Flash MCU with Power Amplifier

Part No.	Internal Clock	VDD	Program Memory	Data Memory	Data EEPROM	I/O	Timer	RTC	A/D	IAP	LVR/LVD	Audio D/A	Power Amp.	Inter- face	Stack	Package
HT66FV130	8MHz 12MHz 16MHz	2.2V~5.5V	2Kx16	128x8	32x8	15	10-bit CTMx1 10-bit PTMx1	—	12-bitx4	√	√	16-bit x1	1.5W	SPIAx1	4	20/24SOP
HT66FV140	8MHz 12MHz 16MHz	2.2V~5.5V	4Kx16	256x8	64x8	19	10-bit CTMx1 10-bit PTMx2	√	12-bitx8	√	√	16-bit x1	1.5W	SPI/I ² Cx1 SPIAx1	8	24SOP/SSOP 28SOP
HT66FV150	8MHz 12MHz 16MHz	2.2V~5.5V	8Kx16	512x8	128x8	27	10-bit CTMx2 10-bit PTMx2	√	12-bitx8	√	√	16-bit x1	1.5W	SPI/I ² Cx1 SPIAx1 UARTx1	8	28SOP 44LQFP
HT66FV160	8MHz 12MHz 16MHz	2.2V~5.5V	16Kx16	1024x8	256x8	35	10-bit CTMx2 10-bit PTMx2 16-bit STMx1	√	12-bitx8	√	√	16-bit x1	1.5W	SPI/I ² Cx1 SPIAx1 UARTx1	8	44LQFP

Touch Voice A/D Flash MCU with Power Amplifier

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	SCOM/SSEG	Timer	RTC	A/D	Audio D/A	Power Amp.	Touch Key	IAP	Inter- face	Stack	Package
BS66FV340	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	4Kx16	512x8	128x8	39	SCOMx6 SSEGx33	10-bit CTMx1 16-bit STMx1 10-bit PTMx2	√	12-bit x8	16-bit x1	1.5W	20	√	SPI/I ² Cx1 SPIAx1 UARTx1	8	44/48 LQFP
BS66FV350	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	8Kx16	768x8	128x8	39	SCOMx6 SSEGx33	10-bit CTMx2 16-bit STMx1 10-bit PTMx2	√	12-bit x8	16-bit x1	1.5W	24	√	SPI/I ² Cx1 SPIAx1 UARTx1	8	44/48 LQFP
BS66FV360	8MHz 12MHz 16MHz	2.2V~5.5V	8MHz~16MHz	16Kx16	1024x8	256x8	39	SCOMx6 SSEGx33	10-bit CTMx2 16-bit STMx1 10-bit PTMx2	√	12-bit x8	16-bit x1	1.5W	28	√	SPI/I ² Cx1 SPIAx1 UARTx1	12	44/48 LQFP

Voice Record / Playback Flash MCU
Voice Record / Playback Flash MCU with Power Amplifier

Part No.	Internal Clock	VDD	Program Memory	Data Memory	Data EEPROM	I/O	Timer	RTC	LVR/LVD	A/D	IAP	G.711 Voice Codec	16-bit PCM ADC	Audio D/A	Power Amp.	Inter- face	Stack	Package
HT66FV240	16MHz	2.2V~5.5V	4Kx16	384x8	128x8	28	16-bit CTMx1 16-bit STMx1 16-bit PTMx1	√	√	12-bit x8	√	√	√	16-bit x1	1.5W	SPI/ I ² Cx1	8	48LQFP

Sound Effect Flash MCU
Waveform Generator Flash MCU

Part No.	VCC (HV)	VDD	Internal Clock	System Clock	Program Memory	Data Memory	I/O	Waveform Output	Timer	Stack	Package
HT45F2020	8V~16V	5.0V	8MHz	8MHz or 32kHz	1Kx14	32x8	4	2	10-bit PTMx1	2	SOT23-6 8SOP
HT45F2022	—	2.2V~5.5V									

Voice & Music MCU
Enhanced Voice MCU

Part No.	VDD	Program Memory	Data Memory	Voice ROM	Voice Capacity	I/O	Timer	Audio D/A	Audio PWM	Stack	Package
HT86B10	2.2V~5.5V	8K×16	192×8	192K×8	72sec	16	8-bit×3	12-bit×1	√	8	24SSOP(150/209mil) 28SOP, 44LQFP
HT86B30	2.2V~5.5V	8K×16	192×8	384K×8	144sec	16	8-bit×3	12-bit×1	√	8	28SOP, 44LQFP
HT86B60	2.2V~5.5V	8K×16	384×8	1024K×8	384sec	20	8-bit×3 16-bit×1	12-bit×1	√	8	28SOP, 44LQFP

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 quoted Voice Capacity is based on a 21Kbps data rate.

Enhanced Music MCU (8 Polyphony) with Power Amplifier

Part No.	VDD	Program Memory	Ext. Flash	Data Memory	I/O	Timer	Audio D/A	A/D	Voice	Power Amplifier	Package
HT37A30	2.4V~5.5V	64K×16	—	320×8	20	8-bit×2 16-bit×1	16-bit×2	—	PCM/ADPCM	0.5W	28SOP, 48SSOP
HT37A40	3.3V~5.5V	96K×16	—	320×8	28	8-bit×2 16-bit×1	16-bit×2	12-bit×8	PCM/ADPCM	0.5W	28SOP, 64QFP, 80LQFP
HT37A50	3.3V~5.5V	128K×16	—	320×8	28	8-bit×2 16-bit×1	16-bit×2	12-bit×8	PCM/ADPCM	0.5W	28SOP, 64QFP, 80LQFP

Note: 1. These devices are only available in mask versions.
 2. The waveform data and program code share the same memory space.

Enhanced Music MCU (16 Polyphony) with Power Amplifier

Part No.	VDD	Program Memory	Ext. Flash	Data Memory	I/O	Timer	Audio D/A	A/D	Voice	Power Amplifier	Package
HT37B90	3.0V~5.5V	512K×16	—	1280×8	40	8-bit×2 16-bit×1	16-bit×2	12-bit×8	PCM/ADPCM	0.5W	100LQFP
HT37P00	2.4V~5.5V	—	Parallel	4096×8	56	8-bit×3 16-bit×1	16-bit×2	12-bit×16	PCM/ADPCM	0.5W	128QFP

Note: 1. These devices are only available in mask versions.
 2. The waveform data and program code share the same memory space.

Bluetooth Low Energy (BLE)
BLE Transparent Transmission Flash MCU

Part No.	Max. Freq.	VDD	Flash	SRAM	ADC	Timers*	Interface	Others	I/O	Data Rate	Output Power	Sensitivity	Package
BC32F7611	40MHz	2.2V~3.6V	64KB	8KB	1MSPS 12-bit×6	RTC×1, WDT×1, BFTM×2 SCTM×4, GPTM×1	USART×1, UART×2 SPI×1, I ² C×2	CRC	22	1Mbps	+3dBm	-90dBm	46QFN

Note: BFTM: Basic Function Timer, SCTM: Single-Channel Timers, GPTM: General-Purpose Timers, MCTM: Motor Control Timer.

BLE Transparent Transmission

Part No.	VDD	Data EEPROM	Data Rate	Output Power	Sensitivity	Interface	Stamp Holes	Package
BC7601	2.2V~3.6V	—	1Mbps	+3dBm	-90dBm	UART/SPI	—	32QFN
BC7602		8K×8		—			46QFN	
BCM-7602-G01				8×2 (P=1.27mm)			—	

2.4GHz RF Transceiver
2.4GHz RF Transceiver Flash MCU

Part No.	VDD	Program Memory	Data Memory	Data EEPROM	I/O	Timer	RTC	LVR/LVD	A/D	Built-in 2.4GHz RF Block	Comparator	Interface	Stack	Package
BC66F840	2.2V~3.6V	4K×16	256×8	128×8	21	16-bit CTM×1 16-bit STM×1 16-bit ETM×1	√	√	12-bit×8	√	1	SPI/I ² C×1	8	32QFN

2.4GHz RF Transceiver

Part No.	VDD	Mod.	Data Rate	Output Power	Sensitivity	Interface	Package
BC9824	1.9V~3.6V	GFSK	250K~2Mbps	-40 ~ +3dBm	-96dBm @ 250Kbps	SPI	20QFN

Transparent Transmission MCU
Low Pin Count Multi Interface Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	LVR/LVD	Interface	Stack	Package
BC68F0031	8MHz	1.8V~5.5V	8MHz or 32kHz	2K×16	128×8	32×8	14	10-bit CTM×1 16-bit STM×1	√	SPI×1 I ² C/UART×1	6	8SOP 16NSOP

Note: It is suggested that UART be used between 2.2V~5.5V of V_{DD} without external crystal.

Sub-1GHz RF Transceiver

Sub-1GHz RF Transceiver									
Part No.	VDD	Band	FSK/GFSK	Low Current	Data Rate	Output Power	Rx Current Consumption	Sensitivity	Package
BC3601	2.0V~3.6V	315/433/868/915MHz	√	—	2~250Kbps	0~17dBm	—	-121dBm@2kbps	24QFN
BC3602	1.9V~3.6V	315/433/470/868/915MHz	√	√	2~250Kbps	0~13dBm	4.2mA @ 433MHz 5.5mA @ 868MHz	-120dBm@2kbps	24QFN

Sub-1GHz RF Transmitter

Sub-1GHz RF Transmitter Flash MCU															
Part No.	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	IAP	I/O	Timer	LVR/LVD	Band	OOK/FSK	Symbol Rate	Output Power	Stack	Package
BC68F2123	2.2V~3.6V	8MHz	1K×14	64×8	32×8	—	9	10-bit STM×1 10-bit PTM×1	√	315/433/ 868/915MHz	√	0.5~25Ksps (OOK)	0/5/10/13dBm	2	16NSOP-EP
BC68F2130	2.0V~3.6V	16MHz	2K×16	256×8	—	√	8	10-bit CTM×1 10-bit PTM×1	√	315/433/ 868/915MHz	√	0.5~25Ksps (OOK)	0/10/13dBm	8	16NSOP-EP
BC68F2140	2.0V~3.6V	16MHz	4K×16	256×8	—	√	14	10-bit CTM×1 10-bit PTM×1	√	315/433/ 868/915MHz	√	0.5~25Ksps (OOK)	0/10/13dBm	8	24SSOP-EP

Sub-1GHz RF Transmitter OTP MCU															
Part No.	VDD	System Clock	Program Memory	Data Memory	I/O	Timer Module	RF				Stack	Package			
							Band	OOK/FSK	Symbol Rate	Output Power					
BC48R2021	2.2V~3.6V	8MHz	1K×14	64×8	8	8-bit Timer×1	315/433/868/915MHz	√	0.5~25Ksps	0/5/10/13dBm	2	16NSOP-EP			

Sub-1GHz RF Transmitter						
Part No.	VDD	Band	OOK/FSK	Symbol Rate	Output Power	Package
BC2102	2.2V~3.6V	315/433/868/915MHz	√	0.5~25Ksps	0/5/10/13dBm	8SOP-EP

Sub-1GHz RF Transmitter with Encoder							
Part No.	VDD	Band	OOK/FSK	Symbol Rate	Output Power	Encoding Format	Package
BC2161	2.2V~3.6V	315/433/868/915MHz	√	1.5~24Ksps	0/5/10/13dBm	1527, 2262 and HT compatible	8SOP-EP 16NSOP-EP/QFN

Sub-1GHz RF Receiver

Sub-1GHz Super Regeneration RF Receiver Flash MCU															
Part No.	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	SCOM	Band	Demod.	Symbol Rate	Sensitivity	Stack	Package
BC66F2430	4.5V~5.5V	16MHz	2K×16	128×8	64×8	17	10-bit PTM×1 10-bit STM×1 16-bit STM×1	12-bit ×4	4	315/433MHz	OOK	0.5~15 Ksps	-97dBm	6	16NSOP-EP 24SSOP-EP

Sub-1GHz Super Heterodyne RF Receiver Flash MCU															
Part No.	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	Band	Demod.	Max. Symbol Rate	Current Consumption	Stack	Package		
BC68F2332	2.5V~5.5V	8MHz	2K×14	64×8	32×8	8	10-bit STM×1	315/433/868/915MHz	OOK	20Ksps	3.2mA@433MHz	4	16NSOP-EP		
BC66F2342		32kHz or 16MHz	4K×15	128×8	32×15#	13	10-bit STM×1 10-bit PTM×1				4.0mA@868MHz	6	24SSOP-EP		

Note : # Emulated EEPROM.

Sub-1GHz Super Heterodyne OOK RF Receiver 12V High Current A/D Flash MCU															
Part No.	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	HV I/O	A/D	LDO Output Voltage	Band	Max. Symbol Rate	Current Consumption	Stack	Package
BC45F7930	7.5V~12V	4.5V~5.5V	32kHz~16MHz	2K×16	128×8	64×8	9	10	12-bit×4	5.0V	315/433/ 868/915MHz	20Ksps	3.2mA@433MHz	4	46QFN
BC45F7940			4K×16	256×8	128×8	13	12-bit×7		4.0mA@868MHz				8		

Sub-1GHz Super Heterodyne RF Receiver							
Part No.	VDD	Band	OOK	Max. Symbol Rate	Current Consumption	Sensitivity	Package
BC2302A	2.5V~5.5V	315/433MHz	√	20Ksps	3.2mA @ 433MHz	-112dBm@1ksps	8SOP-EP
BC2302B		315/433/868/915MHz			4.0mA @ 868MHz		

NFC Flash MCU

A/D NFC Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	RTC	A/D	SCOM	Comparator	High Current LED Driver	Interface	Stack	Package
HT45F4050	4MHz 8MHz 12MHz	1.8V~ 5.5V	400kHz~ 16MHz or 32kHz	8K×16	256×8	64×8	41	10-bit PTM×1 16-bit CTM×1 16-bit STM×1	√	12-bit ×13	4	1	41	SPI/I ² C×1 UART×1 NFC×1	8	48LQFP

Note: NFC: Near Field Communication.

