MOS DIGITAL INTEGRATED CIRCUIT
μPD1937C

REMOTE CONTROL RECEIVER
P-MOS LSI

DESCRIPTION

The μPD1937C is P-MOS IC for decoding the signal from receiver of remote control system for TV etc.

By using with μPD1986C which is the transmitter control IC, this IC will provide direct channel selection signal. When μPC1363C is used as channel selection IC, complete remote control system can be realized. The package is 16 pins plastic dual in-line.

FEATURES

- Capable to receive 27 commands;

  Channel 1 – 20 | Channel up, down | Option

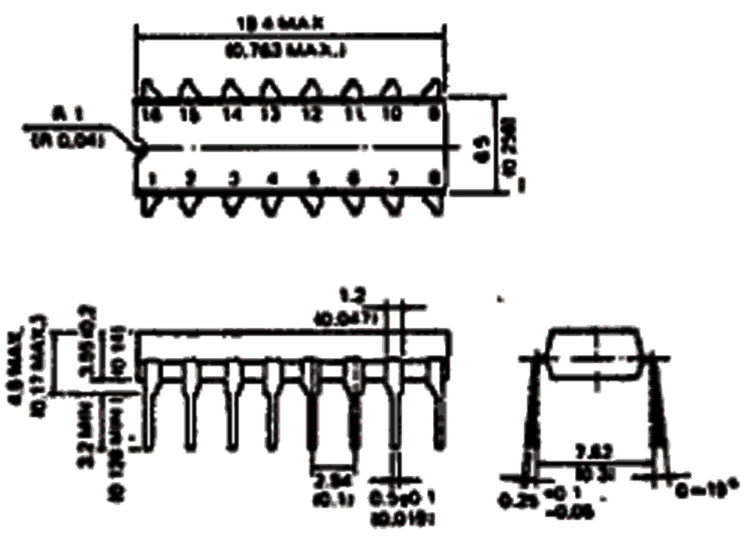
  Volume up, down | Mute on/off | Power on/off

- Capable to control 5 commands directly;

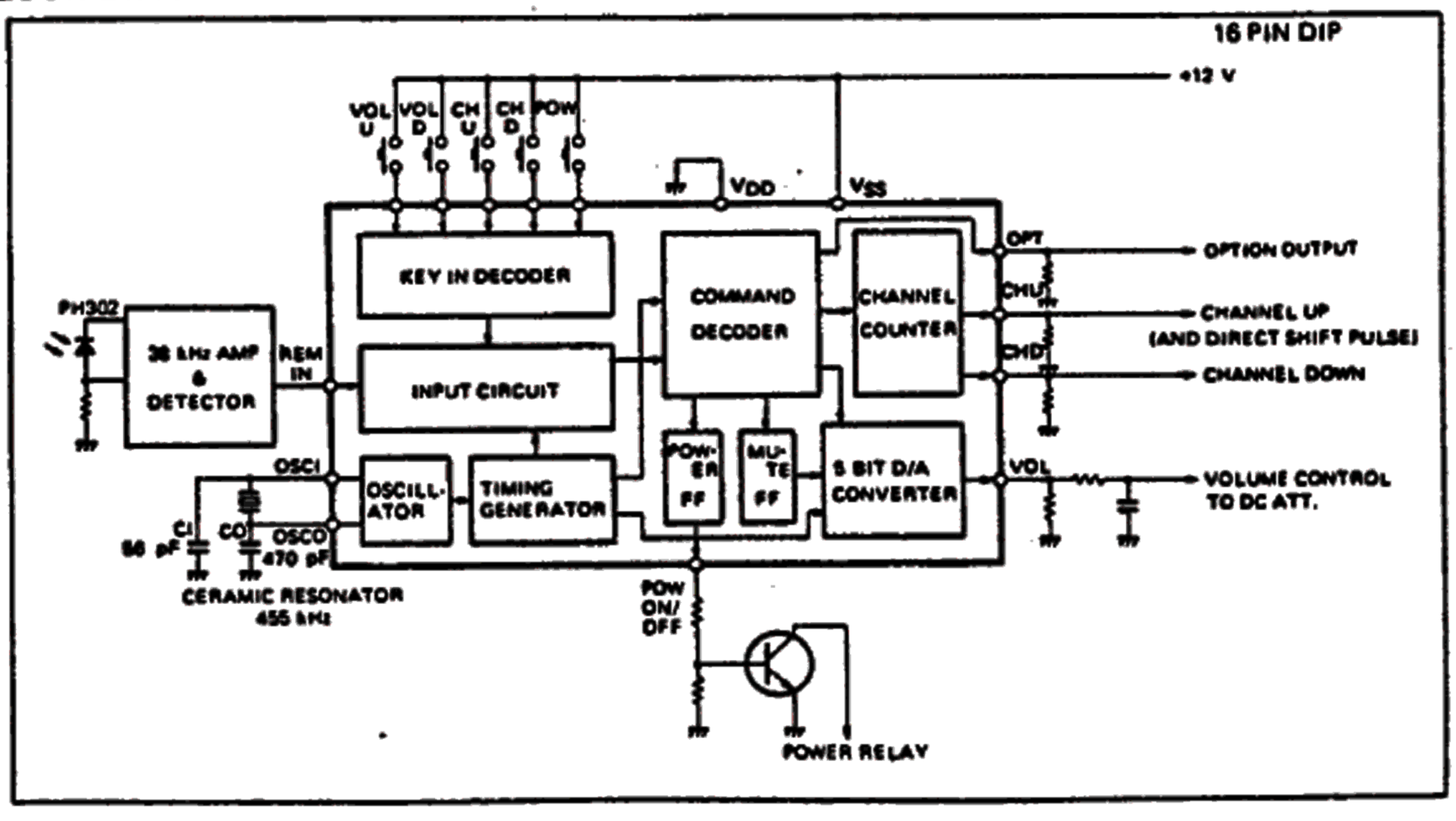
  Channel up, down | Volume up, down | Power on/off

