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MA BELL IS NOT THE ONLY ONE WITH STANDARDS! JUST ABOUT EVERY MANUFACTURER OF IC'S THAT GENERATE TOUCH TONES HAS ALSO GONE BY THE 16 KEY (8 TONE) STANDARD FOR TOUCH TONE PADS. AND IT IS EVEN EASIER TO CONVERT A TONE PAD THAT USES AN INTEGRATED CIRCUIT TO GENERATE THE TONES THAN CONVERTING A MA BELL PAD!

IT WILL HELP IMMENSELY IF YOU HAVE THE SCHEMATIC FOR THE PAD IN QUESTION, OR AT LEAST THE PIN-OUT DIAGRAM OF THE CHIP BEING USED. PIN-OUTS CAN USUALLY BE OBTAINED FROM THE MANUFACTURER OR FROM AN ECG, SK, GE OR SIMILIAR SEMICONDUCTER HANDBOOK (PROVIDED THAT MANUFACTURER MAKES AN EQUIVALENT FOR THE CHIP IN YOUR PAD). I'LL USE THE RADIO SHACK CEX-4000 TONE PAD MODULE FOR AN EXAMPLE, EVEN THOUGH IT IS PROBABLY ALMOST THE LOUSIEST ONE YOU CAN BUY, IT IS FAIRLY TYPICAL ASILY AVAILABLE.

TAKE A LOOK AT THE DIAGRAM OR THE PIN-OUT OF THE CHIP. YOU SHOULD SEE TWO GROUPS OF PINS, THE ROWS TONE PINS AND THE COLUMN TONE PINS. THESE WILL BE MARKED AS R1,R2,R3,R4 AND C1,C2,C3 (RADIO SHACK) OR OR X1,X2,X3 AND Y1,Y2,Y3 ETC. ON OTHERS. AT ANY RATEU SHOULD BE ABLE TO DISTINGUISH WHICH THREE PINS CONTROL THE COLUMNS AND WHICH FOUR CONTROL THE ROWS. IF YOU'RE LUCKY, EACH GROUP OF ROWS AND COLUMNS WILL BE CONTIGUOUS. NOW LOOK AT THE COLUMN PINS, AND YOU'LL PROBABLY SEE AN EMPTY PIN RIGHT NEXT TO THEM. THIS IS THE COLUMN PIN FTHE 1633 HZ TONES. THESE CHIPS USUALLY ACHIEVE THEIR SWITCHING BY CONNECTING A ROW PIN WITH A COLUMN PIN (THAT WAY TQAN USE A0VERY SIMPLE KEYBOARD PAD, UNLIKE MA BELL'S COMPLICATED ONE). SO ALL YOU HAVE TO DO IS TAKE A SPDT SWITCH AND A FEW PIECES OF WIRE, CUT THE TRACE GOING TO THE COLUMN 3 PIN OF THE CHIP, ATTACH A WIRE FROM THE CHIP SIDEOF THAT CUT TO ONE END OF THE SPDT SWITCH, A WIRE FROM THE OTHER SIDE OF THE CUT TO THE CENTER OF THE SPDT SWITCH, AND FINALLY, FROM THE REMAINING CONTACT ON THE SPDT SWITCH, HOOK A WIRE TO THE PREVIOUSLY IDENTIFIED PIN C4 (COLUMN 4). NOW YOU HAVE A "BANK SWITCHING ARRANGEMENT EXACTLY LIKE THE ONE DESCRIBED IN THE PREVIOUS BULLETIN FOR MODIFYING A MA BELL PAD.

IF YOU CAN'T GET THE SCHEMATICS OR THE PIN OUTS FOR YOUR CHIP, DON'T DESPAIR. THERE IS STILL HOPE FOR YOU! YOU JUST HAVE TO TRACK THE CONNECTIONS GOING FROM THE PAD'S KEYS TO THE CHIP. CHANCES ARE YOU'LL FIND THAT EACH ROW HAS A COMMON TRACE, AND SO DOES EACH COLUMN (FOR THOSE NON-TECHNICAL FOLKS, A TRACE IS A CONNECTION ETCHED OUT ON A CIRCUIT BOARD). JUST FOLLOW THESE TO THE CHIP, AND MAKE YOUR OWN SCHEMATIC UP. NOW TAKE A LOOK FOR THAT EXTRA PIN--THERE SHOULD BE ONE FLOATING AROUND RIGHT NEXT TO THE COLUMN PINS. IT WILL BE NOT BE HOOKED UP TO ANYTHING ELSE, THAT IS, "HANGING FREE". DRILL A HOLE IN THE SIDE OF TONEPAD'S CASE, AND MOUNT YOUR SWITCH. RADIO SHACK SELLS A NICE MICROMINIATURE SWITCH THAT WORKS EXCELLENTLY! (ALMOST THE ONLY GOOD THING I CAN SAY ABOUT

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RADIO SHACK IN THIS ARTICLE)

HAPPY PHREAKING.....

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