

DESCRIPTION

The AMC8213 is a very high frequency video pre-amplifier system especially for ultra high resolution monitor applications (1280 × 1024 or higher). In addition to three matched amplifiers, the AMC8213 contains three gain adjustment circuits for white balance, three clamp gated comparators for brightness control, and the OSD mixer. Also, the AMC8213 has an internally set output DC level of 1.0V, for some applications, no external output DC level setting is required. The AMC8213 is built into a 22 pin DIP package, accommodating very compact and cost effective designs for those applications requiring OSD. All controls to AMC8213 such as contrast, gain adjustment, and fast blanking are 0V to 4V with high impedance DC inputs. This makes the system easily interfaced with 5V DACs in micro computer controlled systems. Not only working with 8V power supply, The AMC8213 can be operated directly from the heater of 6.2V, which provides very low power consumption and enhance the over all performance.

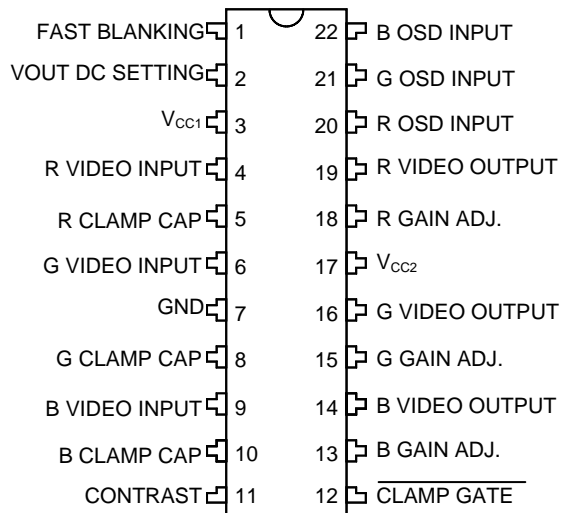
FEATURES

- **4V_{P-P} output with 1.7ns T_r/T_f and low Electrical Magnetic Emission**
- **Power consumption 40% lower than 12V operated video amplifiers**
- **Can be Operated at 6.2V supply voltage for lower power consumption**
- **Fast Blanking for OSD inputs, typical 7ns**
- **Fast OSD switching time, typical 3ns**
- **0V to 4V, high impedance DC controls for Contrast, Gain Adjustment and Output DC level setting**
- **Output stage directly drives most hybrid or discrete CRT drivers**
- **Low power ≤ 600mW; ICC1 + ICC2 Typ. 90mA at full swing**

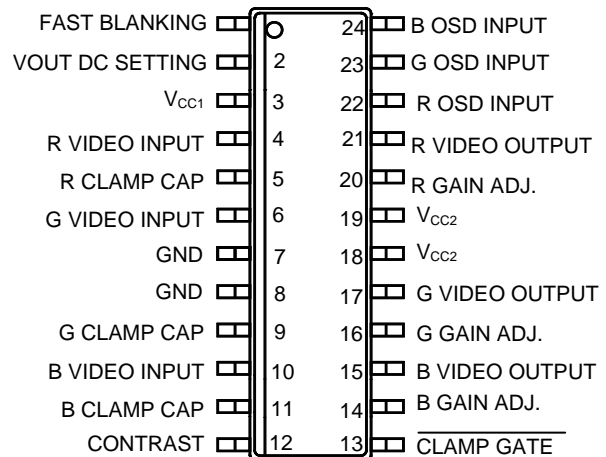
APPLICATIONS

- High Resolution Monitor
- LCD Monitor
- Video signal Processor
- HDTV
- TV Monitors

PACKAGE PIN OUT



**N PACKAGE
(TOP VIEW)**



**DW PACKAGE
(TOP VIEW)**

ORDER INFORMATION

| | | | | |
|----------------|----------|-----------------------------|-----------|------------------------------|
| T_A (°C) | N | Plastic DIP | DW | Plastic SOWB |
| | | 22-pin | | 24-pin |
| 0 to 70 | | AMC8213N | | AMC8213DW |
| 0 to 70 | | AMC8213NF(Lead Free) | | AMC8213DWF(Lead Free) |

Note: 1. All surface-mount packages are available in Tape & Reel. Append the letter "T" to part number (i.e. AMC8213DMT).
2. The letter "F" is marked for Lead Free process.

