

# Selection Guide



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## ***Product Selection Guide 2010***

凌通科技主要以研發和行銷消費性積體電路IC產品為主，本公司擁有IC電路設計及應用軟體設計相關技術，包括嵌入式記憶體（Embedded Memory）、類比的IP和DSP等，將高科技技術商品化，使人們享受高科技帶來的歡樂、舒適與便利是我們努力的目標。

凌通科技掌握IC電路設計及應用軟體設計技術，自力研發，以「全客戶委託設計模式」提供客戶滿意的產品及服務，產品具有少量多樣及難以立即替代的特性。公司運用次微米技術、多媒體影音、單晶片微處理器、數位訊號處理器（DSP）...等核心技術，發展出多樣化的產品線，目前主要產品包括：液晶IC、F微控器IC、語音IC、音樂IC、通訊IC、無線遙控IC、多媒體IC、遊戲機平台、MP3、個人媒體撥放器、數位相框及各式ASIC，並逐年擴增中。

創業以來，凌通始終秉持著「誠信」、「創意」、「品質」、「服務」的經營理念，以人性化管理及利潤共享，吸引最優秀的人才投入。未來，凌通科技將朝目標全力以赴，持續提高企業價值，提供傑出的產品與服務，以期成為具有全球競爭力的IC設計公司，實現「科技落實生活」的企業願景。

## Technology for Easy Living

### - 科技落實生活 -

Generalplus is engaged in the research, development, design, testing and sales of high quality, high value-added consumer integrated circuits (ICs). We are dedicated to commercializing the communication, educational entertainment and multimedia technology, and helping people enjoy happy, comfortable and convenient life.

Generalplus manages IC designing & system application technology by using the "custom designed approach" which provides top products and service to meet customers' needs. Generalplus uses "core technology" such as single-chip controller and digital signal processor technologies to develop hundreds of products including LCD Controller, LCD Driver, Controller IC, Speech IC, Music Synthesizer, Tel-Communication IC, Remote Controller IC, Multi-Media IC, Game Platform, MP3, PMP, DPF and ASIC which can be applied to our daily life.

Since its founding, Generalplus has held the principles of "Integrity", "Innovation", "Quality", and "Service" as our business philosophy. Generalplus is devoted to promoting labor relations built on creating people management and profit sharing to attract the most brilliant people to join us. In the future, we will also strive to steady operation and keep innovation in technology to fulfill our company's vision **"Technology for Easy Living"**.

### LCD Controller



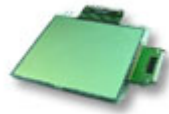
LCD controllers are designed for the use of Watch/Clock, Data Bank, Calculator, Calendar, Handheld Game, Dictionary, PDA, Educational Learning Aids (ELA).

LCD 控制 IC 的主要用途為電子鐘錶，電子計算機，電子萬年曆，掌上型電子遊戲機，電子字典，PDA，教育性學習玩具等。

LCD drivers (GPLD series) are designed for the use of STN LCD, OLED, such as Watch/Clock, Data Bank, Calculator, Calendar, Handheld Game, Dictionary, PDA, Educational Learning Aids (ELA), Mobile Phone.

LCD 驅動 IC (GPLD 系列) 主要是用來驅動各類顯示裝置如 STN 型的液晶 LCD 及有機 OLED 屏幕等，主要用在電子鐘錶，掌上型遊戲機，電子計算機，電子字典，PDA，教育性學習玩具，手機電話等各類產品上的顯示裝置。

### LCD Drivers



### Speech & Music



Speech&Music ICs are used in Music Keyboard, Vocal Toys/Cards, Voice Recorder, Interactive Toys, Educational Learning Aids, Organ, Voice Recognition Application, Story Teller, Religious Speech Player, Toy Mobile Phone, Electronic Plush Toy, Electronic Dictionary, Text To Speech, Multi-Channel Music Synthesizer etc.

語音音樂 IC 的主要應用有音樂電子琴，語音發聲玩具，電子音樂卡片，錄音玩具，語音互動玩具，教育性學習玩具，語音辨識應用，電子有聲故事書，宗教經文電子播放機，玩具電話機，電子字典，多聲道音樂合成器等。

Recorder ICs are used in Recording Toy/Gift, Digital Voice Recorder and Language Learning Repeater... etc.

錄音 IC 主要是用在錄音玩具/贈品，數位錄音筆，語言複讀學習機等產品。

### Recorder



### Memory



GPR series includes various kinds of memory devices such as Serial SRAMs and Serial Flash/ROM and Mask ROMs. Main applications are Voice Recorder, Game Cartridge and Data Storage...etc.

GPR 系列包含了各式各樣的記憶體 IC，主要有串接式靜態 Static RAM，串接式 Flash/ROM，並接式光罩唯讀記憶體 Mask ROM 等產品，可以用在語音錄音機，玩具產品擴充卡匣，及各項資料儲存裝置等。

Wireless (GPRC series) ICs are used in Radio Control Car, Remote Control Toys, etc.

無線 IC 產品 (GPRC 系列) 主要用在遙控車，各類遙控玩具等。

### Remote Application



### Tel-Communication



Tel-Communication (GPTC series) ICs are used in Pager, Digital Answering Machine, Caller ID, SMS Phone.

電話通訊 IC (GPTC 系列) 主要用在數位電話答錄機，來電號碼顯示電話，短訊息電話等應用。

### White Light LED Driver

GPWL series are DC/DC converters and can be used to drive White Light LED with high efficiency.

GPWL 系列 IC 主要是 DC/DC 轉換器的架構，可以有效率的驅動白光 LED。



# **Generalplus Product Selection Guide Index**

## **LCD Controller/Driver Product Line**

<b>1. GPL0X, GPLXX, GPL61/121/191</b> : 8 bit LCD Controller (single chip solution , 76 dots ~ 1024 dots)	<b>Page 4~6</b>
<b>2. GPLB1X/2X, GPLB3X, GPLB5X</b> : 8 bit LCD Controller (single chip solution, 300 dots ~ 6144 dots)	<b>Page 7~10</b>
<b>3. GPL13X</b> : 8 bit LCD Controller (multi-chip solution, < 40000 dots) (external LCD driver GPLDXXX needed)	<b>Page 11</b>
<b>4. GPLDXXX</b> : LCD Driver (work with GPL13X, GPL16XXX, or other controller)	<b>Page 11~12</b>
<b>5. GPL16XXX</b> : 16 bit CPU u'nSP@96Mhz LCD Controller(single/multi chip solution) (16 Gray/CSTN/TFT/USB/MP3/Multi-algorithm/16 bit DAC/16 bit ADC)	<b>Page 13</b>

## **Speech Product Line**

<b>1. GPES2XX</b> : 8 bit Easy-to-Use 1Ch speech synthesizer (3 Sec ~ 80 Sec)	<b>Page 14</b>
<b>2. GPC1XXX</b> : 8 bit, Full instruction set 6502 CPU, low cost, powerful speech, can play 5Ch midi by software, DAC/PWM X1	<b>Page 15~17</b>
<b>3. GPCXXX</b> : 8 bit, 6502 CPU, Dual Ch speech/melody, DAC X2	<b>Page 18~19</b>
<b>4. GPC3XXX</b> : 8 bit, 6502 CPU, 3Ch speech/melody, PWM	<b>Page 20</b>
<b>5. GPDSXXX</b> : 16 bit, High performance DSP voice, long duration speech/music	<b>Page 25~26</b>
<b>6. GPCEXXX</b> : 16 bit CPU u'nSP@49Mhz, Long duration speech/music, play multi algorithms at the same time, 16 bit DAC, 12 bit ADC, SPI/UART	<b>Page 27~28</b>

## **Multi-Channel Music/Speech Product (4 – 32 channels)**

<b>1. GPCH8XXX, GPCH4XXX</b> : 8 bit, Full instruction set 6502 CPU, 4/8Ch hardware midi wavetable SPU, 12 bit DAC/PWM	<b>Page 21~22</b>
<b>2. GPCD3/6/9XXX</b> : 8 bit, Full instruction set 6502 CPU, 1/4/8Ch hardware midi wavetable SPU with 2 software channel, 14 bit push/pull	<b>Page 22~23</b>
<b>3. GPFAXXX</b> : 8 bit, 6502 CPU, 8Ch hardware music synthesizer, for music/speech	<b>Page 24</b>
<b>4. GPF8XXX</b> : 16 bit CPU u'nSP@48Mhz, 8Ch hardware midi wavetable SPU, 16 bit DAC, 12 bit ADC, SPI/UART	<b>Page 28</b>
<b>5. GPF16/32XXX</b> : 16 bit CPU u'nSP@27Mhz/54Mhz/96Mhz, 16/32Ch hardware Midi wavetable SPU, 16bit DAC, 16bit ADC, SPI/UART/USB	<b>Page 29</b>

## **TV Game/Handheld Game/LCD Controller Product Line**

<b>1. GPL162XX 16-bit TV Game/Handheld Game Controller</b>	<b>Page 30</b>
<b>2. GPL32XXX 32-bit ARM7 TV Game/Handheld Game/ELA LCD Controller</b>	<b>Page 30</b>

## **MCU Product Line**

<b>1. GPM60 Family</b> : ASIC, Timer/Charger	<b>Page 31</b>
<b>2. GPM61 Family</b> : 8 bit, 6502 CPU, OTP/Mask, IO Type MCU/Remote Controller	<b>Page 31</b>

<b>Memory</b> 1. GPRSXXX/GPRXXX 2. GPR23XXX 3.GPR25XXX/GPR26XXX 4.GPR27XXX 5.GPR32XXX	<b>Page 32~36</b>
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<b>Recording IC</b> GPCRXX, GPDS20X, GPRT550X	<b>Page 36~37</b>
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<b>White Light LED Driver</b> GPWL8937, GPWL8938, GPWL8939	<b>Page 38</b>
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<b>Tel-Communication</b> GPTCXXX : For pager, digital answering machine, Caller ID, SMS phone	<b>Page 38~39</b>
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<b>Remote Application</b> GPRCXXX	<b>Page 40</b>
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<b>Others</b> GPY003X (Audio Driver), GPY0016C(DC-DC Converter), GPY0029B(Linear Regulator), GPY0014B(Echo IC), GPY020X(Power Management SOC) GPBA01B/02A(I/O Bus Extender), GPUSB101A (USB Bridge)	<b>Page 41~42</b>
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**GPLOX 8-bit LCD Controller** **8-bit 6502**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COM x SEG Option	Bias	Duty	Audio Channel	Audio Output (Mask option)		Interrupt			32K OSC.	
											DAC	PWM	2Hz	Sound Generator	Power Key	ROSC	X'TAL
GPL02E2/E3	2.4~5.5	1.5	19.5K	192	10	320	4X40 8X40	1/4 1/5	1/4 1/8	2-Tone + 1-Noise	•	•	•	•	•	•	-

