Assignment Due Thursday

Develop a plan to change from world time (24-hour) time to 12-hour time.

Career Fair Tomorrow 10 AM - 2 PM

Be sure to contact the employers targeted at the BTV program.

Lab Today

We worked on our time code readers. See Diagram 1 for part of the circuit with the transistor.

Dirty 5 Volts at Collector

We had to install a capacitor.

The collector gives us some of the signal onto our 5 volt line (see diagram 2). We don't want this signal on our 5 volt line, so we added a capacitor between the collector and ground. We could probably use 10 mF or less. That capacitor's called a **bypass capacitor** or a **decoupling capacitor**. It's usually tied directly to the 5 volt line. Can have a lot of those capacitors tied to the hot line, each placed right next to the device that lets through the signal.

Why is the voltage regulator so hot?

The input voltage is probably 18 to 24 volts, the output voltage is 5 volts. So, we are losing 13-19 volts. Suppose we are drawing 1A. 19 volts at 1A means 19 watts to dissipate.

If dropped input voltage to 15 volts, have output of 10 watts. So, lower input voltage would reduce the heat generated. We need a couple of volts above the regulated voltage in order for the voltage regulator to work. 15 volts input would be OK, 10 maybe too low, 12 might be ideal.

Common Collector configuration

See diagram 3. The base gets the input, the output is taken off the emitter. This configuration amplifies current, and loses a bit of voltage. We measured 2.2 volts at the base and 1.5 volts at the emitter, so we had a 0.7 volt drop across the transistor from input to output. This is why a **common collector** (also called **emitter follower**) configuration doesn't have a voltage gain, because of the 0.7v diode drop.

Using this transistor in cutoff and saturation. At cutoff, the collector is at 5 volts since no current flows. At saturation, the collector is at ground (0 volts) because of very little resistance. Good because we can use a small transistor Pt because we are acting like a switch.

Cameras

Handout of 4 pages of a block diagram of cameras. Sony BVP-360, the last tube-type professional camera. Broadcast Video P.

Put blue on top, green in center, red at bottom. If anything should dislodge and fall on the face of the blue tube (it is pointed down), not much will be affected as compared with the other colors.

PA

PA stands for preamplifier. Very likely is an FET preamplifier: quiet so doesn't add noise to signal, high impedance so we get maximum power transfer since the input signal isn't loaded down.

Next go to VA-18 – video amplifier.

Want to make sure peak white in each color is the same among all the colors. We want to see 714 mV out of the VA. Will be looking at the chip chart. 7.5 IRE at the mustache, 100 IRE at the white chip. Adjust video amplifier.

Ensure color bars fall in right place in the encoder. Then we will go back and do the VA now that the encoder is calibrated.

VA includes white shading for all colors.

DF board – deflection

Drives the shading board.

Drives the deflection coils that sit around the tubes.

Control a lot of beam focus in the deflection coil.

IE board (page 2)

Interface electronics.

Aperture correction, detail enhancement.

PR board – processing

PR49 – chromaticity masking allows us to match this camera to other cameras. NAM Y goes down to auto iris circuit (Y is luminance).

Pedestal, gamma correction, amplifier, knee, white/black clip circuits in this order (separate circuits).

End

Will continue this Thursday.