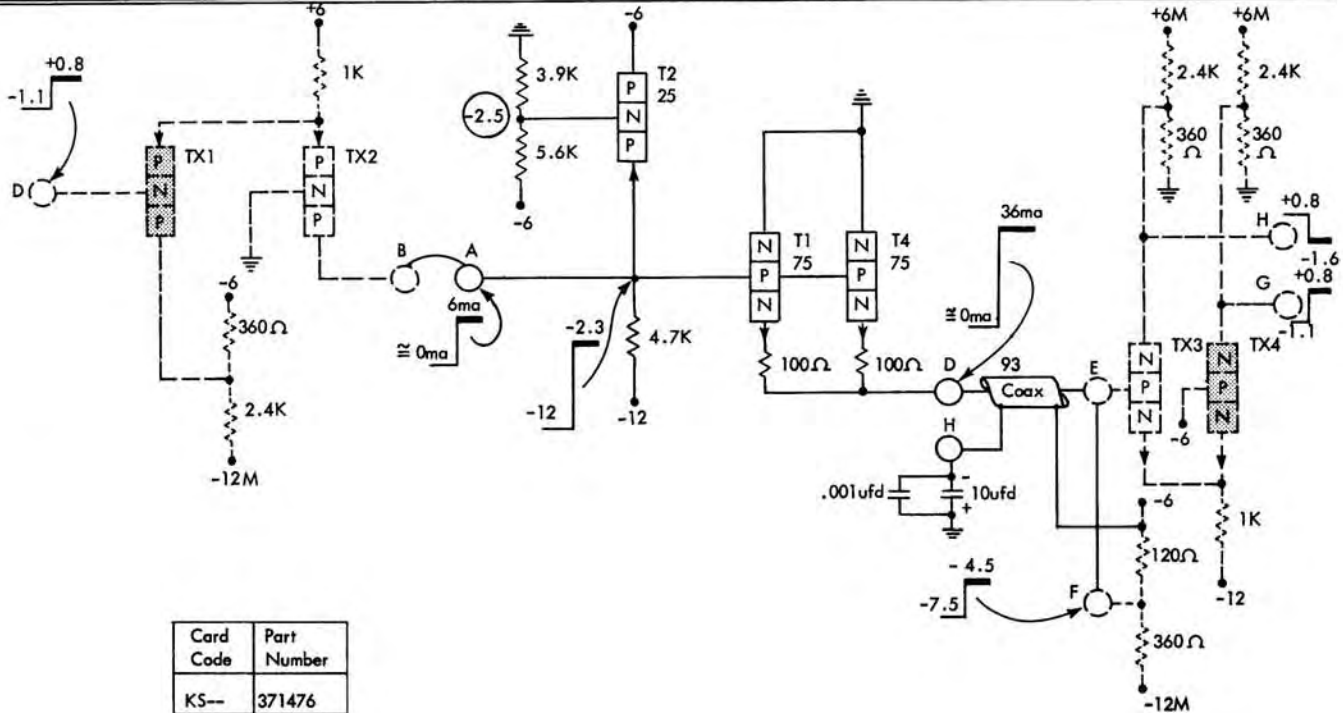


Typical Application of Line Driver



Card Code	Part Number
KS--	371476

Current Mode, P-to-P Line Driver

The line driver couples information between two widely separated points over a 93 ohm coaxial line. This driver is a current amplifier which amplifies input current to levels large enough to drive long lines. It can drive up to ten circuits dispersed at random distances along the coaxial line. Line levels are established by the coupling network which terminates the line. Considering these line levels, the driver develops an in-phase P line output for a P line input.

Circuit Description

As shown, tx2 is cut off and the input current to the line driver is zero. T1, T4, and T2 are reverse-biased. The output of the coaxial line is at a -P level of -7.5v because of divider current through the 120 ohm, 360 ohm coupling network.

When the input signal to the converter rises, tx2 is forward-biased and 6ma flows out of the driver through tx2 to +6v. The sequence which results when input current increases from zero to 6ma is as follows. As input current increases from zero, the current flow from -12v

through the 4.7K resistor increases and the voltage drop across this resistor increases. When current increases to 1ma, the base potential of T1 and T4 rises above -7.5v which forward-biases T1 and T4.

Base current for these transistors flows out of the 120 ohm, 360 ohm coupling network, through the emitter-base diodes and tx2 to +6v. When the current flow through the 4.7K resistor increases to 2.1ma the emitter of T2 rises above -2.5v and T2 is forward-biased. Its emitter clamps to its base potential and current flows from -6v, through T2, and tx2 to +6v. The 6ma current flow through tx2 has three components (current from -12v through the 4.7K resistor, Ib of T1 and T4, and Ice of T2). T2 functions as a clamp circuit; it sets the base voltage of T1 and T4 at -2.3v over a range of input current. In this state, a nominal current of 36ma flows out of the coupling network and the load, through T1 and T4 to ground. The output of the coaxial line rises to a +P level of -4.5v because of this current flow. The 100 ohm emitter resistors provide degeneration so currents through T1 and T4 tend to divide equally.