

Low Power Video Buffer

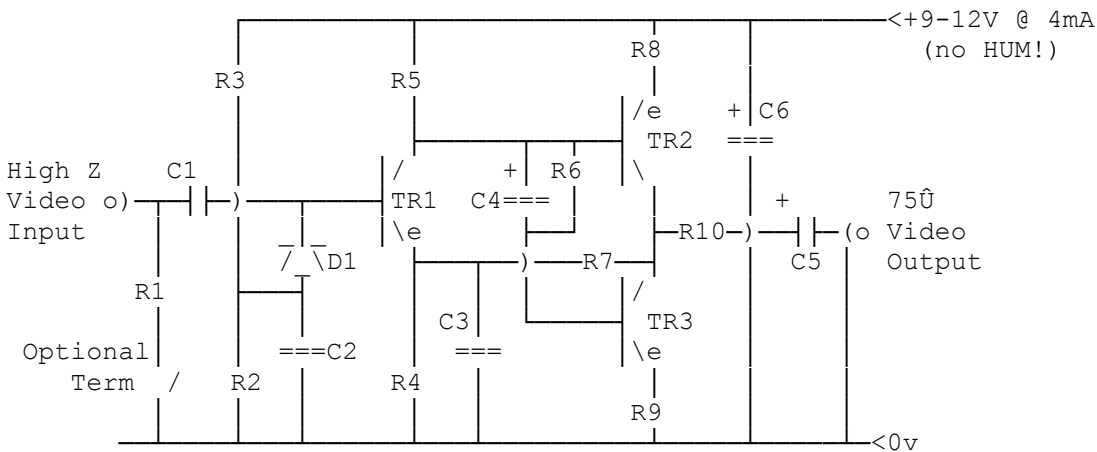
By G8MNY (CQTV 1993, new to packet Feb 06)
 (8 Bit ASCII Graphics use code page 437 or 850)

For battery use, or merely power saving in a complex vision switchers, this circuit was development from the standard 2 transistor (25mA) design, many existing circuits can be modified to this arrangement.

The push-pull output means a more complex design, but it enables quite substantial reductions in power (heat) consumption (about 5 times).

FEATURES

1. Very low current drawn, just 4mA, better than some Chips?
2. Push pull output stage.
3. High Input Z >10kΩ
4. Correctly matched Output Z, to 75Ω
5. Low amplitude distortion, & low phase error.
6. Vision clamp, irons out poor LF response & hum
7. Vision clamp, stops sync crushing in amp.



Type\No	1	2	3	4	5	6	7	8	9	10
R	75Ω	33k	100k	2k7	2k7	220k	3k3	10Ω	10Ω	39Ω
C	u2	u1	22p	10u	470u	47u				
Tr	BC109	BC212	BC107							
D	1N4148									

HOW IT WORKS

C1-2, D1, & R2-3 form the input biasing clamp, this maintains the I/P voltage at 3V, so with a gain of 2x, the output voltage will always be around 6V.

TR1-2, & R5 make up the standard non inverting amplifier with the gain being set by (R4+R7)/R4. However R8 provides extra current negative feed back on the TR2 emitter, which reduces the loop gain slightly, and greatly improves linearity. This consequently enables the more linear driving voltage in T2 base to be suitable to feed (via C4) a complementary output components TR3 & R9. TR3 provides the light DC quiescent load of 3mA, from the low base current through R6.

The HF trim is set up by C3 at a value of 22pF (try a preset if you like). This results in no phase error (lead/lag on Vectorscope) through the amplifier. With faster transistors, a reduced value for C3 may be required for perfect colour phase alignment.

CONCLUSION

To give 75 Ω output Z, R10 has to be lower than the frequently encountered 68 Ω , this is due to the slightly high output impedance created by the loop gain being lowered by the linearizing effects of R8 & R9. This limits the usefulness of this circuit for multiple outputs.

The power supply must clean, as any ripple present will be fed into the TR3 base!

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73 de John G8MNY @ GB7CIP