GRAPHICS

Advanced Monochrome Display Controller

| PRELIMINARY |

YGV603

YAMAHA CORP OF AMERICA/   38E D ■■ 9945524 0000747 4 ■YAMA

■OUTLINE

The AMDC is compatible with the IBM-PC CGA (Color Graphics Adapter), the MDA (Monochrome Display Adapter), and the HGC (Hercules Graphic Card). Only the IBM monochrome monitor can be connected to the AMDC, so when using MDA and HGC software, full compatibility is provided without making any modifications to the software (including initial settings). When the CGA software package is used, the software type is recognized by the internal hardware and Emulation Mode is entered. When this mode is entered, the registers of the MC6845 are initialized automatically. In the Graphics Mode, a 5-level gray-scale display is produced. Furthermore, a built-in font ROM allows easy configuration of a display system by adding only a few external components.

■FEATURES

•Compatibility with MDA, HGC, and CGA is provided at the register level.
HGC supports both Page 0 and Page 1.
With CGA, only a monochrome monitor can be connected. (Color monitors are not supported.)
• A 132 Column Mode is supported among the MDA expansion modes.
• All MC6845 functions are built in (except for R8)
• A 5-level gray-scale display is possible with a monochrome monitor.
• A Protect bit is used to provide software protection.
• Only a DRAM can be used for the VRAM.
(Since the timing for the display and that for the CPU are separate, the CPU can access the VRAM at any point (without waiting for line retracing).
• The light pen interface is built in.
• The printer board is built in.
• A smooth-scroll function is provided (only in 132 Column Mode).
• A font ROM for the MDA is built in (external fonts can also be connected).
• An auto-switching circuit is built in.
• A 16 MHz crystal generator circuit is built in.
• A 25 MHz crystal generator circuit is built in.
• CMOS, 5V single power supply, 100-pin QFP

The specifications of this product are subject to improvement changes without prior notice.

■ ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Item	Symbol	Min	Max	Unit
Supply voltage	V_{DD}	−0.8	+7.0	V
Input voltage	V_I	−0.3	$V_{DD}+0.3$	V
Output voltage	V_O	−0.3	$V_{DD}+0.3$	V
Operating temperature	T_{OP}	0	+70	℃
Storage temperature	T_{STG}	−50	+125	℃

(Based on the reference voltage of $V_{SS}=0.0V$)

Recommended Operating Conditions

Supply voltage	+5±5% (based on $V_{SS}=0.0V$)
Operating temperature	0~70℃

DC Characteristics ($V_{DD}=5V±5%$, $T_{OP}=0~70℃$)

Item	Symbol	Condition	Min.	Max.	Unit
High-level output voltage (for TTL driving)	V_{OH}	$I_{OH}=-0.4mA$	2.4		V
Low-level output voltage (for normal output)	V_{OL}	$I_{OL}=1.6mA$		0.4	V
Low-level output voltage (Power output)	V_{OL}	$I_{OL}=8.0mA$		0.4	V
High-level input voltage	V_{IH}		2.0		V
Low-level input voltage	V_{IL}			0.8	V
Input leak current	I_L		−10	10	μA
OFF status leak current	I_{LZ}		−10	10	μA
Power current (during normal operation)	I_{DD}			70	mA

■ OUTLINE DIMENSIONS

■ BLOCK DIAGRAM

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