FRS Flash MCU

Two Way Radio Flash MCU

Part No.	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	RTC	A/D	D/A	FRS AFE	Audio Processor	Audio Power Amp.	Interface	Stack	Package
BC98FR066*	3.3V~ 5.5V	32kHz~ 16MHz	8K×16	512×8	128×8	17	8-bit×2 16-bit×1	√	10-bit ×8	8-bit ×3	√	√	1.5W	UART	8	48LQFP-EP
HT98F069	3.3V~ 5.5V	32kHz~ 16MHz	24K×16	1152×8	—	42	8-bit×2 16-bit×1	√	12-bit ×8	8-bit ×4	—	√	—	SPI	10	48/64LQFP

* Under development, available in 3Q, 2019.

Note: FRS: Family Radio Service.

The Audio Processor function includes the CTCSS, DCS, DTMF, Pre-emphasis, De-emphasis, Scramble, Compander and VOX functions.

Infrared / 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	HT12E
HT12F	Decoder	2.4V~12V	12	0	0	—	—	3	18DIP, 20SOP	HT12E

3⁹ Encoder

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

Learning Encoder

Part No.	VDD	Addr. No.	Data No.	Trig.	Package
HT6P20B	2V~12V	22	2	Data Low	8DIP/SOP
HT6P20D		20	4		16DIP/NSOP

IR Remote Controller

Part No.	VDD	Addr. No.	Data No.	Key No.	Signal Gap Time	38kHz Carrier	Package
HT62104	2.0V~5.0V	2	7	8	4T	√	16DIP/NSOP
HT6220A	2.0V~3.6V	16	8	6	—	√	8SOP
				30			16NSOP
HT6221A	2.0V~3.6V	16	8	32	—	√	20SOP
HT6221B				48			
HT6222A	2.0V~3.6V	16	8	64	—	√	24SOP, Chip, Wafer

Earphone Interface Bridge MCU
Earphone Interface Bridge Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	IO	Timer	Mic Signal Frequency	Mic Signal Waveform	Interface	Stack	Package
BH45F0031	4MHz 8MHz 12MHz	2.2V~5.5V	32kHz~12MHz	1K×16	128×8	6	10-bit CTM×1 10-bit STM×1	500Hz~100kHz	Analogous Sinewave	Earphone	4	8SOP 16NSOP

Interface Bridge
Bridge

Part No.	Description	VDD	Clock Input	Internal clock	End-points	Interface	USB	Virtual COM	HID	FIFO/Buffer	Interface Data Rate	I/O VDD	Package
HT45B0F	SPI to UART Bridge	2.0V~5.5V	400kHz~20MHz	—	—	SPI×1 UART×1	—	—	—	TX: 1 byte RX: 4 byte	Up to 115.2kbps Baud	—	16NSOP
HT45B0K	SPI to USB Bridge	3.3V~5.5V	6MHz or 12MHz	—	6	SPI×1 USB×1	Full Speed	—	—	160 byte	12MHz	—	16NSOP
HT42B532-1	USB to I ² C Bridge	3.3V~5.5V	—	12MHz	—	USB×1 I ² C×1	Full Speed	√	—	TX: 62 bytes RX: 62 bytes	Up to 400kHz	√	8SOP 10MSOP
HT42B533-1	USB to SPI Bridge	3.3V~5.5V	—	12MHz	—	USB×1 SPI×1	Full Speed	√	—	TX: 128 bytes RX: 128 bytes	Up to 8MHz	√	10MSOP 16NSOP
HT42B534-2	USB to UART Bridge	3.3V~5.5V	—	12MHz	—	USB×1 UART×1	Full Speed	√	—	TX: 128 bytes RX: 128 bytes	Up to 3Mbps Baud	√	8/10SOP 10MSOP 16NSOP
HT42B564-1	USB to UART Bridge	3.3V~5.5V	—	12MHz	—	USB×1 UART×1	Full Speed	—	√	TX: 32 bytes RX: 32 bytes	Up to 115.2kbps Baud	√	10SOP

Telecom IC
Telecom Peripheral

Part No.	Description	VDD	OSC Frequency	Package
HT9200A	DTMF generator	2.5V~5.5V	3.58MHz	8DIP/SOP
HT9200B				14SOP
HT9170B	DTMF receiver	2.5V~5.5V	3.58MHz	18DIP
HT9170D				18SOP
HT9172	DTMF receiver	2.5V~5.5V	3.58MHz	18DIP/SOP

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

Battery Management MCU
Cortex-M0 32-Bit USB Type-C PD MCU

Part No.	Max. Freq.	VCC (HV)	VDD	SRAM	MTP	ADC	PWM Controller	PFM	Timer	High Voltage Gate Driver	VCONN Current-Limit	CCn Rp/Rd	CV/CC	OVP/ OVP	Current Sense	LDO	PD 3.0	I/O	Package
HT32FP2350	21.6MHz	6V~36V	4.25V~5.5V	2KB	16KB	10-bit x5	Buck Only 150~600kHz	✓	✓	✓	400mA	✓	✓	✓	✓	1.8V	✓	10	40QFN
HT32FP2450							Buck/Boost 300~600kHz												

Power Bank Flash MCU

Part No.	Internal Clock	VCC (HV)	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	OVP/OCP/ OUVV	LDO	Level Shift	PE+	Q.C 2.0	Stack	Package
HT45F4MA	30MHz	—	2.55V~5.5V	470kHz~15MHz or 32kHz	2Kx16	128x8	64x8	16	10-bit PTMx1 16-bit STMx1	12-bit x8	1/1/0	—	—	—	—	4	16NSOP 20SSOP
HT45FH4MA-1		3V~28V										5V	2	—	—		20SSOP
BP45F4MB	30MHz	—	2.5V~5.5V	470kHz~15MHz or 32kHz	2Kx16	128x8	—	18	10-bit PTMx1 16-bit STMx1	12-bit x7	1/1/0	—	—	—	—	4	16NSOP 20SSOP
HT45F4N	30MHz	—	2.55V~5.5V	470kHz~15MHz or 32kHz	4Kx16	192x8	64x8	26	10-bit PTMx3 16-bit STMx1	12-bit x14	0/2/1	—	—	—	—	8	28SSOP
HT45FH4N		3V~28V						5V				2	✓	✓			

Advanced Power Bank Flash MCU

Part No.	Internal Clock	VCC (HV)	VDD	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	Auto-adjust H.R. PWM	OCP/ OUVV	LDO	Level Shift	PE+	Q.C 2.0	Stack	Package
HT45F5N	8MHz	—	2.55V~5.5V	4Kx16	256x8	64x8	30	10-bit PTMx1 16-bit STMx1	12-bit x14	2	2/2	—	—	—	—	8	28SSOP 32QFN
HT45FH5N		3V~28V										5V	2	✓	✓		28SSOP 46QFN
BP45FH6N	16MHz	3V~15V	2.55V~5.5V	6Kx16	256x8	64x8	33	10-bit PTMx1 16-bit STMx1	12-bit x14	2	2/2	5V	8	✓	✓	8	46QFN

Note: 1. H.R. PWM: High Resolution and Complementary PWM Outputs with dead-time control, the duty cycle resolution is 7.8ns when the HIRC is 8MHz.
2. BP45FH6N has 4 pin level shift output with 12V/90mA and 4 pin High Voltage MOS Gate Driver with 12V/450mA.

Battery Charger Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Inter- face	Timer	A/D	D/A	OPA	PGA	LVR	Stack	Package
HT45F5Q-1*	8MHz	2.2V~5.5V	400kHz~8MHz or 32kHz	1Kx14	32x8	32x14#	9	—	10-bit STMx1	10-bit x5	8-bitx1 12-bitx1	2	—	2.1V	4	16NSOP
HT45F5Q-2	8MHz 32kHz	2.2V~5.5V	400kHz~8MHz or 32kHz	2Kx16	128x8	32x8	15	UARTx1	10-bit CTMx1	12-bit x6	8-bitx1 12-bitx1	2	1	2.1V	6	20NSOP

* Under development, available in 3Q, 2019.
Note: # Emulated EEPROM.

Wireless Charger Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	OCP	Demodulation	PLL	Inter- face	Clock Gen.	FSK	Stack	Package
HT66FW2230	20MHz	4.0V~5.5V	400kHz~20MHz	4Kx16	128x8	64x8	21	10-bit CTMx1 10-bit STMx1	12-bit x8	1	1	0	I ² Cx1	1	—	8	28SSOP 28QFN
HT66FW2350	8MHz	4.0V~5.5V	400kHz~16MHz	8Kx16	256x8	64x8	28	10-bit CTMx1 10-bit STMx1 16-bit PTMx1	12-bit x8	1	2	32kHz	I ² Cx1	1	✓	8	32QFN

Handheld Product Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Emulated EEPROM	I/O	Timer	PWM	A/D	High Current LED Driver	Linrar Charger	H-Bridge Driver	H-Bridge Current	Stack	Package
BP66F0043	8MHz	1.8V~5.5V	8MHz or 32KHz	2Kx14	64x8	32x14	19	8-bitx1	8-bit x1	10-bit x4	19	40~400mA	—	—	4	16/20NSOP 24SSOP
BP45F0102	8MHz	1.8V~5.5V	8MHz or 32KHz	2Kx14	64x8	32x14	13	8-bitx1	8-bit x1	10-bit x4	13	40~400mA	✓	2.1A	4	20SSOP
BP45F0104							14				14					24SSOP
BP45F0106	8MHz	1.8V~5.5V	8MHz or 32KHz	4Kx15	128x8	32x15	16	10-bit PTMx1 10-bit STMx1	—	10-bit x8	16	—	✓	2.1A	6	24SSOP

Battery & Power Management Peripheral
Wireless Charger Transmitter's Power Stage

Part No.	VIN	VDD	OCP	OTP	R _{DS(ON)}	Package
HT45B0016	4.5V~25V	4.5V~5.5V	√	√	12mΩ/30mΩ	23QFN

Battery Protection Analog Front End

Part No.	Cell #	Input Voltage	Control I/F	V _{MON} Voltage Monitor Type	V _{MON} Accuracy	IMON Gain Accuracy	Charge Balancer	Gate Driver	LDO	HV Wake Up	Package
HT7Q1520*	3~8	7.5V~36V	I/O	Accumulative	1/n±0.5% (Ratio)	—	—	—	5V±1%, 30mA	—	16NSOP
HT7Q1531**	3~8	7.5V~36V	I2C	Accumulative	1/n ± 0.5% (Ratio)	—	120Ω	2L1H	5V±1%, 30mA	√	24SSOP
HT7Q2552***	3~8	7.5V~36V	I2C	Cell Voltage	4.2V±15mV	±5%	120Ω	2L1H	5V±1%, 30mA	√	28SSOP

* Under development, available in 3Q, 2019.
 ** Under development, available in 1Q, 2020.
 *** Under development, available in 3Q, 2020.

AC Power Management
AVR Flash MCU

Part No.	Internal Clock	VDD	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	D/A	OPA	Comparator	Stack	Package
HT45F6530	8MHz	2.2V~5.5V	2K×15	128×8	32×8	22	10-bit CTM×2	12-bit ×6	12-bit×2	2	2	4	20NSOP 24SOP/SSOP

Note: AVR: Automatic Voltage Regulator.

LDO & Detector
TinyPower™ LDO

Part No.	Maximum Input Voltage	Output Voltage, V _{OUT}	Max. Output Current (mA)	Typical Current Consumption (μA)	Chip Enable Function	Tolerance	Protections	Package
HT1015-1	12V	1.5V	18	2.2	—	±3%	—	SOT23-5, SOT89
HT71xx-1	30V	2.1V/2.3V/2.5V/2.7V/3.0V/ 3.3V/3.6V/4.4V/5.0V	30	2.5	—	±3%	Soft-Start	TO92, SOT23-5 SOT89
HT71xx-2	30V	2.1V/2.3V/2.5V/2.7V/3.0V/ 3.3V/3.6V/4.4V/5.0V	30	2.5	—	±1%	Soft-Start	SOT23-5, SOT89
HT71xx-3	30V	2.1V/2.3V/2.5V/2.7V/3.0V/ 3.3V/3.6V/4.4V/5.0V	30	1.0	—	±2%	Soft-Start	SOT23-5, SOT89
HT75xx-1	30V	2.1V/2.3V/2.5V/2.7V/3.0V/3.3V/3.6V/4.0V/4.4V	100	2.5	—	±3%	Soft-Start	TO92, SOT23-5 SOT89
		5.0V/6.0V/7.0V/8.0V/9.0V/10.0V/12.0V	150					
HT75xx-2	30V	2.1V/2.3V/2.5V/2.7V/3.0V/3.3V/3.6V/4.0V/4.4V	100	2.5	—	±1%	Soft-Start	TO92, SOT23-5 SOT89
		5.0V/6.0V/7.0V/8.0V/9.0V/10.0V/12.0V	150					
HT75xx-3	30V	2.1V/2.3V/2.5V/2.7V/3.0V/3.3V/3.6V/4.0V/4.4V	100	1.0	—	±2%	Soft-Start	SOT23-5, SOT89
		5.0V/6.0V/7.0V/8.0V/9.0V/10.0V/12.0V	150					
HT75xx-7	30V	2.1V/2.3V/2.5V/2.7V/3.0V/3.3V/3.6V/4.0V/4.4V	100	2.5	√	±2%	Soft-Start, OCP, OTP	SOT23-5, SOT89
		5.0V/6.0V/7.0V/8.0V/9.0V/10.0V/12.0V	150					
HT73xx	12V	1.8V	150	3.5	—	±3%	—	SOT89
		2.5V	180					
		2.7V	200					
		3.0V/3.3V/3.5V/4.15V/5.0V	250					
HT73xx-1	30V	2.1V/2.3V/2.5V/2.7V/3.0V/ 3.3V/3.6V/4.0V/4.4V/5.0V	250	2.5	—	±3%	Soft-Start	SOT89, 8SOP-EP
HT73xx-2	30V	2.1V/2.3V/2.5V/2.7V/3.0V/ 3.3V/3.6V/4.0V/4.4V/5.0V	250	2.5	—	±1%	Soft-Start	SOT89, 8SOP-EP
HT73xx-3	30V	2.1V/2.3V/2.5V/2.7V/3.0V/ 3.3V/3.6V/4.0V/4.4V/5.0V	250	1.0	—	±2%	Soft-Start	SOT89, 8SOP-EP
HT73xx-7	30V	2.1V/2.3V/2.5V/2.7V/3.0V/ 3.3V/3.6V/4.0V/4.4V/5.0V	250	2.5	√	±2%	Soft-Start, OCP, OTP	SOT89, 8SOP-EP
HT72xx	8V	1.8V/2.5V/2.7V/3.0V/3.3V/4.5V/5.0V	300	4.0	√	±2%	OCP, OTP	SOT23, SOT23-5 SOT89
HT78xx	8V	1.8V/2.5V/2.7V/3.0V/3.3V/5.0V	500	4.0	√	±2%	OCP, OTP	SOT23-5, SOT89
HT73Lxx	6V	0.9V/1.05V/1.2V/1.5V/1.8V/ 2.5V/2.7V/3.0V/3.3V/3.6V	250	1.0	√	±2%	Soft-Start, OCP, OTP	4DFN, SOT89, SOT23-5
HT71Hxx*	40V	2.1V/2.3V/2.5V/2.7V/3.0V/ 3.3V/3.6V/4.0V/4.4V/5.0V	50	2.5	√	±2%	Soft-Start, OCP, OTP, Reverse Battery, Output Reverse Current	SOT89, SOT23-5 TO252, 8SOP-EP
HT75Hxx*	40V	2.1V/2.3V/2.5V/2.7V/3.0V/ 3.3V/3.6V/4.0V/4.4V/5.0V	150	2.5	√	±2%	Soft-Start, OCP, OTP, Reverse Battery, Output Reverse Current	SOT89, SOT23-5 TO252, 8SOP-EP
HT73Hxx*	40V	2.1V/2.3V/2.5V/2.7V/3.0V/ 3.3V/3.6V/4.0V/4.4V/5.0V	250	2.5	√	±2%	Soft-Start, OCP, OTP, Reverse Battery, Output Reverse Current	SOT89, SOT23-5 TO252, 8SOP-EP

