MACROVISION DECODER
MV41

Is a module that works closely with TS61. Both MV41 and TS61 form together a single Macrovision decoder. Pick your TS61-module (if you have built one) and connect it to the MV41 module according to the wiring diagram. How this will look like pure mechanical is up to each one. Then it will be some cable access jobs too.

Macrovision is composed of a collection of pulses that has been added to a standard video signal. The pulses are in the area between the vertical and the horizontal part of a CVBS signal - the so-called picture blanking interval. Additional pulses can be found just between the lines end and the vertical sync pulse. These large pulses have relatively nasty amplitude which also varies continuously. The result while a VCR trying to read this type of video signal is huge problems with both brightness and synchronization. A television receiver is not affected by these disturbing pulses, except for a slightly worse picture.

In order to restore this with pulses superimposed video signal requires a considerable precision from a decoder. With precision aims the short but important area of the vertical sync pulse. By using a suitable pin from the 4060 counter on the TS61 module can one get the decimal counting logic circuit 4017 to form a stable pulse that begins before and covers the entire picture blanking interval. This pulse is connected to a complex of gates and associated delays. At this stage we know the exact position where the Macrovision ravaged part of the video signal is added. The final correction is performed by that this areas are deflected and replaced with ordinary black lines.

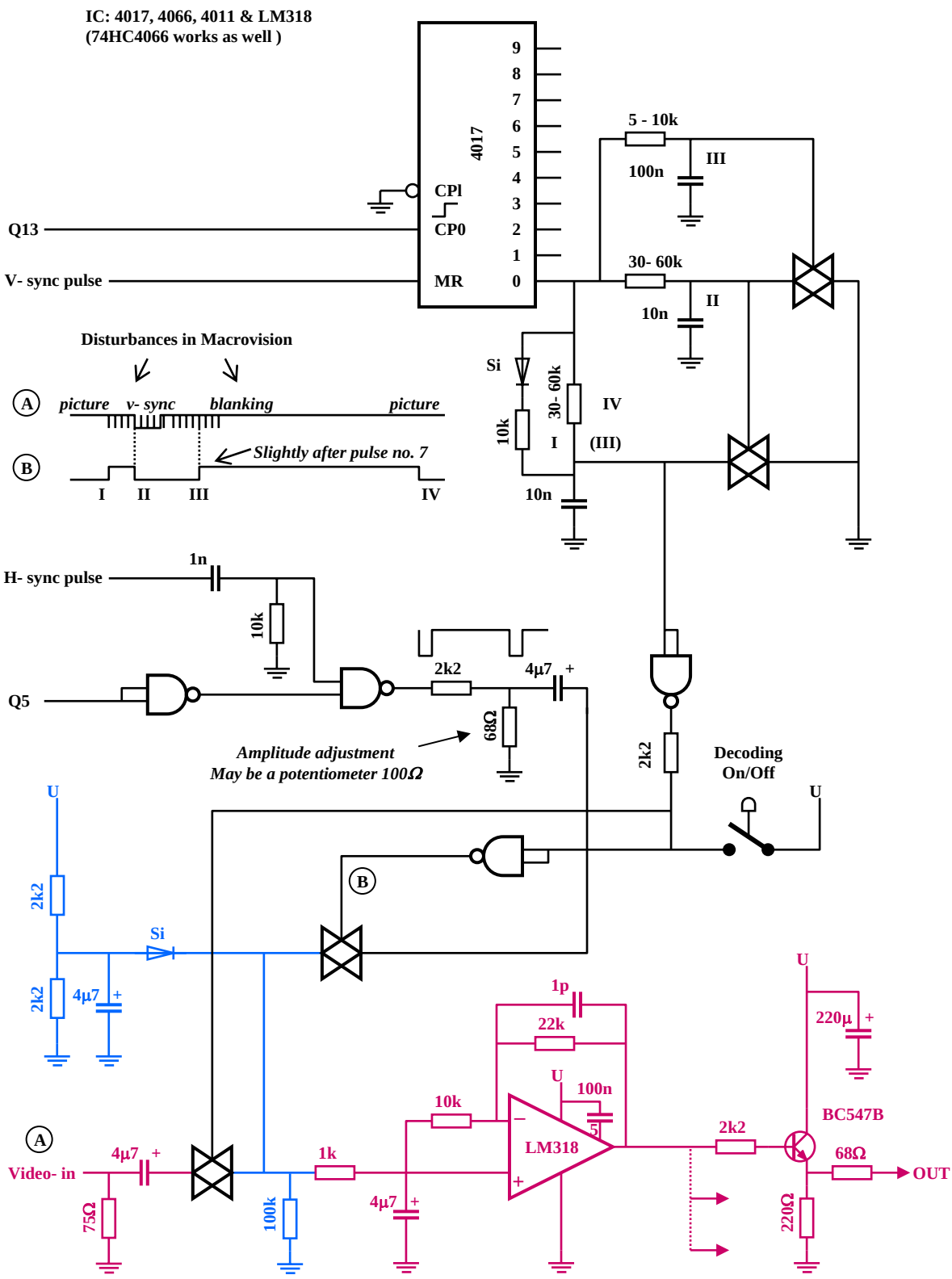
If you intent to manufacture and use a decoder for Macrovision, the law say:
You are allowed to make one copy and only for your own use.

