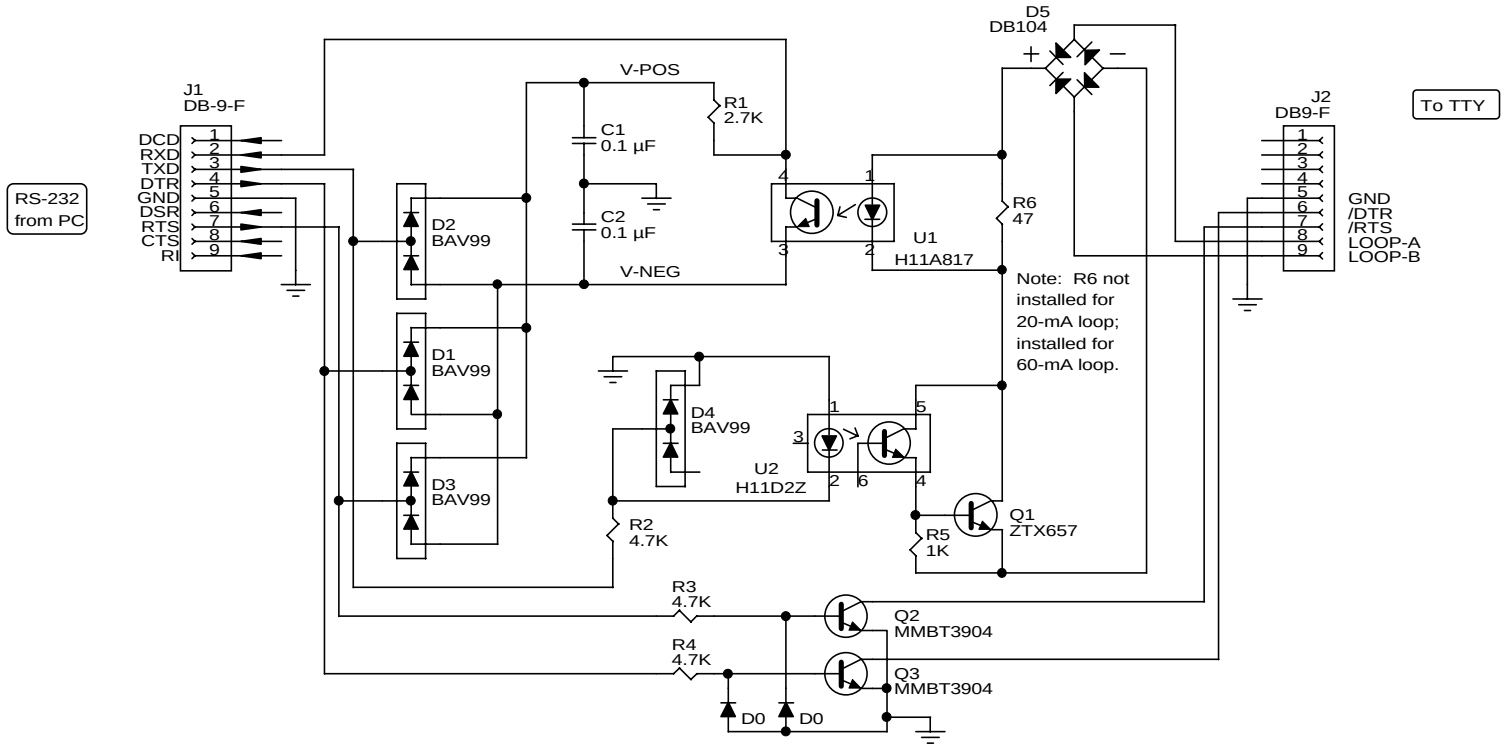

TTY232-TAP -- RS-232 to Teletype Current-Loop Interface

Allows RS-232 port to tap into externally-powered (and current-limited) TTY current loop.
For half-duplex single loop using 20-60 mA (150V max). Auto-Loop-Polarity provided by bridge D5.
Self-powered RS-232 interface, derives V-POS and V-NEG rails from RTS, DTR, and/or
TXD lines. Note: laptops may have low-voltage/low-current 232 ports compared to desktop PCs.
Best results are obtained when RTS and DTR are driven to opposite voltage levels by PC
(one active=positive, one inactive=negative), resulting in stable V-POS and V-NEG rails.
If RTS and DTR are both active (positive), V-NEG rail is derived from filtered TXD, which is
normally marking (negative). V-NEG rail will rise when data is transmitted -- if it rises
above -3V (RS-232 min spec), filter cap C2 may need to be increased, and/or inter-character
delays (or extra stop bits) may be needed, to increase TXD's marking time for charging C2.
The RS-232 spec calls for the negative level to be less than -3V, but most 232 receivers
will accept as negative a level all the way up to ground. If only TXD is connected
(no RTS or DTR), V-POS rail is also derived from TXD during transmission -- a break (line
spacing) or header string of dummy characters may be needed to charge C1.
Tested to 9600 baud with 20-mA/30V loop, and 4800 baud with 60-mA/150V loop.

Open-collector RTS and DTR lines are available for uses such as. keying a radio transmitter. Setting RTS or DTR active (positive) will activate Q2 or Q3. Set the other line inactive (negative) to provide V-NEG; V-POS wil be provided by TXD.

OOPS: Forgot diodes on B-E of Q2 and Q3 to clamp neg level. Add these on next rev, and maybe a second bridge for full duplex.

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