**GPLXX 8-bit LCD Controller (≤320 pixels)** **8-bit 6502**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COMxSEG Option	Bias	Duty	Timer/Counter	Audio Channel	Tone Output (Ch)	Audio Output		32K OSC. (Mask option)		WDT	LVD	LVR
													DAC	PWM	ROSC	X'TAL			
GPL08A2/A5	1.2~1.7	0.5	4K	64+12	10 I/O	76	2X19 3X19 4X19	1/2 1/3	1/2 1/3 1/4	8-bitX1	-	-	-	-	•	•	• (Mask)	-	-
GPL081A1/A3	1.2~1.7	0.5	7.5K	128+ 20	10 I/O 6 I	160	2X32 3X32 4X32 5X32	1/2 1/3	1/2 1/3 1/4 1/5	8-bitX1	-	1	-	-	•	•	• (Mask)	-	-
GPL082A	1.2~1.7	0.6	7 K	128+ 20	6 I/O 6 I	160	2X32 3X32 4X32 5X32	1/2 1/3	1/2 1/3 1/4 1/5	8-bitX1	-	1	-	-	•	•	• (Mask)	-	•
GPL10B	2.0~5.5	2	7K	96	4 I/O 6 I	128	2X32 3X32 4X32	1/2 1/3	1/2 1/3 1/4	12-bitX1	1	1	•	-	•	•	• (Default)	-	•
GPL083B	1.15~3.6	1.8	26K	192	10	200	4X50	1/2 1/3	1/2 1/3 1/4	16-bitX1	-	-	-	-	•	-	•	-	•
GPL084A	1.1~3.6	1.8	24K	2304+ 48	16	336	4X46 5X45 6X44 8X42	1/3 1/4	1/4 1/5 1/6 1/8	16-bitX1	-	-	-	-	•	-	•	-	•

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COM×SEG Option	Bias	Duty	Timer/Counter	Audio Channel	Tone Output (Ch)	Audio Output		32K OSC. (Mask option)		WDT	LVD	LVR
													DAC	PWM	ROSC	X'TAL			
GPL085A*	1.1~3.6	1.8	64K	2432+88	18	660	3X60 4X60 4X64 6X60 8X60 9X60 10X60 11X60	1/3 1/4	1/3 1/4 1/6 1/8 1/9 1/10 1/11	16-bitX1	-	1	-	-	•	•	•	•	•
GPL11B(OTP)**	2.6~5.5 (LVR Enable) 2.4~5.5 (LVR Disable)	4	8K	128+48	16 I/O	360	3X32 4X32 5X32 8X32 9X32 10X30 11X30 12X30	1/2 1/3 1/4	1/3 1/4 1/5 1/8 1/9 1/10 1/11 1/12	16-bitX1	-	1	-	-	• (Pin)	• (Pin)	• (Default)	-	•
GPL12A	2.2~5.5 (LVR Enable) 1.9~5.5 (LVR Disable)	4	8K	128+48	8 I/O 8 I	360	3X32 4X32 5X32 8X32 9X32 10X30 11X30 12X30	1/2 1/3 1/4	1/3 1/4 1/5 1/8 1/9 1/10 1/11 1/12	16-bitX1	-	1	-	-	•	•	• (Default)	-	•
GPL13A	2.2~5.5 (LVR Enable) 1.9~5.5 (LVR Disable)	4	8K	128+20	12 I/O	160	3X32 4X32 5X31 5X32	1/2 1/3	1/3 1/4 1/5	16-bitX1	-	1	-	-	•	•	• (Default)	-	•
GPL15A	2.4~5.5	2	56K	128	12 I/O 8 I	128	2X32 3X32 4X32	1/2 1/3	1/2 1/3 1/4	12-bitX2	2	2	-	•	•	•	• (Default)	-	-
GPL15B1	2.4~5.5	2	72K	128	6 I/O 6 I	96	2X24 3X24 4X24	1/2 1/3	1/2 1/3 1/4	12-bitX2	2	2	-	•	•	•	• (Default)	-	-
GPL25B	2.4~5.5	2	96K	128	12 I/O 8 I	128	2X32 3X32 4X32	1/2 1/3	1/2 1/3 1/4	12-bitX2	2	2	-	•	•	•	• (Default)	-	-

\*Note : Under development, contact Generalplus for available date.

\*\*Note : GPL11B is the OTP chip for GPL12A, GPL13A with serial programming interface.

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COM×SEG Option	Bias	Duty	Timer/Counter	Audio Channel	Tone Output (Ch)	Audio Output		32K OSC. (Mask option)		WDT	LVD	LVR	
													DAC	PWM	ROSC	X'TAL				
GPL25C	2.4~5.5	2	96K	128	12 I/O 8 I	128	2X32 3X32 4X32	1/2 1/3	1/2 1/3 1/4	12-bitX2	2	2	-	•	•	•	•	(Default)	-	-
GPL30A1	2.4~5.5	2	144K	160	12 I/O 8 I	220	2X44 3X44 4X44 5X44	1/2 1/3	1/2 1/3 1/4 1/5	16-bitX2	2	2	-	•	•	•	•	(Default)	-	-
GPL31B/B1/B2	2.4~5.5	3	64K	160+ 30	12 I/O	220	2X44 3X44 4X44 5X44	1/2 1/3	1/2 1/3 1/4 1/5	16-bitX2	2	2	-	•	•	•	•	(Default)	•	•
GPL31C	2.4~5.5	2	64K	160+ 20	16 I/O	160	5X32	1/3	1/5	16-bitX1	1	1	-	•	•	•	•	-	•	

Note : (Pin)= Pin Option  
 (Mask)= Mask Option  
 (Default)= Default Always Turn On

## GPL61/121/191 8-bit LCD Controller

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COM×SEG Option	Bias	Duty	Timer/Counter	Audio Channel	Audio Output (PWM)	32K OSC. (Mask option)		WDT (Mask option)	LVD	LVR
													ROSC	X'TAL			
GPL61A	2.6~5.5	3	80K	496+ 80	16	640	8X40 12X40 16X40	1/4 1/5	1/8 1/12 1/16	16-bitX2	2	•	•	•	•	•	-
GPL121B/B2	2.4~5.5	4	128K	704+ 128	20	1024	8X64 12X64 16X64	1/4 1/5	1/8 1/12 1/16	16-bitX2	2	•	•	•	•	•	•
GPL191B/B2	2.4~5.5	4	256K	704+ 128	20	1024	8X64 12X64 16X64	1/4 1/5	1/8 1/12 1/16	16-bitX2	2	•	•	•	•	•	•

Note : (Pin)= Pin Option  
 (S/W)=Software Option

# GPLB1X/2X 8-bit LCD Controller 8-bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COM×SEG Option	Bias	Duty	Timer/Counter	32K OSC. (Mask option)		WDT (Mask option)	LVD	LVR	LVPD*
											ROSC	X'TAL				
GPLB11A	1.1~1.7	1.5	46K	1920+55	18	440	4X40 8X40 10X40 11X40	1/3 1/4	1/4 1/8 1/10 1/11	8-bitX1	•	•	•	•	•	-
GPLB12A	1.1~1.7	1.5	30K	1920+55	18	440	4X40 8X40 10X40 11X40	1/3 1/4	1/4 1/8 1/10 1/11	8-bitX1	•	•	•	•	•	-
GPLB13A	1.1~1.7	1.5	60K	2432+88	18	660	4X60 8X60 10X60 11X60	1/3 1/4	1/4 1/8 1/10 1/11	8-bitX1	•	•	•	•	•	-
GPLB20D4	2.4~5.5	1	30K	2176+64	8	480	6X48 6X60 8X48 8X60	1/4	1/6 1/8	8-bitX1	•	•	•	-	-	•
GPLB21C	2.4~5.5	1	22K	384+40	8	304	6X38 8X38	1/4	1/6 1/8	8-bitX1	•	•	-	-	-	•
GPLB24A	2.4~5.5	1	22K	1280+40	8	320	6X40 8X40	1/4	1/6 1/8	8-bitX1	•	•	•	-	-	•
GPLB24B	2.4~5.5	1	22K	1280+40	8	320	6X40 8X40	1/4	1/6 1/8	8-bitX1	•	•	•	-	-	•
GPLB25A	2.4~5.5	1	46K	2176+88	14	660	10X60 11X60	1/4 1/5	1/10 1/11	8-bitX1	•	•	•	-	-	•
GPLB25B	2.4~5.5	3	46K	2176+88	14	660	4X60 5X60 6X60 8X60 9X60 10X60 11X60	1/4 1/5	1/4 1/5 1/6 1/8 1/9 1/10 1/11	8-bitX1	•	•	•	•	•	•

\*Note : LVPD=Low Voltage Power Down



Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COM×SEG Option	Bias	Duty	Timer/Counter	32K OSC. (Mask option)		WDT (Mask option)	LVD	LVR	LVPD*
											ROSC	X'TAL				
GPLB27A (OTP)**	2.6~5.5	4	46K	2176+88	14	660	4X60 5X60 6X60 8X60 9X60 10X60 11X60	1/4 1/5	1/4 1/5 1/6 1/8 1/9 1/10 1/11	8-bitX1	• (S/W)	• (S/W)	• (S/W)	• (S/W)	• (S/W)	•

Note : (S/W)=Software Option

\*Note : LVPD=Low Voltage Power Down

\*\*Note : GPLB27A is the OTP chip for GPLB25B.

