MOS INTEGRATED CIRCUITS

M 054
M 055

1 OF 16 DECODER

- SPECIFICALLY DESIGNED FOR TV APPLICATION
- MINIMIZATION OF THE EXTERNAL COMPONENTS
- INTERNAL PULL-UP FOR USE WITH LIGHT PRESSURE SWITCHES (M054)
- OPEN DRAIN OUTPUTS FOR TOUCH CONTROL (M055)

The M 054, M 055 are monolithic integrated circuits specifically designed to act as interface between M 1025 (30 channel ultrasonic receiver) and H 580/590 (quad analog switch) in TV applications. The inputs A,B,C,D,E are driven directly from the corresponding outputs of the M 1025. If G input is high the circuits decode the binary combinations from 0 to 15, if G is low the combinations from 16 to 31 are decoded instead. The M 054 has an internal pull-up circuit on the outputs to minimize the number of external components when light pressure switches are used. The M 055 has open drain outputs for touch control applications. The circuits are constructed with N-channel silicon gate technology and are supplied in a 24-lead dual in-line plastic package.

ABSOLUTE MAXIMUM RATINGS*

V_{DD} **	Supply voltage	-0.5 to 20	V
V_I	Input voltage	-0.5 to 20	V
$V_{O(off)}$	Off state output voltage (M 055 type)	20	V
P_{tot}	Total power dissipation	1	W
T_{stg}	Storage temperature	-65 to 150	°C
T_{op}	Operating temperature	0 to 70	°C

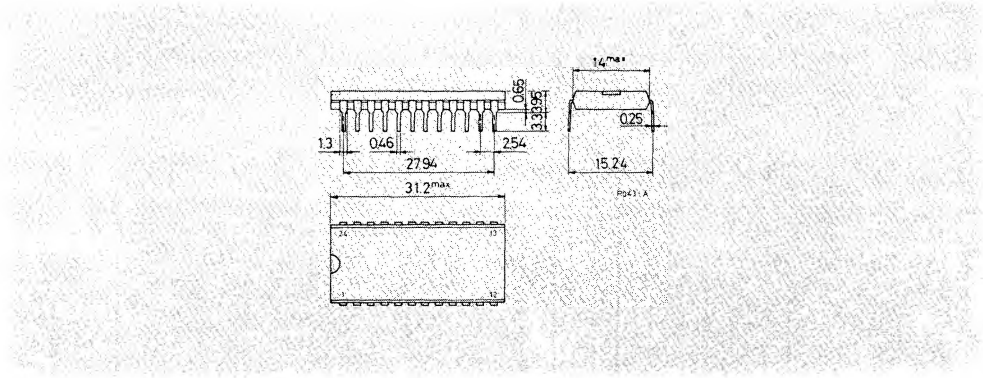
* Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other condition above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

** All voltages values are refered to V_{SS} pin voltage.

ORDERING NUMBERS: M 054 B1
M 055 B1

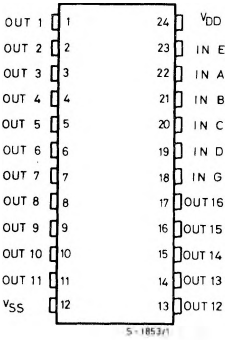
MECHANICAL DATA

Dimensions in mm

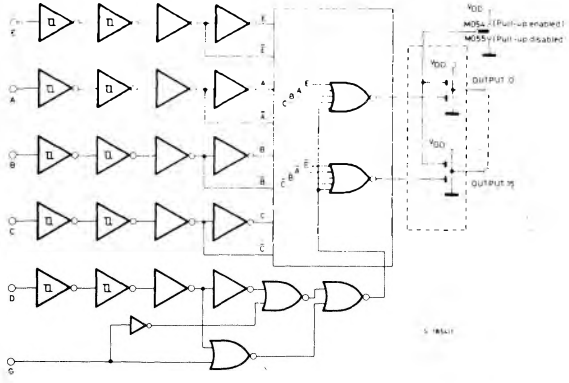


M 054
M 055

PIN CONNECTIONS



BLOCK DIAGRAM



TRUTH TABLE (positive logic)