* Under development, available in 4Q, 2019.

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

TinyPower™ Voltage Detector

Part No.	Maximum Input Voltage	Detector Voltage, V _{DET}	Hysteresis Width (V)	Typical Current Consumption (μA)	Tolerance	Package
HT70xxA-1	30V	2.2V/2.4V/2.7V/3.3V/3.9V/4.4V/5.0V/8.2V	0.05 × V _{DET}	3.0	±3%	TO92, SOT23, SOT23-5, SOT89
HT70xxA-2	30V	2.2V/2.4V/2.7V/3.3V/3.9V/4.4V/5.0V/8.2V	0.05 × V _{DET}	3.0	±1%	SOT23-5, SOT89
HT70xxA-3	30V	2.2V/2.4V/2.7V/3.3V/3.9V/4.4V/5.0V/8.2V	0.05 × V _{DET}	1.0	±2%	SOT23-5, SOT89

Note: The xx in the part number is the detect voltage.

DC to DC Converter											
Asynchronous Step-Down DC to DC Converter											
Part No.	Max. Input Voltage	Output Voltage	Output Current (A)	Switching Frequency (kHz)	Current Limit (A)	Accuracy	Shutdown Current, I _{OFF} (μA)	Operation Current, I _Q (mA)	Efficiency	Mode	Package
HT7463A	52V	1.00V~36V	0.6	1250	1.0	0.8V±2.0%	1.0	0.7	95%	PWM	SOT23-6
HT7463B				550							
Synchronous Step-Down DC to DC Converter											
Part No.	Max. Input Voltage	Output Voltage, V _{OUT}	Output Current (A)	Switching Frequency (kHz)	Current Limit (A)	Accuracy	Shutdown Current, I _{OFF} (μA)	Operation Current, I _Q (mA)	Efficiency	Mode	Package
HT74153**	6V	0.6V~5V	1.8	1200	3.2	0.6V±1.5%	0.5	0.05	95%	PWM/PFM	8SOP-EP SOT23-5
HT74173*			3.0		5.0						
* Under development, available in 4Q, 2019. ** Under development, available in 1Q, 2020.											
Asynchronous Step-Up DC to DC Converter											
Part No.	Input Voltage	Output Voltage, V _{OUT}	Output Current (A)	Switching Frequency (kHz)	Current Limit (A)	Accuracy	Shutdown Current, I _{OFF} (μA)	Operation Current, I _Q (μA)	Efficiency	Mode	Package
HT77xxB	0.7V~6.0V	1.8V/2.2V	0.1	115	—	V _{OUT} ±2.5%	1.0	4	80%	PFM	SOT23, SOT23-5 SOT89
		2.7V/3.0V/3.3V/3.7V/5.0V							85%		
HT77xxBA	0.7V~6.0V	2.7V/3.0V/3.3V/3.7V/5.0V	0.2	200	0.8	V _{OUT} ±2.5%	1.0	5	85%	PFM	SOT23, SOT23-5 SOT89
HT77xxC	0.7V~6.0V	1.8V/2.2V	— (External)	115	—	V _{OUT} ±2.5%	1.0	4	80%	PFM	SOT23-5, SOT89
		2.7V/3.0V/3.3V/3.7V/5.0V							85%		
HT7991	2.6V~5.5V	3.0V~12.0V	1.0	1000	2.5	0.6V±2.0%	1.0	210	85%	PWM	SOT23-6
Note: The xx in the part number is the output voltage.											
Synchronous Step-Up DC to DC Converter											
Part No.	Input Voltage	Output Voltage, V _{OUT}	Output Current (A)	Switching Frequency (kHz)	Current Limit (A)	Accuracy	Shutdown Current, I _{OFF} (μA)	Operation Current, I _Q (μA)	Efficiency	Mode	Package
HT77xxS	0.7V~6.0V	1.8V/2.2V	0.1	500	—	V _{OUT} ±2.5%	1.0	4	80%	PFM	SOT23, SOT23-5, SOT89
		2.7V/3.0V/3.3V/3.7V/5.0V							85%		
HT77xxSA	0.7V~6.0V	2.7V/3.0V/3.3V/3.7V/5.0V	0.2	500	0.8	V _{OUT} ±2.5%	1.0	4	90%	PFM	SOT23, SOT23-5, SOT89
HT79171*	2.2V~5.0V	2.6V~5.5V	2.0	500	5.0	0.6V±1.5%	1.0	70	95%	PWM/PSM	8SOP-EP, 10QFN
HT79181*	2.2V~5.0V	2.6V~5.5V	3.0	500	6.0	0.6V±1.5%	1.0	70	95%	PWM/PSM	10QFN
* Under development, available in 3Q, 2019. Note: The xx in the part number is the output voltage.											
Charge Pump DC to DC Converter											
Part No.	Input Voltage	Output Voltage, V _{OUT}	Output Current (mA)	Switching Frequency (kHz)	Current Limit (A)	Accuracy	Shutdown Current, I _{OFF} (μA)	Operation Current, I _Q (mA)	Efficiency	Mode	Package
HT7660	3V~12V	-V _{DD} ~V _{DD}	20	10	—	V _{OUT} ±4.0%	—	0.08	98%		8DIP/SOP

AC to DC Converter											
AC to DC Converter											
Part No.	Topology	PF	Power MOS (BV)	Input Voltage	R _{DS(ON)}	Operation Current	Typical Power Capability	Frequency	Protections		Package
HT7A6312	Flyback (SSR), Buck, Buck-Boost	—	730V	9V~38V	19Ω	0.7mA	8W/13W*	60kHz	UVLO, OTP, OVP, OCP		8DIP/SOP
HT7A6322					12Ω		12W/20W*				
HT7L5820	Flyback (PFC+QR PWM)	> 0.97	Ext.	9V~28V	—	3mA	200W	—	Brown In/Out, UVLO, OCP, open/short, OVP (Auto Recovery), OTP (Auto Recovery)		16NSOP
HT7L5821											
Note: All of ICs operate from 85V _{AC} to 265V _{AC} . * Max. output power from 85V _{AC} to 265V _{AC} / 176V _{AC} to 265V _{AC} .											

LCD Controller & Driver
RAM Mapping LCD Controller & Driver

Part No.	VDD	Max. Resolution Segment × Common	LCD Voltage	Bias	Gray Scale	Serial Data	Built-in OSC.	Ext. Crystal	Package
HT1620	2.4V~3.3V	32×4, 32×3, 32×2	3/2V _{DD}	1/2, 1/3	—	1	—	√	64LQFP
HT1621	2.4V~5.2V	32×4, 32×3, 32×2	≤ V _{DD}	1/2, 1/3	—	1	√	√	44LQFP, 48SSOP/LQFP
HT1621G									Gold Bump
HT1622	2.7V~5.2V	32×8	≤ V _{DD}	1/4	—	1	√	—	44/52/64LQFP
HT1622G									Gold Bump
HT16220	2.7V~5.2V	32×8	≤ V _{DD}	1/4	—	1	—	√	64LQFP
HT1623	2.7V~5.2V	48×8	≤ V _{DD}	1/4	—	1	√	√	100LQFP
HT1625	2.7V~5.2V	64×8	≤ V _{DD}	1/4	—	1	√	√	100LQFP
HT1626	2.7V~5.2V	48×16	≤ V _{DD}	1/5	—	1	√	√	100LQFP
HT1628	2.4V~5.5V	116×2, 116×1	≤ V _{DD}	1/1, 1/2	—	1	√	√	128LQFP
HT1629G	2.4V~5.5V	240×2, 240×1	2.4V~5.5V	1/1, 1/2	—	1	√	√	Gold Bump
HT1647	2.7V~5.2V	64×16	≤ V _{DD}	1/4, 1/5	4	4	√	√	100LQFP

High Noise Immunity LCD Controller & Driver

Part No.	VDD	Max. Resolution Segment × Common	LCD Voltage	Bias	Power Saving Mode	Interface	Keyscan	Package
HT16C21	2.4V~5.5V	20×4, 16×8	≤ V _{DD}	1/3, 1/4	—	I ² C	—	16NSOP 20/24/28SOP
HT16C22	2.4V~5.5V	44×4	≤ V _{DD}	1/2, 1/3	—	I ² C	—	48/52LQFP
HT16C22G								Gold Bump
HT16C23	2.4V~5.5V	56×4, 52×8	2.4V~5.5V	1/3, 1/4	—	I ² C	—	48/64LQFP
HT16C23G								Gold Bump
HT16C24	2.4V~5.5V	72×4, 68×8, 60×16	2.4V~5.5V	1/3, 1/4, 1/5	—	I ² C	—	64/80LQFP
HT16C24G								Gold Bump
HT16K23	2.4V~5.5V	20×4	= V _{DD}	1/3	—	I ² C	20×1	28SOP
		16×8		1/4				
HT9B92	2.4V~5.5V	36×4	≤ V _{DD}	1/2, 1/3	√	I ² C	—	48LQFP/TSSOP
HT9B92G		40×4						Gold Bump
HT9B95A	2.4V~5.5V	35×8	2.4V~5.5V	1/4	√	I ² C	—	48TSSOP, 52LQFP
HT9B95B		43×4		1/3				52LQFP
		39×8		1/4				
		43×4		1/3				
HT9B95G		39×8		1/4				Gold Bump

Low Voltage LCD Controller & Driver

Part No.	VDD	Max. Resolution Segment × Common	LCD Voltage	Bias	Power Saving Mode	Interface	LED	Keyscan	Package
HT16L21	1.8V~5.5V	32×4	2.4V~6.0V	1/2, 1/3	—	I ² C, SPI 3-Wire	8	—	44LQFP
HT16L23	1.8V~5.5V	52×4, 48×8	2.4V~6.0V	1/3, 1/4	—	I ² C, SPI 3-Wire	8	—	64LQFP
HT16LK24	1.8V~5.5V	67×1, 67×2, 67×3, 67×4, 63×8	2.4V~6.0V	1/1, 1/2, 1/3, 1/4	√	I ² C, SPI 3-Wire	12 (128 for each dot)	4×12	64/80LQFP

High Operating Voltage LCD Controller & Driver

Part No.	VDD	Max. Resolution Segment × Common	LCD Voltage	Bias	Duty	Interface	Charge Pump	Contrast Adjustment	GPO	Package
HT16H25	2.4V~5.5V	60×16	2.5~12V	1/1~1/5	Static, 1/2~1/16	I ² C, SPI 3-Wire	×2, ×3, ×4, ×5	4-bit	4CH	80/100LQFP

LED Controller & Driver
RAM Mapping LED Controller & Driver

Part No.	VDD	Max. Resolution Row×Common	Row Source Current (Min.)	Row Sink Current (Min.)	Com Source Current (Min.)	Com Sink Current (Min.)	Interface	PWM Gray Scale	Key-scan	Package
HT1632C	4.5V~5.5V	32×8, 24×16	50mA	12mA	45mA	250mA	4-Wire	16Level for Global	—	52LQFP
		24×8								48LQFP
HT1635A	4.5V~5.5V	44×8	50mA	10mA	45mA	250mA	4-Wire	16Level for Global	—	64LQFP
HT1635B							I ² C			
HT16K33	4.5V~5.5V	16×8	20mA±5%	6mA	20mA	160mA	I ² C	16Level for Global	13×3	28SOP
		12×8							10×3	24SOP
		8×8							8×3	20SOP