ABSOLUTE MAXIMUM RATINGS

| | |
|---------------------------------------|-------------------------------|
| Supply Voltage (V_{CC1}, V_{CC2}) | 9.0V |
| Video Output Current | 30mA |
| Voltage at Any Input Pin | $V_{CC} \geq V_{IN} \geq GND$ |
| Junction Temperature (T_J) | 150°C |
| ESD Susceptibility | 3.5KV |
| ESD Machine Model | 300V |
| Storage Temperature | -65°C to 150°C |
| Lead Temperature | 300°C |

Note: Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of the specified terminal.

THERMAL DATA

| | |
|---|--------|
| N PACKAGE: | |
| Thermal Resistance-Junction to Ambient, θ_{JA} | 55°C/W |
| Thermal Resistance-Junction to Case, θ_{JC} | 30°C/W |
| DW PACKAGE: | |
| Thermal Resistance-Junction to Ambient, θ_{JA} | 80°C/W |
| Thermal Resistance-Junction to Case, θ_{JC} | 37°C/W |

Junction Temperature Calculation: $T_J = T_A + (P_D \times \theta_{JA})$.

The θ_{JA} numbers are guidelines for the thermal performance of the device/PC-board system.

All of the above assume no ambient airflow.

RECOMMENDED OPERATING CONDITIONS

| Parameter | Pin | Recommended Operating Conditions | | | Units |
|--|------------|----------------------------------|------|------|-----------|
| | | Min. | Typ. | Max. | |
| Power Supply Voltage (V_{CC1} , V_{CC2}) | 3, 17 | 5.7 | 7.0 | 8.4 | V |
| Video Input Signal | 4, 6, 9 | | 0.7 | | V_{P-P} |
| Fast Blanking Signal | 1 | | TTL | | TTL |
| OSD Input Signal | 20,21,22 | 0 | 1.8 | 5 | V |
| Contrast Control Voltage | 11 | 0 | | 5 | V |
| Gain Adjustment Control Voltage | 13, 15, 18 | 0 | | 5 | V |
| Clamp Gate Pulse Signal Amplitude | 12 | | TTL | | TTL |
| Clamp Gate Pulse Signal High Voltage | 12 | 3 | | 5 | V |
| Clamp Gate Pulse Signal Low Voltage | 12 | 0 | | 0.8 | V |
| Clamp Gate Pulse Width | 12 | | 150 | | ns |
| Video Output DC Level Setting | 2 | 0.6 | 1.0 | 1.1 | V |

ELECTRICAL CHARACTERISTICS

$T_A = 25^\circ\text{C}$; $V_{CC1} = V_{CC2} = 7.0\text{V}$; Contrast = 4V; R, G, B Gain Adj. = 4V; V_{OUT} DC Setting = 1V; Fast Blanking = 0V; Clamp Gate = 0V; OSD Inputs = 0V, unless otherwise stated. (See Figure 1)

