

# YGV641 VC1N

Cutting-edge GDC with Sprite Architecture

## Master of Animating

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.

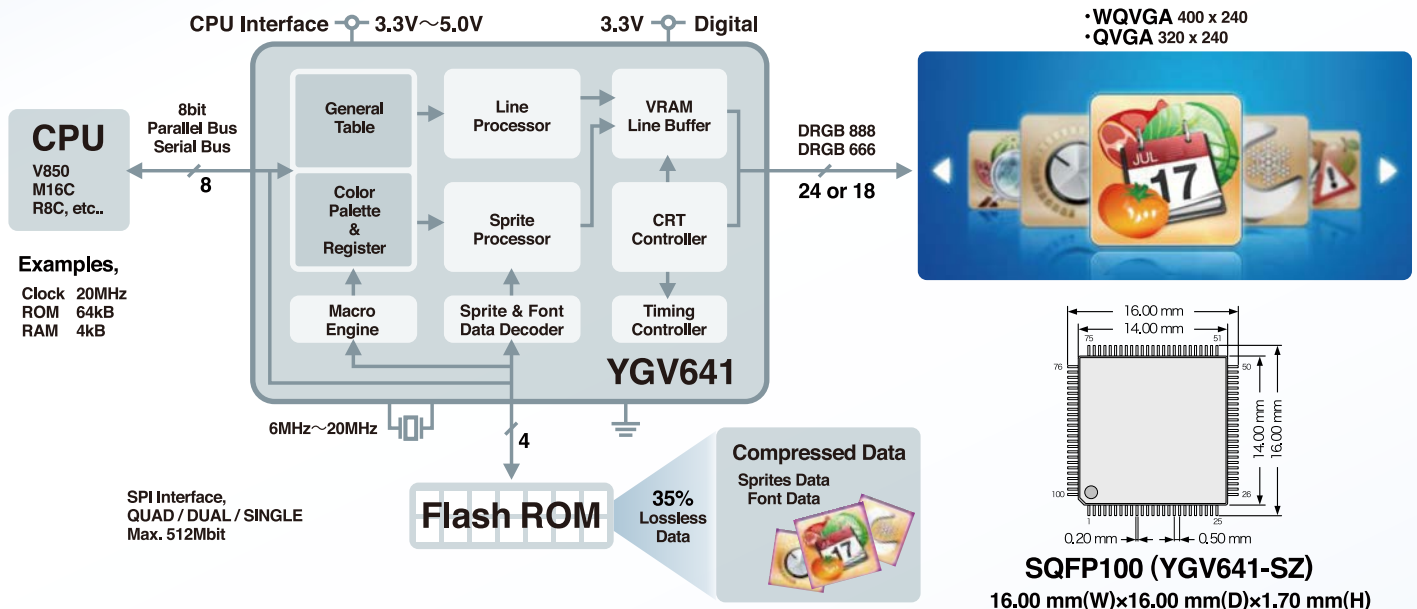
### APPLICATIONS

- ▶ 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 24 bit full color 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.

### APPLICATION DIAGRAM



## Various features for rich expression

Each sprite is associated with a twelve-byte attribute data that defines its position, scaling, rotation, 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

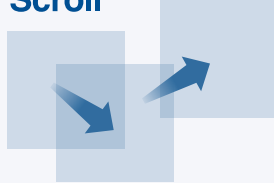
512 dot



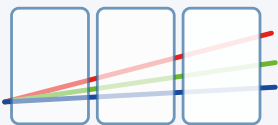
### Scaling



### Scroll



### Alpha-blending

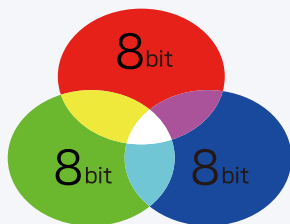


### Color Palettes

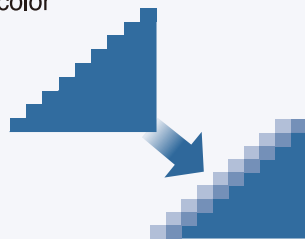
1024 colors selectable from;  
64 sets of 16-color palette  
16 sets of 64-color palette  
4 sets of 256-color palette  
Flexible configuration

### Colors

Supports 2-, 16-, 64-, 256-color palette out of 24-bit RGB  
Or 16-, 18-, 24-bit RGB True color



### Anti-aliasing

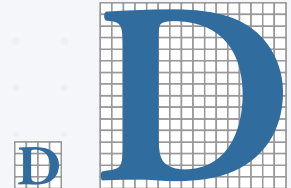


## TEXTS

Up to 1,948 letters per frame  
Up to 64 characters per field

### Font Size

From 1×1 to 64×64 in pixel



### Font Rendering

Supports proportional font and kerning

Windows-Web Design

Windows-Web Design

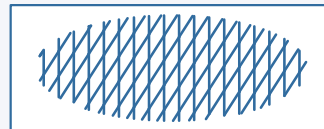
### Anti-aliasing Font Data

Support 4- or 2-bit/pixel format

## 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

