

| No. | 品名 Part Name | 位数 No. of Digits | 显示内容 Pattern | 颜色 Color | 外形尺寸 Package Size (mm) | 显示区域 Viewing Area (mm) | 灯丝电压 Filament Voltage (V) | 阳极, 栅极电压 ebb,ecc or VH Typ (V) | 截止偏压 Cut Off Voltage Min (V) | 亮度 Luminance Typ (cd/m2) | 驱动芯片功能 Driver Function | 字库 Font ROM | 其他功能 Other Functions |
|-----|-------------------------|---------------------|-----------------|-------------|------------------------------|------------------------------|------------------------------------|--|---------------------------------------|--------------------------------|------------------------------|-------------------|--|
| 1 | 2MT237INK | 6 | | Green/Red | 18.5 * 85.8 | 9.80 * 53.80 | 2.45 dc | 12 | 0.0 | Green 1,000 Red 100 | Controller | - | Key scan, General port |
| 2 | 3MT138INK | 9 | | Green | 20.5 * 92.2 | 11.80 * 60.20 | 2.4 dc | 12 | 0.0 | 700 | Controller | - | Key scan, General port |
| 3 | 11MT141INK | 9 | | Green/Red | 16.2 * 110.2 | 8.00 * 84.20 | 4.0 ac | 23.8 | 4.8 | Green 700 Red 140 | - | - | - |
| 4 | 11BT234NK | 10 | | Green | 18.5 * 100.0 | 9.70 * 74.00 | 3.6 ac | 30.5 | 4.5 | 700 | - | - | - |
| 5 | 12BY03INK | 12 | | Green | 16.2 * 100.0 | 7.00 * 70.70 | 3.5 dc | 12 (VH 30) | 1.5 | 1300 | Controller | - | Charge pump/Key scan General port |
| 6 | 8MD06INKM | 8 | | Green | 16.2 * 81.2 | 8.00 * 51.70 | 2.7 dc | 25 | 2.0 | 1,000 | Controller | 02 | Universal Drive |
| 7 | 12BD03INK | 12 | | Green | 16.2 * 90.0 | 6.30 * 61.47 | 3.0 dc | 29 | 2.0 | 1,000 | Controller | 02 | Universal Drive |
| 8 | 12BD02INK | 12 | | Green | 18.5 * 118.2 | 6.66 * 80.01 | 3.3 ac | 30 | 4.3 | 700 | Controller | 03 | Universal Drive |
| 9 | 12BT229INK | 12 | | Green/Red | 20.5 * 95.0 | 12.00 * 64.60 | 3.3 dc | 12 (VH 29) | 2.0 | Green 800 Red 110 | Controller | - | Charge pump/Universal/ Grid Skip/24RAM/No ROM |
| 10 | 13ST84GINK | 12 | | Green/Red | 20.5 * 110.2 | 9.00 * 84.20 | 3.9 dc | 32 | 2.0 | Green 1,000 Red 140 | Controller | Euro D03 | Universal Drive |
| 11 | 16SD13GINK | 16 | | Green | 16.2 * 100.0 | 5.80 * 73.80 | 4.2 ac | 36 | 5.0 | 880 | Controller | 07 | Universal Drive |
| 12 | 16BD11INK | 16 | | Green | 16.2 * 118.2 | 7.40 * 86.75 | 4.2 dc | 12 (VH 30) | 2.0 | 700 | Controller | - | Charge pump/Universal/ Grid Skip/24RAM/No ROM |
| 13 | 16BT160INAK | 16 | | Green/Red | 20.5 * 118.2 | 12.00 * 86.70 | 4.0 dc | 31 | 2.0 | Green 700 Red 100 | Controller | 02 | Universal Drive |
| 14 | 16BT169INK | 16 | | Green/Red | 20.5 * 118.2 | 12.00 * 86.70 | 4.6 dc | 12 (VH 30) | 2.0 | Green 700 Red 100 | Controller | - | Charge pump/Universal/ Grid Skip/24RAM/No ROM |
| 15 | GP1183AI (112*16dot) | | | Green | 22.0 * 80.0 | 11.45 * 52.50 | 2.75 ac | 38 | 4.0 | 700 | SPI | - | - |
| 16 | GP1229AI (128*32dot) | | | Green | 27.0 * 84.0 | 14.30 * 57.50 | 2.8 ac | VHA 63 VHG 46 | 5.0 | 1,200 | Controller | - | - |
| 17 | GP1212AI (256*64dot) | | | Green | 44.0 * 145.0 | 28.70 * 115.10 | 5.2 ac | VHA 96 VHG 56 | 10.0 | 1,000 | Controller | - | - |