| DC Parameter | Symbol | Test Conditions | AMC8213 | | | Units |
|---|-------------------|---|---------|---------|------|---------------|
| | | | Min. | Typ. | Max. | |
| Supply Current | I_S | $V_{CC1} + V_{CC2}$ | | 90 | 100 | mA |
| Video Input Bias Voltage | $V_{4,6,9}$ | | 2.42 | 2.62 | 2.82 | V |
| Clamp Cap Charge Current | I_{CHG} | | | +1.0 | | mA |
| Clamp Cap Discharge Current | I_{DISCHG} | | | -1.0 | | mA |
| Input Current for Contrast and R, G, B, Gain Adj. | $I_{11,13,15,18}$ | | | | -5 | μA |
| Clamp Gate High Current | I_{12H} | Clamp Gate = 5V | | | 0.1 | μA |
| Clamp Gate Low Current | I_{12L} | Clamp Gate = 0V | | | -5 | μA |
| High Video Output | V_{OH} | R, G, B Clamp Cap = V_{CC1} | 5.2 | | | V |
| Low Video Output | V_{OL} | R, G, B Clamp Cap = 0V | | 0.1 | | V |
| Blanked Video Output | V_{BLKOIT} | R, G, B Clamp Cap = V_{CC1} , Fast Blanking = 5V | | 0.1 | 0.5 | V |
| Output Voltage Difference | $V_{O(DIFF)}$ | Between Any Two Channels | | ± 2 | 10 | mV |
| Spot Killer Voltage | V_{SPOT} | Adjust V_{CC} to Active | | 5.0 | 5.5 | V |

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Fast Blanking = 0V; Clamp Gate = 0V; OSD Inputs = 0V, unless otherwise stated. (see Figure 1)

| AC Parameter | Symbol | Test Conditions | AMC8213 | | | Units |
|------------------------|------------|--|---------|------|------|-------|
| | | | Min. | Typ. | Max. | |
| Video Amplifier Gain | A_{VMAX} | $V_{IN} = 635\text{mV}_{PP}$ | 6 | 7 | | V/V |
| Gain Adjustment Range | A_{VADJ} | $V_{13,15,18} = 0$ to 4V | 5 | 6 | | dB |
| Video Bandwidth | BW | $V_{PP} = 4\text{V}$ | | 200 | | MHz |
| Video Output Rise Time | t_r | $V_{PP} = 4\text{V}$, $C_{LOAD} = 7\text{pf}$ t_r of $V_{IN} = 1.5\text{ns}$ | | 1.75 | 2.1 | ns |
| Video Output Fall Time | t_f | $V_{PP} = 4\text{V}$, $C_{LOAD} = 7\text{pf}$ t_f of $V_{IN} = 1.5\text{ns}$ | | 1.75 | 2.1 | ns |
| OSD Rise Time | t_{rOSD} | $V_{20,21,22} = \text{TTL Level}$, $V_1 = 5\text{V}$ | | 3.0 | 5.0 | ns |
| OSD Fall Time | t_{fOSD} | $V_{20,21,22} = \text{TTL Level}$, $V_1 = 5\text{V}$ | | 3.0 | 5.0 | ns |
| OSD Propagation Delay | t_{v-O} | See figure 2 | | 10.0 | 12.0 | ns |

