



Low Cost Triple CRT Driver

Preliminary Data Sheet

CVA2403T

FEATURES

- Rise/Fall Time 4.0ns
- Swing 65V_{P-P}
- Supply Voltage 90V
- High Input Impedance

APPLICATIONS

- CRT driver for up to 82kHz monitors
- Excellent Gray Scale Linearity
- Emitter Peaking Option
- Adjustable Gain

DESCRIPTION

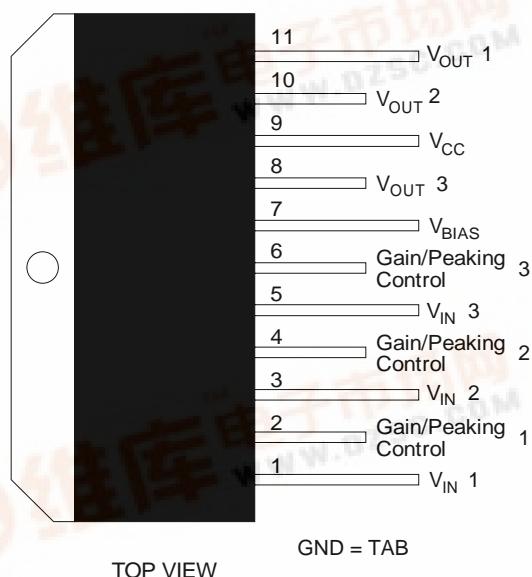
The CVA2403T is a high input impedance wideband triple amplifier. The device is specifically designed to drive a CRT featuring a high speed buffer for easy matching to a pre-amplifier, no crossover distortion for excellent gray scale linearity, external emitter peaking to maximize the high frequency gain at the cross hatch pattern and an adjustable gain for ease of use. This device can drive monitors with resolutions of 1280 X 1024 (interlaced) with pixel frequencies of 220MHz.

The part is housed in the industry standard 11-lead TO-220 molded power package. The heat sink is grounded.

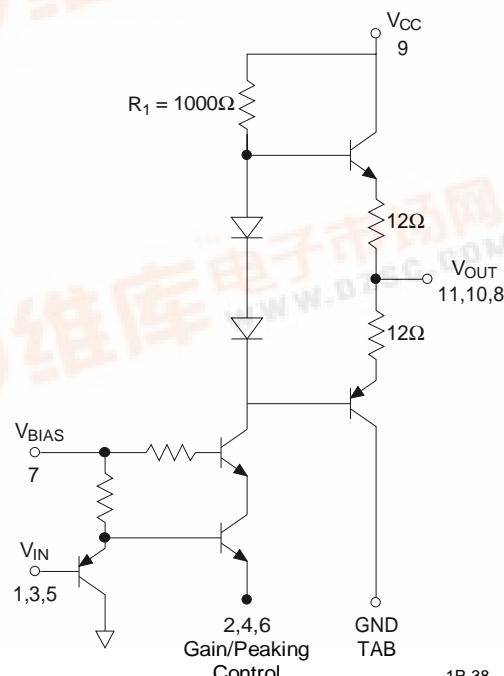
ORDERING INFORMATION

| Part | Package | Temperature |
|----------|---------|-----------------|
| CVA2403T | T11A | -20°C to +100°C |

CONNECTION DIAGRAM AND SIMPLIFIED SCHEMATIC



1N-22



ABSOLUTE MAXIMUM RATINGS

Supply Voltage 90V
 Power Dissipation 16W
 Storage Temperature -25°C to +100°C

Operating Temperature -20°C to +100°C
 Lead Temperature +300°C

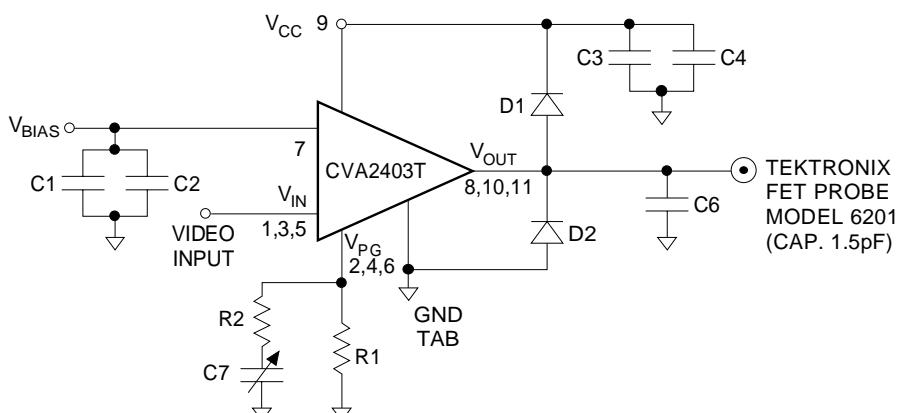
DC ELECTRICAL CHARACTERISTICS $V_s = 80V$, $C_L = 8pF$, $DC_{INPUT\ BIAS} = 12V$, $V_{IN} = 3.4V$, $V_{OUT} = 50V_{p-p}$. $T_{CASE} = +25^{\circ}C$.
 See Figure 1.