## GPLB3X 8-bit LCD Controller 8-bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COM × SEG Option	Bias	Duty	Timer/Counter	Audio Output	32K OSC. (Mask option)		Serial I/F	Bus I/F	SPI /UART	WDT (Mask option)	LVD /LVR
												ROSC	X'TAL					
GPLB30A	2.4~5.5	5	96K	2752+140	29	1120	16X70	1/5	1/16	16-bitX2	PWM	•	•	•	•	-/•	•	•/•
GPLB30B	2.2~5.5	5	48K	2240+80	16	640	16X40	1/3 1/4 1/5	1/4 1/8 1/16	16-bitX1	-	•	•	-	-	-	•	-/•
GPLB31A	2.4~5.5	5	256K	4288+296	29	2368	32X74	1/5 1/6	1/32	16-bitX2	PWM	•	•	•	•	-/•	•	•/•
GPLB32A2/A3	2.4~5.5	5	512K	1216+296	28	2048	16X74 32X64	1/5 1/6	1/16 1/32	16-bitX2	PWM /DAC	•	•	•	-	-/•	•	•/•
GPLB33B	2.4~3.6	4	96K	1024+96	24	768	16X48	1/3 1/4 1/5	1/4 1/8 1/16	16-bitX2	PWM	•	•	-	-	-	•	•/•
GPLB34A1	2.4~5.5	6	1M	2752+296	21	2368	32X74	1/5 1/6	1/16 1/32	16-bitX2	PWM	•	•	•	•	-/•	•	•/•

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COM x SEG Option	Bias	Duty	Timer/ Counter	Audio Output	32K OSC. (Mask option)		Serial I/F	Bus I/F	SPI /UART	WDT (Mask option)	LVD /LVR
												ROSC	X'TAL					
GPLB34A3	2.4~5.5	6	1M	2752+296	21	2368	32X74	1/5 1/6	1/16 1/32	16-bitX2	PWM	•	•	•	•	-/•	•	•/•
GPLB35A1	2.4~5.5	6	1M	2752+600	21	4032	32X100 36X96 48X84	1/5 1/6 1/7 1/8	1/16 1/32 1/36 1/48	16-bitX2	PWM	•	•	•	•	•/•	•	•/•
GPLB35A3	2.4~5.5	6	1M	2752+600	21	4032	32X100 36X96 48X84	1/5 1/6 1/7 1/8	1/16 1/32 1/36 1/48	16-bitX2	PWM	•	•	•	•	•/•	•	•/•
GPLB36A1	2.4~5.5	6	512K	2752+600	21	4032	32X100 36X96 48X84	1/5 1/6 1/7 1/8	1/16 1/32 1/36 1/48	16-bitX2	PWM	•	•	•	•	•/•	•	•/•
GPLB36A3	2.4~5.5	6	512K	2752+600	21	4032	32X100 36X96 48X84	1/5 1/6 1/7 1/8	1/16 1/32 1/36 1/48	16-bitX2	PWM	•	•	•	•	•/•	•	•/•
GPLB37A2/A3	2.4~5.5	5	256K	1216+296	28	2048	16X74 32X64	1/5 1/6	1/16 1/32	16-bitX2	PWM /DAC	•	•	•	-	-/•	•	•/•
GPLB38B	2.4~3.6	8	512K	1216+128	12	1024	16X64	1/5	1/16	16-bitX2	PWM	•	•	-	-	-	•	•/•
GPLB38C	2.2~5.5	8	512K	1216+128	12	1024	16X64	1/3 1/4 1/5	1/4 1/8 1/16	16-bitX2	PWM	•	•	-	-	-	•	•/•
GPLB39B	2.4~5.5	6	2M	8128+896	21	6144	8X112 16X112 32X112 48X112 64X96	1/4 1/5 1/6 1/7 1/8 1/9	1/8 1/16 1/32 1/48 1/64	16-bitX2	PWM	•	•	•	•	•/•	•	•/•
GPLB301A(OTP)*	2.4~5.5	10	512K	4288+296	30	2368	32X74	1/3 1/4 1/5 1/6	1/4 1/8 1/16 1/32	16-bitX2	PWM /DAC	•	•	•	•	-/•	•	•/•

\*Note : GPLB301A is the OTP chip for GPLB30A, GPLB32A2, GPLB33B, GPLB37A2, GPLB38B.

## GPLB5XXX 8-bit 4 Gray Level LCD Controller 8-bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COM x SEG Option	Bias	Duty	Timer/Counter	Audio Output	32K OSC. (Mask option)		SPI /UART	WDT (SW option)	LVD /LVR	Sound Processing Unit	Gray Level
												ROSC	X'TAL					
GPLB52001A(OTP)*	2.4~5.5	8	1M	1536+512	24	2048	22x74 32x64	1/3 1/4 1/5 1/6 1/7	1/2 1/3 ~ 1/31 1/32	16-bitX2	PWM/ DAC	•	•	•/-	•	•/•	8 Channels	4 Levels
GPLB51320A	2.4~5.5	8	320K	1536+512	16	1628	22x74	1/3 1/4 1/5 1/6 1/7	1/2 1/3 ~ 1/21 1/22	16-bitX2	PWM/ DAC	•	•	•/-	•	•/•	8 Channels	4 Levels
GPLB51640A	2.4~5.5	8	640K	1536+512	16	1628	22x74	1/3 1/4 1/5 1/6 1/7	1/2 1/3 ~ 1/21 1/22	16-bitX2	PWM/ DAC	•	•	•/-	•	•/•	8 Channels	4 Levels
GPLB52320A	2.4~5.5	8	320K	1536+512	16	2048	22x74 32x64	1/3 1/4 1/5 1/6 1/7	1/2 1/3 ~ 1/31 1/32	16-bitX2	PWM/ DAC	•	•	•/-	•	•/•	8 Channels	4 Levels
GPLB52640A	2.4~5.5	8	640K	1536+512	16	2048	22x74 32x64	1/3 1/4 1/5 1/6 1/7	1/2 1/3 ~ 1/31 1/32	16-bitX2	PWM/ DAC	•	•	•/-	•	•/•	8 Channels	4 Levels
GPLB51A24A	2.4~5.5	8	1M	1536+512	22	1628	22 x 74	1/3 1/4 1/5 1/6 1/7	1/2 1/3 ~ 1/21 1/22	16-bitX2	PWM/ DAC	•	•	•/-	•	•/•	8 Channels	4 Gray
GPLB52A24A	2.4~5.5	8	1M	1536+512	22	2048	22x74 32x64	1/3 1/4 1/5 1/6 1/7	1/2 1/3 ~ 1/31 1/32	16-bitX2	PWM/ DAC	•	•	•/-	•	•/•	8 Channels	4 Levels

\*Note : GPLB52001A is the the Emulation chip of GPLB5XXX series. Also it built-in 1M byte OTP ROM, thus is the OTP chip for GPLB5XXX series.

## GPL13X 8-bit LCD Controller (External LCD Driver GPLDXXX Series Needed) 8-bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Channel	Audio Output (PWM)	32K X'TAL	VLCD Bright Control	UART	WDT (Mask option)	LVD	LVR
GPL130A	2.4~5.5	6	128K	2K	32	2	•	•	•	•	•	•	-
GPL132A	2.4~5.5	6	512K	4K	32	2	•	•	•	•	•	•	-
GPL133A	2.4~5.5	6	256K	4K	32	2	•	•	•	•	•	•	•

## GPLD LCD Driver

Part NO.	Working Voltage (V)	Max. VLCD (V)	Max. LCD Dots	COM × SEG Option	Interface (Bit)	DC-DC Converter	Electronic Volume Contrast Control	Built-in OP Amplifier	Internal LCD Bias Resistor Divider	Gray-Level	Package Form
GPLD1080A	2.4~5.5	14.5	1536	48X32 64X16 80X0	1, 4	•	•	•	•	-	COB
GPLD2080A	2.4~5.5	16	80	0X80	1, 4	-	-	-	-	-	COB
GPLD1120B	2.4~5.5	16	3584	0X120 32X88 48X72 64X56 80X40 96X24 112X8 120X0	1, 4	•	•	•	•	-	COB

Part NO.	Working Voltage (V)	Max. VLCD (V)	Max. LCD Dots	COM × SEG Option	Interface (Bit)	DC-DC Converter	Electronic Volume Contrast Control	Built-in OP Amplifier	Internal LCD Bias Resistor Divider	Gray-Level	Package Form
GPLD1120C	2.4~5.5	14.5	3584	16X104 32X88 48X72 64X56 80X40 96X24 112X8 120X0	1, 4	•	•	•	•	-	COB
GPLD2120A	2.4~5.5	16	120	0X120	1, 4	•	-	-	-	-	COB
GPLD1160A	2.4~3.6	11	6400	64X96 80X80	1	•	•	•	•	4	COG

**GPLD FS-LCD Controller / Driver**

Part NO.	Working Voltage (V)	Max. VLCD (V)	Max. LCD Dots	COM × SEG Option	RAM (Bytes)	Interface	Internal OSC.	DC-DC Converter	Built-in OP Amplifier	Internal LCD Bias Resistor Divider	Color-Level	Package Form
GPLD94080A	2.4~5.5	9	320	1X80 2X80 3X80 4X80	160	8080 68000 SPI I2C	•	•	•	•	12	COB
GPLD94160A	2.4~3.6	7.2	640	1X160 2X160 3X160 4X160	320	8080 68000 SPI I2C	•	•	•	•	12	COG

## GPL16XXX 16-bit LCD Controller (LCD Driver Built-In) 16-bit u'nSP

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max LCD Dots	COM×SEG Option	16 Gray-Level	Audio Output		ADC (Ch)	USB Device	SPI/ UART/ IrDA	Standard Memory Interface	LVD
									DAC	PWM					
GPL168001A/A1	2.7~3.6	51.6	1024K	8K	24	2368	4X74 8X74 16X74 32X74	•	-	16-bitX2	12-bitX5	-	•/•/•	•	•
GPL169251A(MTP)*	2.7~3.6	48	512K <small>(Flash)</small>	8K	37	2368	16X64 ~ 32X74	•	16-bitX2	-	12-bitX3	•	•/•/•	-	•
GPL169256A	2.4~5.5	48	512K	8K	37	2368	16X64 ~ 32X74	•	16-bitX2	-	12-bitX3	-	•/•/•	-	•
GPL169256UA	2.4~5.5	48	512K	8K	37	2368	16X64 ~ 32X74	•	16-bitX2	-	12-bitX3	•	•/•/•	-	•

\*Note : GPL169251A is the MTP chip for GPL169256A, GPL169256UA.