Is the automatic version of MV41. It is identical with MV41 in addition to one logic circuit, which is a 4011B plus related components. This accessory will react on the amount of line sync pulses in a video signal. If we have a Macrovision encoded video signal to the thread, it will be more line sync pulses than from a normal picture blanking interval. If we use a NAND gate as a comparator, we can choose to place a DC voltage slightly above half the supply voltage to its input as U_{R20}. The difference in the pulse density as a normal video signal has against a Macrovision encoded video signals, leading to a smaller v-shaped pulse and a larger V-shaped pulse. The larger V-shaped pulse, stand down a bit under the DC voltage level and shifts the logical state. Furthermore we need a rectifier diode and a low pass filter, then we can control the encoding to be or not to be.

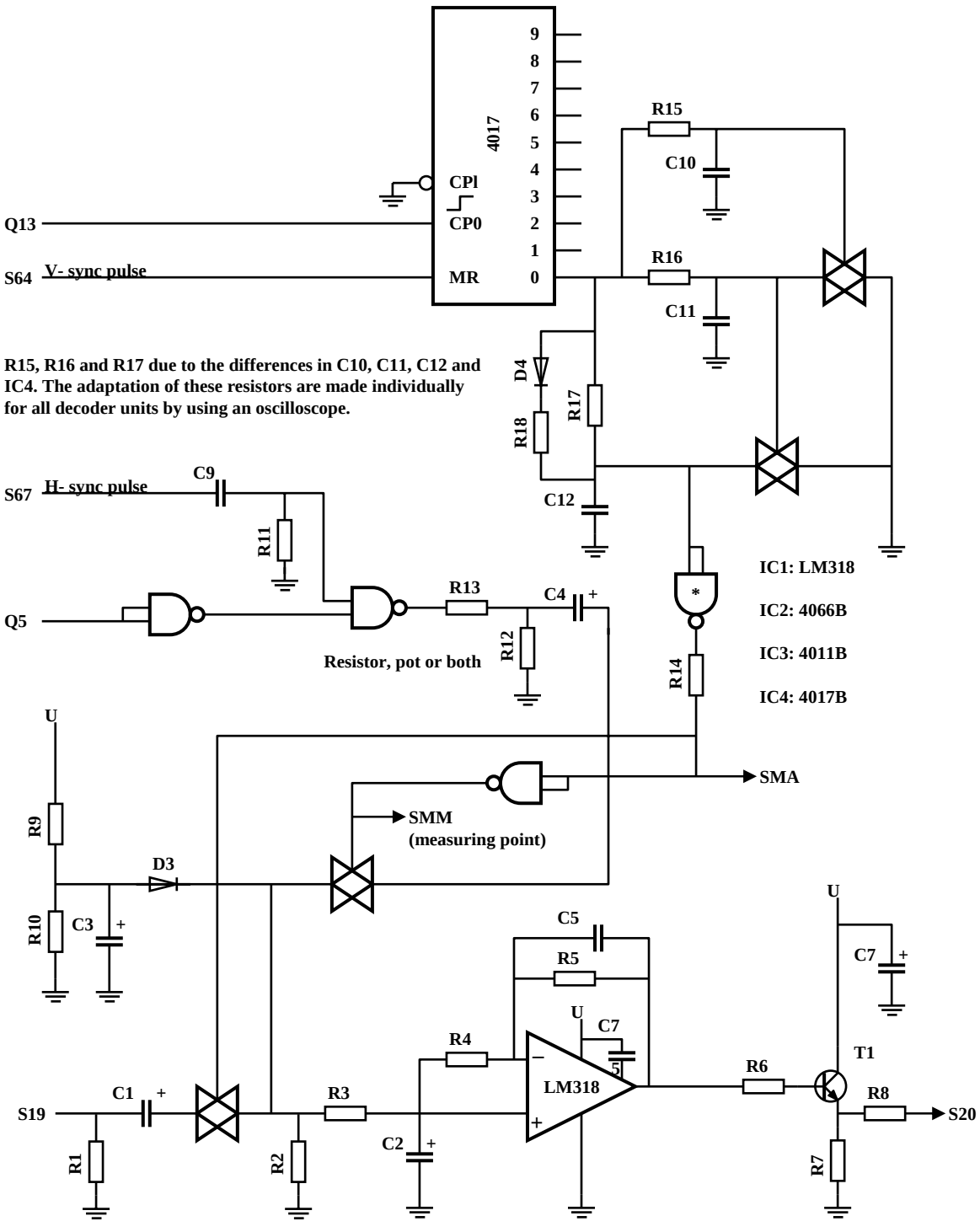
Occurs a problem, i.e. that the automation not work as intended, is it likely caused by the logic circuit IC5 (4011B). Where your specific copy does not have the normal shift mode for the switch of the various states. To remedy this, one can experiment with resistor values of R19 and R20. I myself have not found a 4011B with an abnormal character.

You can choose the layout of MV42, but only build it as an MV41. If it turns out in the future that MV42 is necessary, you can build it then.