| SYMBOL | CHARACTERISTICS | MIN | TYP | MAX | UNITS |
|---------------|-----------------|-----|-----|-----|-------|
| I_{cc} | Supply Current | 30 | 34 | 40 | mA |
| $V_{OUT\ DC}$ | Output DC Level | 40 | 45 | 50 | V |
| A_v | Voltage Gain | 13 | 15 | 17 | V |
| | Gain Matching | | 0.2 | | dB |

AC ELECTRICAL CHARACTERISTICS $V_s = 80V$, $C_L = 8pF$, $DC_{INPUT\ BIAS} = 12V$, $V_{IN} = 3.4V$, $V_{OUT} = 50V_{p-p}$. $T_{CASE} = +25^{\circ}C$.
 See Figure 1.

| SYMBOL | CHARACTERISTICS | MIN | TYP | MAX | UNITS |
|--------|-----------------|-----|-----|-----|-------|
| T_r | Rise Time | | 4 | 4.5 | ns |
| T_f | Fall Time | | 4 | 4.5 | ns |
| L_e | Linearity | | 6 | | % |
| OS | Overshoot | | 5 | | % |

FIGURE 1. TEST CIRCUIT



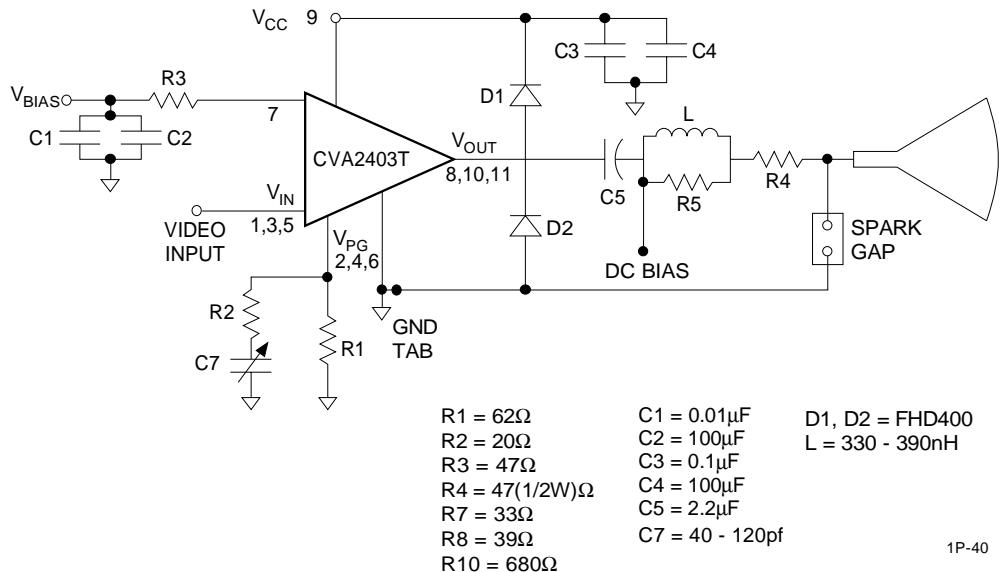
$C1 = 0.01\mu F$
 $C2 = 100\mu F$
 $C3 = 0.1\mu F$
 $C7 = 120pF$

$C4 = 100\mu F$
 $C6 = 8pF$

$R1 = 62\Omega$
 $R2 = 20\Omega$

D1, D2 = FHD400

FIGURE 2. APPLICATION CIRCUIT



APPLICATION INFORMATION

The CVA2403T is a high voltage triple CRT driver suitable for VGA, Super VGA, IBM® 8514, 1280 x 1024 and 1024 x 768 non-interlaced display applications. The CVA2403T features 80V operation. The part is housed in the industry standard 11 lead TO-220 molded power package. The heat sink is floating and may be grounded for ease of manufacturing and RFI shielding.

Thermal Considerations

The transfer characteristics of the amplifier are shown in Figure 4. Since this is a class A input stage, power supply current increases as the input signal increases and consequently power dissipation also increases.

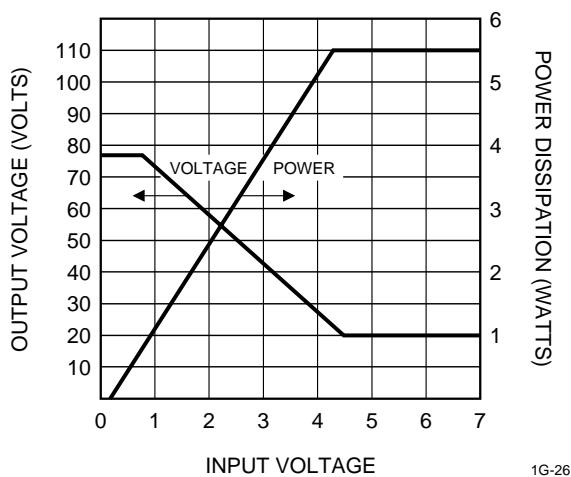
The CVA2403T cannot be used without heat sinking. Figure 2 shows the power dissipated in each channel over the operating voltage range of the device. Under white screen conditions, i.e.: 20V output, dissipation increases to 16W total. The CVA2403T case temperature must be maintained below +90°C. If the maximum expected ambient temperature is +50°C, then a heat sink is needed with thermal resistance equal to or less than:

$$R_{th} = \frac{(90 - 50^{\circ}\text{C})}{16\text{W}} = 2.5^{\circ}\text{C/W}$$

The CVA2403T maximum load is 600Ω to ground or V⁺.