- Using with μPC1363C, direct addressing is easily realized.
- Capable to control the volume for 31 steps.

PACKAGE DIMENSIONS
in millimeters (inches)



BLOCK DIAGRAM



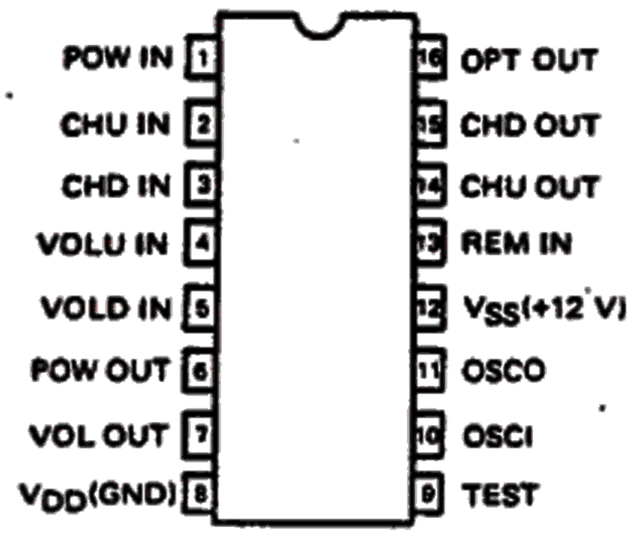
ABSOLUTE MAXIMUM RATINGS (Ta=25 °C)

Supply Voltage	$V_{DD}-V_{SS}$	−15.0 to +0.3	V
Input Voltage	$V_{IN}-V_{SS}$	$-V_{DD}$ to +0.3	V
Output Current	I_{OH} (CHU, CHD, INI)	−5.0	mA
	I_{OH} (VOL, POW)	−10.0	mA
Power Dissipation	P_d	360	mW
Operating Temperature Range	T_{opt}	−20 to +75	°C
Storage Temperature Range	T_{stg}	−40 to +125	°C

ELECTRICAL CHARACTERISTICS (Ta=−20 to 75 °C, V_{DD}=−9.6 to 14.4 V)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Supply Voltage	V_{DD}	−9.6	−12.0	−14.4	V	
Supply Current	I_{DD}	−4.0	−10.0	−20.0	mA	Ta=25 °C, OSCI=V_{SS} V_{DD}=−12 V
Input High Voltage	V_{IH} (1~5,13)	0		−1.5	V	
Input Low Voltage	V_{IL} (1~5,13)	−5.0		V_{DD}	V	
Input Pull Down Current	I_{IL} (1~5,13)	5.0		50	μA	Ta=25 °C, V_{IN}=V_{SS} V_{DD}=−12 V
Output High Voltage	V_{OH} (CHU)			−2.5	V	I_{OH}=−1.0 mA
Output High Voltage	V_{OH} (CHD)			−2.5	V	I_{OH}=−1.0 mA
Output High Voltage	V_{OH} (OPT)			−2.5	V	I_{OH}=−1.0 mA
Output High Voltage	V_{OH} (VOL)			−2.5	V	I_{OH}=−5.0 mA
Output High Voltage	V_{OH} (POW)			−2.5	V	I_{OH}=−5.0 mA
Output Low Current	I_{OL} (1~5,13)	0		100	μA	Ta=25 °C, V_{OL}=−11.5 V V_{DD}=−12 V