SCHEMATIC DIAGRAM

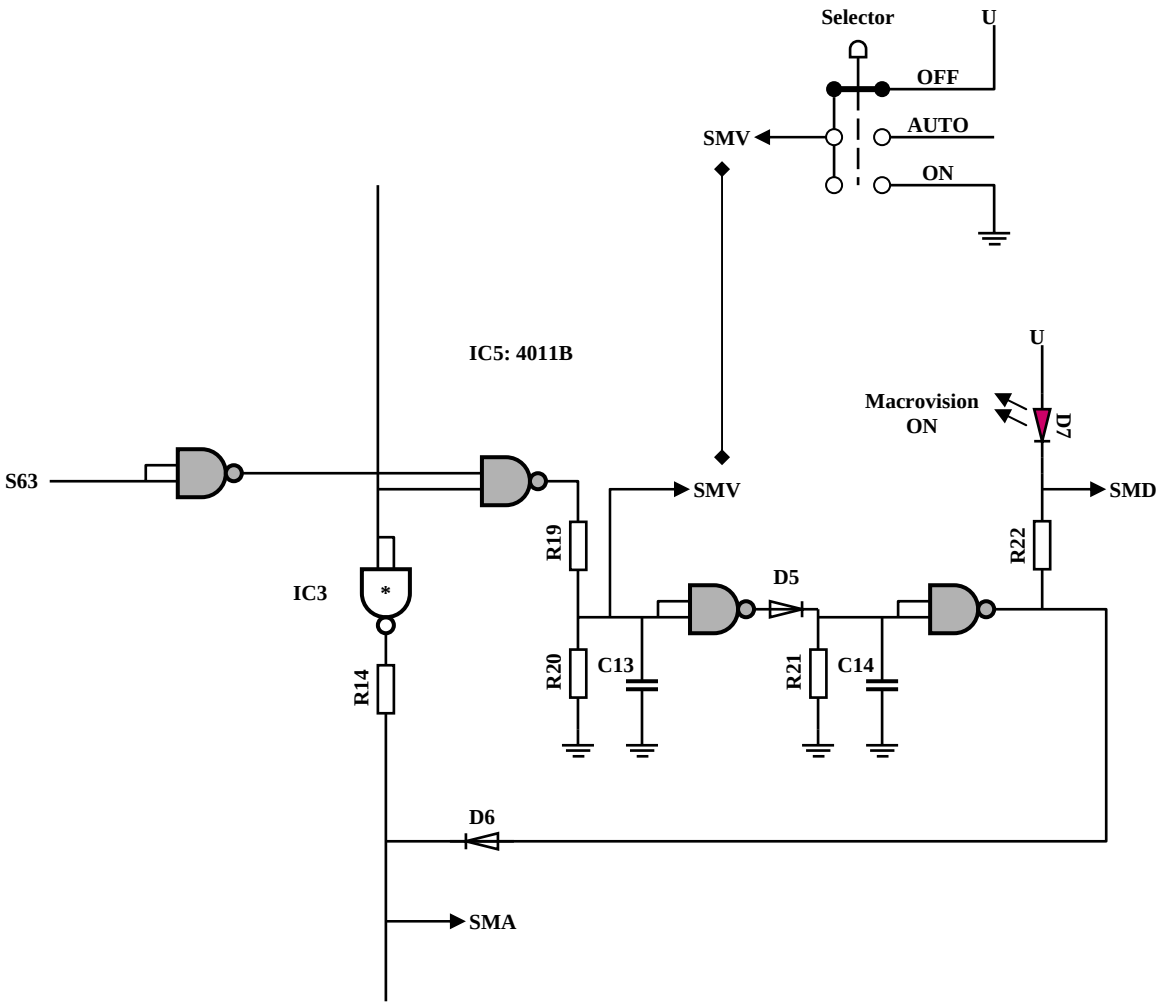


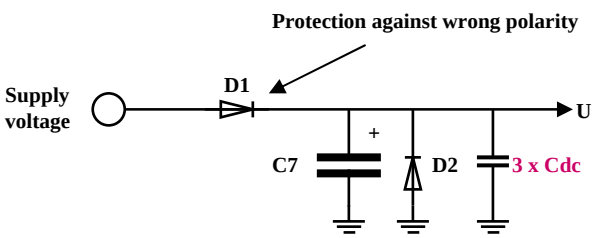
CIRCUIT DIAGRAM



PROJECT	*Macrovision Decoder*	
MODULE	*Sub module for TS61*	
MODEL	**MV41**	
AUDIT	A-1	**DRAWING: 1 of 1**
SUPPLY	≥ +7 VDC	≤ +15 VDC
CURRENT	60mA	at 12V
OTHER	*45mA at 9V*	
B. Lindqvist		