Advanced LED Controller & Driver

Part No.	VDD	LED_VDD	Max. Resolution Row×Common	Com Source Current (Min.)	Com Sink Current (Min.)	Interface	PWM Gray Scale	Constant Current	Fade	Auto Scrolling	Over Temp. Detection	Open/Short Detection	Package
HT16D31A	2.7V~5.5V	4.5V~5.5V	8×9	270mA	—	3-Wire SPI	256Level for each dot	33mA±3% Max. 48mA	√	√	√	√	16NSOP-EP 16QFN
HT16D31B						I ² C							
HT16D33A	2.7V~5.5V	4.5V~5.5V	9×10 + 9×10 12×12 16×16	315mA	—	3-Wire SPI	256Level for each dot	33mA±3% Max. 48mA	√	√	√	√	24SSOP-EP 28SSOP 32QFN
HT16D33B						I ² C							
HT16D35A	2.7V~5.5V	4.5V~5.5V	28×8	250mA	45mA	3-Wire SPI	64Level for each dot	30mA±3% Max. 45mA	√	√	√	—	48LQFP-EP
HT16D35B						I ² C							

White LED Backlight Driver
White LED Backlight Driver

Part No.	Input Voltage	Output Current (mA)	Switching Frequency (kHz)	Efficiency	Typical OVP (V)	Accuracy	Max. LED#	PWM Dimming Frequency	Power Element	Backlight Type	Protections	Package
HT7938A-3	2.6V~5.5V	200	1200	90%	39	300mV±5%	10	100Hz~200kHz	Internal	Parallel/Series	UVLO, OVP, OCP, OTP	SOT23-6
HT7939A-1	2.6V~5.5V	260	1200	90%	17.6	200mV±5%	39	100Hz~200kHz	Internal	Parallel/Series	UVLO, OVP, OCP, OTP	SOT23-6
HT7939A-2					32							
HT7963	9.0V~30V	1200	200	90%	Adjustable	300mV±3%	—	100Hz~1kHz	External	Parallel/Series	UVLO, OVP, OCP, OTP, Soft-Start, LED open, LED short, OSP	8SOP

AC / DC LED Lighting Driver
AC / DC LED Lighting

Part No.	Topology	PF	Dimming	Power MOS	LDO Output	HV Start-up	Maximum Output Power	Current Accuracy	Protections	Package
HT7L5600	Flyback (PSR)	>0.9	—	Ext.	—	—	60W	±3%	UVLO, OVP, OTP, OCP, LED open/short	SOT23-6
HT7L5820	Flyback (PFC+QR PWM)	>0.97	—	Ext.	—	650V	200W	±2%	Brown In/Out, UVLO, OCP, open/short, OVP (Auto Recovery), OTP (Auto Recovery)	16NSOP
HT7L5821									Brown In/Out, UVLO, OCP, open/short, OVP (Latched), OTP (Latched)	

Note: All of LED Lighting Drivers operate from 85V_{AC} to 265V_{AC}.
 * Max. output power from 85V_{AC} to 265V_{AC}/ 176V_{AC} to 265V_{AC}.

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	V _{DD} -35V	12×4	4	5	8	52LQFP
HT16512	3.0V~5.5V	11~16	11~6	V _{DD} -35V	6×4	4	4	8	44LQFP
HT16515	3.0V~5.5V	16~24	12~4	V _{DD} -35V	16×2	—	4	8	44LQFP

Dot Character VFD Controller & Driver

Part No.	VDD	Segment	Digit	Output Voltage	Display RAM	CGROM	CGRAM	Package
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.

Segment VFD Driver

Part No.	VDD	Output Voltage	Output Driver	Output Current	Cascade	Package
HT16506	3.0V~5.5V	20V~80V	64	20mA	√	80LQFP

EPD Controller & Driver
Segment EPD Controller & Driver

Part No.	VDD	Segment	Driving High Voltage (VDH)		Data Comparison	Cascade	Charge Pump	Temperature Sensor	Package
			Black/White	Red					
HT16E07	2.4V~3.6V	120 bit	12V	4~8V	√	√	√	√	Gold Bump

Note: EPD: E-Paper Display.

Bank & Commercial MCU
Smart Card Reader Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	A/D	RTC	Timer	Comparator	USB	LDO	EMV ISO 7816-3	IAP/ISP	Interface	Stack	Package
HT66F4360	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	16K×16	3072×8	—	36	12-bit ×8	√	10-bit CTM×2 10-bit PTM×1 16-bit STM×1	2	√	1.8V 3.0V 5.0V	Class A/B/C	√	UART×2 SPI×2 I ² C×1	12	48/64 LQFP
HT66F4370	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	32K×16	3072×8	—	36	12-bit ×8	√	10-bit CTM×2 10-bit PTM×1 16-bit STM×1	2	√	1.8V 3.0V 5.0V	Class A/B/C	√	UART×2 SPI×2 I ² C×1	12	48/64 LQFP
HT66F4390	12MHz	2.2V~5.5V	400kHz~16MHz or 32kHz	64K×16	3072×8	256×8	36	12-bit ×8	√	10-bit CTM×2 10-bit PTM×1 16-bit STM×1	2	√	1.8V 3.0V 5.0V	Class A/B/C	√	UART×2 SPI×2 I ² C×1	16	48/64 LQFP

Ultra-Low Power Flash MCU with LCD Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	RTC	A/D	Timer	Interface	Stack	Package
HT66F2560	1MHz 2MHz 4MHz 8MHz 12MHz 16MHz	1.8V~5.5V	400kHz~16MHz or 32kHz	16K×16	2048×8	256×8	42	SCOM×4	√	12-bit ×8	16-bit PTM×2 16-bit STM×3	SPI/I ² C×1 SPIA×1 UART×2	16	48LQFP
HT69F2562	4MHz 8MHz 12MHz	1.8V~5.5V	400kHz~12MHz or 32kHz	16K×16	2304×8	128×8	19	32×4	√	—	10-bit CTM×2 16-bit STM×1	SPI×1 SPI/I ² C/UART×1	16	64LQFP

Note: # MDU: Multiplier Divider Unit.
The power consumption of the RTC on standby current is less than 200nA at 3V.

Ultra-Low Power Flash MCU with EPD Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	EPD#	RTC	A/D	Timer	Interface	Stack	Package
HT67F2567	4MHz 8MHz 12MHz	1.8V~5.5V	400kHz~12MHz or 32kHz	16K×16	2304×8	128×8	19	SEG×64 COM×1 BG×1	√	12-bit ×8	10-bit CTM×2 16-bit STM×1	SPI×1 SPI/I ² C/UART×1	16	100LQFP Gold Bump

Note: # EPD: Electronic Paper Displays.
The power consumption of the RTC on standby current is less than 200nA at 3V.

Ultra-Low Voltage / Low Current Flash MCU with LCD Driver

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	LCD	Timer	Stack	Package
HT69F3742*	2MHz 4MHz 8MHz	1.2V~5.5V	400kHz~8MHz or 32kHz	4K×16	128×8	128×8	9	23×4 24×3	10-bit STM×1	4	46QFN

* Under development, available in 4Q, 2019.

Special Purpose MCU
Personal Care Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	SCOM	Timer	A/D	DC/DC	Start up Voltage	H.R. PWM	OCV/OVP	Stack	Package
HT45F3420	8MHz	2.2V~5.5V	400kHz~8MHz or 32kHz	1K×14	64×8	32×8	8	—	10-bit STM×1	12-bit ×4	—	—	√	1/1	4	8SOP 10MSOP
HT45F3430	8MHz	2.2V~5.5V	400kHz~8MHz or 32kHz	2K×15	128×8	64×8	22	4	10-bit STM×1	12-bit ×8	—	—	√	1/1	4	16NSOP 24SSOP
HT45F3520	8MHz	2.2V~5.5V	400kHz~8MHz or 32kHz	1K×14	64×8	32×8	13	—	10-bit STM×1 10-bit PTM×1	12-bit ×4	Boost	0.9V (Boost)	—	—	4	16NSOP
HT45F3530	8MHz	2.2V~5.5V	400kHz~8MHz or 32kHz	2K×15	128×8	64×8	21	4	10-bit STM×1 10-bit PTM×1	12-bit ×8	Boost	0.9V (Boost)	—	—	4	24SSOP

Note: H.R. PWM: High Resolution and Complementary PWM Outputs with dead-time control, the duty cycle resolution is 7.8ns when the HIRC is 8MHz.

Waveform Generator Flash MCU

Part No.	VCC (HV)	VDD	Internal Clock	System Clock	Program Memory	Data Memory	I/O	Waveform Output	Timer	Stack	Package
HT45F2020	8V~16V	5.0V	8MHz	8MHz or 32kHz	1K×14	32×8	4	2	10-bit PTM×1	2	SOT23-6 8SOP
HT45F2022	—	2.2V~5.5V									

Induction Cooker Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	PWM	PPG	Comp- arator	OPA	Inter- face	Stack	Package
HT45F0004	8MHz	2.2V~5.5V	400kHz~8MHz	4K×16	208×8	32×8	17	8-bit ×3	12-bit ×12	8-bit ×1	9-bit ×1	4	1	I ² C×1	8	16DIP/NSOP 20DIP/SOP
HT45F0057	8MHz	2.2V~5.5V	8MHz	4K×16	208×8	—	13	8-bit ×3	12-bit ×9	—	9-bit ×1	4	1	—	6	16DIP/NSOP

Half-bridge Induction Cooker Flash MCU

Part No.	Internal Clock	VDD	System Clock	Program Memory	Data Memory	Data EEPROM	I/O	Timer	A/D	PWM	OPA	OVP	CRC	MDU#	Inter- face	Stack	Package
HT45F0074	16MHz	4.5V~5.5V	32kHz~16MHz	8K×16	512×8	128×8	20	10-bit CTM×3 10-bit PTM×1	12-bit ×8	12-bit ×1	1	7	√	16-bit	SPI/I ² C/ UART×1	8	20NSOP 24SOP

Note: # MDU: Multiplier Divider Unit.

Bluetooth Low Energy (BLE) Module

BLE Transparent Transmission								
Part No.	VDD	Data EEPROM	Data Rate	Output Power	Sensitivity	Shielding Case	Interface	Stamp Holes
BCM-7602-G01	2.2V~3.6V	8K×8	1Mbps	+3dBm	-90dBm	—	UART/SPI	8×2 (P=1.27mm)
BCM-7602-G02						√		

PIR Module

Passive Infra Red Miniaturized Module						
Part No.	VDD	Detection Range (Typ.) Meter	FOV H, V	Lens Color	Interface	Power Consumption
HT7M2126	2.7V~5.5V	3.5~6	121°, 77°	Nature	I ² C or I/O	< 50μA
HT7M2127		2.8~5	121°, 77°	Black		
HT7M2136		5.5~8	91°, 10°	Nature		
HT7M2156		8~12	20°, 10°	Nature		
HT7M2176		5~7.5	86°, 75°	Nature		

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	1.8V~5.5V	2	5	5	2	8DIP/SOP

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	1.8V~5.5V	400	5	5	3	8DIP/SOP
HT24LC02A	256×8	1.8V~5.5V	400	5	5	2	8SOP, SOT23-5
HT24LC04	512×8	1.8V~5.5V	400	5	5	3	8DIP/SOP
HT24LC08	1024×8	1.8V~5.5V	400	5	5	3	8DIP/SOP
HT24LC16	2048×8	1.8V~5.5V	400	5	5	3	8DIP/SOP
HT24LC32	4096×8	1.8V~5.5V	400	5	5	3	8DIP/SOP
HT24LC64	8192×8	1.8V~5.5V	400	5	5	3	8DIP/SOP

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

General OP Amplifier

General Purpose OP Amplifier

Part No.	Description	OP No.	VDD	BW(Hz)	Current(μA)/OP	Package
HT9231	220μA, 2.3MHz Single OP amplifier	1	2.0V~5.5V	2.3M	220	SOT23-5
HT9232	220μA, 2.3MHz Dual OP amplifier	2	2.0V~5.5V	2.3M	220	8DIP/SOP
HT9234	220μA, 2.3MHz Quad OP amplifier	4	2.0V~5.5V	2.3M	220	14DIP/SOP
HT9251	50μA, 550kHz Single OP amplifier	1	1.8V~5.5V	550K	50	SOT23-5
HT9252	50μA, 550kHz Dual OP amplifier	2	1.8V~5.5V	550K	50	8DIP/SOP
HT9254	50μA, 550kHz Quad OP amplifier	4	1.8V~5.5V	550K	50	14DIP/SOP
HT9274	Quad micropower OP amplifier	4	1.6V~5.5V	100K	3	14SOP
HT9291	TinyPower™ Single OP amplifier	1	1.4V~5.5V	11K	0.6	SOT23-5
HT9292	TinyPower™ Dual OP amplifier	2	1.4V~5.5V	11K	0.6	8SOP
HT9294	TinyPower™ Quad OP amplifier	4	1.4V~5.5V	11K	0.6	14SOP
HT92232	16μA, 300kHz, Rail to Rail, Dual OP amplifier	2	2.1V~5.5V	300K	16	8SOP/MSOP
HT92252	40μA, 1MHz, Rail to Rail, Dual OP amplifier	2	2.1V~5.5V	1M	40	8SOP/MSOP

Precision OP Amplifier

Part No.	Description	OP No.	VDD	BW(Hz)	Current(μA)/OP	Package
HT92632	30μA, 300kHz, Rail to Rail, Dual OP amplifier	2	2.0V~5.5V	300K	30	8SOP/MSOP
HT92652	500μA, 1.5MHz, Rail to Rail, Dual OP amplifier	2	2.0V~5.5V	1.5M	500	8SOP/MSOP

Low Power OP Amplifier

Part No.	Description	OP No.	VDD	BW(Hz)	Current(μA)/OP	Package
HT92112	0.6μA, 14kHz, Rail to Rail, Dual OP amplifier	2	1.4V~5.5V	14K	0.6	8SOP/MSOP
HT92122	0.6μA, 100kHz, Rail to Rail, Dual OP amplifier	2	1.4V~5.5V	100K	0.6	8SOP/MSOP

Audio Amplifier

Class AB Audio Amplifier

Part No.	Description	VDD	Output Power	Mute/Shutdown Function	Package
HT82V733	Mono audio power amplifier	2.4V~5.5V	400mW into 8Ω	√	8SOP
HT82V735	Stereo audio power amplifier with shutdown	2.4V~6.0V	330mW into 32Ω	√	8SOP
HT82V739	1200mW mono audio power amplifier with shutdown	2.2V~5.5V	1200mW into 8Ω	√	8SOP
HT82V73A	1500mW mono audio power amplifier with shutdown	2.2V~5.5V	1500mW into 8Ω	√	8SOP-EP

Audio PWM Driver

Part No.	Description	VDD	Output Power	Mute/Shutdown Function	Package
HT82V742	Audio PWM driver	2.0V~5.5V	1.5W into 5V, 8Ω	—	8SOP

Class D Audio Amplifier

Part No.	Description	VDD	Output Power	Mute/Shutdown Function	Package
HT82V7524	3W mono filter-free class-D audio power amplifier	1.8V~6.0V	3W into 5V, 4Ω	—	8SOP-EP
HT82V7534	3W Stereo Filter-free Class-D Audio Power Amplifier	1.8V~6.0V	3W into 5V, 4Ω	√	20TSSOP-EP

24-Bit Delta Sigma A/D Peripheral

24-Bit Delta Sigma A/D Peripheral

Part No.	Internal Clock	VDD	A/D	ENOB	Data Rate	PGA	Interface	Package
BH45B1225*	4.91MHz	2.4V~5.5V	24-bit×4	19.5 (10Hz, 128x)	5Hz~1.6kHz	1~128	I ² C×1	8SOP/16NSOP

* Under development, available in 3Q, 2019.

