

Tech Brief 13: Modifying the DS1075K Board to Work With the DS1073 3.6V EconOscillator

Older DS1075K EconOscillator programming boards comes from the factory configured to program 5V EconOscillators. This application brief demonstrates the modification required to make these boards operate with 3V EconOscillators. Note: If you have a recently purchased demo kit, year 2000 and newer, your board comes from the factory with these modifications incorporated. Consult the user manual that came with your programming kit (a copy is included on the programming kit software disc) if you are uncertain whether your board needs these modifications.

The original [DS1075K Development Kits](#) were designed to work with 5 V devices (e.g., the [DS1075](#) and [DS1065 EconOscillators](#)). With the advent of the 3-volt DS1073 came the need to be able to program 3-volt devices with the DS1075K. The DS1075K (Rev C) has been re-designed to allow for 3-volt operation. These Rev C boards can be identified by a sticker on the box sleeve and a voltage select jumper installed on the board. This article shows a method to modify older DS1075Ks to work with the newer 3-volt devices. The main requirement of the modification is to supply 3 volts to the [DS1073 3-Volt EconOscillator](#) to be programmed while preserving the 5-volt supply needed by the remainder of the components on the board. Furthermore, the 3 volts must be able to be cycled by the board to enter/exit from the program mode of the device.

NOTE: It is quite possible to program the DS1073 without damaging the device on an unmodified DS1075K. However, the measured output frequency from the board will be quite inaccurate as the DS1073 is being operated outside its specified voltage range.

Modification Procedure

Step 1. The 5-volt supply must be isolated from the switching transistor Q1. This can be accomplished by cutting the PCB source trace on the back side of Q1 on the board. A flying lead can then be used to connect an external 3-volt supply to the source of Q1. Unfortunately, the FET Q1 will not work reliably when a 3-volt supply is used, so it must be replaced.

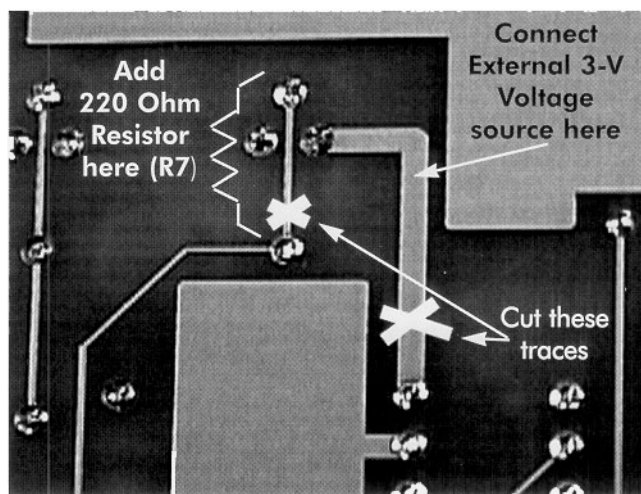


Figure 1: Modifications to the back of the DS1075K PCB

Step 2. Q1 must be replaced by a pnp transistor, e.g., 2N2907. In addition, the PCB gate trace which was originally used to drive the Q1 gate must be cut and a 220 Ohm R7 series resistor inserted to limit the base current of Q1. The trace is accessible from the back of Q1 on the PCB. This is also a convenient location to add the resistor. The photo below shows the placement and result of the modifications.

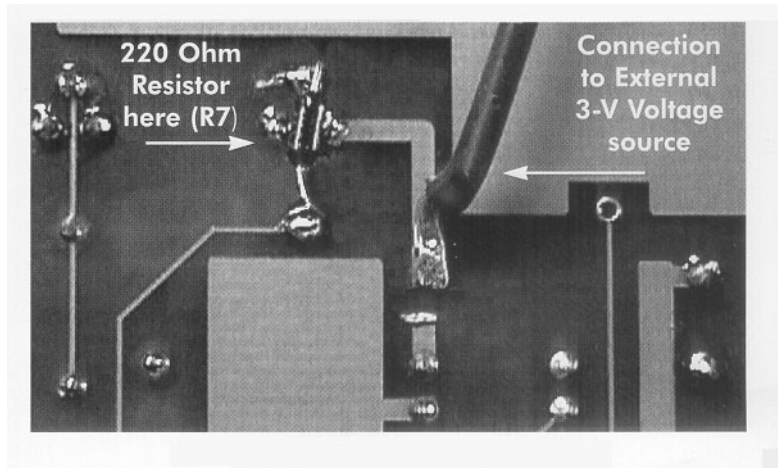


Figure 2: DS1075 PCB after modification

Using the DS1075K to Program 5-volt and 3-volt EconOscillators

Once these modifications have been completed, the DS1075K board can be used to program the DS1075-based EconOscillator family, including the DS1065, DS1075 and DS1073. No matter which EconOscillator you plan to program, a 5-volt supply must still be connected to the sockets on the board to power the rest of the circuitry. The following notes will provide techniques of programming specific products.

DS1065 and DS1075 EconOscillators

To program DS1065 and DS1075 devices, the flying lead (described in Step 1) should also be connected to the +5-volt supply.

DS1073 EconOscillator

To program the DS1073, the flying lead must be connected to an external power supply with a voltage in the range 2.7 V to 3.6 V. (The ground/return terminal of this power supply is shared with the ground terminal of the 5-volt supply.) The DS1073 is factory-trimmed at 3.15 volts, so this voltage will result in the most accurate correlation with the programmed frequency of the device. Variation of frequency with supply can be monitored by varying the voltage applied over the range 2.7 to 3.6 volts.

NOTE: The voltage should be measured at the DS1073 supply pin to prevent errors caused by the voltage drop across Q1

MORE INFORMATION

DS1073:	QuickView	-- Full (PDF) Data Sheet (272k)	-- Free Sample
DS1075:	QuickView	-- Full (PDF) Data Sheet (264k)	-- Free Sample
DS1075K:	QuickView	-- Full (PDF) Data Sheet (136k)	