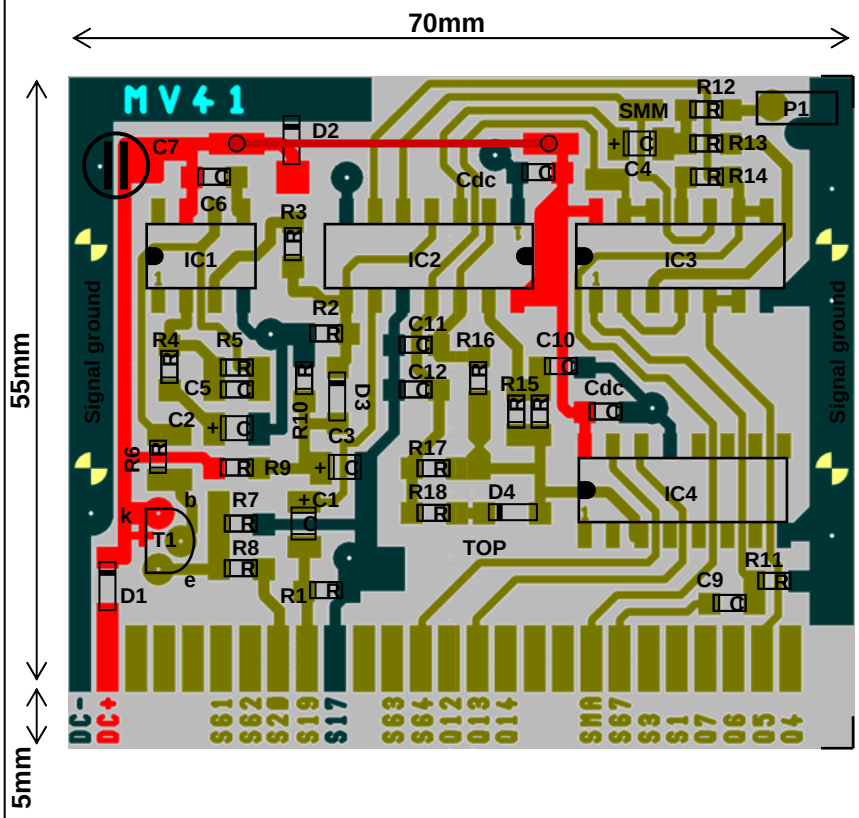
CIRCUIT DIAGRAM





PROJECT	*Automatic MV-Decoder*		
MODULE	*Sub module for TS61*		
MODEL	**MV42**		
AUDIT	A-1	**DRAWING: 1 of 1**	
SUPPLY	≥ +7 VDC		≤ +15 VDC
CURRENT	60mA + I_{D7}		at 12V
OTHER	*Otherwise identical to MV41*		
B. Lindqvist			

PLACING OF COMPONENTS



SMR1206:	*SMC1206:*
R1 = 75Ω	C5 = 1p
R2 = 100k	C6 = 100n
R3 = 1k	C9 = 1n
R4 = 10k	C10 = 100n
R5 = 22k	C11 = 10n
R6 = 2k2	C12 = 10n
R7 = 220Ω	Cdc = 10nx2
R8 = 68Ω	
R9 = 2k2	
R10 = 2k2	
R11 = 10k	
R13 = 2k2	
R14 = 2k2	
R15 = 5- 10k	
R16 = 30- 60k	
R17 = 30- 60k	
R18 = 10k	

Other capacitors:
C1-C4 = 4µ7, Tantalum, SMD
C7 = 220µ, E-lytic, Hole mount
C8 = Reserve

IC (hole mounted):
1) LM318, wideband single-OP
2) 4066B, 4x analogue switch
3) 4011B, 4x nand
4) 4017B, decimal counter

Other components:
R12&P1 = 50-100Ω, depends on the supply voltage and the level on the video signal.
D1&D2 = LL5817, SMD
D3&D4 = BAS32, SMD
T1 = BC547B

Single sided or double sided boards. For the ground plane: Drill 10 pcs. of ground holes that are marked on the board. The ground plane can also consist of sheet metal. No other holes shall be drilled, except the screw holes - If it is screwed? The negative pin on C7 shall act as a ground passage. T1 is placed above or below the board.
The temperature on T1 and R7 is due to U. Other components are surface mounted.

PROJECT	*Macrovision Decoder*	
MODULE	*Sub module for TS61*	
MODEL	**MV41**	
AUDIT	A-1	**DRAWING: 1 of 1**
OTHER	-	
B. Lindqvist		

