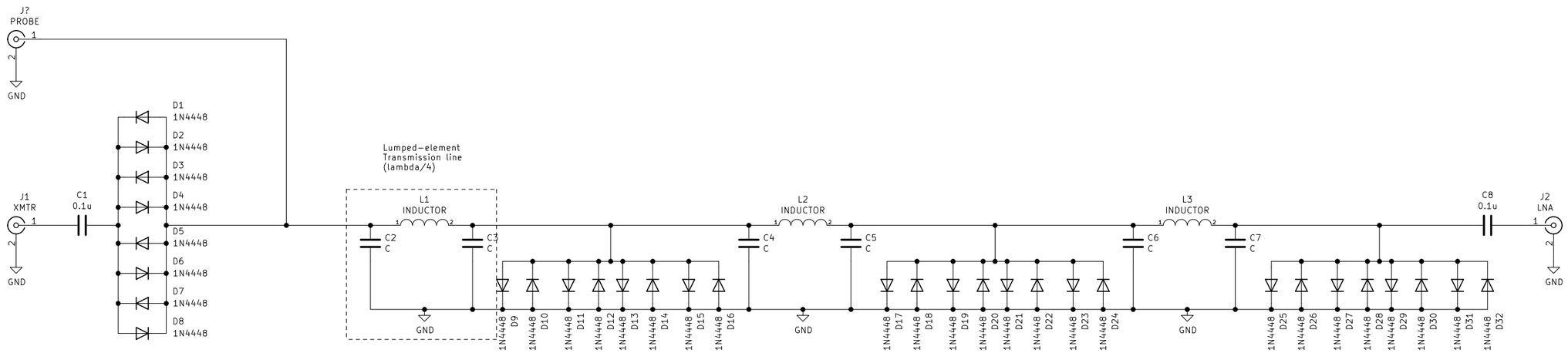
Passive transmit/recieve circuit with 3 stage lambda quarters (~10–350 MHz)



Equations (lambda/4)

C = 1/(omega*Z)*sin(theta)/(1+cos(theta)) = 1/(omega*Z0)
L = (Z/omega)*sin(theta) = Z0/(omega)

0.585 T 1H (25.07 MHz)
C=127 pF
L=317 nH

Housing (box) [Not spacoius enough for 3 stages]
– Hammond Manufacturing 1590A (Digikey= HM150–ND)
– Hammond Manufacturing 1590B (Digikey= HM151–ND)
– Hammond Manufacturing 1590BFL (Digikey= HM572–ND)

– BNC Panel connector Amphenol 112639 (ACX2300–ND)

Non–magnetic component vendors

** Trimmers**
– Knowles Voltronics
– Voltronics
– EW Electronics (Sprague–Goodman) [SGC3 Series]

Fixed
– ATC
– PPI
– Johanson
– Syfer [C0G/NP0 (1B), High Q, X7R (2R1)]

Notes:
– There is a practical margin for lumped element values error when realizing the transmission line (pi–network).
– Check S parameters (S11, S21) of lumped transmission line prior to assembly, phase= –90 deg with reflection < –15 dB.
– Two stage lambda/4 may be sufficient to provide enough isolation between XTMR and LNA
– The design is adapted from the passive broadband T/R switch in the Varian spectrometer.