Am81EC471/478

CMOS Color Palette

DISTINCTIVE CHARACTERISTICS

- **VGA-compatible color palette with low-power Sleep mode**
- **Consumes only 2 mA power in Sleep mode**
- **Sleep mode enabled by hardware or software method**
- **Compatible with Am81C471 (Am81C478)**
- **Available in 35-, 50-, 66-, and 80-MHz versions**
- **Available in 44-pin PLCC package**
- **256 × 18(24) color palette RAM**

- **15 × 18(24) overlay RAM**
- **Triple 6-bit (8-bit) DACs**
- **Sync on all three outputs**
- **R-343A/RS-170-compatible RGB outputs**
- **External current or voltage reference**
- **Standard MPU Interface**
- **Single +5-V power supply**

GENERAL DESCRIPTION

The Am81EC471/478 CMOS Color Palette has been designed specifically for manufacturers of laptop personal computers that will offer the VGA feature. The part is software- and hardware-compatible with the Am81C471/478 and includes a low-power (sleep) feature. The Am81EC471 and Am81EC478 operate at speeds sufficient to support screen resolutions up to 1024 × 768 pixels.

The low-power option can be enabled using two methods. The first method (software) method requires only a write to an internal register. The second method (hardware) requires pulling the SLEEP pin high. Enabling the sleep feature reduces the power consumption of the Am81EC471/478 by about 98%.

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BLOCK DIAGRAM

12435A-001A
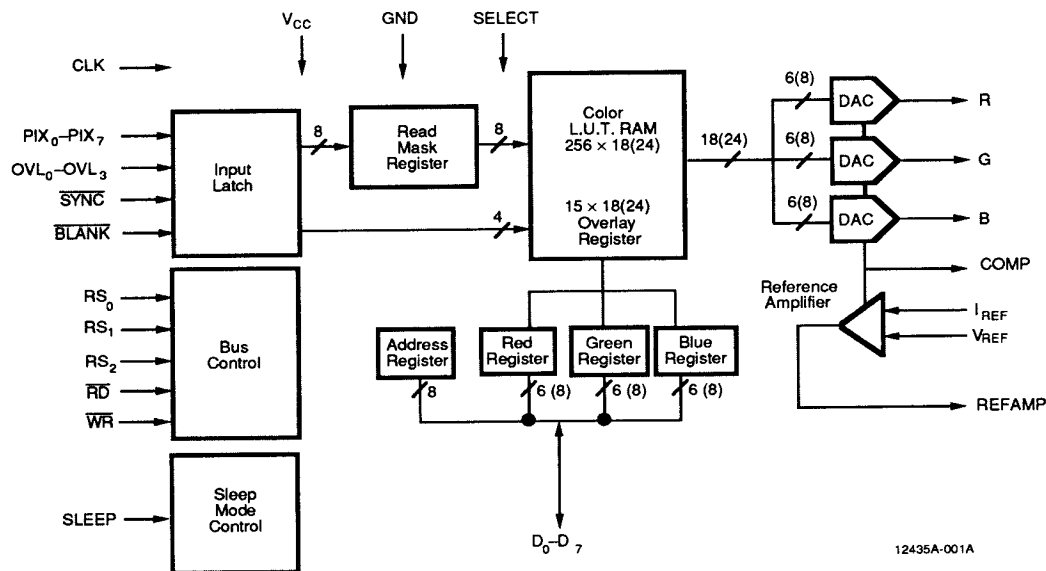
GENERAL DESCRIPTION (continued)

The Am81EC471/478 has a 256 × 18(24) Look-Up Table and 15 × 18(24) Overlay Table and as such can simultaneously display 271 colors out of an available set of 256K (16.8 million) colors. The Am81EC471 has triple 6-bit video DACs; the Am81EC478 may be used in either 6-bit or 8-bit mode.

The Am81EC471/478 includes an input latch and programmable bit-plane Read Mask. They are available in versions with pixel rates as high as 80 MHz. Proprietary DAC decoding techniques minimize glitch energy and skew.
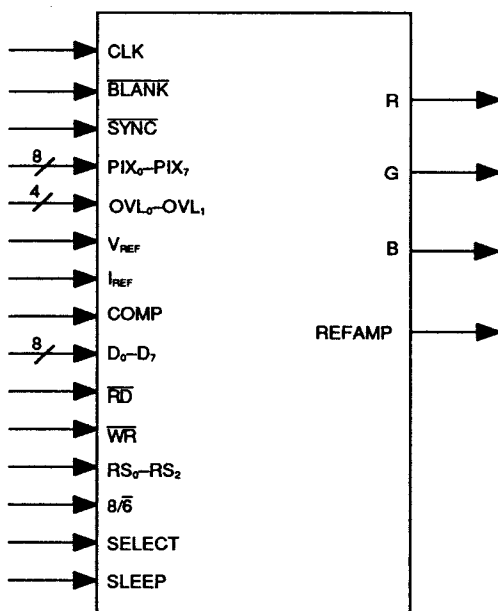
Both the Am81EC471 and Am81EC478 include programmable pedestals (0 or 7.5 IRE) and can be used with an external voltage or current reference. EGA emulation, overlaying cursors, text, grids, etc., can be implemented using the 15 overlay registers.