CCD / CIS Analog Signal Processor

CCD / CIS Analog Signal Processor

Part No.	AVDD/VDD	A/D (Bit)	Input CH.	MSPS	Clamp Bias	PGA	Prog. Offset	Full Scale	Other Features	Power Consumption	Package
HT82V36	3.0V~3.6V	16	1	10 (CCD:6)	2.5V/2.0V	1~5.85V/V (6-bit)	±100mV (9-bit)	1.4V	—	56mW/1µA	28SSOP
HT82V38	3.15V~3.45V	16	3/2/1	30/30/20	0.45V~2.7V (4-bit)	1~6.25V/V (6-bit)	±250mV (9-bit)	1.6V/2V	—	300mW/10µA	28SSOP
HT82V42	3.0V~3.6V	16	1	15	0.4V~3.0V (4-bit)	0.7~7.84V/V (8-bit)	±315mV (8-bit)	2V	—	188mW/300µA	20SSOP
HT82V48	3.0V~3.6V	16×2	3×2	60×2	0.4V~3.0V (4-bit)	0.65~6.0V/V (9-bit)	±290mV (8-bit)	1.2V/2V	—	925mW/400µA	48LQFP-EP

Currency Recognition Processor

CIS Analog Front End Processor

Part No.	AVDD/VDD	A/D (Bit)	Input Channel	MSPS	Clamp Bias	PGA	Prog. Offset	Full Scale	Power Consumption	Package
HT82V48	3.0V~3.6V	16×2	3×2	60×2	0.4~3.0V (4-bit)	0.65~6.0V/V (9-bit)	±290mV (8-bit)	1.2V/2V	925mW/400µA	48LQFP-EP

CIS Digital Front End Processor

Part No.	AVDD/VDD	CIS Module				Shading Correction		Line Information	Others	Output	Power Consumption	Package
		Channel	MSPS	Element	LED	Gain	Offset					
HT82V70	3.0V~3.6V	3~6 ×2	120×2	1,584	6×2	0x~8x (10-bit)	0~255 (8-bit)	Index, Left/Right Boundary, Max, Min, Sum, Histogram	COMP, TG, I ² C, SPI	VPFE, EMIFA	400mW/3mW	100LQFP

CIS Front End Processor

Part No.	AVDD/VDD	A/D (Bit)	Input Ch.	MSPS	PGA (V/V)	Prog. Offset (mV)	Full Scale	CIS Module		Shading Correction		Line Information	Others	Output	Power	Package
								Element	LED	Gain	Offset					
HT82V72	3.0V~3.6V	16×2	3×2	60×2	0.65~6.0 (9-bit)	±290 (8-bit)	1.2V/2V	1,584	6×2	0x~8x (10-bit)	0~255 (8-bit)	Index, Left/Right Boundary, Max, Min, Sum, Histogram	COMP, TG, I ² C, SPI	VPFE, EMIFA	1100mW/10µW	64TQFP-EP

Dual Floating-Point DSP Core with Video Processor

Part No.	Max. Freq.	VDD	DSP Core (Each)			L2 RAM	DDR	DMA	e-Fuse	ADC	CMP	Timers ¹	Interface ²	Others ³	I/O	Power	Package
			I/D Cache	L1 I/D-RAM	FPU												
HT82V82*	250MHz	3.0V~3.6V	32/32KB	16/32KB	1	256KB	DDR2 DDR3	EDMA: 2CH PDMA: 8CH	128-bit	1MSPs 12-bit ×16	1	RTC×1 WDT×1 BFTM×2 GPTM×4	UART×4 SPI×3, I ² C×2 CLSIF×2 CASIF×2 HSSPI 8080 LCD I/F	AES-128 SHA-256 TG, LINFO SHDC JPG ENC HWE	40	750mW	256LQFP-EP

* Under development, available in 3Q, 2019.

Note: 1. BFTM: Basic Function Timer, GPTM: General-Purpose Timers.

2. CLSIF: CMOS Line Sensor Interface; CASIF: CMOS Area Sensor Interface; HSSPI: 40MHz High Speed SPI.

3. AES-128: Advanced Encryption Standard; SHA-256: Secure Hash Algorithm; TG: Sensor, LED & AFE Timing Generator; LINFO: Scan Line Information; SHDC: Shading Correction; JPG ENC: JPEG Encoder; HWE: Hardware Matrix & Neural Calculation Engine.

Image Signal Processor

Dual Floating-Point DSP Core with Video Processor

Part No.	Max. Freq.	VDD	DSP Core (Each)			L2 RAM	DDR	DMA	e-Fuse	ADC	CMP	Timers ¹	Interface ²	Others ³	I/O	Power	Package
			I/D Cache	L1 I/D-RAM	FPU												
HT82V82*	250MHz	3.0V~3.6V	32/32KB	16/32KB	1	256KB	DDR2 DDR3	EDMA: 2CH PDMA: 8CH	128-bit	1MSPs 12-bit ×16	1	RTC×1 WDT×1 BFTM×2 GPTM×4	UART×4 SPI×3, I ² C×2 CLSIF×2 CASIF×2 HSSPI 8080 LCD I/F	AES-128 SHA-256 TG, LINFO SHDC JPG ENC HWE	40	750mW	256LQFP-EP

* Under development, available in 3Q, 2019.

Note: 1. BFTM: Basic Function Timer, GPTM: General-Purpose Timers.

2. CLSIF: CMOS Line Sensor Interface; CASIF: CMOS Area Sensor Interface; HSSPI: 40MHz High Speed SPI.

3. AES-128: Advanced Encryption Standard; SHA-256: Secure Hash Algorithm; TG: Sensor, LED & AFE Timing Generator; LINFO: Scan Line Information; SHDC: Shading Correction; JPG ENC: JPEG Encoder; HWE: Hardware Matrix & Neural Calculation Engine.

Miscellaneous									
IGBT Driver									
Part No.	Description	VIN	LDO	Level Shifter	Voltage Detect Protection	Package			
HT45B1S	IGBT Driver with LDO and Voltage Detector	6.0V~24V	5.0V	√	√	8SOP			
Timepiece									
Part No.	VDD	V _{BAT}	I _{DD} (μA)	I _{BAT} (μA)	I _{STB} (μA)	External X'tal Osc.	Build in Memory (Bytes)	Oscillator Compensation	Package
HT1380A	2.0V~5.5V	—	1.0 at 5V	—	0.1	32.768kHz	—	—	8DIP
HT1381A									8SOP
HT1382	2.7V~5.5V	2.0V~5.5V	15 at 3V	1.2 at 3V	0.1	32.768kHz	4	√	8SOP, 10MSOP

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				
Device Part No.	Debug Adapter	Development Kit	Writer	e-Socket32
HT32F0006	e-Link32 Pro	N/A	e-Writer32	ESKT3248LQFPB, ESKT3264LQFP7B
HT32F0008	e-Link32 Pro	ESK32-30508, ESK32-20001, ESK32-21001	e-Writer32	ESKT3248LQFPB, ESKT3246QFN4B, ESKT3233QFN4B, ESKT3224QFN3C, ESKT321CPB
HT32F12345	e-Link32 Pro	ESK32-30106, ESK32-20001, ESK32-21001	e-Writer32	ESKT3264LQFP7B, ESKT3248LQFPB, ESKT3246QFN4B, ESKT321CPB
HT32F12365, HT32F12366	e-Link32 Pro	ESK32-30105, ESK32-20001, ESK32-21001	e-Writer32	ESKT32100LQFPB, ESKT3264LQFP7B, ESKT3248LQFPB, ESKT3246QFN4B, ESKT321CPB
HT32F1653, HT32F1654	e-Link32 Pro	ESK32-360, ESK32-370, ESK32-360SK	e-Writer32	ESKT3248LQFPB, ESKT3264LQFP7B, ESKT321CPB
HT32F22366	e-Link32 Pro	N/A	e-Writer32	ESKT3248LQFPB, ESKT3264LQFP7B, ESKT32100LQFPB, ESKT321CPB, ESKT3246QFN4B
HT32F50220, HT32F50230	e-Link32 Pro	ESK32-30506, ESK32-20001, ESK32-21001	e-Writer32	ESKT3228SSOPB, ESKT3228SOPC, ESKT3224QFN3C, ESKT3233QFN4B, ESKT3244LQFPB, ESKT3248LQFPB, ESKT321CPB
HT32F50231, HT32F50241	e-Link32 Pro	ESK32-30507, ESK32-20001, ESK32-21001	e-Writer32	ESKT3228SSOPB, ESKT3228SOPC, ESKT3224QFN3C, ESKT3233QFN4B, ESKT3244LQFPB, ESKT3248LQFPB, ESKT321CPB
HT32F52220, HT32F52230	e-Link32 Pro	ESK32-30504, ESK32-20001, ESK32-21001	e-Writer32	ESKT3228SSOPB, ESKT3233QFN4B, ESKT321CPB
HT32F52231, HT32F52241	e-Link32 Pro	ESK32-30503, ESK32-20001, ESK32-21001	e-Writer32	ESKT3228SSOPB, ESKT3233QFN4B, ESKT3248LQFPB, ESKT321CPB
HT32F52243, HT32F52253	e-Link32 Pro	ESK32-30505, ESK32-20001, ESK32-21001	e-Writer32	ESKT3248LQFPB, ESKT3264LQFP7B, ESKT321CPB, ESKT3233QFN4B, ESKT3246QFN4B
HT32F52331, HT32F52341	e-Link32 Pro	ESK32-30502, ESK32-20001, ESK32-21001	e-Writer32	ESKT3233QFN4B, ESKT3248LQFPB, ESKT321CPB
HT32F52342, HT32F52352	e-Link32 Pro	ESK32-30501, ESK32-20001, ESK32-21001	e-Writer32	ESKT3248LQFPB, ESKT3264LQFP7B, ESKT321CPB, ESKT3233QFN4B
HT32F52344, HT32F52354	e-Link32 Pro	ESK32-30509, ESK32-20001, ESK32-21001	e-Writer32	ESKT3264LQFP7B, ESKT3248LQFPB, ESKT3246QFN4B, ESKT3233QFN4B

Hardware		
ICE		
Model	Function	Support Software
e-Link32 Pro	On Chip Debug Support (OCDS) new debug adapter for HT32 series	Keil µVision, IAR EWARM
Programmer		
Model	Function	Support Software
e-Writer32	HT32 series MCU Dedicated Writer	HOPE3000 For HT32 series MCU
e-Socket32	Adaptors used together with e-Writer32	HOPE3000 For HT32 series MCU
Development Kit		
Model	Function	Note
ESK32-360	HT32F1653/1654 Development Board	HT32F1654 DVB + mini USB cable + 2.8 inches TFT-LCD Module * This board can be used with the e-Link32 Pro providing a complete development kit.
ESK32-370	HT32F1653/1654 Development Board	HT32F1654 DVB + mini USB cable * This board can be used with the e-Link32 Pro providing a complete development kit.
ESK32-300SK	32-bit Arm® Cortex®-M3 HT32F1656 Starter Kit	This board has a built-in e-Link32 USB debug adapter.
ESK32-360SK	32-bit Arm® Cortex®-M3 HT32F1654 Starter Kit	This board has a built-in e-Link32 USB debug adapter.
ESK32-30105	32-bit Arm® Cortex®-M3 HT32F12366 Starter Kit	This board has a built-in e-Link32 Pro USB debug adapter.
ESK32-30106	32-bit Arm® Cortex®-M3 HT32F12345 Starter Kit	This board has a built-in e-Link32 Pro USB debug adapter.
ESK32-30501	32-bit Arm® Cortex®-M0+ HT32F52352 Starter Kit	This board has a built-in e-Link32Pro USB debug adapter.
ESK32-30502	32-bit Arm® Cortex®-M0+ HT32F52341 Starter Kit	This board has a built-in e-Link32Pro USB debug adapter.
ESK32-30503	32-bit Arm® Cortex®-M0+ HT32F52241 Starter Kit	This board has a built-in e-Link32Pro USB debug adapter.
ESK32-30504	32-bit Arm® Cortex®-M0+ HT32F52230 Starter Kit	This board has a built-in e-Link32Pro USB debug adapter.
ESK32-30505	32-bit Arm® Cortex®-M0+ HT32F52253 Starter Kit	This board has a built-in e-Link32Pro USB debug adapter.
ESK32-30506	32-bit Arm® Cortex®-M0+ HT32F50230 Starter Kit	This board has a built-in e-Link32Pro USB debug adapter.
ESK32-30507	32-bit Arm® Cortex®-M0+ HT32F50241 Starter Kit	This board has a built-in e-Link32Pro USB debug adapter.
ESK32-30508	32-bit Arm® Cortex®-M0+ HT32F0008 Starter Kit	This board has a built-in e-Link32Pro USB debug adapter.
ESK32-30509	32-bit Arm® Cortex®-M0+ HT32F52354 Starter Kit	This board has a built-in e-Link32Pro USB debug adapter
ESK32-20001	HT32 Series Expansion Board Basic	Expansion Board for ESK32-30xxx
ESK32-21001	HT32 Series Expansion Board Plus	Expansion Board for ESK32-30xxx
ESK32-A2A31	2.8 inches TFT-LCD Module	2.8 inches SPI / EBI LCD Module * This module can be used with the ESK32-20001/ ESK32-21001 providing a complete development kit.

