

DEM Part Number PIN and PINK

2M Pin Diode IF Switch for all DEM Microwave Transverters, 2.3 GHz and up

The DEM PIN and PINK was designed to be used as an interface between a 2 Watt or less 144 MHz transceiver and any DEM Microwave transverter, 2.3 GHz and up. It is used to combine all dual mixer transverters to a common IF 144 MHz. transceiver. This interface is complete with adjustable TX and RX levels, DC control switching functions, and either Push-to-talk to ground or Positive voltage Keying.

Description: The DEM PIN switch PC board measures 3.75" x 1.5", which is designed to fit in the new DEMI microwave enclosures. The dual mixers of our microwave transverters are combined to a common 144 MHz. transceiver by the use of a Pin Diode switch. 2 PIN diodes and a LC circuit, isolate the receive and transmit ports mirroring the functions of the 144 MHz transceiver in use. On the receive side, a receive IF (RXIF) post amplifier is provides up to 20dB of additional gain at 144MHz. This gain stage can be left out if you do not require the extra gain or the extra gain may be attenuated to a desired level using the RXIF adjustable attenuator. On the TXIF side, a 50 Ohm, 2Watt attenuator pad precedes the TXIF adjustable attenuator which provides a more precise adjustment of the Transmit mixer level. The only mechanical device on the PIN board is a DPDT relay that switches voltage to the PIN diodes and RXIF amplifier, as well as performing the transmit and receive functions of the transverter. The DEM PIN is controlled by a Push-To-Talk to ground (PTT-L) or a positive voltage during transmit (PTT-H) from the transceiver used.

Construction: All components are thru-hole except for IC1. Refer to the provided schematics and component placement diagram and install and solder in any order. Installing the optional RXIF gain stage is a judgment call. If you do not need the extra receive gain, do not install it. Installation or not of this gain stage will generally not have an effect on your final system noise figure if any amplification is used before the mixer in your transverter down converts. To bypass the gain stage, install a 120pF in place of IC1

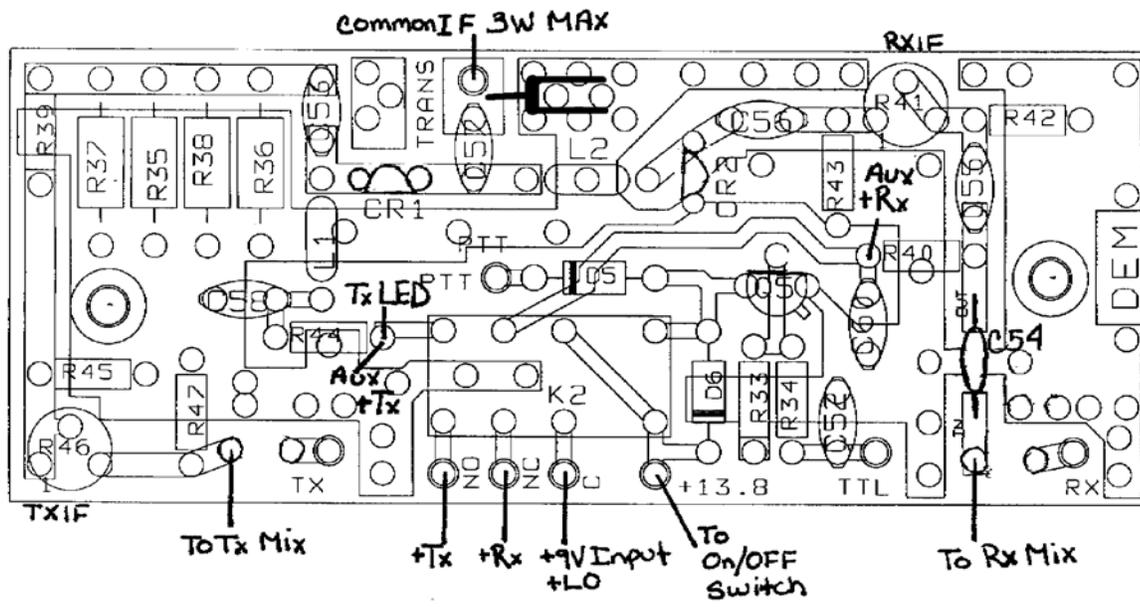
Installation: Small diameter coax, such as RG-174, should be used for the 3 RF connections to the board unless very short connection to the transverter of IF connector can be made. See the Complete kit document for details if this is to be part of a complete DEMI transverter system. Two connections couple the TX/RX ports of the transverter to the switch, and a single common TRANS connection couples the switch to the transceiver. In all cases, solder the shield to the ground plane. Finally, all DC connections are made at the PCB at their indicated points. Please refer to the complete kit document.