## GPL16XXX 16-bit LCD Controller (External LCD Driver Needed) 16-bit u'nSP

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Output		ADC (Ch)	H/W MIDI Channel (SPU)	TFT/ CSTN/ STN B&W/ 16 Gray	CMOS I/F	MP3	SD Card	SPI/ UART/ IrDA	USB Device/ Host	NAND/ Standard Memory Interface	SD RAM I/F
						DAC	PWM										
GPL161001A	2.4~3.6	51.6	256K	16K	44	10-bitX2	10-bitX2	-	-	-/•/•/•	-	-	-	•/•/•	-	•/•	-
GPL162002A1*	2.7~3.6	96	N/A	60K	64	16-bitX2	-	16-bitX5 12-bitX6	-	•/•/•/•	-	•	•	•/•/•	•/•	•/•	-
GPL162003A1*	2.7~3.6	96	N/A	60K	64	16-bitX2	-	16-bitX5 12-bitX6	-	-/•/•/•	-	•	•	•/•/•	•/•	•/•	-
GPL162004A*	2.7~3.6	96	N/A	56K	72	16-bitX2	-	12-bitX5	16	•/•/•/•	•	•	•	•/•/•	•/•	MLC/•	•
GPL162005A*	2.7~3.6	96	N/A	56K	72	16-bitX2	-	12-bitX5	-	•/•/•/•	-	•	•	•/•/•	•/•	MLC/•	•
GPL162006A*	2.7~3.6	96	N/A	24K	51	16-bitX2	-	-	32	•/•/•/•	•	-	•	•/•/•	•/•	MLC/•	•

\*Note : GPL162XXX series built-in u'nSP V2.0 - the 2<sup>nd</sup> generation u'nSP. It has at least three times CPU computing power than u'nSP V1.0 when same CPU clock.

## GPES2XX Easy to Use Speech

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	I/O	Advanced ADPCM @6KHz Duration Time (Sec)	Audio Output (PWM)	LVR
GPES203B	1.9~5.5	6	12K	4 I/O	3.8	•	-
GPES204B	1.9~5.5	6	16K	4 I, 8 O	5	•	•
GPES207B1	1.9~5.5	6	24K	4 I/O	7.5	•	-
GPES208B	1.9~5.5	6	28K	4 I, 8 O	8.8	•	•
GPES209B1	1.9~5.5	6	32K	4 I/O	10	•	-
GPES212B	1.9~5.5	6	40K	4 I/O	12.5	•	-
GPES213B2	1.9~5.5	6	44K	4 I, 8 O	14	•	•
GPES215B	1.9~5.5	6	48K	4 I/O	15	•	-
GPES216B2	1.9~5.5	6	52K	4 I, 8 O	16	•	•
GPES220B2	1.9~5.5	6	64K	4 I, 8 O	20	•	•
GPES230B2	1.9~5.5	6	96K	4 I, 8 O	30	•	•
GPES240B2	1.9~5.5	6	128K	4 I, 8 O	40	•	•
GPES242A(OTP)*	2.4~5.5	6	128K	4 I, 8 O	40	•	•
GPES250B2	1.9~5.5	6	160K	4 I, 8 O	50	•	•
GPES260B2	1.9~5.5	6	192K	4 I, 8 O	60	•	•
GPES270B1	1.9~5.5	6	224K	4 I, 8 O	70	•	•
GPES280B1	1.9~5.5	6	256K	4 I, 8 O	80	•	•
GPES282A(OTP)**	2.4~5.5	6	256K	4 I, 8 O	80	•	•

\*Note : GPES242A is OTP chip for GPES203B, GPES204B, GPES207B1, GPES208B, GPES209B1, GPES212B, GPES213B2, GPES215B, GPES216B2, GPES220B2, GPES230B2, GPES240B2.

\*\*Note : GPES282A is the OTP chip for GPES204B, GPES208B, GPES213B2, GPES216B2, GPES220B2, GPES230B2, GPES240B2, GPES250B2, GPES260B2, GPES270B1, GPES280B1.

## GPC1XXXX Sound Controller

8-bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	GPIO D0~D3 High Sink Current	Audio Output (Mask option)		Max S/W MIDI (Ch)	CPU CLK OSC. (ROSC)	WDT (Mask option)	IR (Tx,Rx)
							DAC	PWM				
GPC11001A*	2.4~5.5	8	-	128	24	-	•	•	5	•	•	•
GPC10024D	2.4~5.5	8	24K	64	8	•	-	•	-	• (Build in Chip)	•	•
GPC10048A	2.4~5.5	8	48K	128	8	-	•	•	5	•	•	•
GPC10064A	2.4~5.5	8	64K	128	8	-	•	•	5	•	•	•
GPC10096A	2.4~5.5	8	96K	128	8	-	•	•	5	•	•	•
GPC11024A	2.4~5.5	8	24K	128	16	-	•	•	5	•	•	•
GPC11032A	2.4~5.5	8	32K	128	16	-	•	•	5	•	•	•
GPC11033D(OTP)**	2.4~5.5	8	32K	128	16	•	•	•	5	•	•	•
GPC11048A	2.4~5.5	8	48K	128	16	-	•	•	5	•	•	•
GPC11064A	2.4~5.5	8	64K	128	16	-	•	•	5	•	•	•
GPC11080A	2.4~5.5	8	80K	128	16	-	•	•	5	•	•	•
GPC11096A	2.4~5.5	8	96K	128	16	-	•	•	5	•	•	•
GPC11112A	2.4~5.5	8	112K	128	16	-	•	•	5	•	•	•

\*Note : GPC11001A is a ROMLESS chip with address/data bus pulled out and acts as the Emulation Chip of GPC1XXXX series.

\*\*Note : GPC11033D is the OTP chip for GPC11024A, GPC11032A, GPC10024D.



Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	GPIO D0~D3 High Sink Current	Audio Output (Mask option)		Max S/W MIDI (Ch)	CPU CLK OSC. (ROSC)	WDT (Mask option)	IR (Tx,Rx)
							DAC	PWM				
GPC11128A	2.4~5.5	8	128K	128	16	-	•	•	5	•	•	•
GPC11122A(OTP)*	2.4~5.5	8	128K	128	16	-	•	•	5	•	•	•
GPC11160A	2.4~5.5	8	160K	128	16	-	•	•	5	•	•	•
GPC11160C	2.2~5.5	8	160K	128	24	•	•	•	5	•	•	•
GPC11192A	2.4~5.5	8	192K	128	16	-	•	•	5	•	•	•
GPC11192C	2.2~5.5	8	192K	128	24	•	•	•	5	•	•	•
GPC11224A	2.4~5.5	8	224K	128	16	-	•	•	5	•	•	•
GPC11224C	2.2~5.5	8	224K	128	24	•	•	•	5	•	•	•
GPC11256A	2.4~5.5	8	256K	128	16	-	•	•	5	•	•	•
GPC11256C	2.2~5.5	8	256K	128	24	•	•	•	5	•	•	•
GPC11288A	2.4~5.5	8	288K	128	16	-	•	•	5	•	•	•
GPC11288C	2.2~5.5	8	288K	128	24	•	•	•	5	•	•	•
GPC11384A	2.4~5.5	8	384K	128	16	-	•	•	5	•	•	•
GPC11384C	2.2~5.5	8	384K	128	24	•	•	•	5	•	•	•
GPC11448A	2.4~5.5	8	448K	128	16	-	•	•	5	•	•	•
GPC11448C	2.2~5.5	8	448K	128	24	•	•	•	5	•	•	•
GPC11512A	2.4~5.5	8	512K	128	16	-	•	•	5	•	•	•

\*Note : GPC11122A is the OTP chip for GPC11024A, GPC11032A, GPC11048A, GPC11064A, GPC11080A, GPC11096A, GPC11128A.

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	GPIO D0~D3 High Sink Current	Audio Output (Mask option)		Max S/W MIDI (Ch)	CPU CLK OSC. (ROSC)	WDT (Mask option)	IR (Tx,Rx)
							DAC	PWM				
GPC11512C	2.2~5.5	8	512K	128	24	•	•	•	5	•	•	•
GPC11501C(OTP)*	2.4~5.5	8	512K	128	24	•	•	•	5	•	•	•
GPC11768A1	2.4~5.5	8	768K	128	24	-	•	•	5	•	•	•
GPC11A24A1	2.4~5.5	8	1024K	128	24	-	•	•	5	•	•	•
GPC11A24B1	2.4~5.5	8	1024K	128	8	-	•	•	5	•	•	•

\*Note : GPC11501C is the OTP chip for GPC11160C, GPC11192C, GPC11224C, GPC11256C, GPC11288C, GPC11384C, GPC11448C, GPC11512C.

**GPCLXXX One Battery Sound Controller** 8-bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	GPIO D0~D3 High Sink Current	Audio Output		Max S/W MIDI (Ch)	CPU CLK OSC. (ROSC)	WDT (Mask option)	IR (Tx,Rx)
							DAC	PWM				
GPCL096A	1.0~1.8	6	288K	128	12	-	-	•	5	•	•	•
GPCL170A	1.0~1.8	6	512K	128	12	-	-	•	5	•	•	•

**GPCXXX Sound Controller** 8-bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Output (Mask option)		ADC	Volume Control	CPU CLK OSC. (Mask option)		SIO*	LVR
						DAC	PWM			ROSC	X'TAL		
GPC11A	2.4~5.5	6	12K	64	8	2	-	-	-	•	-	-	• (1.3V/2.7V)
GPC12A(OTP)**	2.4~5.5	6	12K	64	8	2	-	-	-	•	-	-	•
GPC21A2/A3	2.4~5.5	6	20K	64	10	2	-	-	-	•	-	-	•
GPC41A1/A2	2.4~5.5	6	40K	128	16	2	-	-	-	•	•	-	•
GPC41A3	1.9~5.5	6	40K	128	16	2	-	-	-	•	•	-	•
GPC41B1/B3	2.4~5.5	6	40K	64	12	2	-	-	-	•	-	-	•
GPC41C	1.9~5.5	6	40K	128	16	-	1	-	-	• (Build in Chip)	-	-	•
GPC61A	2.4~5.5	6	64K	128	20	2	1	-	•	•	•	•	•
GPC81A1	2.4~5.5	6	80K	128	20	2	1	-	•	•	•	•	•

\*Note : SIO is Generalplus Proprietary Serial Interface.  
 \*\*Note : GPC12A is the OTP chip for GPC11A

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Output (Mask option)		ADC	Volume Control	CPU CLK OSC. (Mask option)		SIO*	LVR
						DAC	PWM			ROSC	X'TAL		
GPC81B1	1.9~5.5	6	80K	128	20	2	-	-	•	•	•	-	•
GPC121A1	2.4~5.5	6	120K	128	21	2	-	-	-	•	•	-	•
GPC192A	2.4~5.5	8	192K	1K	32	-	1	•	-	•	•	-	•
GPC251A1	2.4~5.5	6	256K	128	24	2	-	-	•	•	•	-	•
GPC252A	2.4~5.5	8	256K	1K	32	-	1	•	-	•	•	-	•
GPC380A/A2	2.4~5.5	6	384K	128	23	2	1	-	•	•	•	•	•
GPC500A3/A4	2.4~5.5	6	512K	128	23	2	1	-	•	•	•	•	•
GPC501A(OTP)**	2.4~5.5	8	512K	128	28	2	1	-	•	•	•	•	•
GPC1000A1/A2	2.4~5.5	6	1024K	128	10	2	1	-	•	•	•	-	-
GPC1000B	2.4~3.6	6	1024K	128	23	2	1	-	•	•	•	•	•
GPC2000B	2.4~3.6	6	2048K	128	23	2	1	-	•	•	•	•	•

\*Note : SIO is Generalplus Proprietary Serial Interface.

