

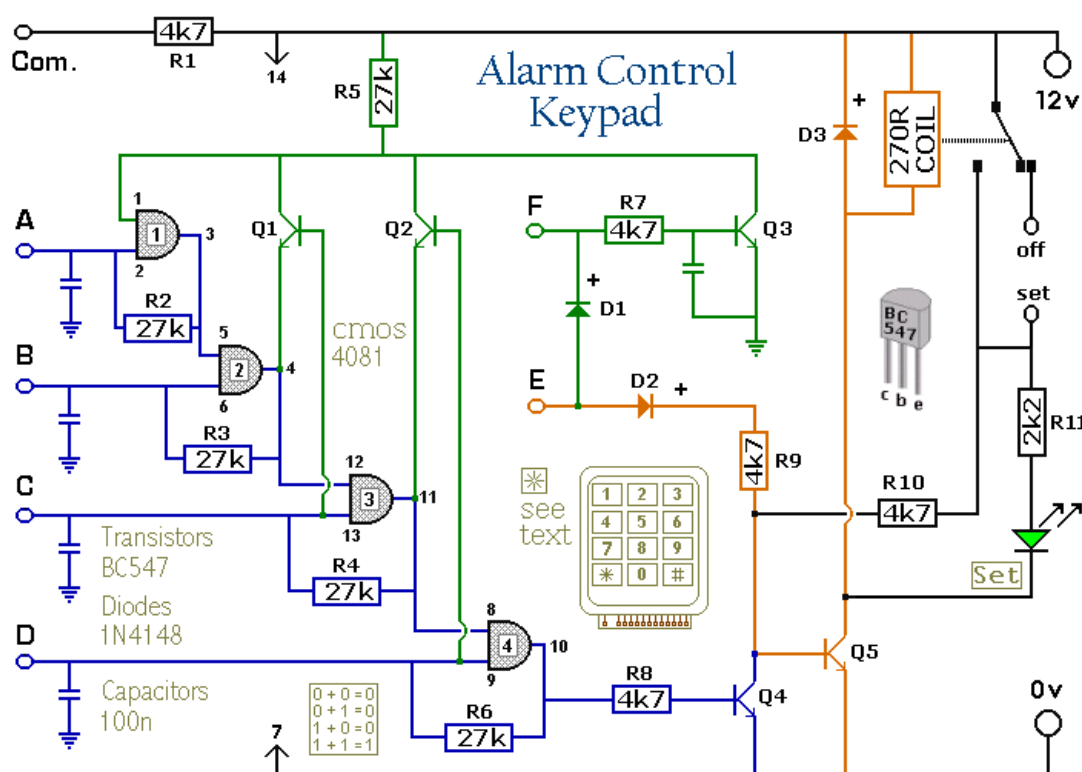
4 Digit Alarm Keypad

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Description

This is an enhanced 4 digit keypad which may be used with the [Modular Alarm System](#).

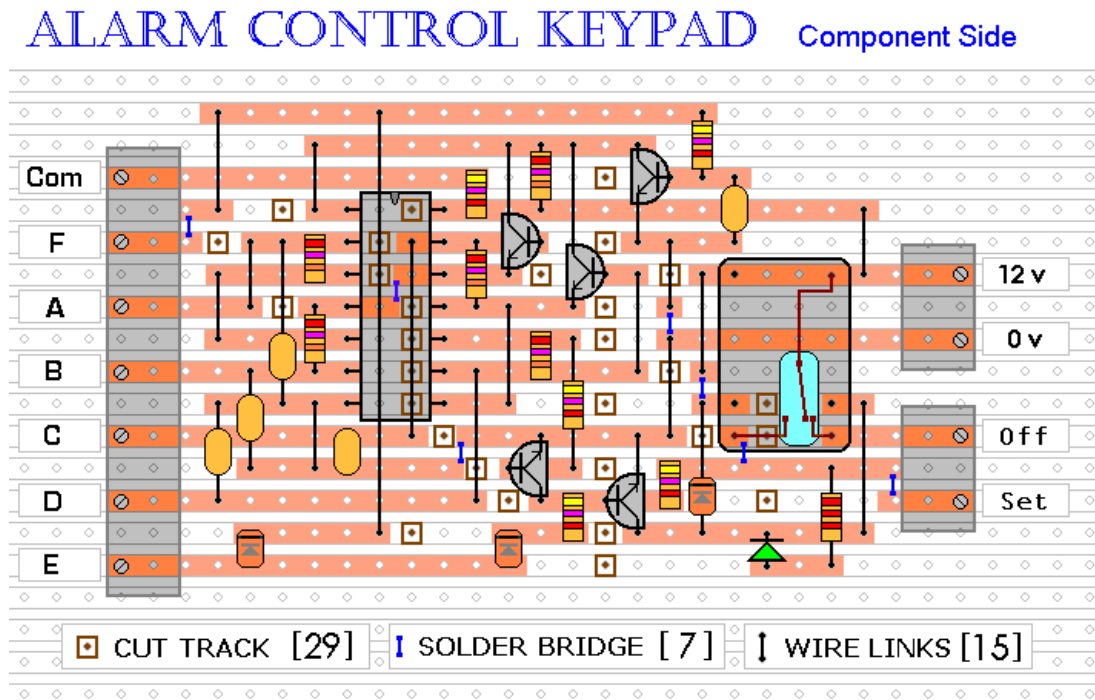


Notes

The Keypad must be the kind with a common terminal and a separate connection for each key. On a 12-key pad, look for 13 terminals. The matrix type with 7 terminals will NOT do. The Alarm is set by pressing a single key. Choose the key you want to use and wire it to 'E'. Choose the four keys you want to use to switch the alarm off, and connect them to 'A B C & D'. Your code can include the non-numeric symbols. With a 12-key pad, over 10 000 different codes are available. Wire the common to R1 and all the remaining keys to 'F'. When 'E' is pressed, current through D2 and R9 switches Q5 on. The relay energises, and then holds itself on by providing base current for Q5 through R10. The 12-volt output is switched from the "off" to the "set" terminal, and the LED lights. To switch the Alarm off again it is necessary to press A, B, C & D in the right order. The IC is a quad 2-input AND gate, a Cmos 4081. These gates only produce a high output when both inputs are high. Pin 1 is held high by R5. This 'enables' gate 1, so that when 'A' is pressed, the output at pin 3 will go high. This output does two jobs. It locks itself high using R2 and it enables gate 2 by taking pin 5 high. The remaining gates operate in the same way, each locking itself on through a resistor and enabling its successor. If the correct code is entered, pin 10 will switch Q4 on and so connect the base of Q5 to ground. This causes Q5 to switch off and the relay to drop out. Any keys not wired to 'A B C D or E' are connected to the base of Q3 by R7. Whenever one of these 'wrong' keys is pressed, Q3 takes pin 1 low. This removes the 'enable' from gate 1, and the code entry process fails. If 'C' or 'D' is pressed out of sequence, Q1 or Q2 will also take pin 1 low, with the same result. You can change the code by altering the keypad connections. If you need a

more secure code use a bigger keypad with more 'wrong' keys wired to 'F'. A 16-key pad gives over 40 000 different codes. All components are shown lying flat on the board; but some are actually mounted upright. The links are bare copper wires on the component side. Two of the links must be fitted before the IC.

Veroboard Layout



The [Support Material](#) for this circuit includes a step-by-step guide to the construction of the circuit-board, a parts list, a detailed circuit description and more.