APPLICATION DIAGRAM

Cutting-edge GDC with Sprite Architecture

Fully-featured animations are possible for a simple system enabled by this GDC. Experience the cutting-edge "easiness yet quality" display technology accomplished by the Yamaha’s proprietary sprite-based control mechanism and graphics data compression method. Feel the new "norm" for yourself.

APPLCIATIONS
- Washing Machines
- Microwaves
- Rice Cookers
- Refrigerators
- Health-care and Medical Equipment
- FA equipment
- Automotives

Features Summary
- Sprite-based drawing architecture enables to implement GUI with only several bytes of control data.
- 341 Sprites per screen at maximum are displayed simultaneously.
- Animation of ARGB8888 at 60 fps is supported.
- Graphics data is compressed approximately to 1/3 to reduce memory size drastically.
- Adobe® Flash® can be used for authoring graphic contents.
- Up to SVGA (800 x 600) panel is supported.

YGV642

CPU Interface 3.3V~5.0V
3.3V Digital
- General Table
- Line Processor
- VRAM Line Buffer
- Color Palette & Register
- Sprite Processor
- CRT Controller
- Sprite & Font Data Decoder
- Macro Engine
- Timing Controller
- 8bit Parallel Bus Serial Bus
- 6MHz~20MHz
- 24 or 18
- 80MHz
- 64kB
- 4kB
- 5.0V

Flash ROM

Compressed Data
- Sprites Data
- Font Data
- 35% Lossless Data

Examples,
- Clock 20MHz
- ROM 64kB
- RAM 4kB

SPI Interface, QUAD / DUAL / SINGLE
Max. 512Mbit

Things to Consider

- WVGA 800 x 480
- WQVGA 480 x 272

SQUF100 (YGV642-SZ)
14.00mm(W) x 14.00mm(D) x 1.70mm(H)
Each sprite is associated with a twelve-byte attribute data that defines its position, scaling, transparency, colors, and all the other features. A macro command execution engine is available to control these attribute data making it possible to animate them at 60 fps easily. The macro command engine is triggered by a host CPU as well as macro command stored in Flash ROM to further reduce a host MCU load.

**Alpha-Blending Between Layers**
Pixel-by-pixel blending controls

**Clipping (Masking)**
Sprites, Texts, or Lines can be used as masks

**Animation**
Macro Commands allow complicated animations easily

**Authoring Supports**
Data authored in Adobe Flash format can be converted for use in Yamaha-supplied authoring tool.

### SPRITES

- **Number of Sprite**
  - Up to 341 per frame

- **Size**
  - 512 dot

- **Scaling**
  - 8 dot /Step

- **Positioning**

- **Alpha-blending**
  - 8bit (256 levels)

- **Color Palettes**
  - 1024 colors selectable from:
    - 512 sets of 2-color palette
    - 64 sets of 16-color palette
    - 16 sets of 64-color palette
    - 4 sets of 256-color palette

- **Colors**
  - Supports 2-, 16-, 64-, 256-color palette out of 24-bit RGB
  - 256-levels RGB True color

### TEXTS

- **Up to 1,864 fonts per screen**
- **Up to 64 fonts per scan line**
- **Font Size**
  - From 1x1 to 64x64 in pixel

### LINES

- **Up to 510 lines per screen**
- **Direct draw by specifying its start and end point coordinates**
- **1- to 16-dot width per line**
- **32,768-color RGB**
- **Anti-aliasing**