The Am81EC471/478 generates RS-343A-compatible outputs into doubly-terminated 75-ohm loads and RS-170-compatible output into a singly-terminated 75-ohm load, without external buffers.

The Am81EC471 and Am81EC478 are fabricated using AMD's state-of-the-art 1.2-μ CMOS process. The devices are available in a 44-lead PLCC package.

LOGIC SYMBOL

Inputs: CLK, $\overline{\text{BLANK}}$, $\overline{\text{SYNC}}$, PIX_0–PIX_7 (8), OVL_0–OVL_1 (4), V_{REF}, I_{REF}, COMP, D_0–D_7 (8), $\overline{\text{RD}}$, $\overline{\text{WR}}$, RS_0–RS_2, $8/\overline{6}$, SELECT, SLEEP

Outputs: R, G, B, REFAMP

1147A-003A

CONNECTION DIAGRAM

PL 044

Pin assignments (top row, left to right): pins 6, 5, 4, 3, 2, 1, 44, 43, 42, 41, 40 — $\overline{RD}$, $\overline{SYNC}$, V_{CC}, GND, (N/C)8/6, SLEEP, OVL_3, OVL_2, OVL_1, OVL_0, CLK

Left side (top to bottom):
- $\overline{BLANK}$ — 7
- D_0 — 8
- D_1 — 9
- D_2 — 10
- D_3 — 11
- D_4 — 12
- D_5 — 13
- D_6 — 14
- D_7 — 15
- $\overline{WR}$ — 16
- RS_0 — 17

Right side (top to bottom):
- 39 — PIX_7
- 38 — PIX_6
- 37 — PIX_5
- 36 — PIX_4
- 35 — PIX_3
- 34 — PIX_2
- 33 — PIX_1
- 32 — PIX_0
- 31 — V_{REF}
- 30 — REFAMP
- 29 — COMP

Bottom row (left to right): pins 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28 — RS_1, RS_2, V_{CC}, V_{CC}, V_{CC}, SELECT, GND, R, G, B, I_{REF}
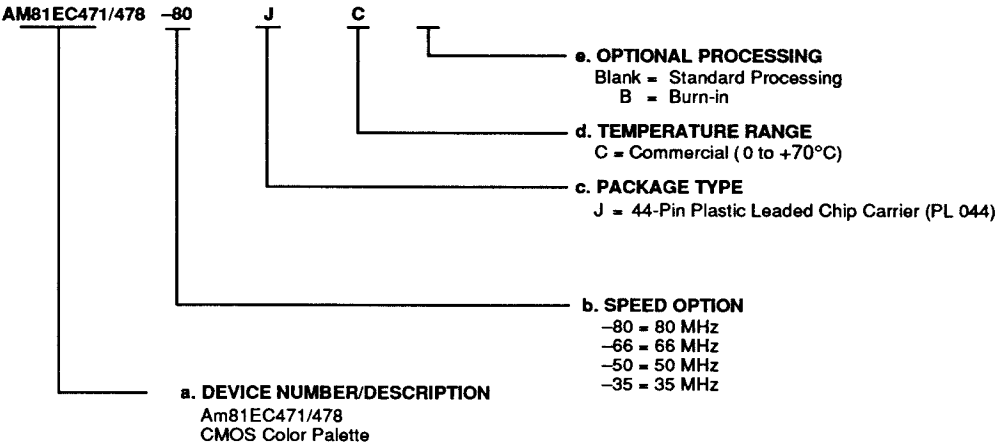
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ORDERING INFORMATION
Standard Products

AMD standard products are available in several packages and operating ranges. The ordering number (Valid Combination) is formed by a combination of:
- a. Device Number
- b. Speed Option (if applicable)
- c. Package Type
- d. Temperature Range
- e. Optional Processing

AM81EC471/478 –80 J C

e. OPTIONAL PROCESSING
Blank = Standard Processing
B = Burn-in

d. TEMPERATURE RANGE
C = Commercial (0 to +70°C)

c. PACKAGE TYPE
J = 44-Pin Plastic Leaded Chip Carrier (PL 044)

b. SPEED OPTION
–80 = 80 MHz
–66 = 66 MHz
–50 = 50 MHz
–35 = 35 MHz

a. DEVICE NUMBER/DESCRIPTION
Am81EC471/478
CMOS Color Palette

Valid Combinations	
AM81EC471-80	
AM81EC471-66	
AM81EC471-50	
AM81EC471-35	JC, JCB
AM81EC478-80	
AM81EC478-66	
AM81EC478-50	
AM81EC478-35	

Valid Combinations

Valid Combinations list configurations planned to be supported in volume for this device. Consult the local AMD sales office to confirm availability of specific valid combinations, to check on newly released combinations, and to obtain additional data on AMD's standard military grade products.