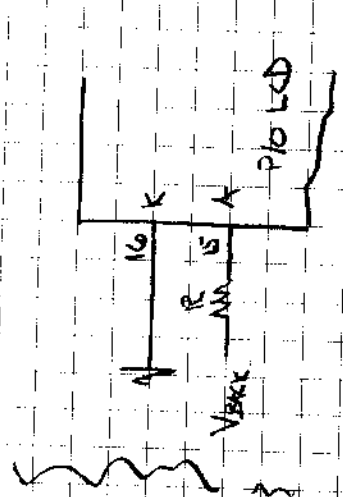


TO LED OR TRANSISTOR (TIP41) OR DARLINGTON TRANSISTOR (TIP122) OR FET (IRFZ44) OR DARLINGTON NETWORK (ULN2803)

ON THE LCD NOT THIS IS USED FOR LED BACKLITE INTENSITY

SPEAKER OR SIMILAR SOUND DEVICES

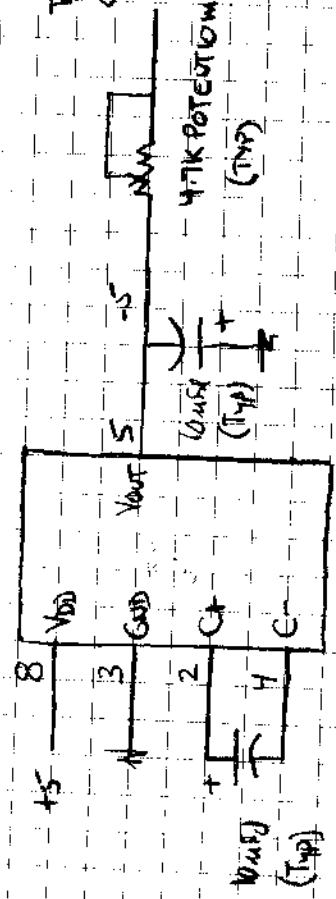


FOR LCDS HAVING AN LED BACKLIGHT, THE CURRENT MUST BE LIMITED WITH AN EXTERNAL RESISTOR

$$R = (V_{BACK} - V_O) / I_{BACK}$$

$$P_{RATING} = I_{BACK}^2 \times R$$

IC NE520A OR EQUIV



LCD'S DESIGNED FOR EXTENDED TEMPERATURE OPERATION FREQUENTLY REQUIRE A NEGATIVE BIAS

FOR EXAMPLE - V = 12VDC

$$R = (12 - 4) / 0.200 \approx 39\Omega$$

$$P_{RATING} = 0.2^2 \times 39 = 1.5W$$

USE 39Ω 3WATT

FOR EXAMPLE V = 5V

$$R = (5 - 4) / 0.2 \approx 4.7\Omega$$

$$P_{RATING} = 0.2^2 \times 4.7 = 0.18W$$

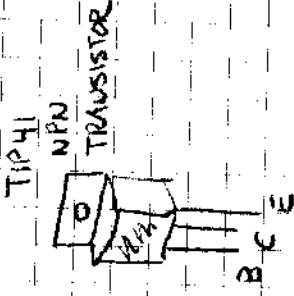
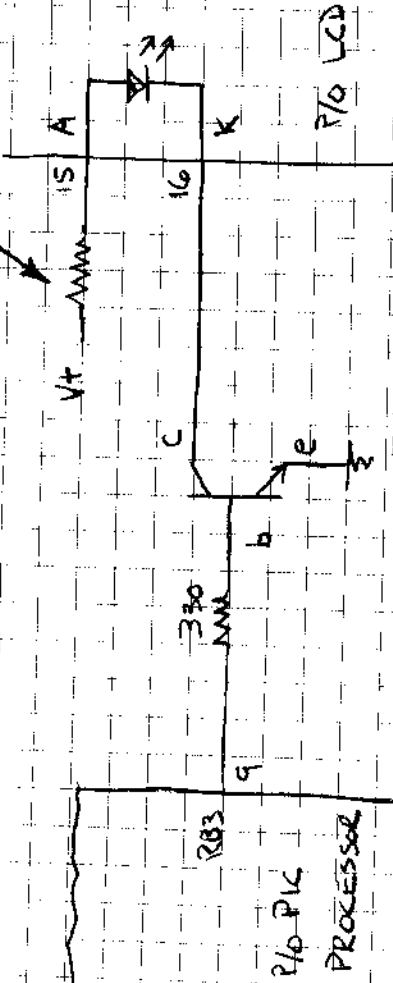
USE 4.7Ω 0.5W

LIMITING LCD BACK LIGHT CURRENT

LCD #100/07 - FIG #2

Anderson, Nov, 63

392 FOR VT OF 12V
472 FOR VT OF 5V



LCD #107 - FK#3

LED BACKLIGHT INTENSITY

Anderson Dec '03