\*\*Note : GPC501A is the OTP chip for GPC251A1, GPC380A/A2, GPC500A3/A4.

## GPC3XXX Sound Controller 8-bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	GPIO B0~B3 High Sink Current	Audio Output		Volume Control	CPU CLK OSC. (ROSC)	WDT (Mask option)	IR (Tx,Rx)
							DAC	PWM				
GPC3001A*	2.0~5.5	8	-	128	32	•	-	•	•	•	•	•
GPC3026A	2.0~5.5	8	80K	96	12	•	-	•	•	•	•	•
GPC3030A	2.0~5.5	8	96K	96	12	•	-	•	•	•	•	•
GPC3040A	2.0~5.5	8	128K	96	12	•	-	•	•	•	•	•
GPC3052A**	2.0~5.5	8	160K	128	16	•	-	•	•	•	•	•
GPC3063A**	2.0~5.5	8	192K	128	16	•	-	•	•	•	•	•
GPC3072A**	2.0~5.5	8	224K	128	16	•	-	•	•	•	•	•
GPC3080A**	2.0~5.5	8	256K	128	16	•	-	•	•	•	•	•
GPC3092A**	2.0~5.5	8	288K	128	16	•	-	•	•	•	•	•
GPC3106A**	2.0~5.5	8	320K	128	16	•	-	•	•	•	•	•
GPC3120A**	2.0~5.5	8	384K	128	16	•	-	•	•	•	•	•
GPC3170A**	2.0~5.5	8	512K	128	16	•	-	•	•	•	•	•
GPC3256A**	2.0~5.5	8	768K	128	24	•	-	•	•	•	•	•
GPC3340A**	2.0~5.5	8	1024K	128	24	•	-	•	•	•	•	•
GPC3540A	2.0~5.5	8	1632K	128	24	•	-	•	•	•	•	•
GPC3680A	2.0~5.5	8	2048K	128	24	•	-	•	•	•	•	•

\*Note : GPC3001A is a ROMLESS chip with address/data bus pulled out and acts as the Emulation Chip of GPC3XXX series.

\*\*Note : Under development, contact Generalplus for available date.

## GPCH8XXX 8-Channel Sound Controller

8 -bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM Type	Built-in ROM (Byte)	RAM (Byte)	I/O	Audio Output (DAC)	H/W MIDI Channel (SPU)	CPU CLK OSC.		WDT	LVR	ADC	SPI	SIO*	High Sink Current I/O
									ROSC	X'TAL						
GPCH8001A(OTP)**	2.4~5.5	7.159	ROMLESS /OTP	512K (OTP)	512	32	12-bit 2-channel	8	•	•	•	•	•	•	•	4-bit
GPCH8001B(OTP)	2.4~5.5	7.159	ROMLESS /OTP	512K (OTP)	512	32	12-bit 2-channel	8	•	•	•	•	•	•	•	4-bit
GPCH8128B	2.4~5.5	7.159	Mask	128K	512	24	12-bit 1-channel	8	•	•	•	•	-	-	-	8-bit
GPCH8256B	2.4~5.5	7.159	Mask	256K	512	24	12-bit 1-channel	8	•	•	•	•	-	-	-	8-bit
GPCH8384A	2.4~5.5	7.159	Mask	384K	512	24	12-bit 1-channel	8	•	•	•	•	-	-	-	8-bit
GPCH8512A	2.4~5.5	7.159	Mask	512K	512	24	12-bit 1-channel	8	•	•	•	•	-	-	-	8-bit
GPCH8501A(OTP)***	2.4~5.5	7.159	OTP	512K (OTP)	512	24	12-bit 1-channel	8	•	•	•	•	-	-	-	8-bit
GPCH8768A	2.4~5.5	7.159	Mask	768K	512	32	12-bit 2-channel	8	•	•	•	•	-	-	-	8-bit
GPCH8A24A	2.4~5.5	7.159	Mask	1024K	512	32	12-bit 2-channel	8	•	•	•	•	-	-	-	8-bit

\*Note : SIO is Generalplus Proprietary Serial Interface.

\*\*Note : The GPCH8001A is the emulation chip of GPCH8 series and can operate in either ROMLESS mode or OTP ROM mode by setting the pin bonding option. In ROMLESS mode, the Address/Data bus which including 22-Bits address bus and 8-Bits data bus can address maximum 4Mbytes memory space.

\*\*\*Note : GPCH8501A is the OTP chip for GPCH8128B, GPCH4256B, GPCH8256B, GPCH4512A, GPCH8512A.

**GPCH4XXX 4-Channel Sound Controller 8-bit 6502**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM Type	Built-in ROM (Byte)	RAM (Byte)	I/O	Audio Output (DAC)	H/W MIDI Channel (SPU)	CPU CLK OSC.		WDT	LVR	ADC	SPI	SIO*	High Sink Current I/O
									ROSC	X'TAL						
GPCH4256B	2.4~5.5	7.159	Mask	256K	512	24	12-bit 1-channel	4	•	•	•	•	-	-	-	8-bit
GPCH4384A	2.4~5.5	7.159	Mask	384K	512	24	12-bit 1-channel	4	•	•	•	•	-	-	-	8-bit
GPCH4512A	2.4~5.5	7.159	Mask	512K	512	24	12-bit 1-channel	4	•	•	•	•	-	-	-	8-bit
GPCH4768A	2.4~5.5	7.159	Mask	768K	512	32	12-bit 2-channel	4	•	•	•	•	-	-	-	8-bit
GPCH4A24A	2.4~5.5	7.159	Mask	1024K	512	32	12-bit 2-channel	4	•	•	•	•	-	-	-	8-bit

\*Note : SIO is Generalplus Proprietary Serial Interface.

**GPCD9XXX 9-Channel Sound Controller 8-bit 6502**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	Built-in ROM (Byte)	RAM (Byte)	I/O	Audio Output	H/W MIDI Channel (SPU)	CPU CLK OSC.		WDT	RTC Clock	LVR	ADC	SPI	PWM IO	High Sink Current I/O
								ROSC	X'TAL							
GPCD9001A*	2.4~5.5	8.0	-	512	32	14-bit Push/Pull	8	•	•	•	•	•	•	•	•	8-bit
GPCD9130A**	2.4~5.5	8.0	416K	512	24	14-bit Push/Pull	8	•	•	•	•	•	-	-	•	8-bit
GPCD9170A**	2.4~5.5	8.0	512K	512	24	14-bit Push/Pull	8	•	•	•	•	•	-	-	•	8-bit
GPCD9270A**	2.4~5.5	8.0	832K	512	32	14-bit Push/Pull	8	•	•	•	•	•	-	•	•	8-bit
GPCD9340A**	2.4~5.5	8.0	1024K	512	32	14-bit Push/Pull	8	•	•	•	•	•	-	•	•	8-bit

\*Note : GPCD9001A is a ROMLESS chip with address/data bus pulled out and acts as the Emulation Chip of GPCD3/6/9 XXX series.

\*\*Note : Under development, contact Generalplus for available date.

## GPCD6XXX 6-Channel Sound Controller 8-bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	RTC Clock	Built-in ROM (Byte)	RAM (Byte)	I/O	Audio Output	H/W MIDI Channel (SPU)	CPU CLK OSC.		WDT	LVR	ADC	SPI	PWM IO	High Sink Current I/O
									ROSC	X'TAL						
GPCD6130A*	2.4~5.5	8.0	•	416K	512	24	14-bit Push/Pull	4	•	•	•	•	-	-	•	8-bit
GPCD6170A*	2.4~5.5	8.0	•	512K	512	24	14-bit Push/Pull	4	•	•	•	•	-	-	•	8-bit
GPCD6270A*	2.4~5.5	8.0	•	832K	512	32	14-bit Push/Pull	4	•	•	•	•	-	•	•	8-bit
GPCD6340A*	2.4~5.5	8.0	•	1024K	512	32	14-bit Push/Pull	4	•	•	•	•	-	•	•	8-bit

\*Note : Under development, contact Generalplus for available date.

## GPCD3XXX 3-Channel Sound Controller 8-bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	RTC Clock	Built-in ROM (Byte)	RAM (Byte)	I/O	Audio Output	H/W MIDI Channel (SPU)	CPU CLK OSC.		WDT	LVR	ADC	SPI	PWM IO	High Sink Current I/O
									ROSC	X'TAL						
GPCD3130A*	2.4~5.5	8.0	•	416K	512	24	14-bit Push/Pull	1	•	•	•	•	-	-	•	8-bit
GPCD3170A*	2.4~5.5	8.0	•	512K	512	24	14-bit Push/Pull	1	•	•	•	•	-	-	•	8-bit
GPCD3270A*	2.4~5.5	8.0	•	832K	512	32	14-bit Push/Pull	1	•	•	•	•	-	•	•	8-bit
GPCD3340A*	2.4~5.5	8.0	•	1024K	512	32	14-bit Push/Pull	1	•	•	•	•	-	•	•	8-bit

\*Note : Under development, contact Generalplus for available date.



**GPFAXXX 8-Channel Music Synthesizer 8-bit 6502**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Build-in Push/Pull	Audio Output (DAC)	Interrupt				CPU CLK OSC. (Mask option)		WDT
								Ch0 – Ch3	T8	T11	EXT_INT	ROSC	X'TAL	
GPFA32B	2.4~5.5	7	32K	224	14 I/O 9 I 1 O	-	•	•	•	•	•	•	•	• (Mask Option)
GPFA32D	2.2~5.5	7	32K	224	4 I/O 4 I	•	-	•	•	•	•	Build-in Rosc	-	• (Mask Option)
GPFA32F	2.2~5.5	7	32K	224	8 I/O 8 I	•	-	•	•	•	•	Build-in Rosc	-	• (Mask Option)
GPFA64B	2.4~5.5	7	64K	224	14 I/O 9 I 1 O	-	•	•	•	•	•	•	•	• (Mask Option)
GPFA64C	2.4~5.5	7	64K	224	14 I/O 9 I 1 O	-	•	•	•	•	•	•	•	• (Mask Option)
GPFA64D	2.2~5.5	7	64K	224	4 I/O 4 I	•	-	•	•	•	•	Build-in Rosc	-	• (Mask Option)
GPFA64F	2.2~5.5	7	64K	224	8 I/O 8 I	•	-	•	•	•	•	Build-in Rosc	-	• (Mask Option)
GPFA96B	2.4~5.5	7	96K	288	14 I/O 10 I 8 O	-	•	•	•	•	•	•	•	• (Mask Option)
GPFA120B	2.4~5.5	7	128K	288	14 I/O 10 I 8 O	-	•	•	•	•	•	•	•	• (Mask Option)
GPFA120F	2.2~5.5	7	128K	224	8 I/O 8 I	•	-	•	•	•	•	Build-in Rosc	-	• (Mask Option)

Note : GPFA01A is a EV chip for GPFA32B, GPFA64B, GPFA96B, GPFA120B.