Software		
Model	Function	Support Hardware
HOPE3000F or 32Bits	e-Writer32 programmer software for HT32 series MCUs	e-WriterPro
HT32 Flash Programmer	In-System / In-Application programmer software for HT32 series MCUs	All series of HT32 Development Board or Starter Kit. ESK32-xxx, ESK32-xxxSK, ESK32-30xxx
HT32 Keil Support Package	Integrated Keil development environment software for HT32 series MCUs	
HT32 IAR Support Package	Integrated IAR development environment software for HT32 series MCUs	
HT32 Virtual COM Driver	HT32 USB Virtual COM Driver setup program	e-Link32 Pro. All series of HT32 Development Board or Starter Kit with USB Virtual COM example.

e-Link32 Pro Debug Adapter

The e-Link32 Pro is a new generation debug adapter for Holtek's 32-bit microcontrollers allowing users to program and debug their programs on their target boards. By using the e-Link32 Pro together with the Keil µVision IDE or IAR EWARM IDE, users are provided with a suite of development tools for rapid MCU product development.

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

8-Bit 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
	On Chip Debug Support (OCDS) debug adapter for HT85 series	Keil C51 Development Tools
e-FPCB (e-Link selected item)	OCDS EV Flex Cable Converter	—
Programmer		
Model	Function	Support Software
e-WriterPro	Universal Writer for OTP/Flash MCU	HOPE3000
e-Socket	Adaptors used together with e-WriterPro	HOPE3000
EIC-300	Slimmed-down ICP programmer for Flash MCU	HOPE3000
Development Kit		
Model	Function	Note
ESK-66F-A01	HT66F50 Development Board (Starter Kit for HT66F50)	(ESK-200 + ESK-201 + e-Link + M1001D + D1003C + mini USB cable + e-cable1225A)
Development Platform		
Model	Function	Note
Holtek USB Workshop	Development Platform for USB MCU	This board can be used with the ESK66FB-200 + e-Link.

Software		
Model	Function	Support Hardware
HT-IDE3000	Integrated development Environment software for all series of Holtek MCU	HT-ICE, e-ICE, e-Link
HOPE3000	Integrated software for Holtek e-Writer series Programmers.	e-WriterPro, e-Writer plus
HOPE3000 for e-Link	Engineering programmer for HT8 Flash MCU	e-Link
Holtek USB Workshop	Holtek USB MCU Library Generator	ESK66FB-200 + e-Link
Holtek Touch Key Workshop	Touch Key development platform	e-Link, e-Isolator
I3000	HT8 Flash MCU with Bootloader ISP Programming Tool (Program MCU by Bootloader)	

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	Suggested Programming Times
1	ESKT10MSOPA	8MSOP, 10MSOP	10,000
2	ESKT16NSOPC	8SOP, 14SOP, 16NSOP (Applicable beside the HT48RA0-6 series MCU)	10,000
3	ESKT16NSOPHIRCA	16NSOP (for HT48RA0-6 only)	10,000
4	ESKT16QFNA	16QFN	5,000
5	ESKT20QFN4A	20QFN (4mm × 4mm)	5,000
6	ESKT20QFN5A	20QFN (5mm × 5mm)	5,000
7	ESKT20TSSOPA	16TSSOP, 20TSSOP	10,000
8	ESKT28SSOPC	16SSOP(150mil), 20SSOP(150mil), 24SSOP(150mil), 28SSOP(150mil) (Applicable beside the HT48RA0-6 series MCU)	10,000
9	ESKT28SSOPHIRCA	20SSOP (for HT48Ra0-6 only)	10,000
10	ESKT28SOPC	16SOP, 18SOP, 20SOP, 24SOP, 28SOP	10,000
11	ESKT28SSOPHIRCA	20SSOP (for HT48RA0-6 only)	10,000
12	ESKT30SSOPA	20SSOP(209mil), 24SSOP(209mil), 28SSOP(209mil)	10,000
13	ESKT32LQFPA	32LQFP	10,000
14	ESKT32QFNA	32QFN	5,000
15	ESKT32TSOPA	32TSOP	5,000
16	ESKT40DIPC	8DIP, 16DIP, 18DIP, 20DIP, 40DIP, 22SKDIP, 24SKDIP, 28SKDIP	25,000
17	ESKT40QFN5A	40QFN (5mm × 5mm)	5,000
18	ESKT40QFN6A	40QFN (6mm × 6mm)	5,000
19	ESKT44QFPA	44QFP, 44LQFP (FP 3.2mm)	10,000
20	ESKT44LQFPC	44LQFP (FP 2.0mm)	10,000

e-Socket			
No.	Product Name	Supported Package	Suggested Programming Times
21	ESKT46QFNA	46QFN (6.5mm × 4.5mm)	5,000
22	ESKT48QFNA	48QFN	5,000
23	ESKT48LQFPA	48LQFP (Applicable beside the HT49RA0-6 & HT32Fxx series MCU)	10,000
24	ESKT48LQFPHIRCA	48LQFP (for HT49RA0-6 only)	10,000
25	ESKT52QFPA	52QFP	10,000
26	ESKT52LQFPA	52LQFP	5,000
27	ESKT56SSOPA	48SSOP, 56SSOP	10,000
28	ESKT64LQFP7A	64LQFP (7mm × 7mm) (Applicable beside the HT32Fxx series MCU)	5,000
29	ESKT64LQFP10A	64LQFP (10mm × 10mm) (Applicable beside the HT32Fxx series MCU)	10,000
30	ESKT80LQFPA	80LQFP	10,000
31	ESKT100QFPA	100QFP	5,000
32	ESKT100LQFPA	100LQFP (Applicable beside the HT32Fxx series MCU)	5,000
33	ESKT128QFPA	128QFP	10,000
34	ESKT144LQFPA	144LQFP	5,000

Note: 1. Data in parentheses next to each package type shows the actual width of the IC package.

2. ESKxxxxxC is completely compatible with ESKxxxxxA.

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 / ICPDA / ICPCK	OCDSDA / OCDSCK
BA45F0082	e-Link	e-Link + BA45V0082	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BA45FH0082		e-Link + BA45VH0082	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BA45F5222	e-Link	e-Link + BA45V5222 + (e-FADP08N3 or e-FADP10N3)	Flash Type-23A	ICP-2C / PA0 / PA2	OCDSDA / OCDSCK
BA45F5240		e-Link + BA45V5240	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BA45F5240-2		e-Link + BA45V5240-2	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BA45F0096	Demo Board	e-Link + DM20180501-BA45F0096	Flash Type-9	ICP-2C / PA0 / PA2	—
BA45F6730	e-Link	e-Link + BA45V6730	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BA45F5542	e-Link	e-Link + BA45V5542	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BA45F5542-2		e-Link + BA45V5542-2	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BC48R2021	e-ICE	M1001D + D5003A	OTP Type-2B	ICP-1B	
BC66F2342	e-Link	e-Link + BC66V2342	Flash Type-24	ICP-2C / PA0 / PA2	PA0 / PA2
BC45F7930	e-Link	e-Link + BC45V7930	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BC45F7940		e-Link + BC45V7940	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BC66F840	e-Link	e-Link + BC66V840	Flash Type-9	ICP-2C / PB4 / PB2	PB4 / PB2
BC68F0031	e-Link	e-Link + BC68V0031	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
		e-Link + BC68V0031-10 + e-FADP08N	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BC68F2123	e-Link	e-Link + BC68V2123	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BC68F2130		e-Link + BC68V2130	Flash Type-16	ICP-2C / PA0 / PA2	PA0 / PA2
BC68F2140		e-Link + BC68V2140	Flash Type-16	ICP-2C / PA0 / PA2	PA0 / PA2
BC66F2430	e-Link	e-Link + BC66V2430	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BC68F2332	e-Link	e-Link + DEV-BC68F2332	Flash Type-9	ICP-2C / PA0 / PA7	OCDSDA / OCDSCK
BH45F0031	e-Link	e-Link + BH45V0031 + e-FADP08N	Flash Type-9	ICP-2C / PA0 / PA2	OCDSDA / OCDSCK
BH45F68	e-Link	e-Link + BH45V68	Flash Type-9C	ICP-2C / PA0 / RESB	PA0 / RESB
BH66F2232	e-Link	e-Link + BH66V2232	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BH66F2260		e-Link + BH66V2260	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2260		e-Link + BH67V2260	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2261		e-Link + BH67V2261	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2262		e-Link + BH67V2262	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2270		e-Link + BH67V2270	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH66F2470		e-Link + BH66V2470	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2470	e-Link	e-Link + BH67V2470	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2480		e-Link + BH67V2480	Flash Type-9D	ICP-2C / PA0 / PA2	PA0 / PA2

8-Bit MCU Tools					
Device Part No.	ICE Type	Tool Part No.	Programming Timing	ICP Type / ICPDA / ICPCK	OCSDSA / OCDSCK
BH66F2632	e-Link	e-Link + BH66V2632	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BH66F2650		e-Link + BH66V2650	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BH66F2652, BH66F2652-2		e-Link + BH66V2652	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BH66F2662		e-Link + BH66V2662	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH66F2660		e-Link + BH66V2660	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2662		e-Link + BH67V2662	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH66F5232	e-Link	e-Link + BH66V5232-10 + e-FADP10N3	Flash Type-9	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK
BH66F5233		e-Link + BH66V5233	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BH66F5242		e-Link + BH66V5233-10 + e-FADP10N3	Flash Type-9	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK
BH67F5235		e-Link + BH66V5242	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F5245		e-Link + BH67V5235	Flash Type-24	ICP-2C / PA0 / PA2	PA0 / PA2
BH66F5252		e-Link + BH67V5245	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BH66F5250		e-Link + BH66V5252	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F5250		e-Link + BH66V5250	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F5260		e-Link + BH67V5250	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F5270		e-Link + BH67V5260	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2132		e-Link + BH67V5270	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2742		e-Link + BH67V2132	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2752	e-Link	e-Link + BH67V2742	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2762		e-Link + BH67V2752	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BH67F2762		e-Link + BH67V2762	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BP45F0102	e-Link	e-Link + BP45V0102	Flash Type-24	ICP-2C / PA0 / PA2	PA0 / PA2
BP45F0104		e-Link + BP45V0104	Flash Type-24	ICP-2C / PA0 / PA2	PA0 / PA2
BP45F0106		e-Link + BP45V0106	Flash Type-24	ICP-2C / PA0 / PA2	PA0 / PA2
BP66F0043		e-Link + BP66V0043	Flash Type-24	ICP-2C / PA0 / PA2	PA0 / PA2
BP45F4MB	e-Link	e-Link + BP45V4MB	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BP45FH6N	e-Link	e-Link + BP45VH6N	Flash Type-9B	ICP-2C / PA0 / PA7	PA0 / PA7
BS45F3232	e-Link	e-Link + BS45V3232	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS45F3235		e-Link + BS45V3235	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS45F3832	e-Link	e-Link + BS45V3832-10 + (e-FADP08N3 or e-FADP10N3)	Flash Type-9	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK
BS45F3833		e-Link + BS45V3833	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS45F5830	e-Link	e-Link+BS45V5830	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS45F5831		e-Link+BS45V5831	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS45F5832		e-Link+BS45V5832	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS45F5833		e-Link+BS45V5833	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS45F5930	e-Link	e-Link + BS45V5930	Flash Type-9	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK
BS66F340	e-Link	e-Link + BS66V340	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS66F350		e-Link + BS66V350	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BS66F360		e-Link + BS66V360	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BS66F370		e-Link + BS66V370	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BS66FV340	e-Link	e-Link + BS66VV340	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS66FV350		e-Link + BS66VV350	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BS66FV360		e-Link + BS66VV360	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BS67F340	e-Link	e-Link + BS67V340	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS67F350		e-Link + BS67V350	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BS67F360		e-Link + BS67V360	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BS67F370		e-Link + BS67V370	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BS82B12A-3	e-Link	e-Link + BS82BV12A-3	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS82C16A-3		e-Link + BS82CV16A-3	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS82D20A-3		e-Link + BS82DV20A-3	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BS83A02A-4	e-Link	e-Link + BS83AV02A + (Optional e-FADP06T)	Flash Type-9	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK
BS83A04A-3, BS83A04A-4		e-Link + BS83V04A + (Optional e-FADP08N-BS or e-FADP10M-BS)	Flash Type-9	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK
BS83B04A-4		e-Link + BS83BV04A + (Optional e-FADP08N-BS or e-FADP10M-BS)	Flash Type-9	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK
BS83B08A-3, BS83B08A-4		e-Link + 83V08AV15	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS83B12A-3, BS83B12A-4		e-Link + BS83V12A	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS83B16A-3, BS83B16A-4		e-Link + BS83V16A	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2