FUTABA VFD Standard Part List for STB / FUTABA机顶盒用途 荧光显示屏标准品 一览表

Appendix A) Font Table / フォントテーブル

<02>
8MD06INKM, 12BD03INK, 16BT160INAK

Table 1_CGRAM Codes (General-purpose code: 02)

| MSB LSB | 0000 | 0001 | 0010 | 0011 | 0100 | 0101 | 0110 | 0111 | 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111 |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0000 | RAM0 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E |
| 0001 | RAM1 | ! | " | # | \$ | % | & | ' | (|) | * | + | , | . | / | : |
| 0010 | RAM2 | " | # | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; |
| 0011 | RAM3 | # | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; | < |
| 0100 | RAM4 | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; | < | = |
| 0101 | RAM5 | % | & | ' | (|) | * | + | , | . | / | : | ; | < | = | > |
| 0110 | RAM6 | & | ' | (|) | * | + | , | . | / | : | ; | < | = | > | ? |
| 0111 | RAM7 | ' | (|) | * | + | , | . | / | : | ; | < | = | > | ? | @ |
| 1000 | | (|) | * | + | , | . | / | : | ; | < | = | > | ? | @ | A |
| 1001 | |) | * | + | , | . | / | : | ; | < | = | > | ? | @ | A | B |
| 1010 | | * | + | , | . | / | : | ; | < | = | > | ? | @ | A | B | C |
| 1011 | | + | , | . | / | : | ; | < | = | > | ? | @ | A | B | C | D |
| 1100 | | , | . | / | : | ; | < | = | > | ? | @ | A | B | C | D | E |
| 1101 | | . | / | : | ; | < | = | > | ? | @ | A | B | C | D | E | F |
| 1110 | | / | : | ; | < | = | > | ? | @ | A | B | C | D | E | F | G |
| 1111 | | : | ; | < | = | > | ? | @ | A | B | C | D | E | F | G | H |

* The addresses 00H to 07H are for the CGRAM address

<03>
12BD02INK

Table 2_CGRAM Codes (General-purpose code: 03)

| MSB LSB | 0000 | 0001 | 0010 | 0011 | 0100 | 0101 | 0110 | 0111 | 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111 |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0000 | RAM0 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E |
| 0001 | RAM1 | ! | " | # | \$ | % | & | ' | (|) | * | + | , | . | / | : |
| 0010 | RAM2 | " | # | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; |
| 0011 | RAM3 | # | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; | < |
| 0100 | RAM4 | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; | < | = |
| 0101 | RAM5 | % | & | ' | (|) | * | + | , | . | / | : | ; | < | = | > |
| 0110 | RAM6 | & | ' | (|) | * | + | , | . | / | : | ; | < | = | > | ? |
| 0111 | RAM7 | ' | (|) | * | + | , | . | / | : | ; | < | = | > | ? | @ |
| 1000 | | (|) | * | + | , | . | / | : | ; | < | = | > | ? | @ | A |
| 1001 | |) | * | + | , | . | / | : | ; | < | = | > | ? | @ | A | B |
| 1010 | | * | + | , | . | / | : | ; | < | = | > | ? | @ | A | B | C |
| 1011 | | + | , | . | / | : | ; | < | = | > | ? | @ | A | B | C | D |
| 1100 | | , | . | / | : | ; | < | = | > | ? | @ | A | B | C | D | E |
| 1101 | | . | / | : | ; | < | = | > | ? | @ | A | B | C | D | E | F |
| 1110 | | / | : | ; | < | = | > | ? | @ | A | B | C | D | E | F | G |
| 1111 | | : | ; | < | = | > | ? | @ | A | B | C | D | E | F | G | H |