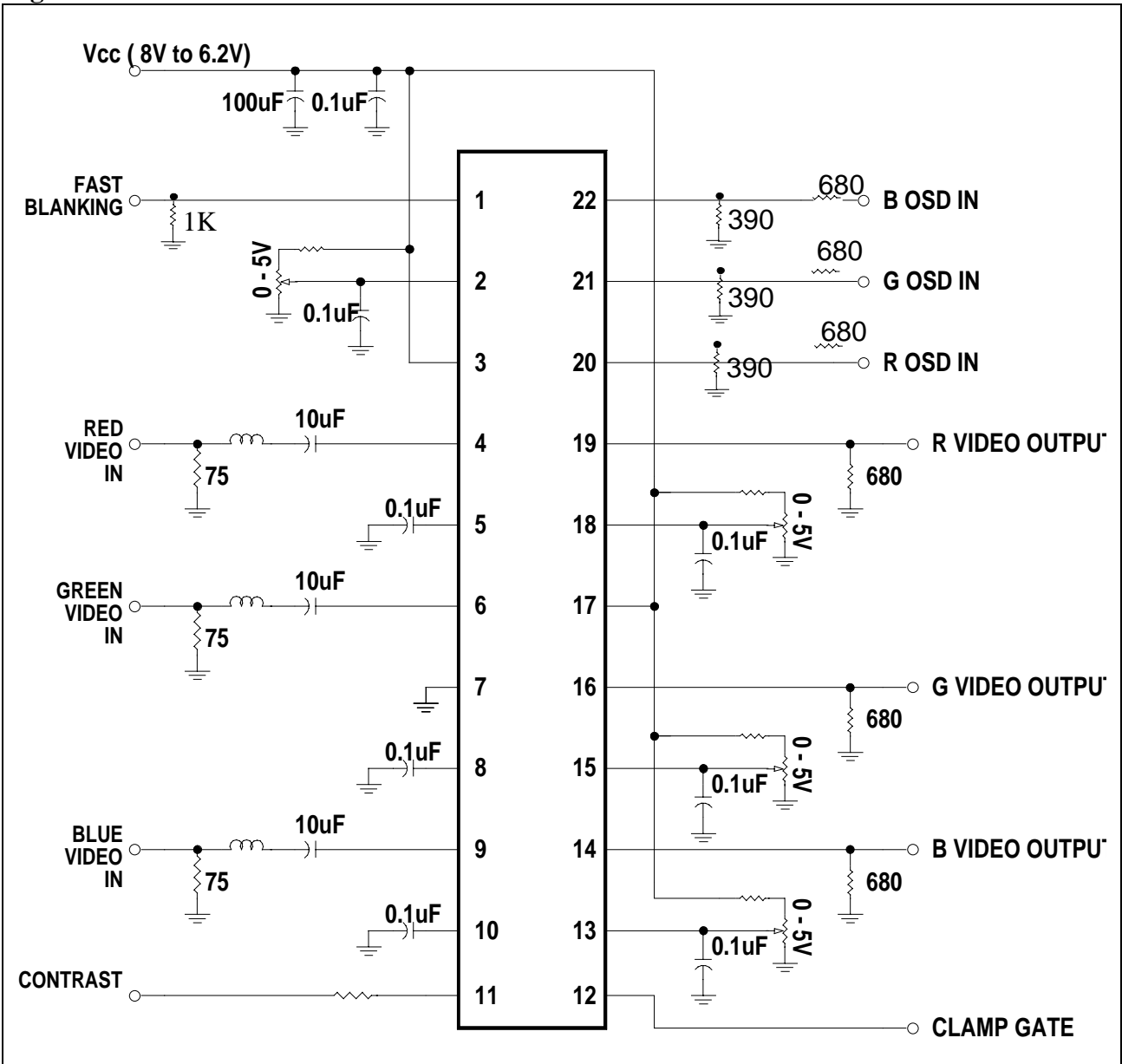
Figure 1. AMC8213 Test Circuit


Figure 2. Timing Diagram for Video Input, Clamp Gate, Fast Blanking and OSD Input.