Note : GPFA001C is a EV chip for GFA64C.

Note : GPFA001D is a EV chip for GPFA32D, GPFA64D,GPFA32F, GPFA64F, GPFA120F.

## GPDSXXX DSP Voice Synthesizer, Playback & Recorder 8-bit 6502

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	DSP Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Output (Mask option)		Volume Control	CPU CLK OSC. (Mask option)		SIO*	LVR	Speech Type
							DAC	PWM		ROSC	X'TAL			
GPDS101A-005A**	2.4~5.5	5	20	-	128	23	2	1	•	•	•	•	•	S200,S480, S530, S720, A2400, A3200, A1600, MS01(2/4 CH)
GPDS105A1	3.0~5.5	5	20	512K	128	23	2	1	•	•	•	•	•	S480, S720, A2400,A3200, MS01(2/4 CH)
GPDS106A1	2.4~5.5	5	20	256K	128	23	-	1	-	•	•	•	•	S480, S720 A2400, A3200, MS01(2/4 CH)
GPDS107A	2.4~3.6	5	20	1024K	128	23	2	1	•	•	•	•	•	S480, S720 A2400, A3200, MS01(2/4 CH)
GPDS108A	2.4~3.6	5	20	256K	128	23	2	1	•	•	•	•	•	S200,S480, S530, S720, A2400, A3200, A1600, MS01(2/4 Ch)
GPDS109A	2.4~3.6	5	20	512K	128	23	2	1	•	•	•	•	•	S200,S480, S530, S720, A2400, A3200, A1600, MS01(2/4 Ch)
GPDS110A1	2.4~3.6	5	20	1024K	128	23	2	1	•	•	•	•	•	S200,S480, S530, S720, A2400, A3200, A1600, MS01(2/4 Ch)
GPDS111A	2.4~3.6	5	20	2048K	128	23	2	1	•	•	•	•	•	S200,S480, S530, S720, A2400, A3200, A1600, MS01(2/4 Ch)
GPDS112A	2.4~3.6	5	20	1536K	128	23	2	1	•	•	•	•	•	S200,S480, S530, S720, A2400, A3200, A1600, MS01(2/4 Ch)

\*Note : SIO is Generalplus Proprietary Serial Interface.

\*\*Note : GPDS101A-005A is a ROMLESS chip (with address/data bus available) for emulating GPDS108A, GPDS109A, GPDS110A/A1, GPDS111A, and GPDS112A thus needs to connect to External ROM.

**8-bit 6502**

**GPDS12X series – with S320 algorithm**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	DSP Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Output (Mask option)		Volume Control	CPU CLK OSC. (Mask option)		SIO*	LVR	Speech Type
							DAC	PWM		ROSC	X'TAL			
GPDS101A-002A**	2.4~3.6	5	20	-	128	23	2	1	•	•	•	•	•	***S320, S480, S720, A1600, MS01(2/4 CH)
GPDS120A1	2.4~3.6	5	20	256K	128	23	2	1	•	•	•	•	•	***S320, S480, S720, A1600, MS01(2/4 CH)
GPDS121A1	2.4~3.6	5	20	512K	128	23	2	1	•	•	•	•	•	***S320, S480, S720, A1600, MS01(2/4 CH)
GPDS122A1	2.4~3.6	5	20	1024K	128	23	2	1	•	•	•	•	•	***S320, S480, S720, A1600, MS01(2/4 CH)

\*Note : SIO is Generalplus Proprietary Serial Interface.

\*\*Note : GPDS101A-002A is a ROMLESS chip (with address/data bus available) for emulating GPDS120A1, GPDS121A1 and GPDS122A1 thus needs to connect to External ROM.

\*\*\*Note : S320 can provide voice changer function.

**16-bit u'nSP**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	CPU CLK OSC.		Audio Output		LVR	Interface with Host	Speed Control	Support Algorithms
			ROSC	X'TAL	DAC	PWM				
GPDS301A	2.4~3.6	30	•	-	-	1	•	SIO*	-	A1600, S200, S480, S720, MS01
GPDS302A	2.4~3.6	30	•	-	-	1	•	SIO*	-	A1600, S530, MS01, μTTS
GPDS311A	3.0~3.6	49	-	•	2	-	•	UART	•	S200, S480, S600, TTS600, A1600, MS01

\*Note : SIO is Generalplus Proprietary Serial Interface.

## GPCEXXX 16-bit Micro-Controller 16-bit u'nSP

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Output (DAC)	ADC (Ch)	CPU CLK (PLL) OSC		UART	SIO*	WDT Option		LVR	LVD
								ROSC	X'TAL			Bond	Mask		
GPCE061A(MTP)**	3.0~3.6	49.152	64K <small>(Flash)</small>	4K	32	10-bitX2	10-bitX8	-	•	•	•	•	-	•	•
GPCE040A/A1	2.4~3.6	49.152	48K	4K	32	10-bitX2	10-bitX8	-	•	•	•	•	-	•	•
GPCE060A/A1	2.4~3.6	49.152	64K	4K	32	10-bitX2	10-bitX8	-	•	•	•	•	-	•	•

Note : (Mask)= Mask Option

\*Note : SIO is Generalplus Proprietary Serial Interface.

\*\*Note : GPCE061A is the MTP chip for GPCE040A/A1, GPCE060A/A1.

## NEW GPCEXXX 16-bit Micro-Controller 16-bit u'nSP

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Output (DAC)	ADC (Ch)	CPU CLK (PLL) OSC		UART	SPI	WDT Option		LVR	LVD
								ROSC	X'TAL			S/W*	Mask		
GPCE063A(MTP)**	2.7~3.6	49.152	64K <small>(Flash)</small>	4K	32	14-bitX1	12-bitX8	-	•	-	•	•	-	•	•
GPCE048A	2.4~5.5	49.152	48K	4K	32	14-bitX1	12-bitX8	-	•	-	•	-	•	•	•
GPCE064A	2.4~5.5	49.152	64K	4K	32	14-bitX1	12-bitX8	-	•	-	•	-	•	•	•

\*Note : S/W Option by IDE tool.

\*\*Note : GPCE063A is the MTP chip for GPCE048A and GPCE064A.

**NEW GPCEXXX 16-bit Micro-Controller** **16-bit u'nSP**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Output (DAC)	ADC (Ch)	CPU CLK (PLL) OSC Option *(Bonding)		WDT Option		SIO***	SPI	LVR	LVD
								X'TAL	ROSC	S/W**	Mask				
GPCE001A (MTP)****	2.7~3.6	48	512K (Flash)	4K	32	16-bitX1	12-bitX8	•	•	•	-	•	•	•	•
GPCE128A	2.7~3.6	48	128K	4K	32	16-bitX1	12-bitX8	•	•	-	•	•	•	•	•
GPCE256A	2.7~3.6	48	256K	4K	32	16-bitX1	12-bitX8	•	•	-	•	•	•	•	•
GPCE384A	2.7~3.6	48	384K	4K	32	16-bitX1	12-bitX8	•	•	-	•	•	•	•	•
GPCE512A	2.7~3.6	48	512K	4K	32	16-bitX1	12-bitX8	•	•	-	•	•	•	•	•

\*Note : Bonding = Pin Bonding Option.

\*\*Note : S/W Option by IDE tool.

\*\*\*Note : SIO is Generalplus Proprietary Serial Interface.

\*\*\*\*Note : GPCE001A is the MTP chip for GPCE128A, GPCE256A, GPCE384A, GPCE512A.

**GPF8XXX 8 Channel Speech Synthesizer** **16-bit u'nSP**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Output *(Bonding)		ADC (Ch)	H/W MIDI Channel (SPU)	CPU CLK (PLL) OSC Option *(Bonding)		WDT Option		SIO***	UART /SPI	LVD /LVR
						DAC	PWM			ROSC	X'TAL	S/W**	Mask			
GPF8001A (MTP)****	3.0~3.6	48	512K (Flash)	4K	85	16-bitX2	12-bitX1	12-bitX8	8	•	•	•	-	•	•/•	•/•
GPF8256A	3.0~3.6	48	256K	4K	43	16-bitX2	12-bitX1	12-bitX8	8	•	•	-	•	•	•/•	•/•
GPF8512A	3.0~3.6	48	512K	4K	43	16-bitX2	12-bitX1	12-bitX8	8	•	•	-	•	•	•/•	•/•

\*Note : Bonding = Pin Bonding Option.

\*\*Note : S/W Option by IDE tool.

\*\*\*Note : SIO is Generalplus Proprietary Serial Interface.

\*\*\*\*Note : GPF8001A is the MTP chip for GPF8256A, GPF8512A.

## GPF16/32XXX 16/32-Channel Speech Synthesizer

16-bit u'nSP

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Output (DAC)	ADC (Ch)	H/W MIDI Channel (SPU)	USB /SPI /UART	TFT/ STN/ 16Gray	SDRAM/ NAND Flash	SD Card	MP3	WDT *(S/W option)	LVR
GPF16064C	2.4~3.6	27	128K	4K	32	16-bitX2	-	16	-/●/-	-	-	-	-	●	●
GPF16064B	2.4~3.6	27	128K	4K	43	16-bitX2	10-bitX8	16	-/●/●	-	-	-	-	●	●
GPF16128B	2.4~3.6	27	256K	4K	43	16-bitX2	10-bitX8	16	-/●/●	-	-	-	-	●	●
GPF16256B	2.4~3.6	27	512K	4K	43	16-bitX2	10-bitX8	16	-/●/●	-	-	-	-	●	●
GPF16512A	3.0~3.6	27	1024K	4K	48	16-bitX2	10-bitX8	16	-/●/●	-	-	-	-	●	-
GPF32512A	3.0~3.6	54	1024K	4K	48	16-bitX2	10-bitX8	32	-/●/●	-	-	-	-	●	-
GPF32001A**	2.7~3.6	96	***	56K	72	16-bitX2	12-bitX5	32	●/●/●	●/●/●	●	●	●	●	●

\*Note : (S/W option)= Software Option

\*\*Note : GPF32001A series built-in u'nSP V2.0 – the 2<sup>nd</sup> generation u'nSP. It has at least three times CPU computing power than u'nSP V1.0 when same CPU clock.