* The addresses 00H to 07H are for the CGRAM address

<07>
16SD13GINK

Table 2_CGRAM Codes (General-purpose code: 07)

| MSB LSB | 0000 | 0001 | 0010 | 0011 | 0100 | 0101 | 0110 | 0111 | 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111 |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0000 | RAM0 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E |
| 0001 | RAM1 | ! | " | # | \$ | % | & | ' | (|) | * | + | , | . | / | : |
| 0010 | RAM2 | " | # | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; |
| 0011 | RAM3 | # | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; | < |
| 0100 | RAM4 | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; | < | = |
| 0101 | RAM5 | % | & | ' | (|) | * | + | , | . | / | : | ; | < | = | > |
| 0110 | RAM6 | & | ' | (|) | * | + | , | . | / | : | ; | < | = | > | ? |
| 0111 | RAM7 | ' | (|) | * | + | , | . | / | : | ; | < | = | > | ? | @ |
| 1000 | | (|) | * | + | , | . | / | : | ; | < | = | > | ? | @ | A |
| 1001 | |) | * | + | , | . | / | : | ; | < | = | > | ? | @ | A | B |
| 1010 | | * | + | , | . | / | : | ; | < | = | > | ? | @ | A | B | C |
| 1011 | | + | , | . | / | : | ; | < | = | > | ? | @ | A | B | C | D |
| 1100 | | , | . | / | : | ; | < | = | > | ? | @ | A | B | C | D | E |
| 1101 | | . | / | : | ; | < | = | > | ? | @ | A | B | C | D | E | F |
| 1110 | | / | : | ; | < | = | > | ? | @ | A | B | C | D | E | F | G |
| 1111 | | : | ; | < | = | > | ? | @ | A | B | C | D | E | F | G | H |

* The addresses 00H to 07H are for the CGRAM address.

<Euro D03>
13ST84GINK

Table 2_CGRAM Codes (Euro D code: 03)

| MSB LSB | 0000 | 0001 | 0010 | 0011 | 0100 | 0101 | 0110 | 0111 | 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111 |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0000 | RAM0 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E |
| 0001 | RAM1 | ! | " | # | \$ | % | & | ' | (|) | * | + | , | . | / | : |
| 0010 | RAM2 | " | # | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; |
| 0011 | RAM3 | # | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; | < |
| 0100 | RAM4 | \$ | % | & | ' | (|) | * | + | , | . | / | : | ; | < | = |
| 0101 | RAM5 | % | & | ' | (|) | * | + | , | . | / | : | ; | < | = | > |
| 0110 | RAM6 | & | ' | (|) | * | + | , | . | / | : | ; | < | = | > | ? |
| 0111 | RAM7 | ' | (|) | * | + | , | . | / | : | ; | < | = | > | ? | @ |
| 1000 | | (|) | * | + | , | . | / | : | ; | < | = | > | ? | @ | A |
| 1001 | |) | * | + | , | . | / | : | ; | < | = | > | ? | @ | A | B |
| 1010 | | * | + | , | . | / | : | ; | < | = | > | ? | @ | A | B | C |
| 1011 | | + | , | . | / | : | ; | < | = | > | ? | @ | A | B | C | D |
| 1100 | | , | . | / | : | ; | < | = | > | ? | @ | A | B | C | D | E |
| 1101 | | . | / | : | ; | < | = | > | ? | @ | A | B | C | D | E | F |
| 1110 | | / | : | ; | < | = | > | ? | @ | A | B | C | D | E | F | G |
| 1111 | | : | ; | < | = | > | ? | @ | A | B | C | D | E | F | G | H |