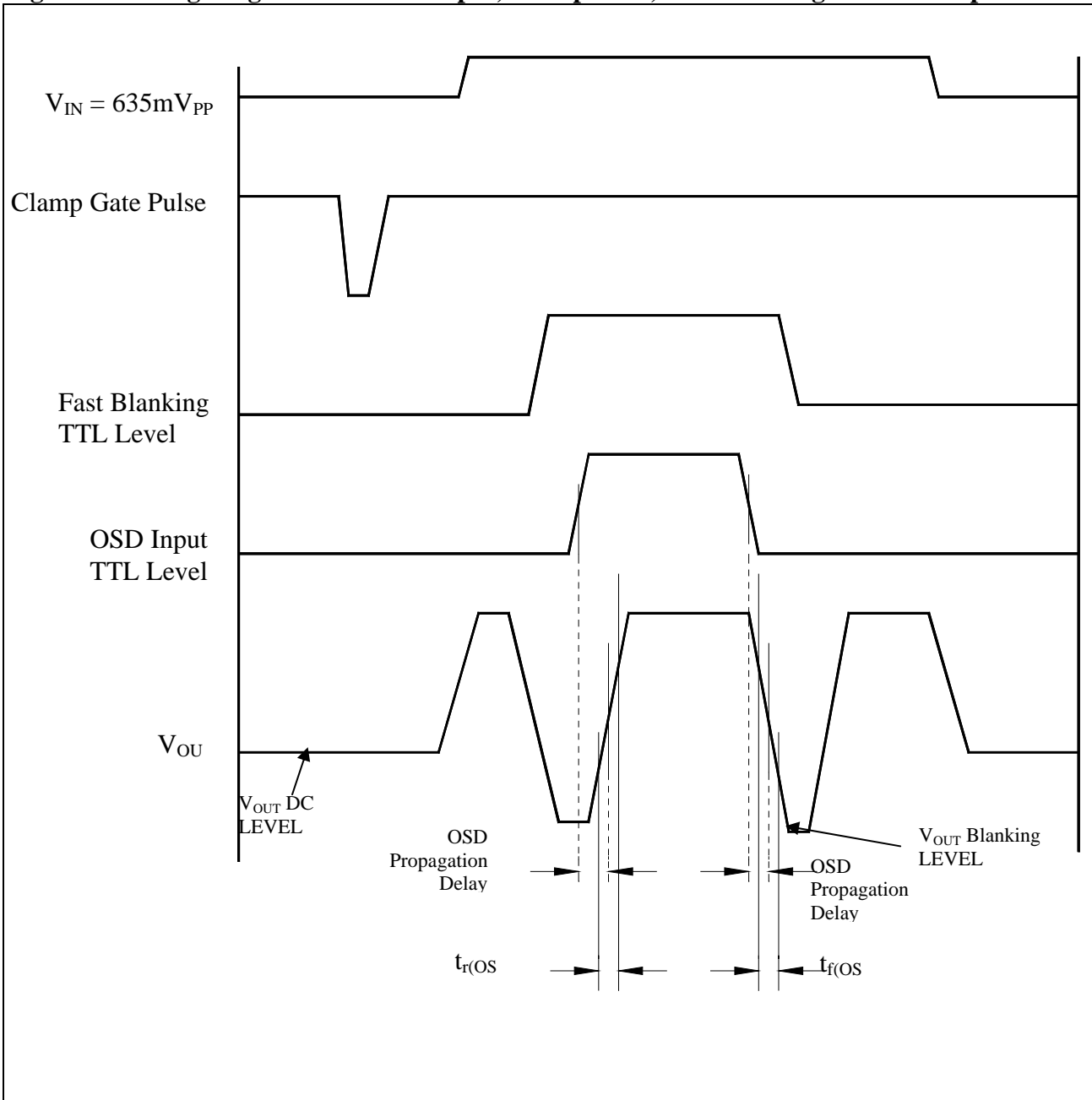
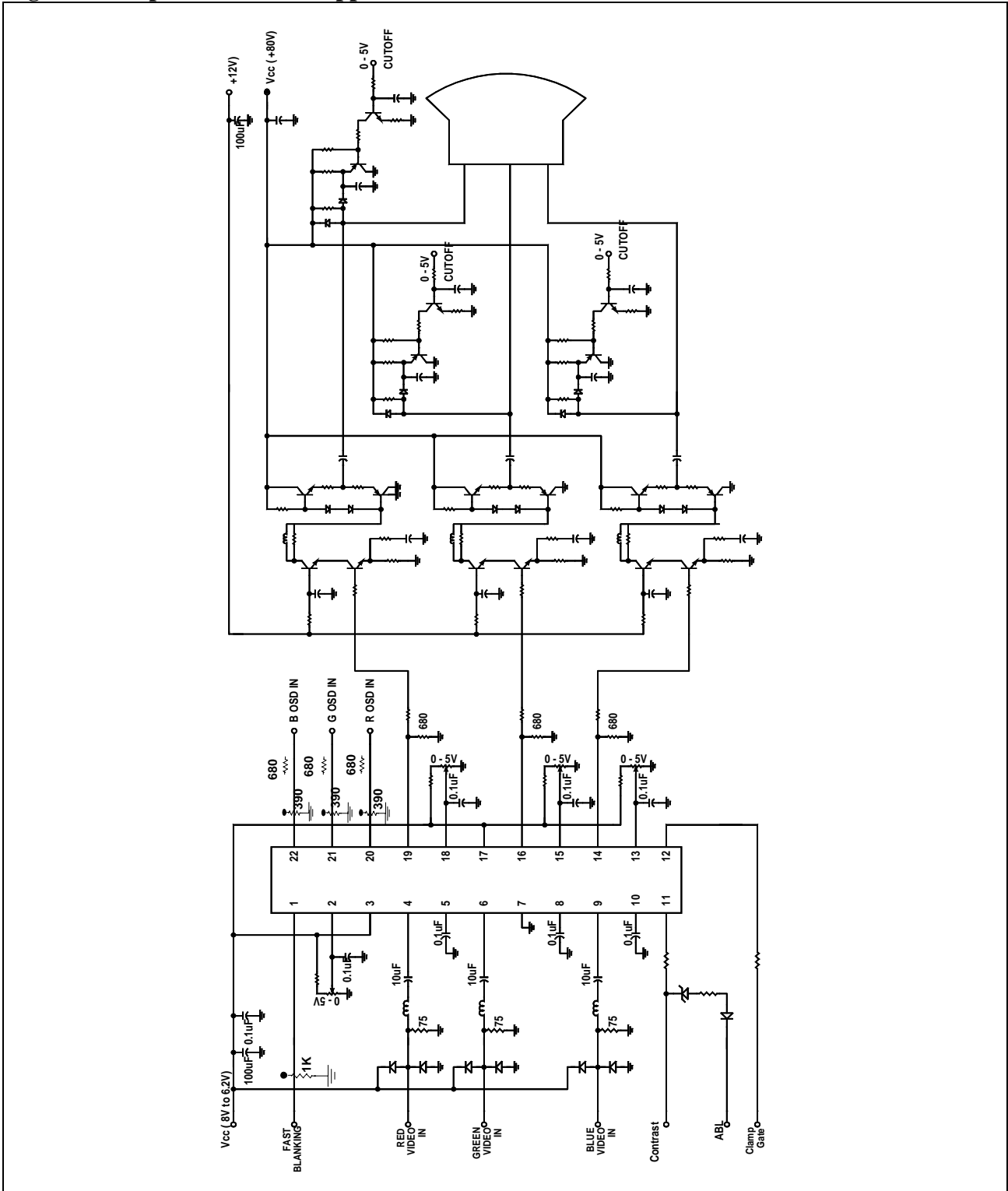
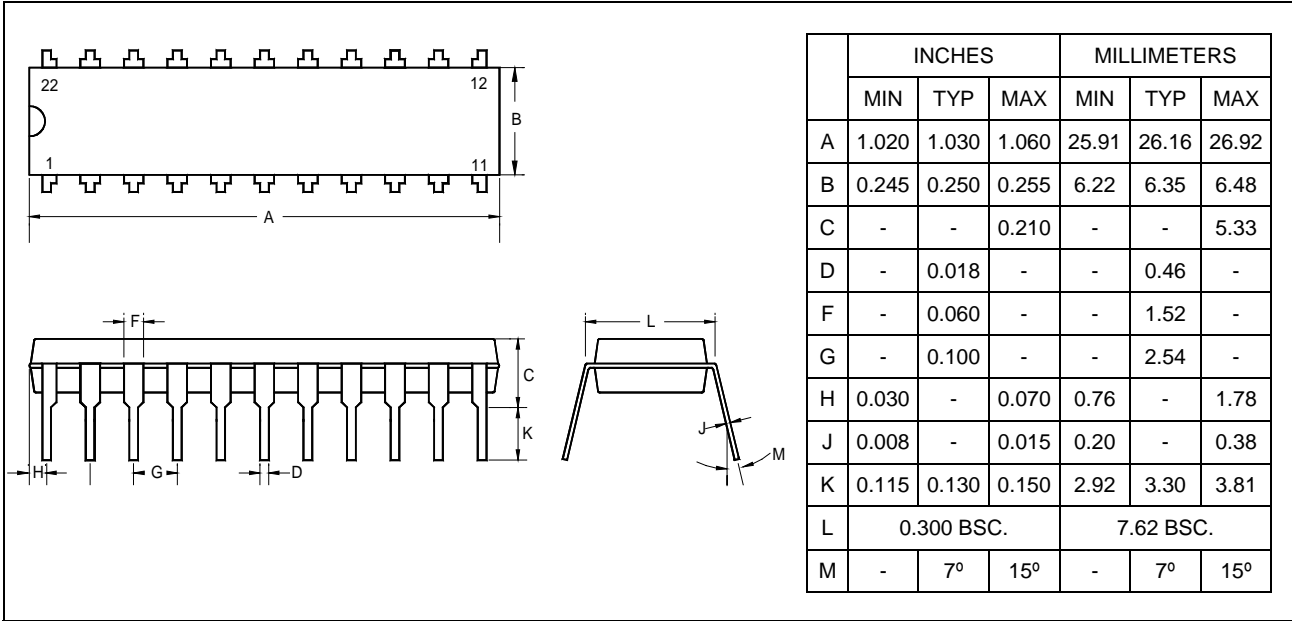