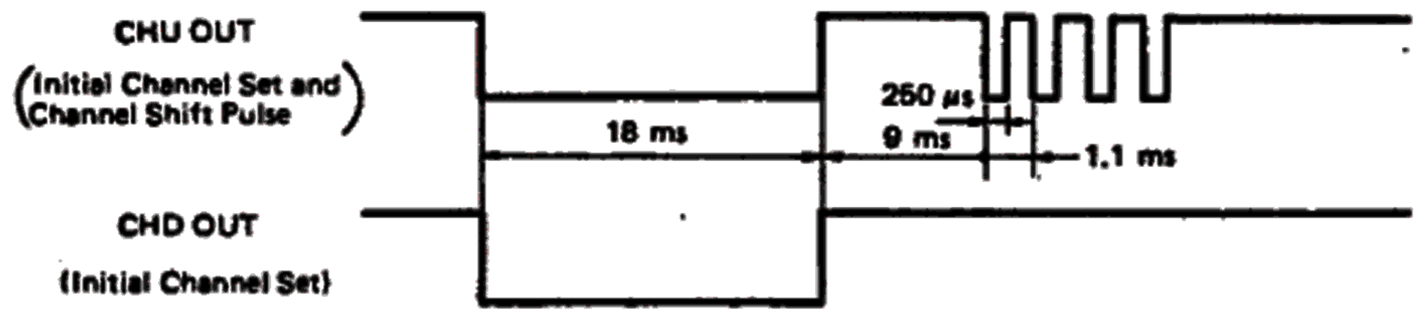
CONNECTION DIAGRAM
(Top View)



PIN	FUNCTION		
8	V_{DD}	Negative supply GND norminal	
12	V_{SS}	Positive supply +12 V norminal (9.6~14.4 V)	
10	OSCI	Oscillator Input	455 kHz Ceramic Resonator CSB455A (MURATA MFG. Co.) is connected to these pins.
11	OSCO	Oscillator Output	
13	REM IN	Remote Signal Input	
1	POW IN	Power ON/OFF Key Input	
2	CHU IN	Channel Up Key Input	
3	CHD IN	Channel Down Key Input	
4	VOLU IN	Volume Up Key Input	
5	VOLD IN	Volume Down Key Input	
6	VOL OUT	Volume Output	This output is in the form of a pulse. Connect to CR filter.
7	POW OUT	Power ON/OFF Output	
14	CHU OUT	Channel Up Pulse Output and Direct Channel Shift Pulse	
15	CHD OUT	Channel Down Pulse Output	
16	OPT OUT	Option Output for free use.	