8-Bit MCU Tools					
Device Part No.	ICE Type	Tool Part No.	Programming Timing	ICP Type / ICPDA / ICPCK	OCSDSA / OCDSCK
BS83A01C	e-Link	e-Link + BS83AV01C	Flash Type-23	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK
BS83A02C		e-Link + BS83AV02C	Flash Type-9	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK
BS83B04C		e-Link + BS83BV04A + (Optional e-FADP08N-BS or e-FADP10M-BS)	Flash Type-9	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK
BS83B08C		e-Link + BS83BV08C	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS83B12C		e-Link + BS83BV12C	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS83B16C		e-Link + BS83BV16C	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS83B24C		e-Link + BS83BV24C	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS83C40C	e-Link + BS83CV40C	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
BS84B06A-3	e-Link	e-Link + BS84BV06A-3	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS84B08A-3		e-Link + BS84V08A	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS84C12A-3		e-Link + BS84V12A	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS84B08C	e-Link	e-Link + BS84BV08C	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS84C12C		e-Link + BS84CV12C	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS86B12A-3	e-Link	e-Link + BS86BV12A	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS86C16A-3		e-Link + BS86CV16A-3	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS86D20A-3		e-Link + BS86DV20A-3	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BS86C08C	e-Link	e-Link + BS86CV08C	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS86D12C		e-Link + BS86DV12C	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BS86D20C		e-Link + BS86DV20C	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BS86E16C		e-Link + BS86EV16C	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
BS86DH12C	e-Link	e-Link + BS86DHV12C	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
BS87B12A-3	e-Link	e-Link + BS87BV12A	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS87C16A-3		e-Link + BS87CV16A	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
BS87D20A-3		e-Link + BS87DV20A	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
HT37A30, HT37A40, HT37A50, HT37A60	Demo Board	HT-VMS-MB	—	—	
HT37B90			—	—	
HT45F0004	e-Link	e-Link + HT45V0004	Flash Type-9B	ICP-2C / PB0 / PB3	PB0 / PB3
HT45F0027	e-Link	e-Link + HT45V0027	—	—	PA0 / PB0
HT45F0057	e-Link	e-Link + HT45V0057	Flash Type-9	ICP-2C / PB0 / PB3	PB0 / PB3
HT45F0060	e-Link	e-Link + HT45V0060 + (optional e-FADP08N3 or e-FADP10N3)	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F0062		e-Link + HT45V0062	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F0074	e-Link	e-Link + HT45V0074	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F23A	e-ICE	M1001D + D1088A	Flash Type-6	ICP-2B	
HT45F24A		M1001D + D1095A	Flash Type-6	ICP-2B	
HT45F3230	e-Link	e-Link + HT45V3230	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F3420	e-Link	e-Link + HT45V3420 + (Optional e-FADP08N or e-FADP10M2)	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F3430		e-Link + HT45V3430	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F3520	e-Link	e-Link + HT45V3520	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F3530		e-Link + HT45V3530	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F3630	e-Link	e-Link + HT45V3630	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F39, HT45F391	e-Link	e-Link + HT45V39	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F4050	e-Link	e-Link + HT45V4050	Flash Type-10B	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F4630	e-Link	e-Link + HT45V4630	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F4830	e-Link	e-Link + HT45V4830	Flash Type-9	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK
HT45F4833	e-Link	e-Link + HT45V4833	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F4MA	e-Link	e-Link + HT45V4MA	Flash Type-9	ICP-2C / PA6 / PA7	PA6 / PA7
HT45FH4MA		e-Link + HT45VH4MA	Flash Type-9	ICP-2C / PA6 / PA7	PA6 / PA7
HT45FH4MA-1		e-Link + HT45VH4MA-1	Flash Type-9	ICP-2C / PA6 / PA7	PA6 / PA7
HT45F4N		e-Link + HT45V4N	Flash Type-9	ICP-2C / PA6 / PA7	PA6 / PA7
HT45FH4N		e-Link + HT45VH4N	Flash Type-9	ICP-2C / PA6 / PA7	PA6 / PA7
HT45F5N		e-Link + HT45V5N	Flash Type-9	ICP-2C / PA6 / PA7	PA6 / PA7
HT45FH5N		e-Link + HT45VH5N	Flash Type-9	ICP-2C / PA6 / PA7	PA6 / PA7
HT45FH23A	e-ICE	M1001D + D1088A + ESK-B0023-100	Flash Type-6	ICP-2B	
HT45FH24A		M1001D + D1095A + ESK-B0023-100	Flash Type-6	ICP-2B	
HT45F56	e-Link	e-Link+HT45V56 + (Optional FPCB)	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F5Q-2	e-Link	e-Link + HT45V5Q-2	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT45F6530	e-Link	e-Link + HT45V6530	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2

8-Bit MCU Tools						
Device Part No.	ICE Type	Tool Part No.	Programming Timing	ICP Type / ICPDA / ICPCK	OCSDSA / OCDSCK	
HT45F67	e-Link	e-Link + HT45V67	Flash Type-9C	ICP-2C / PA0 / RES	PA0 / RES	
HT45F75	e-Link	e-Link + HT45V75	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT45F77		e-Link + HT45V77	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F002	e-Link	e-Link + HT66V002 + (Optional e-FADP08N or e-FADP10M2)	Flash Type-9	ICP-2C / PA0 / PA7	OCSDSA / OCDSCK	
HT66F0021		e-Link + HT66V0021 + e-FADP08N	Flash Type-23	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK	
HT66F0025		e-Link + HT66V0025 + (Optional e-FADP08N or e-FADP10N2)	Flash Type-9	ICP-2C / PA0 / PA7	OCSDSA / OCDSCK	
HT66F007		e-Link + HT66V007 + (Optional e-FADP08D or e-FADP08N or e-FADP10M)	Flash Type-9	ICP-2C / PA0 / PA1	OCSDSA / OCDSCK	
HT66F008		e-Link + HT66V008 (Optional e-FADP08D or e-FADP08N or e-FADP10M)	Flash Type-9	ICP-2C / PA0 / PA1	OCSDSA / OCDSCK	
HT66F003	e-Link	e-Link + HT66V003	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F0031		e-Link + HT66V0031	Flash Type-23	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F004		e-Link + HT66V004	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F0041		e-Link + HT66V0041	Flash Type-24	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F0042	e-Link	e-Link + HT66V0042	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F0082		e-Link + HT66V0082		ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F016, HT66F017	e-ICE	M1001D + D1070A	Flash Type-6A	ICP-2B		
HT66F0172, HT66F0174	e-Link	e-Link + HT66V0174	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F0175		e-Link + HT66V0175	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F0176		e-Link + HT66V0176	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F018		e-Link + HT66V018	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F0181		e-Link + HT66V0181	Flash Type-24	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F0182		e-Link + HT66V0182	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F0185		e-Link + HT66V0185	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F0186		e-Link + HT66V0186	Flash Type-14	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F0187		e-Link + HT66V0187	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F019		e-Link + HT66V019	Flash Type-9B	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK	
HT66F0195		e-Link + HT66V0195	Flash Type-9B	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK	
HT66F13		e-ICE	M1001D + D1007B	Flash Type-6	ICP-2B	
HT66F14			M1001D + D1008B	Flash Type-6	ICP-2B	
HT66F15	M1001D + D1004B		Flash Type-6	ICP-2B		
HT66F2350	e-Link	e-Link + HT66V2350	Flash Type-10B	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F2360		e-Link + HT66V2360	Flash Type-10C	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F2370		e-Link + HT66V2370	Flash Type-10C	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F2390		e-Link + HT66V2390	Flash Type-10D	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F25D	e-ICE	M1001D + D1067A	Flash Type-6A	ICP-2B		
HT66F26D	e-Link	e-Link + HT66V26D	Flash Type-6A	ICP-2B		
HT66F2630	e-Link	e-Link + HT66V2630	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F2730	e-Link	e-Link + HT66V2730	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F2740		e-Link + HT66V2740	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F302	e-Link	e-Link + HT66V302 + (Optional e-FADP08N or e-FADP10N2)	Flash Type-9	ICP-2C / PA0 / PA2	OCSDSA / OCDSCK	
HT66F303		e-Link + HT66V303	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F317	e-Link	e-Link + HT66V317	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F318		e-Link + HT66V318	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F319		e-Link + HT66V319	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F40, HT68F40	e-ICE	M1001D + D1002C	Flash Type-6	ICP-2B		
HT66F50		M1001D + D1003C	Flash Type-6	ICP-2B		
HT66F4360	e-Link	e-Link + HT66V4360	Flash Type-7C	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F4370		e-Link + HT66V4370	Flash Type-7C	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F4390		e-Link + HT66V4390	Flash Type-15J	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F4530	e-Link	e-Link + HT66V4530	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F4540		e-Link + HT66V4540	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F4550		e-Link + HT66V4550	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2	
HT66F489	e-Link	e-Link + HT66V489	Flash Type-9B	ICP-2C		
HT66F60A, HT66F70A	e-Link	e-Link + HT66V70A	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2	

8-Bit MCU Tools					
Device Part No.	ICE Type	Tool Part No.	Programming Timing	ICP Type / ICPDA / ICPCK	OCSDSA / OCDSCK
HT66FB540	e-Link	e-Link + HT66VB540	Flash Type-7A	ICP-2C / UDN / RES	PA0 / RES
HT66FB542		e-Link + HT66VB542	Flash Type-7A	ICP-2C / UDN / RES	PA0 / RES
HT66FB550		e-Link + HT66VB550	Flash Type-7A	ICP-2C / UDN / RES	PA0 / RES
HT66FB560		e-Link + HT66VB560	Flash Type-7B	ICP-2C / UDN / RES	PA0 / RES
HT66FB570		e-Link + HT66VB570	Flash Type-7E	ICP-2C / UDN / RES	PA0 / RES
HT66FB582		e-Link + HT66VB582	Flash Type-15N	ICP-2C / UDN / RES	PA0 / RES
HT66FB572	e-Link	e-Link + HT66VB572	Flash Type-15A	ICP-2C / UDN / RES	PA0 / RES
HT66FB574		e-Link + HT66VB574	Flash Type-15E	ICP-2C / UDN / RES	PA0 / RES
HT66FB576		e-Link + HT66VB576	Flash Type-15E	ICP-2C / UDN / RES	PA0 / RES
HT68FB571		e-Link + HT68VB571	Flash Type-22A	ICP-2C / PA0 / PA2	PA0 / PA2
HT66FM5230	e-Link	e-Link + HT66VM5230	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT66FM5240		e-Link + HT66VM5240	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT66FM5440		e-Link + HT66VM5440	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT66FM5340	e-Link	e-Link + HT66VM5340	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT66FV130	e-Link	e-Link + HT66VV130	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT66FV140		e-Link + HT66VV140	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT66FV150		e-Link + HT66VV150	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
HT66FV160		e-Link + HT66VV160	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
HT66FV240	e-Link	e-Link + HT66VV240	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT66FW2230	e-Link	e-Link + HT66VW2230	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT66FW2350		e-Link + HT66VW2350	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F2350	e-Link	e-Link + HT67V2350	Flash Type-10B	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F2360		e-Link + HT67V2360	Flash Type-10C	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F2370		e-Link + HT67V2370	Flash Type-10C	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F2390		e-Link + HT67V2390	Flash Type-10D	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F2567	e-Link	e-Link + HT67V2567	Flash Type-10C	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F30, HT67F40	e-ICE	M1001D + D2004C	Flash Type-6	ICP-2B	
HT67F50, HT67F60		M1001D + D2004D	Flash Type-6	ICP-2B	
HT67F5652	e-Link	e-Link + HT67V5652	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F60A	e-Link	e-Link + HT67V60A	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F70A		e-Link + HT67V70A	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F86A		e-Link + HT67V86A	Flash Type-9D	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F489		e-Link + HT67V489	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F4892	e-Link + HT67V4892	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2	
HT67F5630	e-Link	e-Link + HT67V5630	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F5640		e-Link + HT67V5640	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F5650		e-Link + HT67V5650	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
HT67F5660		e-Link + HT67V5660	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
HT68F002	e-Link	e-Link + HT68V002 + (Optional e-FADP08N or e-FADP10M2)	Flash Type-9	ICP-2C / PA0 / PA7	OCSDSA / OCDSCK
HT68F0025		e-Link + HT68V0025 + (Optional e-FADP08N or e-FADP10N2)	Flash Type-9	ICP-2C / PA0 / PA7	OCSDSA / OCDSCK
HT68F003		e-Link + HT68V003	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT68F0036	e-Link + HT68V0036	Flash Type-23	ICP-2C / PA0 / PA2	PA0 / PA2	
HT68FB240	e-Link	e-Link + HT68VB240	Flash Type-7A	ICP-2C / UDN / RES	PA0 / RES
HT68FB540	e-Link	e-Link + HT68VB540	Flash Type-7A	ICP-2C / UDN / RES	PA0 / RES
HT68FB550		e-Link + HT68VB550	Flash Type-7A	ICP-2C / UDN / RES	PA0 / RES
HT68FB560		e-Link + HT68VB560	Flash Type-7B	ICP-2C / UDN / RES	PA0 / RES
HT67F370	e-Link	e-Link + HT67V370	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
HT69F340		e-Link + HT69V340	Flash Type-9	ICP-2C / PA0 / PA2	PA0 / PA2
HT69F350		e-Link + HT69V350	Flash Type-9B	ICP-2C / PA0 / PA2	PA0 / PA2
HT69F360		e-Link + HT69V360	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2
HT66F2560	e-Link	e-Link + HT66V2560	Flash Type-10C	ICP-2C / PA0 / PA2	PA0 / PA2
HT69F2562		e-Link + HT69V2562	Flash Type-10C	ICP-2C / PA0 / PA2	PA0 / PA2
HT86B10, HT86B30, HT86B60	HT-ICE(S)	CICE86B000008A	—	—	
HT98F069	e-Link	e-Link + HT98V069	Flash Type-9C	ICP-2C / PA0 / PA2	PA0 / PA2