INPUTS						OUTPUTS													
	M 1025 output code																		
E	A	B	C	D	G	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	0	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	0	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	0	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
0	0	1	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1
1	0	1	0	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1
0	1	1	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
1	1	1	0	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
0	0	0	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
1	0	0	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
X	X	X	X	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	0	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	0	0	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	0	0	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
0	0	1	0	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1
1	0	1	0	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1
0	1	1	0	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
1	1	1	0	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
0	0	0	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
1	0	0	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
0	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
X	X	X	X	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

RECOMMENDED OPERATING CONDITIONS

V_{DD}	Supply voltage	17 to 19	V
V_I	Input voltage	0 to V_{DD}	V
$V_{O(off)}$	Off state output voltage (M055 type)	19	V
T_{op}	Operating temperature	0 to 70	°C

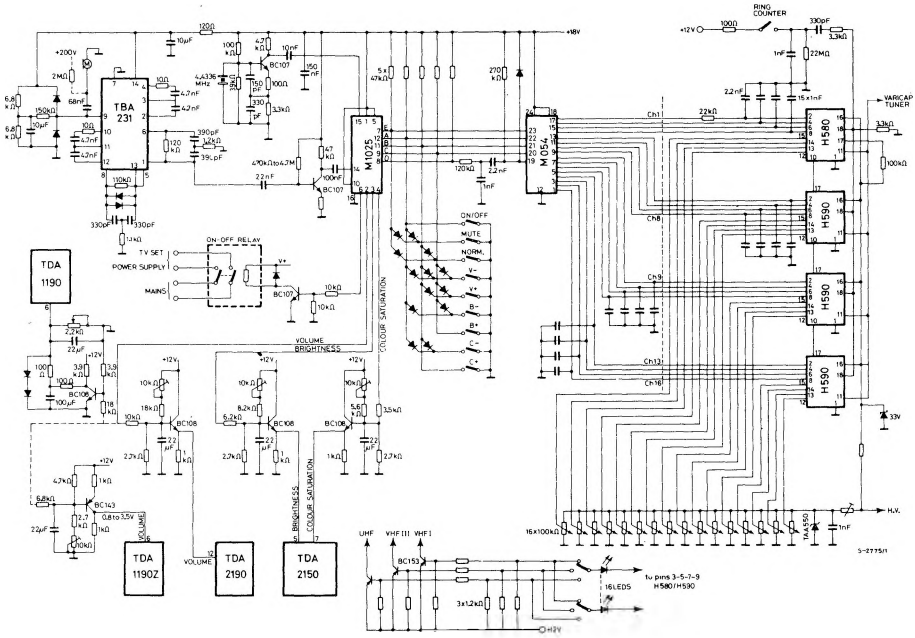
STATIC ELECTRICAL CHARACTERISTICS (over recommended operating conditions)

Parameter			Test conditions	Values at 25°C			Unit
				Min.	Typ.	Max.	
V_{IH}	High level input voltage	A-B-C-D-E Inputs		V_{DD}-1		V_{DD}	V
		G Input		3		V_{DD}	
V_{IL}	Low level input voltage	A-B-C-D-E Inputs		0		V_{DD}-4	V
		G Input		0		0.3	
I_{OL}	Low level output current		V_{DD}= 17V V_{OL}= 0.4V	1.6			mA
I_{OH}	High level output current (M 055 Type)		M 054 Type V_{DD}= 19V V_{OH}= 8V			-200	µA
$I_{O(off)}$	Off state output current (M 054 Type)		M 055 Type V_{DD}= 19V $V_{O(off)}$= 8V			1	µA
I_{DD}	Supply current		V_{DD}= 19V All input to V_{SS}			25	mA

TYPICAL APPLICATIONS

Fig. 1 and 2 show a typical application of M 054 and M 055 respectively in a TV remote control system.

Fig. 1 - M054 with light pressure switches



TYPICAL APPLICATIONS (continued)

Fig. 2 - M055 with direct touch controls