\*\*\*Note : It is a ROMLESS chip with address/data bus pulled out.

**TV Game/Handheld Game/LCD Controller**

**GPL162XX 16-bit TV Game/Handheld Game Controller** **16-bit u'nSP**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	RAM (Byte)	TV Out	PPU	I/O	Audio Output (DAC)	ADC (Ch)	H/W MIDI Channel (SPU)	TFT/ CSTN/ STN B&W/ 16 Gray	CMOS I/F	MP3	SD Card	SPI/ UART/ IrDA	USB1.1 Device/ Host	NAND/ SDRAM/ Standard Memory Interface
GPL16258VB	2.7~3.6	96	24K	VGA	2.5D	51	16-bitX2	-	32	●/-/●/●	●	-	●	●/-/-	●/-	MLC/●/●
GPL16248VB	2.7~3.6	96	24K	VGA	2D	51	16-bitX2	-	32	●/-/●/●	●	-	●	●/-/-	●/-	MLC/●/●
GPL16238B	2.7~3.6	96	24K	QVGA	2D	51	16-bitX2	-	16	●/-/●/●	●	-	●	●/-/-	●/-	MLC/●/●
GPL16218B	2.7~3.6	96	24K	QVGA	2D	51	16-bitX2	-	16	●/-/●/●	-	-	-	●/-/-	●/-	-/-/●
GPL16250VA	2.7~3.6	96	56K	VGA	2.5D	72	16-bitX2	12-bitX5	32	●/-/●/●	●	●	●	●/●/●	●/●	MLC/●/●
GPL16240VA	2.7~3.6	96	56K	VGA	2D	72	16-bitX2	12-bitX5	32	●/-/●/●	●	●	●	●/●/●	●/●	MLC/●/●
GPL16230A	2.7~3.6	96	56K	QVGA	2D	72	16-bitX2	12-bitX5	32	●/-/●/●	●	●	●	●/●/●	●/●	MLC/●/●
GPL16220A	2.7~3.6	96	32K	QVGA	2D	72	16-bitX2	12-bitX5	32	●/-/●/●	●	-	●	●/●/●	●/●	-/-/●

Note:GPL162XX series built-in u'nSP 2.0 CPU core with 4K Bytes I-Cache.

**GPL32XXX 32-bit ARM7 TV Game/Handheld Game/ELA LCD Controller** **32-bit ARM7**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	RAM (Byte)	TV Out	PPU	I/O	Audio Output (DAC)	ADC (Ch)	H/W MIDI Channel (SPU)	TFT/ CMOS Interface	H/W MJPEG Codec (VGA)	SD/ SDHC/ MS/ CF Card	SPI/ UART/ IrDA	USB1.1 Device/ Host	NAND/ SDRAM/ Standard Memory Interface	Package Type (LQFP)
GPL32500A	2.7~3.6	96	16K	D1/VGA	2.5D	118	16-bitX2	10-bitX4	32	●/●	●	●/●/●/●	●/●/●	●/●	MLC/●/●	216
GPL32300A	2.7~3.6	96	16K	D1/VGA	2.5D	62	16-bitX2	10-bitX4	32	●/●	●	●/●/-/-	●/●/●	●/●	MLC/●/●	128
GPL32100A	2.7~3.6	96	16K	D1/VGA	-	62	16-bitX2	10-bitX4	32	●/●	●	●/●/●/-	●/●/●	●/●	MLC/●/●	128

Note:GPL32XXX series built-in ARM7TDMI CPU core with 16K Bytes I-Cache/D-Cache.

## MCU Product Line

### GPM60 Family

Part NO.	ROM Type	Working Voltage (V)	Speed (Hz)	ROM (Byte)	RAM (Byte)	ADC	IO	TMR/CNT	Time base	Int CLK	WDT	LVR	OP Temp	Package
GPM60001A	MTP	3.0 ~ 5.5	32768	3	-	-	6	1	•	•	-	•	-20~85	SSOP8

### GPM61 Family IO Type MCU

Part NO.	ROM Type	Working Voltage (V)	Speed (MHz)	ROM (Byte)	RAM (Byte)	IR Tx/Rx	PWR diode	CCP			TMR/CNT	Time base	CPU OSC.		WDT	LVR	IO No.	PKG
								CAP	CMP	PWM			Int	X'TAL				
GPM6P1129A	OTP	2.4~3.6	8/4	128K	256	Tx/Rx	•	1	1	1	1	•	•	•	•	•	26	LQFP44
GPM6P1065A	OTP	2.4~3.6	8/4	64K	192	Tx/Rx	•	1	1	1	1	•	•	•	•	•	20	SOP28
GPM6C1064A	Mask	2.0~3.6	8/4	64K	128	Tx	•	-	1	1	1	•	•	•	•	•	20	DICE27
GPM6P1033A	OTP	2.4~3.6	8/4	32K	192	Tx/Rx	•	1	1	1	1	•	•	•	•	•	18	SOP24
GPM6P1004A	OTP	2.0~3.6	4	4K	64	Tx	-	-	1	1	1	•	•	•	•	•	12	SOP16
GPM6P1001A	MTP*	2.0~3.6	4	1K	64	Tx	-	-	1	1	1	•	•	•	•	•	12	SOP16

\*Note : ROM can be written above twice or three times.



## Memory GPR Series

GPR-Series includes Serial SRAM/ROM, SPI Flash/ROM and Mask ROM. Main applications are voice recorder, game cartridge and data storage...etc.

### GPRS Serial SRAM

Part NO.	Density (Bit)	Working Voltage (V)	Access Time
GPRS256B	256K	2.4~3.6	250ns@3.0V
GPRS512C	512K	2.4~3.6	250ns@3.0V

Note : Use Generalplus Serial Interface

### GPR Serial Flash

Part NO.	Density (Bit)	Working Voltage (V)	Operating Frequency (MHz)
GPR1024A	1M	2.7~3.6	5.0

### GPR Serial ROM

Part NO.	Density (Bit)	Working Voltage (V)	Access Time
GPR23L822A	8M	2.4~3.6	166ns@2.4V~3.6V
GPR23L1622A	16M	2.4~3.6	166ns@2.4V~3.6V

## GPR23LXXX 3/3.3V Standard ROM

Part NO.	Density (Bit)	Working Voltage (V)	Access Time
GPR23L402A	4M	2.7~3.6	100ns@2.7V~3.6V
GPR23L800D	8M	2.7~3.6	70ns@2.7V~3.6V
GPR23L1600D	16M	2.7~3.6	70ns@2.7V~3.6V
GPR23L3200E	32M	2.7~3.6	70ns@2.7V~3.6V
GPR23L6400E	64M	2.7~3.6	70ns@2.7V~3.6V
GPR23L12800B	128M	2.7~3.6	90ns@2.7V~3.6V

## GPR23LXX11X 3/3.3V Page ROM

Part NO.	Density (Bit)	Working Voltage (V)	Random Access Time (ns)	Page Access Time (ns)
GPR23L1611D	16M	3.0~3.6	100	30
GPR23L3211E	32M	3.0~3.6	90	30
GPR23L6411E	64M	2.7~3.6	70	25
GPR23L12811B	128M	3.0~3.6	90	25

**GPR25LXXX Low Voltage SPI Flash**

Part NO.	Flash Memory Density (Bit)	Working Voltage (V)	Operating Frequency (MHz)
GPR25L005B	512K	2.7~3.6	66
GPR25L010B	1M	2.7~3.6	66
GPR25L020B	2M	2.7~3.6	66
GPR25L040B	4M	2.7~3.6	66
GPR25L080B	8M	2.7~3.6	66
GPR25L161B	16M	2.7~3.6	66
GPR25L321B	32M	2.7~3.6	66

**GPR25LXXX Low Voltage SPI Flash (Multi I/O)**

Part NO.	ROM Density (Bit)	Working Voltage (V)	Operating Frequency (MHz)
GPR25L6404E	64M	2.7~3.6	104
GPR25L1284E	128M	2.7~3.6	104

## GPR26LXXX Low Voltage SPI ROM

Part NO.	SPI ROM Density (Bit)	Working Voltage (V)	Operating Frequency (MHz)
GPR26L080A	8M	2.7~3.6	50
GPR26L160A	16M	2.7~3.6	50
GPR26L320A	32M	2.7~3.6	50
GPR26L640A	64M	2.7~3.6	50
GPR26L128A	128M	3.0~3.6	50

## GPR27LXXX NAND INTERFACE MASK ROM

Part NO.	ROM Density (Bit)	Working Voltage (V)	Read Speed (ns)
GPR27L256A	256M	3.0 ~ 3.6	50

## GPR27PXXX NAND INTERFACE OTP ROM

Part NO.	ROM Density (Bit)	Working Voltage (V)	Read Speed (ns)
GPR27P512A	512M	2.7~3.6	25
GPR27P01GA	1G	2.7~3.6	25

## GPR32XXX SDRAM

Part NO.	ROM Density (Bit)	Organization	Working Voltage (V)	Clock Rate (Hz)
GPR323616A	16M	1Mx16	3.3	166M
GPR323816A	64M	4Mx16	3.3	166M
GPR323916A	128M	8Mx16	3.3	166M
GPR323A16A	256M	16Mx16	3.3	166M

## Recorder Series

Recorder Ics are used in recording toys/gifts, digital voice recorder, language learning repeater...etc.