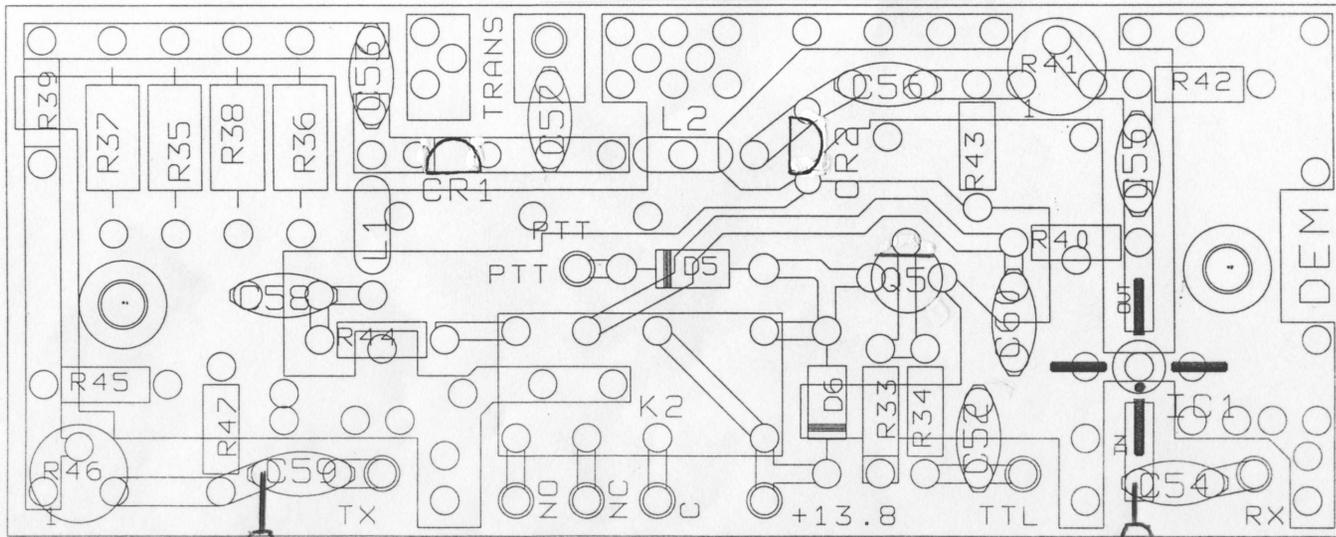
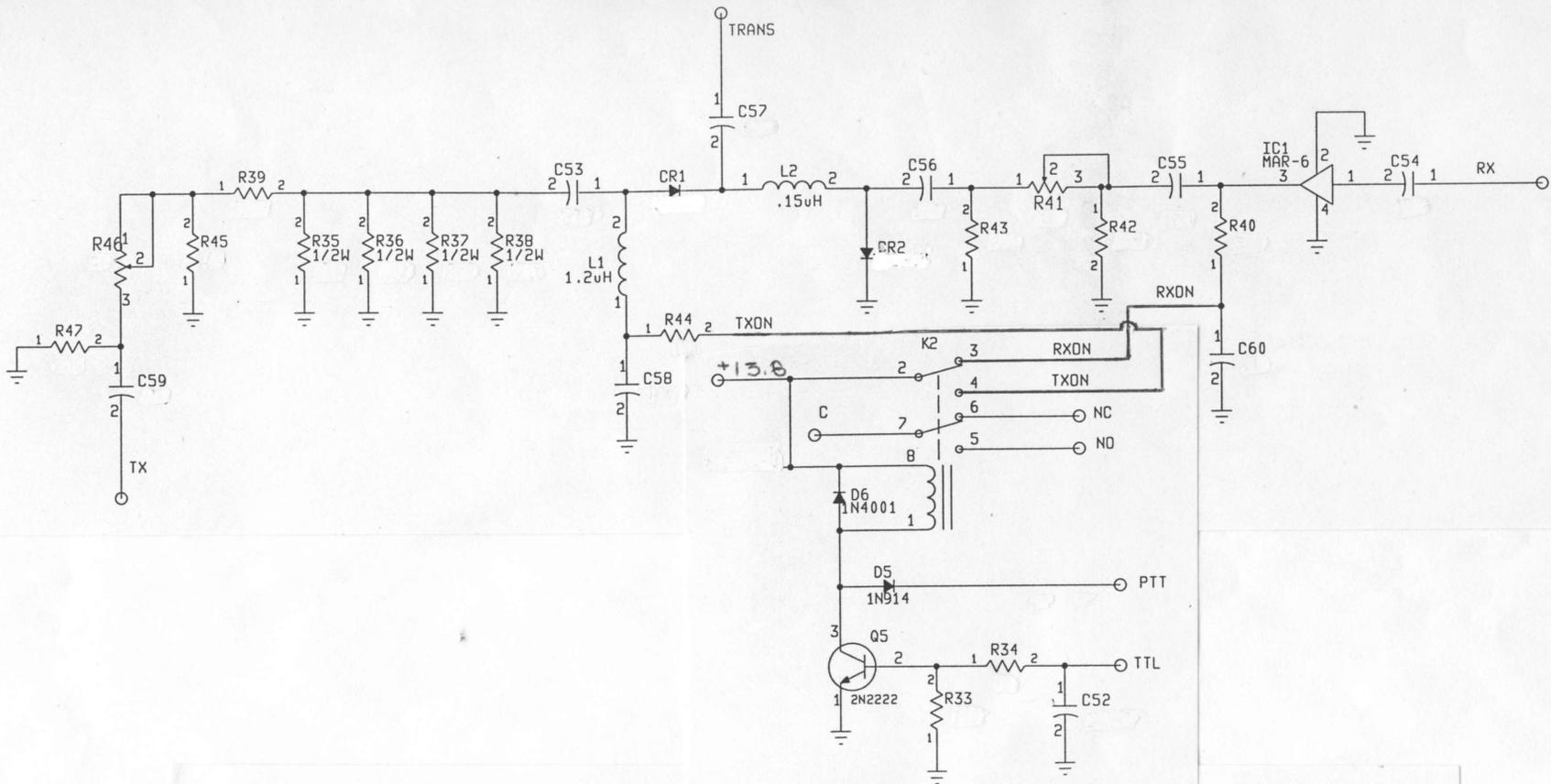
Operation: Input power to the PIN Switch is 1W nominal, 2W max. peak with the resistors provided. A higher power IF may be used if an external attenuator is included in the common IF line. The added attenuation on the receive signals may be overcome by the additional gain of the RXIF gain stage. The RX/TX IF isolation is \approx 30dB. Simply grounding the PTT line or applying a voltage between 1-15V to the TTL input will switch all RX/TX functions in your transverter.

Parts List

| | | | |
|------------------------|-----------------------|-------------------------------|------------------------------|
| R33 5.1K Ω | R42 220 Ω 1/4W | CR2 MPN3404 | RX Gain Option |
| R34 5.1K Ω | R43 220 Ω 1/4W | D5 1N914 | Install the following |
| R35 220 Ω 1/2 W | R44 1K Ω | D6 1N4001 | R40 560 Ω (opt.) |
| R36 220 Ω 1/2 W | R45 220 Ω 1/4W | L1 2.7 μ H (red/purple) | C60 0.1 μ F (opt.) |
| R37 220 Ω 1/2 W | R46 1K Pot | L2 0.15 μ H (brown/black) | IC1 MAR6 (opt.) |
| R38 220 Ω 1/2 W | R47 220 Ω 1/4W | K2 G5V | |
| R39 220 Ω 1/4W | C52-C59 120pF | Q5 2N2222 | |
| R41 1K Pot | CR1 MPN3404 | ① 120pF | |

① If IF gain stage is not required, install 120pF in place of IC1.





Optional parts placement if used with 2304 or 3456