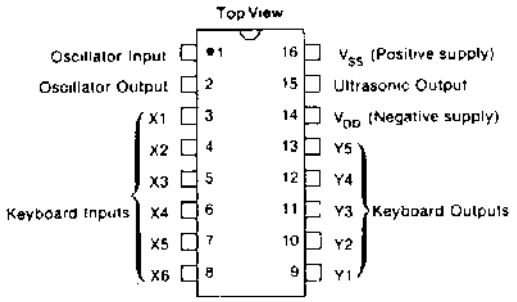
30 Channel Remote Control Transmitter

FEATURES

- 30 channels 346.4Hz spacing in the range 34-44kHz
- P-channel 9V battery operation
- 4.4336MHz TV crystal master oscillator
- 5 × 6 matrix keyboard input
- Low standby current drain (15μA max.)
- Compatible with AY-5-8460 receiver

PIN CONFIGURATION

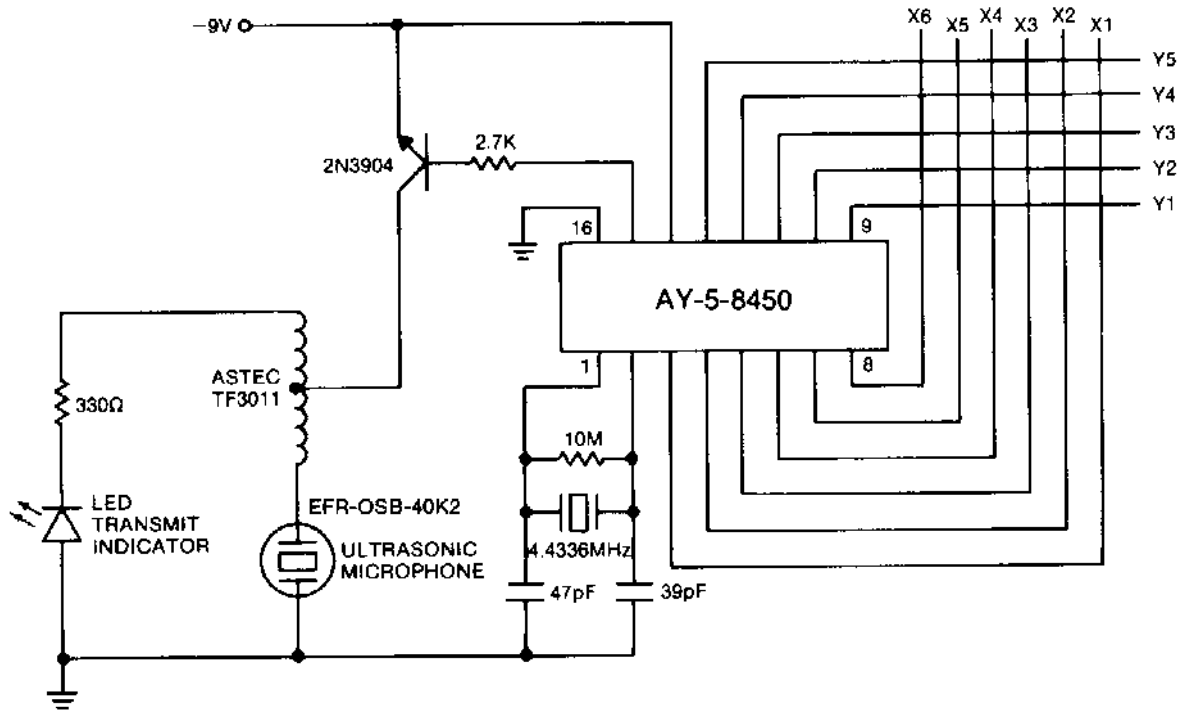
16 LEAD DUAL IN LINE



DESCRIPTION

The AY-5-8450 allows the transmission of 30 commands using 30 different ultrasonic frequencies in the range 33.945 to 43.990kHz. It is designed for battery operation and uses a low cost TV crystal as the master oscillator. When inactive the circuit is in a standby mode having a current drain of less than 15μA. As soon as a key is depressed the main circuit is powered up and transmission commences.

SYSTEM DIAGRAM



ENTER-TAINMENT

PIN FUNCTIONS

Pin No.	Name	Function
1	Oscillator Input	The Quartz crystal network is connected to these pins.
2	Oscillator Output	
3	X1	The keys are in the form of an XY matrix. As soon as a key closure is detected the chip is powered up and the keyboard is scanned at 3kHz. When it has been determined what key has been pressed the appropriate frequency is transmitted. If more than one key is pressed the chip ceases to transmit.
4	X2	
5	X3	
6	X4	
7	X5	
8	X6	
9	Y1	
10	Y2	
11	Y3	
12	Y4	
13	Y5	
14	V_{DD}	Negative supply (-9V nom)
15	Ultrasonic output	Off until key pressed
16	V_{SS}	Positive supply (ground)

OUTPUT FREQUENCIES

Crystal = 4.4336MHz

Key	Matrix	Frequency (Hz)
1	X1 Y1	33944.89
2	X1 Y2	37062.28
3	X1 Y3	37408.66
4	X1 Y4	37755.03
5	X1 Y5	38101.41
6	X2 Y1	34291.21
7	X2 Y2	38447.97
8	X2 Y3	38794.16
9	X2 Y4	39140.54
10	X2 Y5	39486.92

Key	Matrix	Frequency (Hz)
11	X3 Y1	34637.65
12	X3 Y2	39833.29
13	X3 Y3	40179.67
14	X3 Y4	40526.05
15	X3 Y5	40872.42
16	X4 Y1	34984.02
17	X4 Y2	41218.80
18	X4 Y3	41565.18
19	X4 Y4	41911.55
20	X4 Y5	42257.93

Key	Matrix	Frequency (Hz)
21	X5 Y1	35330.40
22	X5 Y2	35676.78
23	X5 Y3	36023.15
24	X5 Y4	42604.31
25	X5 Y5	42950.68
26	X6 Y1	36369.53
27	X6 Y2	36715.91
28	X6 Y3	43297.06
29	X6 Y4	43643.43
30	X6 Y5	43989.81

NOTE: The full key configuration/frequencies above are compatible with 30 channel receivers such as the GI SAA 1025. For operation with 16 channel receivers, such as the GI AY-5-8460/8461, only keyboard inputs X1 to X4 and keyboard outputs Y2 to Y5 are required.

ELECTRICAL CHARACTERISTICS

Maximum Ratings*

Voltage on any pin with respect to V_{SS} pin ..... +0.3 to -12 Volts
Output current 10mA
Storage temperature range ..... -65°C to +150°C
Ambient operating temperature range ..... -10°C to +70°C

*Exceeding these ratings could cause permanent damage. Functional operation of this device at these conditions is not implied—operating ranges are specified below.

Standard Conditions (unless otherwise noted)
V_{SS} = 0V
V_{DD} = -7 to -10V
T_A = −10°C to 70°C

Characteristic	Min.	Typ	Max.	Units	Conditions
Clock Frequency	—	4.4336	—	MHz	See the Connection Diagram for external components
Key Contact Resistance:					
ON	—	—	100	Ω	
OFF	1	—	—	MΩ	
Key Capacitance	—	—	20	pF	
Output:					
On Resistance	—	—	600	Ω	To V_{SS}, V_{OUT} = -1V
Off Resistance	—	—	3	kΩ	To V_{DD}, V_{OUT} = V_{DD} +0.5V
Standby Current Drain	—	5	15	μA	
Operating Current Drain	—	12	15	mA	