The output of CVA2403T is not short circuit proof. Any resistance to V⁺ or Ground should be > 600Ω.

FIGURE 3. CVA2403T DC Characteristics



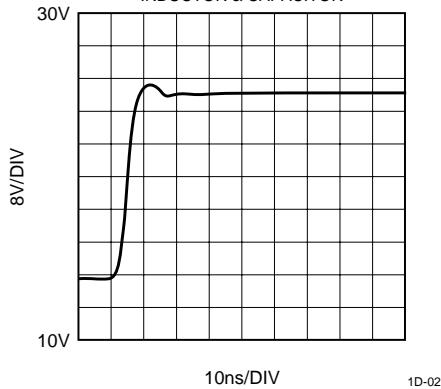
CVA2403T

calogic
CORPORATION

TYPICAL CHARACTERISTICS

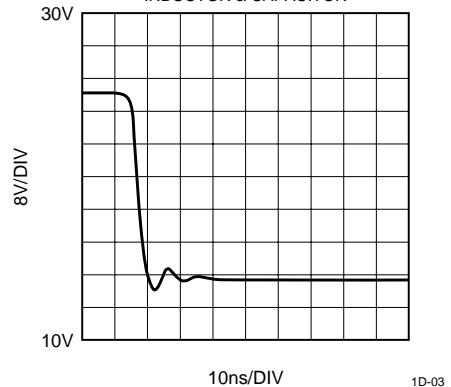
RISE TIME

WITH PEAKING
INDUCTOR & CAPACITOR



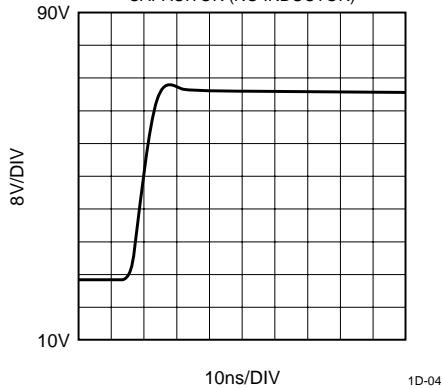
FALL TIME

WITH PEAKING
INDUCTOR & CAPACITOR



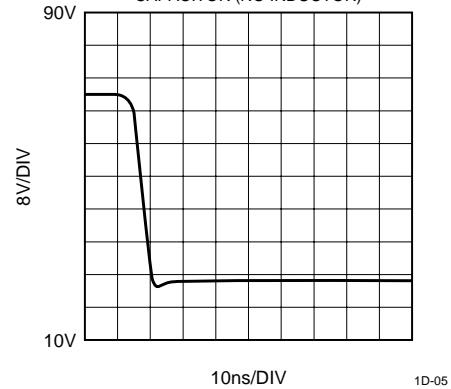
RISE TIME

WITH PEAKING
CAPACITOR (NO INDUCTOR)



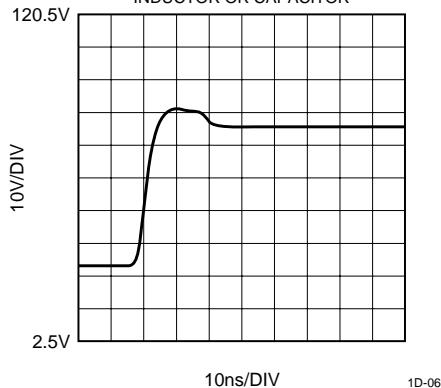
FALL TIME

WITH PEAKING
CAPACITOR (NO INDUCTOR)



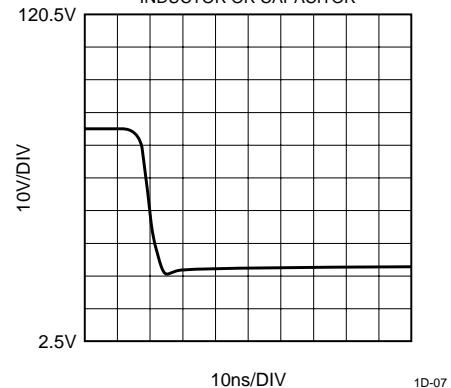
RISE TIME

NO PEAKING
INDUCTOR OR CAPACITOR



FALL TIME

NO PEAKING
INDUCTOR OR CAPACITOR





CVA2401T