

MOS DIGITAL INTEGRATED CIRCUIT

μ PD1937C

REMOTE CONTROL RECEIVER P-MOS LSI

DESCRIPTION

The μ PD1937C is P-MOS IC for decoding the signal from receiver of remote control system for TV etc. By using with μ PD1986C which is the transmitter control IC, this IC will provide direct channel selection signal. When μ PC1363C is used as channel selection IC, complete remote control system can be realized. The package is 16 pins plastic dual in-line.

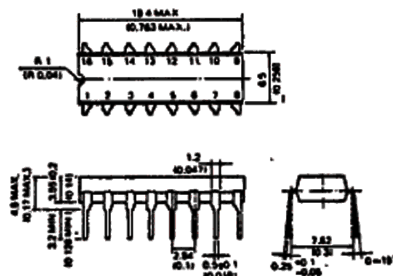
FEATURES

- Capable to receive 27 commands;

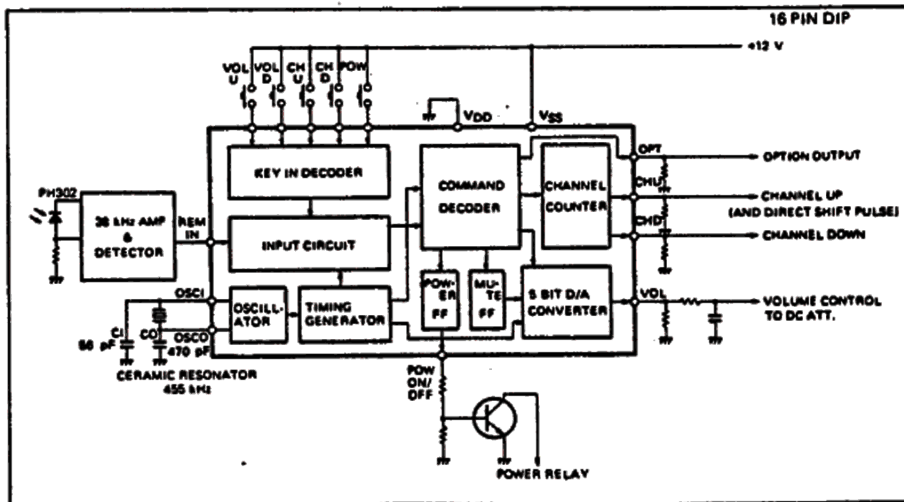
Channel 1 - 20	Channel up, down	Option
Volume up, down	Mute on/off	Power on/off
- Capable to control 5 commands directly;

Channel up, down	Volume up, down	Power on/off
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- Using with μ PC1363C, direct addressing is easily realized.
- Capable to control the volume for 31 steps.

PACKAGE DIMENSIONS in millimeters (inches)



BLOCK DIAGRAM



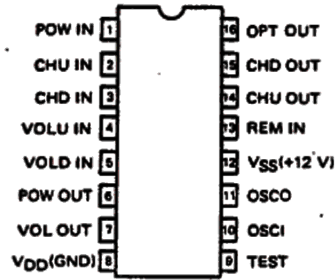
ABSOLUTE MAXIMUM RATINGS (T_a=25 °C)

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 (T_a=-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	T _a =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	T _a =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	T _a =25 °C, V _{OL} =-11.5 V V _{DD} =-12 V

**CONNECTION DIAGRAM
(Top View)**



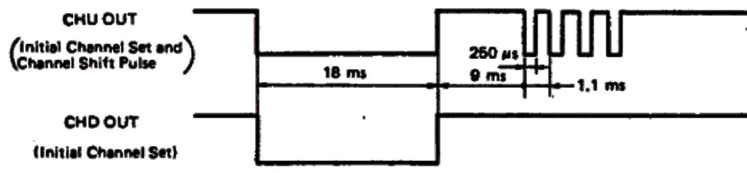
PIN	FUNCTION	DESCRIPTION
8	VDD	Negative supply GND normal
12	VSS	Positive supply +12 V normal (9.6~14.4 V)
10	OSCI	Oscillator Input
11	OSCO	Oscillator Output
13	REM IN	Remote Signal Input
1	POW IN	Power ON/OFF Key Input
2	CHU IN	Channel Up Key Input
3	CHD IN	Channel Down Key Input
4	VOLU IN	Volume Up Key Input
5	VOLD IN	Volume Down Key Input
6	VOL OUT	Volume Output
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.

455 kHz Ceramic Resonator CSB455A (MURATA MFG. Co.) is connected to these pins.

This output is in the form of a pulse. Connect to CR filter.