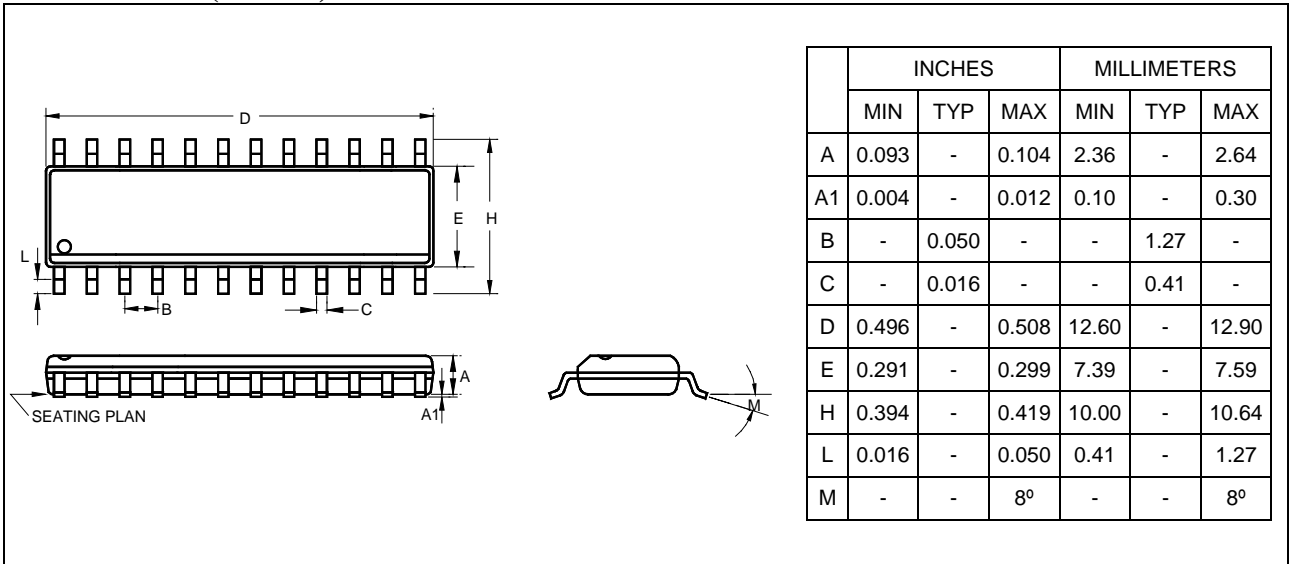


Figure 3. Simplified Monitor Application Circuit


PACKAGE
22-Pin Plastic DIP

24-Pin SOWB (300 mil)


IMPORTANT NOTICE

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