### CPU based

Part NO.	ROM (Byte)	RAM (Byte)	I/O	Audio Output (Ch)	Timer /Counter	Serial SRAM Interface	Sampling Rate (Hz)	Note
GPCR01A	40K	128	12	DACX2	2	-	-	
GPCR02A	40K	128	20	DACX2	2	•	-	External SRAM memory available

### Non-CPU based (No host required).

Part NO.	Recording Time(Sec@6KHz)	Sampling Rate (Hz)	Working Voltage (V)	Audio Output	AGC
GPCR03B	10	4K ~ 12K	2.4 ~ 5.5	PWM	•
GPCR06B	6	4.3K or 6K	2.4 ~ 5.5	DAC	-
GPCR06C	6	4K ~ 8K	2.4 ~ 5.5	PWM	-
GPCR20A	20	4K ~ 10K	2.4 ~ 5.5	PWM	•

**Non-CPU based (Host required).**

Part NO. (Non-CPU)	Working Voltage (V)	Max. CPU Speed (MHz)	CPU CLK OSC. (X'TAL)	MP3 Decoder	UART	Audio Output (DAC)	ADC (Ch)	Flash Control Interface	Interface with Host	Sound Recording & Playback (Kbps)
GPDS202A -005A	2.8~3.6	44	•	-	•	10-bitX1	10-bitX1	•	Parallel Interface	4.8/6.4/16/24

**8-bit 6502**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Timer	Built-in DC-DC	DRAM Interface	SDRAM Interface	ADC	DAC
GPRT5507A/A1	4.5~5.5	6	39.75K	128	12	2	-	•	-	-	-

**16-bit u'nSP**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Timer	Built-in DC-DC	DRAM Interface	SDRAM Interface	ADC	DAC
GPRT5508A	2.4~3.6	43	40K	3.5K	40	2	•	-	•	•	•
GPRT5509A	2.4~3.6	43	40K	3.5K	40	2	•	-	•	•	•

**White Light LED Driver**

High efficiency solarcell-based DC/DC converters and white light LED drivers.

Part NO.	Input Voltage Range (V)	Output Voltage Range (V)	Power Switch	Efficiency (Max. %)	Solar Cell Charger
GPWL8937A	1.1~1.7	Vout(LED)*	Internal	85	•
GPWL8938A	1.1~1.7	V <sub>F</sub> (LED)**	Internal	85	•
GPWL8939B	0.7~1.7	V <sub>F</sub> (LED)***	Internal	85	•
GPWL8939_2A	1.8~3.0	V <sub>F</sub> (LED)**	Internal	85	•

\*Note : Vout(LED) can adjust by external resistor.

\*\*Note : Depend on LED forward diode voltage.(By constant current controlled)

\*\*\*Note : The LED's current can adjust by external inductor.

**Tel-Communication GPTCXXX Series 16-bit u'nSP**

Tel-Communication Ics are used in pager, digital answering machine, Caller ID, SMS phone.

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COM × SEG Option	UART / IrDA	Timer	ADC	DAC	Tone Output	Battery Detect	FSK Decoder	DTMF Transceiver	Built-in DC-DC	SDRAM Interface
GPTC5520A	2.4~3.6	32	80K	4K	22	-	-	-	1	•	•	-	-	•	*	•	•
GPTC6602B	2.0~3.6	15	32K	2K	29	224	8X28	-	2	•	•	•	•	•	•	-	-
GPTC6603A1	2.0~3.6	15	24K	1K	21	192	8X24	-	2	•	•	•	-	•	•	-	-
GPTC6604A	2.2~3.6	28	72K	2K	22	224	8X28	-	2	•	•	•	-	•	•	-	-
GPTC6604A1	2.2~3.6	25	72K	2K	22	224	5X31 6X30 8X28	-	2	•	•	•	-	•	•	-	-
GPTC6604B	2.2~3.6	25	72K	2K	22	224	5X31 6X30 8X28	-	2	•	•	•	-	•	•	-	-

\*Note : Only S/W DTMF decoder is supported.

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Max. LCD Dots	COM × SEG Option	UART / IrDA	Timer	ADC	DAC	Tone Output	Battery Detect	FSK Decoder	DTMF Transceiver	Built-in DC-DC	SDRAM Interface
GPTC6605A	2.5~5.5	28	72K	3K	32	896	8X56 16X56	●/●	2	●	●	●	●	●	*	-	-
GPTC6606A	2.5~5.5	28	72K	3K	32	896	8X56 16X56	●/●	2	●	●	●	●	●	●	-	-
GPTC6607A	2.2~3.6	28	128K	2K	32	224	5X31 6X30 8X28	●/●	2	●	●	●	●	●	●	-	-
GPTC6608A	2.2~3.6	28	764K	8K	40	SPLC501 I/F		●/●	2	●	●	●	●	●	*	-	-
GPTC6609A	2.4~5.5	28	96K	3K	22	640	8X40 16X40	●/●	2	●	●	●	●	●	*	-	-
GPTC6610A	2.1~3.6	28	128K	4K	23	1080	8X60 16X60 18X60	●/-	2	●	●	●	-	●	●	-	-
GPTC6611A**	2.2~3.6	40	-	12K	40	SPLC501 I/F		●/-	2	●	●	●	●	●	*	-	-
GPTC7609A(OTP) ***	2.4~5.5	28	128K	3K	22	640	8X40 16X40	●/●	2	●	●	●	●	●	*	-	-
GPTC7610A(OTP)	2.3~3.6	28	128K	4K	23	1080 ****	8X60 16X60 18X60	●/-	2	●	●	●	-	●	●	-	-

\*Note : Type II CAS decoder is supported.

\*\*Note : GPTC6611A is a ROMLESS chip with address/data bus.

\*\*\*Note : GPTC7609A is the OTP chip for GPTC6609A.

\*\*\*\*Note : SPLC501 I/F is supported.



## Remote Application-Micro-Controller

Wireless (RC series) ICs are used for Radio Controlled cars and RF toys.

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	ROM (Byte)	RAM (Byte)	I/O	Audio Output (DAC)	CPU CLK OSC. (ROSC)	Data in Amplifier	SIO*	LVR
GPRC11A	2.4~5.5	6	12K	64	8	1	•	2	•	•
GPRC12A(OTP)**	2.4~5.5	6	12K	64	8	1	•	2	•	• (1.3V/2.7V)

\*Note : SIO is Generalplus Proprietary Serial Interface.

\*\*Note : GPRC12A is the OTP chip for GPRC11A.

## Remote Application- Encoder/Decoder

Wireless (RC series) ICs are used for Radio Controlled cars and RF toys.

Part NO.	Encode/Decode Function	Functions	R-OSC	RF-OSC	RF Power Amplifier	Data in Amplifier	DC-DC (V)
GPRC201A	Encode	10	•	-	-	-	-
GPRC202A	Decode	10	•	-	-	X2	-
GPRC205A	Encode	5	•	•	•	-	-
GPRC206A	Decode	5	•	-	-	X2	-
GPRC2062A	Decode	5	•	-	-	X2	1.0V ~ 3.0V

## Others

Other ICs are used in Audio driver, Regulator, DC-DC converter, Echo Effect Generator, I/O Bus Extender

### Audio Driver

Part NO.	Working Voltage (V)	Gain	Output Power (THD+N=1%) (mW) (RL=8Ω)	Output Power (THD+N=10%) (mW) (RL=8Ω)	Depop Sound CKT	Current Limitation Protection	Over Temperature Protection	Out put Type	Package Type	
									Chip	Package
GPY0030B	2.4~6.8	20 (Max)	825	1000	•	•	-	BTL	•	DIP8, SOP8
GPY0031A	2.25~6.8	-	1150	1400	•	•	•	BTL	-	MSOP8, SOP8
GPY0032A	2.25~6.8	-	1150	1400	•	•	•	SE/BTL	-	MSOP8, SOP8

### Step-up DC-DC Converter

Part NO.	Input Voltage (V)	Output Voltage (V)	Efficiency	Output Driving	Vstart-up (V)	V-Hold (V)	Package Type	
							Chip	Package
GPY0016C	1.2~3.4	3.2	80%	60mA@Vin = 1.5V	1.1	0.5	•	SOP8

### Linear Regulator

Part NO.	Input Voltage (V)	Output Voltage (V)	Quiescent Current	Output Driving Current	Current Limiter	Low Voltage Detect	Package Type	
							Chip	Package
GPY0029B	(Vout + 0.1)V~7V	3.3V±3%	3μA	150mA	•	•	•	SOT89
GPY0029B-30	(Vout + 0.1)V~7V	3.0V±3%	3μA	150mA	•	•	•	SOT89

**ECHO IC:** Include ADC, DAC and digital processing audio signal for time delay. Application: KARAOKE, TV, Video Disc Player...

Part NO.	Working Voltage (V)	Memory (Bit)	Gain	THD+N	SNR	Package Type	
						Chip	Package
GPY0014B	4.5~5.5	32K	0dB	2.6%	73dB	•	PDI16, SOP16

**Integrated Power management SOC: Included boost DC-DC, LDO, Super Reset, RTC, Li-Battery Charger, Video DAC for analog TFT panel, 2 channel audio amplifier**

Part NO.	Working Voltage (V)	Boost DCDC	LDO	Super Reset	RTC	Li-Battery Charger	Video DAC (7 bit RGB)	2 Ch Audio Amplifier (0.5W)	Internal SRAM	Over Temperature Protection	Communication Interface	IRQ Event	Sleep mode current	System Hard boost	Package
GPY0200A	2.5~5.5	X1	X4	•	•	•	•	•	128 bytes	•	SPI	8	15µA*	•**	64pin QFN
GPY0201A	2.5~5.5	X1	X4	•	•	•	-	•	128 bytes	•	SPI	8	15µA*	•**	48pin QFN
GPY0202A	2.5~5.5	X1	X4	•	•	-	•	-	128 bytes	•	SPI	8	15µA*	•**	48pin QFN

\*Note : 15µA @ 4.2V, RTC, LDO33C, adapter detector on work.

\*\*Note : Force to re-boot the whole system while keeping 4 sec ON\_Key1 pin at high level state when the system is in dead locked state.

**ADC and Microphone Pre-Amplifier**

Part NO.	Working Voltage (V)	Control Interface	ADC		Microphone Pre-Amp	
			ADC(CH)	Max. ADC Sampling Rate	AGC Control	Second Stage.OPA Gain (Max.)
GPY0050A	2.2~5.5	SPI	10-bitX8	128K	•	40

**I/O Bus Extender**

Part NO.	Working Voltage (V)	Max. Total Memory Extension (Byte)	Max. Controllable Memory Number	Input I/O Number	Max. Extensible I/O Number	Operating Frequency
GPBA01B	2.4~5.5	4M	3	10	24 I/O+1 O	4MHz@2.4V 6MHz@3.6V
GPBA02A	2.2~5.5	-	0	4(SPI)	24 I/O	6MHz@2.2V

**GPUSB (USB To SPI/UART Bridge)**

Part NO.	Working Voltage (V)	Max. CPU Speed (MHz)	I/O	Master SPI	Slave SPI	Bridge Modes
GPUSB101A	3.0~3.6	12	20	•	•	SPI, UART 4I/O, 8I/O