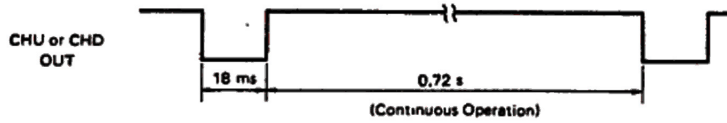
1) CHANNEL SELECTION OUTPUT

• Direct Channel Operation

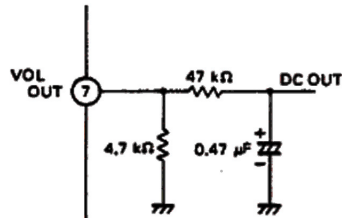


shift pulse = CH number - 1 MAX, 19

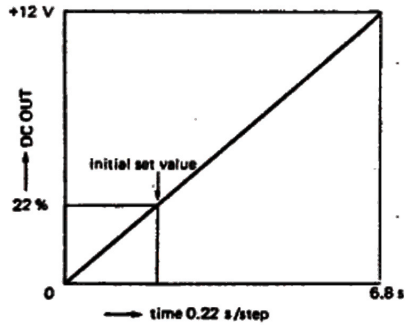
• UP, DOWN Channel Operation



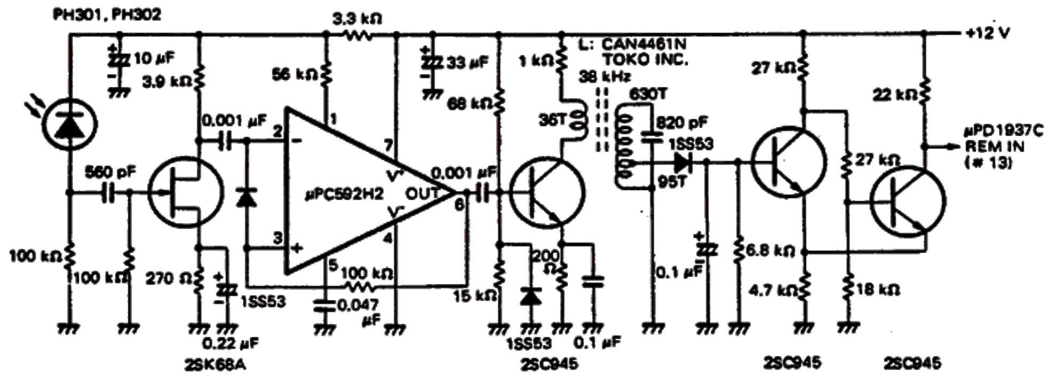
2) VOLUME OUTPUT



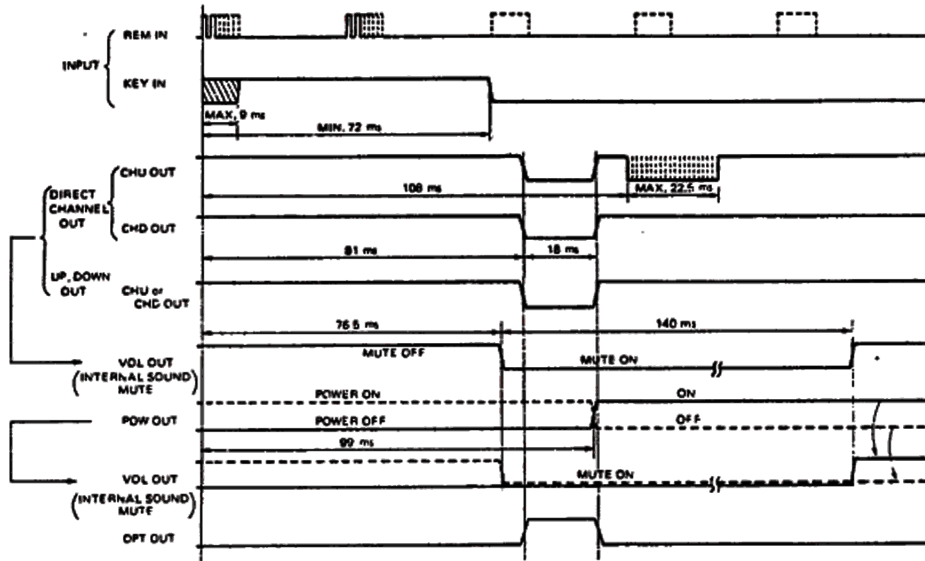
Repetition frequency 3.6 kHz
VOL Steps 31
MIN. to MAX. time 6.8 s



EXAMPLE OF INPUT AMP CIRCUIT



OUTPUT WAVE FORM



APPLICATION CIRCUIT

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