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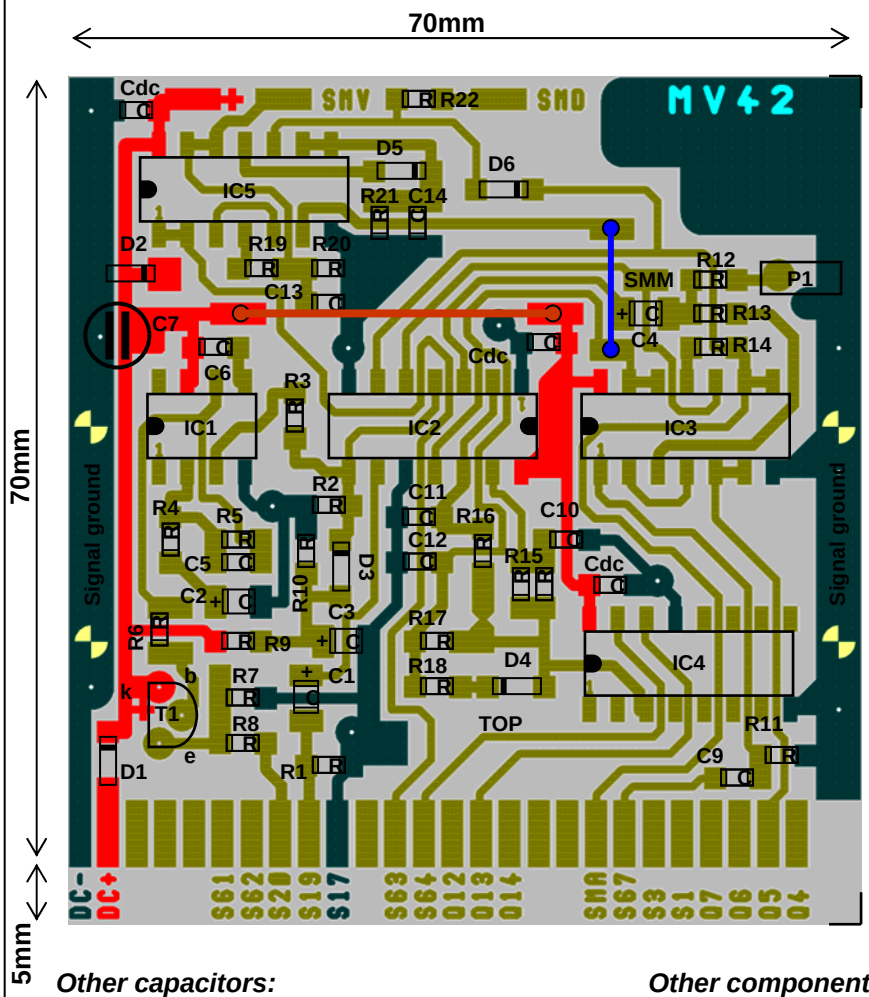

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R7 = 220Ω	C13 = 100n
R8 = 68Ω	C14 = 100n
R9 = 2k2	Cdc = 10nx3
R10 = 2k2	
R11 = 10k	
R13 = 2k2	
R14 = 2k2	
R15 = 5- 10k	
R16 = 30- 60k	
R17 = 30- 60k	
R18 = 10k	
R19 = 2k2	
R20 = 4k7	
R21 = 1M	

Other capacitors:
C1-C4 = 4µ7, Tantalum, SMD
C7 = 220µ, E-lytic, Hole mount
C8 = Reserve

IC (hole mounted):
1) LM318, wideband single-OP
2) 4066B, 4x analogue switch
3) 4011B, 4x nand
4) 4017B, decimal counter
5) 4011B, 4x nand

Other components:
R12&P1 = 50-100Ω, depends on the supply voltage and the level on the video signal.
R22 = (U-2)/ILED
D1&D2 = LL5817, SMD
D3-D6 = BAS32, SMD
T1 = BC547B

Single sided or double sided boards. For the ground plane: Drill 11 pcs. of ground holes that are marked on the board. The ground plane can also consist of sheet metal. No other holes shall be drilled, except the screw holes - If it is screwed? The negative pin on C7 shall act as a ground passage. T1 is placed above or below the board.
The temperature on T1 and R7 is due to U. Other components are surface mounted.

PROJECT	*Automatic MV-Decoder*	
MODULE	*Sub module for TS61*	
MODEL	**MV42**	
AUDIT	A-1	**DRAWING: 1 of 1**
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