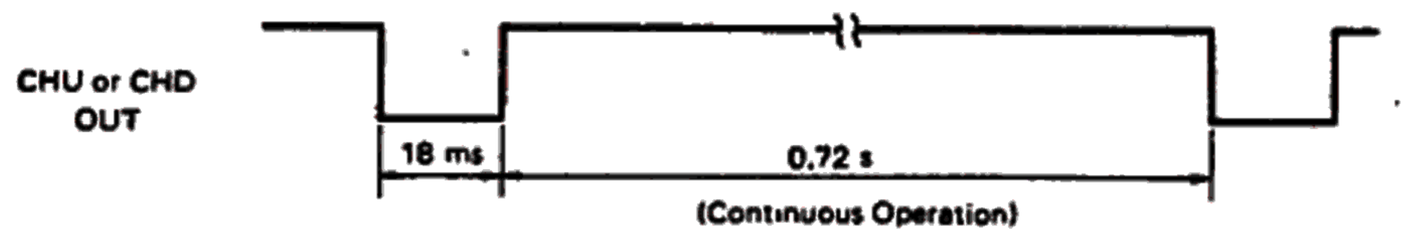
1) CHANNEL SELECTION OUTPUT

- **Direct Channel Operation**

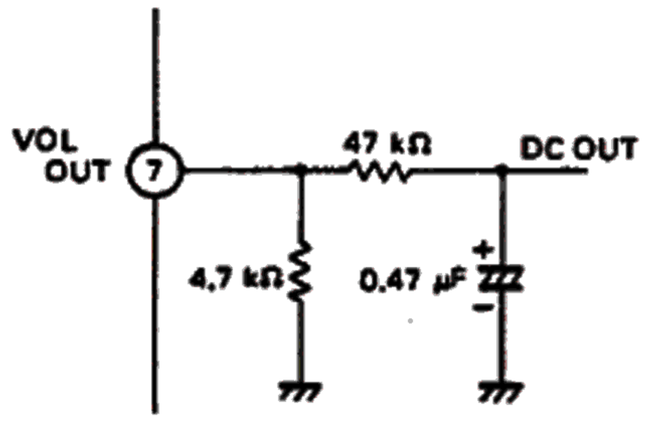


shift pulse = CH number − 1 MAX. 19

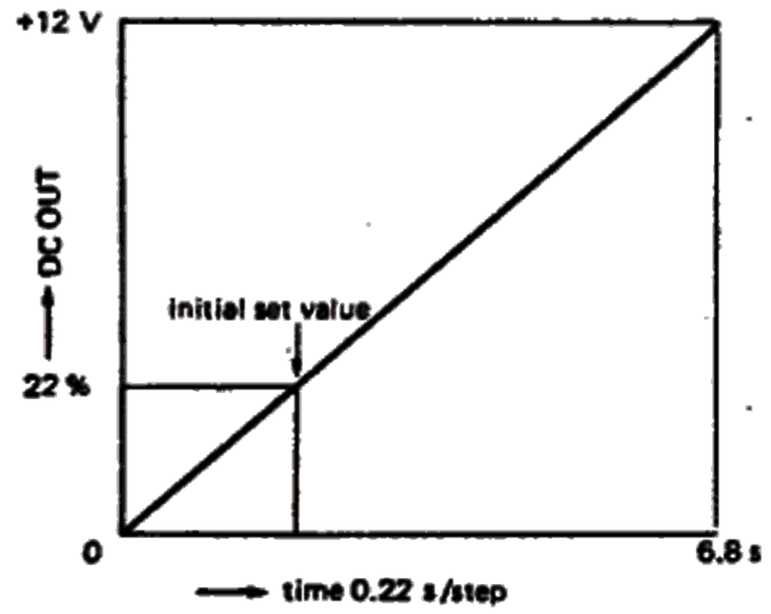
- **UP, DOWN Channel Operation**



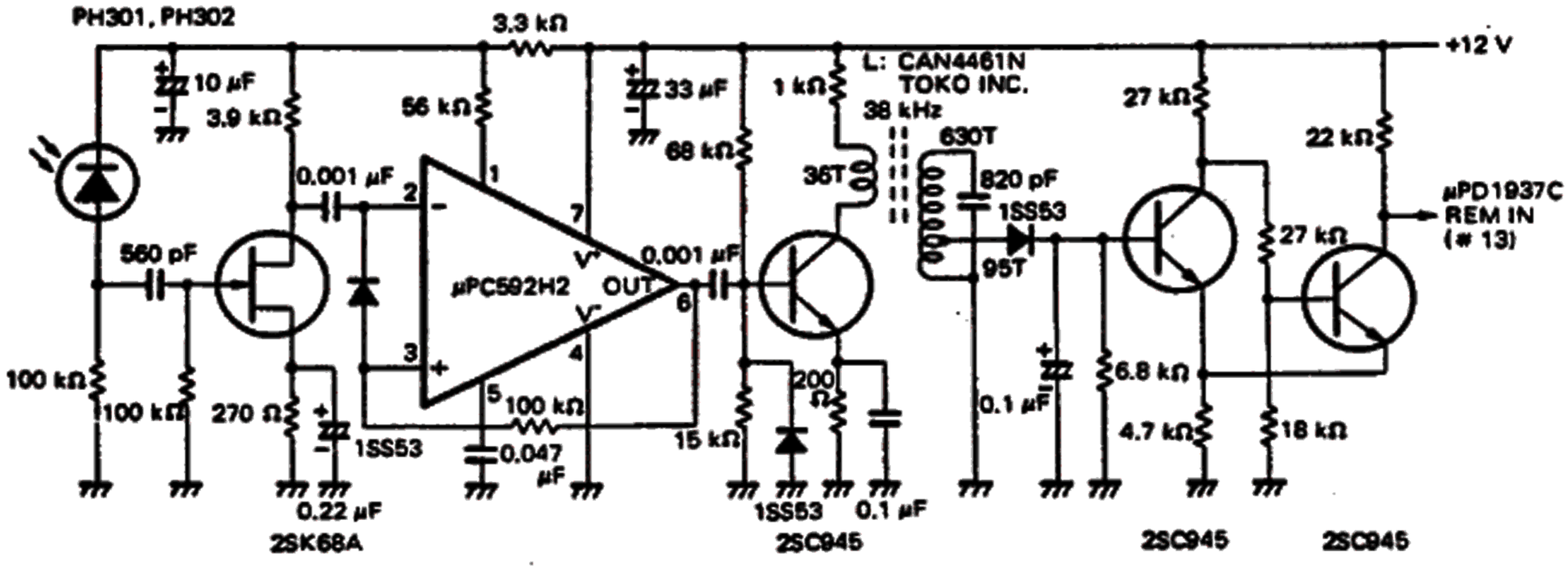