Part Number Index

BA45F0082.....	17	BH66F5252	14	BS806C	23
BA45F0096.....	17	BH67F2132	16	BS808B	23
BA45F5222.....	17	BH67F2260	16	BS808C	23
BA45F5240.....	17	BH67F2261	16	BS8112A-3	23
BA45F5240-2	17	BH67F2262	16	BS8116A-3	23
BA45F5250*	17	BH67F2270	16	BS812A-1	23
BA45F5542.....	17	BH67F2470	15	BS813A-1	23
BA45F5542-2	17	BH67F2480	15	BS814A-1	23
BA45F6622*	17	BH67F2485*	15	BS814A-2	23
BA45F6630.....	17	BH67F2662	15	BS816A-1	23
BA45F6720*	17	BH67F2742	15	BS818A-2	23
BA45F6730.....	17	BH67F2752	15	BS82B12A-3	20
BA45FH0082	17	BH67F2762	15	BS82C16A-3	20
BC2102.....	27	BH67F5235	14	BS82D20A-3	20
BC2161.....	27	BH67F5245	14	BS83A01C*	19
BC2302A	27	BH67F5250	14	BS83A02A-4	19
BC2302B	27	BH67F5260	14	BS83A02C	19
BC32F7611.....	4	BH67F5270	14	BS83A02L	22
BC32F7611.....	26	BP45F0102.....	30	BS83A04A-3	19
BC3601.....	27	BP45F0104.....	30	BS83A04A-4	19
BC3602.....	27	BP45F0106.....	30	BS83B04A-4	19
BC45F7930	27	BP45F4MB	30	BS83B04C	19
BC45F7940	27	BP45FH6N	30	BS83B08A-3	19
BC48R2021	27	BP66F0043.....	30	BS83B08A-4	19
BC66F2342	27	BS45F3232.....	16	BS83B08C	19
BC66F2430	27	BS45F3235.....	16	BS83B12A-3	19
BC66F840	26	BS45F3832.....	22	BS83B12A-4	19
BC68F0031	26	BS45F3833.....	22	BS83B12C	19
BC68F2123	27	BS45F5830.....	22	BS83B16A-3	19
BC68F2130	27	BS45F5831.....	22	BS83B16A-4	19
BC68F2140	27	BS45F5832.....	22	BS83B16C	19
BC68F2332	27	BS45F5833.....	22	BS83B24C	19
BC7601.....	26	BS45F5840.....	22	BS83C40C.....	19
BC7602.....	26	BS45F5842.....	22	BS84B06A-3	20
BC9824.....	26	BS45F5930.....	22	BS84B08A-3	20
BC98FR066*	28	BS66F340.....	21	BS84B08C	20
BCM-7602-G01	26	BS66F350.....	21	BS84C12A-3	20
BCM-7602-G01	39	BS66F360.....	21	BS84C12C	20
BCM-7602-G02	39	BS66F370.....	21	BS86B12A-3	20
BH45B1225*	14	BS66FV340	21	BS86C08C	20
BH45B1225*	41	BS66FV340	24	BS86C16A-3	20
BH45F0031	29	BS66FV350	21	BS86D12C	20
BH45F68	15	BS66FV350	24	BS86D20A-3	20
BH66F2232	16	BS66FV360	21	BS86D20C	20
BH66F2260	16	BS66FV360	24	BS86DH12C	22
BH66F2470	15	BS67F340.....	21	BS86E16C	20
BH66F2632	15	BS67F350.....	21	BS87B12A-3	21
BH66F2650	15	BS67F360.....	21	BS87C16A-3	21
BH66F2652	15	BS67F370.....	21	BS87D20A-3	21
BH66F2652-2	15	BS801B	23	HT1015-1.....	32
BH66F2660	15	BS801C	23	HT12D	28
BH66F2662	15	BS802B	23	HT12E	28
BH66F5232	14	BS802C	23	HT12F	28
BH66F5233	14	BS804B	23	HT1380A.....	43
BH66F5242	14	BS804C	23	HT1381A.....	43
BH66F5250	14	BS806B	23	HT1382.....	43

HT1620.....	34	HT32F50220.....	3	HT45F39.....	16
HT1621.....	34	HT32F50230.....	3	HT45F391.....	16
HT1621G.....	34	HT32F50231.....	3	HT45F4050.....	28
HT1622.....	34	HT32F50241.....	3	HT45F4630.....	12
HT16220.....	34	HT32F52220.....	3	HT45F4830.....	12
HT1622G.....	34	HT32F52230.....	3	HT45F4833.....	12
HT1623.....	34	HT32F52231.....	3	HT45F4MA.....	30
HT1625.....	34	HT32F52241.....	3	HT45F4N.....	30
HT1626.....	34	HT32F52243.....	3	HT45F56.....	17
HT1628.....	34	HT32F52253.....	3	HT45F5N.....	30
HT1629G.....	34	HT32F52331.....	3	HT45F5Q-1*.....	30
HT1632C.....	35	HT32F52341.....	3	HT45F5Q-2.....	30
HT1635A.....	35	HT32F52342.....	3	HT45F6530.....	31
HT1635B.....	35	HT32F52344.....	3	HT45F67.....	15
HT1647.....	34	HT32F52352.....	3	HT45F75.....	15
HT16506.....	36	HT32F52354.....	3	HT45F77.....	15
HT16511.....	36	HT32F52357*.....	3	HT45FH23A.....	17
HT16512.....	36	HT32F52367*.....	3	HT45FH24A.....	17
HT16515.....	36	HT32F57331*.....	3	HT45FH4MA-1.....	30
HT16528-001.....	36	HT32F57341*.....	3	HT45FH4N.....	30
HT16528-002.....	36	HT32F57342*.....	3	HT45FH5N.....	30
HT16528-003.....	36	HT32F57352*.....	3	HT47C07L.....	16
HT16C21.....	34	HT32FP2350.....	4	HT47C08L.....	16
HT16C22.....	34	HT32FP2350.....	30	HT6026.....	28
HT16C22G.....	34	HT32FP2450.....	4	HT62104.....	28
HT16C23.....	34	HT32FP2450.....	30	HT6220A.....	28
HT16C23G.....	34	HT37A30.....	25	HT6221A.....	28
HT16C24.....	34	HT37A40.....	25	HT6221B.....	28
HT16C24G.....	34	HT37A50.....	25	HT6222A.....	28
HT16D31A.....	35	HT37B90.....	25	HT66F002.....	5
HT16D31B.....	35	HT37P00.....	25	HT66F0021.....	5
HT16D33A.....	35	HT42B532-1.....	29	HT66F0025.....	5
HT16D33B.....	35	HT42B533-1.....	29	HT66F003.....	6
HT16D35A.....	35	HT42B534-2.....	29	HT66F0031.....	6
HT16D35B.....	35	HT42B564-1.....	29	HT66F004.....	6
HT16E07.....	36	HT45B0016.....	31	HT66F0041.....	6
HT16H25.....	34	HT45B0F.....	29	HT66F0042.....	9
HT16K23.....	34	HT45B0K.....	29	HT66F007.....	5
HT16K33.....	35	HT45B1S.....	43	HT66F008.....	5
HT16L21.....	34	HT45F0004.....	38	HT66F0082.....	9
HT16L23.....	34	HT45F0027.....	17	HT66F016.....	6
HT16LK24.....	34	HT45F0057.....	38	HT66F017.....	6
HT24LC02.....	40	HT45F0060.....	9	HT66F0172.....	6
HT24LC02A.....	40	HT45F0062.....	9	HT66F0174.....	6
HT24LC04.....	40	HT45F0063*.....	9	HT66F0175.....	6
HT24LC08.....	40	HT45F0074.....	38	HT66F0176.....	6
HT24LC16.....	40	HT45F2020.....	24	HT66F018.....	6
HT24LC32.....	40	HT45F2020.....	38	HT66F0181.....	6
HT24LC64.....	40	HT45F2022.....	24	HT66F0182.....	6
HT32F0006.....	4	HT45F2022.....	38	HT66F0185.....	6
HT32F0006.....	24	HT45F23A.....	13	HT66F0186.....	6
HT32F0008.....	4	HT45F24A.....	13	HT66F0187.....	6
HT32F12345.....	4	HT45F3230.....	16	HT66F019.....	6
HT32F12365.....	4	HT45F3420.....	38	HT66F0195.....	6
HT32F12366.....	4	HT45F3430.....	38	HT66F13.....	5
HT32F1653.....	4	HT45F3520.....	38	HT66F14.....	5
HT32F1654.....	4	HT45F3530.....	38	HT66F15.....	5
HT32F22366.....	4	HT45F3630.....	12	HT66F2350.....	7

HT66F2360.....	7	HT67F489.....	9	HT7612B.....	18
HT66F2370.....	7	HT67F4892.....	9	HT7660.....	33
HT66F2390.....	7	HT67F50.....	8	HT77xxB.....	33
HT66F2560.....	10	HT67F5630.....	8	HT77xxBA.....	33
HT66F2560.....	37	HT67F5630.....	14	HT77xxC.....	33
HT66F25D.....	5	HT67F5640.....	8	HT77xxS.....	33
HT66F2630.....	6	HT67F5640.....	14	HT77xxSA.....	33
HT66F26D.....	5	HT67F5650.....	8	HT78xx.....	32
HT66F2730.....	7	HT67F5650.....	14	HT79171*.....	33
HT66F2740.....	7	HT67F5652.....	15	HT79181*.....	33
HT66F302.....	5	HT67F5660.....	8	HT7938A-3.....	35
HT66F302.....	10	HT67F5660.....	14	HT7939A-1.....	35
HT66F303.....	10	HT67F60A.....	8	HT7939A-2.....	35
HT66F317.....	10	HT67F70A.....	8	HT7963.....	35
HT66F318.....	10	HT67F86A.....	8	HT7991.....	33
HT66F319.....	10	HT68F002.....	5	HT7A6312.....	33
HT66F40.....	5	HT68F0025.....	5	HT7A6322.....	33
HT66F4360.....	37	HT68F003.....	6	HT7K1201.....	12
HT66F4370.....	37	HT68F0036.....	6	HT7K1211.....	12
HT66F4390.....	37	HT68F40.....	5	HT7K1311*.....	12
HT66F4530.....	13	HT68FB240.....	11	HT7K1312*.....	12
HT66F4540.....	13	HT68FB540.....	11	HT7K1401**.....	12
HT66F4550.....	13	HT68FB550.....	11	HT7K1411**.....	12
HT66F4560*.....	13	HT68FB560.....	11	HT7L5600.....	35
HT66F489.....	6	HT68FB571.....	11	HT7L5820.....	33
HT66F50.....	5	HT69F2562.....	10	HT7L5820.....	35
HT66F60A.....	5	HT69F2562.....	37	HT7L5821.....	33
HT66F70A.....	5	HT69F340.....	10	HT7L5821.....	35
HT66FB540.....	11	HT69F350.....	10	HT7M2126.....	39
HT66FB542.....	11	HT69F360.....	10	HT7M2127.....	39
HT66FB550.....	11	HT69F3742*.....	37	HT7M2136.....	39
HT66FB560.....	11	HT6P20B.....	28	HT7M2156.....	39
HT66FB570.....	11	HT6P20D.....	28	HT7M2176.....	39
HT66FB572.....	11	HT70xxA-1.....	32	HT7Q1520*.....	31
HT66FB574.....	11	HT70xxA-2.....	32	HT7Q1531**.....	31
HT66FB576.....	11	HT70xxA-3.....	32	HT7Q2552***.....	31
HT66FB582.....	11	HT71Hxx*.....	32	HT82V36.....	42
HT66FM5230.....	12	HT71xx-1.....	32	HT82V38.....	42
HT66FM5240.....	12	HT71xx-2.....	32	HT82V42.....	42
HT66FM5242.....	12	HT71xx-3.....	32	HT82V48.....	42
HT66FM5340.....	12	HT72xx.....	32	HT82V48.....	42
HT66FM5440.....	12	HT73Hxx*.....	32	HT82V70.....	42
HT66FV130.....	24	HT73Lxx.....	32	HT82V72.....	42
HT66FV140.....	24	HT73xx.....	32	HT82V733.....	41
HT66FV150.....	24	HT73xx-1.....	32	HT82V735.....	41
HT66FV160.....	24	HT73xx-2.....	32	HT82V739.....	41
HT66FV240.....	24	HT73xx-3.....	32	HT82V73A.....	41
HT66FW2230.....	30	HT73xx-7.....	32	HT82V742.....	41
HT66FW2350.....	30	HT74153**.....	33	HT82V7524.....	41
HT67F2350.....	8	HT74173*.....	33	HT82V7534.....	41
HT67F2360.....	8	HT7463A.....	33	HT82V82*.....	42
HT67F2370.....	8	HT7463B.....	33	HT82V82*.....	42
HT67F2390.....	8	HT75Hxx*.....	32	HT86B10.....	25
HT67F2567.....	10	HT75xx-1.....	32	HT86B30.....	25
HT67F2567.....	37	HT75xx-2.....	32	HT86B60.....	25
HT67F30.....	8	HT75xx-3.....	32	HT9170B.....	29
HT67F370.....	10	HT75xx-7.....	32	HT9170D.....	29
HT67F40.....	8	HT7610A.....	18	HT9172.....	29

HT9200A.....	29
HT9200B	29
HT92112	41
HT92122.....	41
HT92232.....	41
HT92252.....	41
HT9231.....	41
HT9232.....	41
HT9234.....	41
HT9251.....	41
HT9252.....	41
HT9254.....	41
HT92632.....	41
HT92652.....	41
HT9274.....	41
HT9291.....	41
HT9292.....	41
HT9294.....	41
HT93LC46	40
HT98F069.....	28
HT9B92	34
HT9B92G.....	34
HT9B95A.....	34
HT9B95B.....	34
HT9B95G.....	34