* The addresses 00H to 07H are for the CGRAM address

FUTABA VFD Standard Part List for STB / FUTABA机顶盒用途 荧光显示屏标准品 一览表

Appendix B) Explanation about CIG VFD controller driver's function / VFD内蔵コントローラドライバ 機能説明

| Function 機能 | Explanation and Merit 説明、メリット | | Part number 対象品種 |
|-----------------------------|----------------------------------|---|--|
| Key scan キースキャン | Explanation 説明 | Enable max. 5x6 key matrix scan 最大5x6のキーマトリックスをスキャンできる | 2MT237INK 3MT138INK 12BY03INK |
| | Merit メリット | Enable to reduce MCU usage マイコンの負荷軽減 | |
| General port 汎用ポート | Explanation 説明 | Enable to use 4 ports for external device output, ex. LEDs. 外部素子出力用のポートが4個あり、LEDの駆動等に使える。 | 2MT237INK 3MT138INK 12BY03INK |
| | Merit メリット | Enable to reduce MCU usage マイコンの負荷軽減 | |
| Universal Drive ユニバーサル駆動 | Explanation 説明 | Using a standardized grid electrode and a unique driving method, pattern designs with no limitation are realized. MCU corresponding to the universal driving VFD has been developed by many semiconductor companies. グリッド電極のユニークな駆動方法により、自由度の高いパターンを実現。ユニバーサル駆動対応のマイコンは数多くの半導体メーカーから供給可能。 | 8MD06INKM 12BD03INK 12BD02INK 12BT229INK 13ST84GINK 16SD13GINK 16BD11INK 16BT160INK 16BT169INK |
| | Merit メリット | Pattern design has less limitation than conventional one. 通常のVFDよりパターンの自由度が大きい。 | |
| Charge pump チャージポンプ | Explanation 説明 | Enable to generate VH(21V and 32V) inside VFD by using 12V power supply voltage in STB set and simple additional external circuit. HDDやCDドライブなどの12V電源を活用し、簡単な外付け回路の追加のみでVH(21Vまたは32V)を作る。 | 12BY03INK 12BT229INK 16BD11INK 16BT169INK |
| | Merit メリット | Enable to simplify power supply circuit design because of Unnecessary negative voltage circuit and DC/DC converter 負電源回路不要、DC/DCコンバータ不要で電源設計の簡素化に繋がる。 | |
| 12V Drive 12V駆動 | Explanation 説明 | VH is 12V. VHが12V | 2MT237INK 3MT138INK 12BY03INK 12BT229INK 16BD11INK 16BT169INK |
| | Merit メリット | Enable to simplify power supply circuit design because of Unnecessary negative voltage circuit and DC/DC converter in case STB has 12V power supply internally. STBセットが12V電源内蔵の場合、負電源回路不要、DC/DCコンバータ不要で電源設計の簡素化に繋がる。 | |
| Grid Skip グリッドスキップ | Explanation 説明 | Enable to switch off unnecessary grid with simple setting. 簡単な設定でON不要グリッドを選択してOFFにすることができる。 | 12BT229INK 16BD11INK 16BT169INK |
| | Merit メリット | Enable to reduce power consumption. 電力消費を抑えることが可能。 | |
| Font RAM (No ROM) | Explanation 説明 | Font ROM on previous controller driver has ROM 240 characters and RAM 8 characters so that it's not enough to display fully customized character. New controller driver has only RAM 24 character and its font data comes from memory on main PCB. 従来のコントローラDr.のフォントROMはROM 240文字+RAM 8文字であり、カスタムの文字を全桁表現するには不十分であった。新規コントローラDr.はROMを廃止し、RAM 24文字とした。セットのメモリにフォントデータを準備する。 | 12BT229INK 16BD11INK 16BT169INK |
| | Merit メリット | No limitation on number of characters. 文字数に制限がない。 | |