2) VOLUME OUTPUT



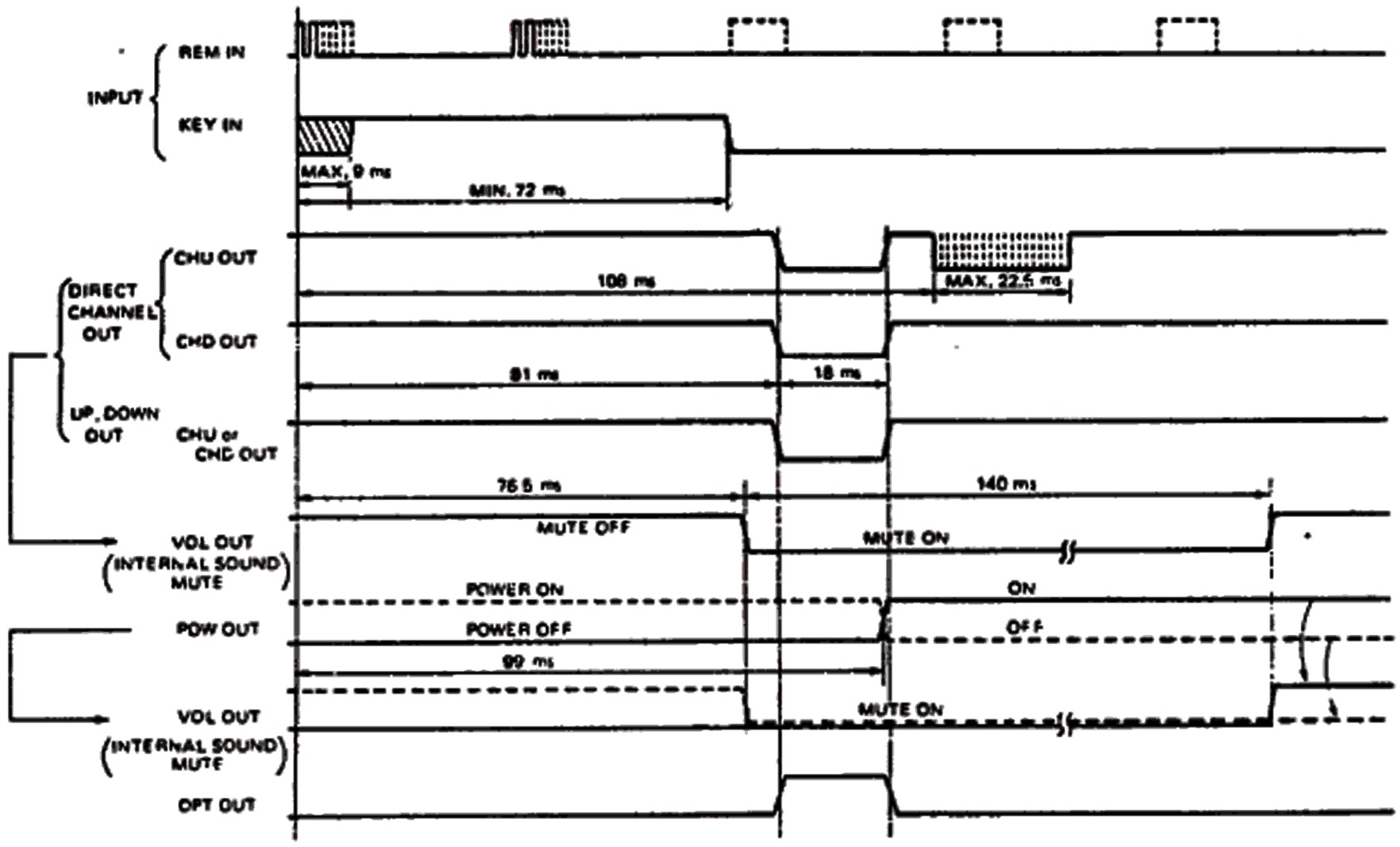
Repetition frequency ..... 3.6 kHz
VOL Steps 31
MIN. to MAX. time ..... 6.8 s



EXAMPLE OF INPUT AMP CIRCUIT



OUTPUT WAVE FORM



APPLICATION CIRCUIT

EXAMPLE OF TV REMOTE CONTROL TUNNING SYSTEM USING PH302, μPD1937C and μPC1363C.