

# MOS DIGITAL INTEGRATED CIRCUIT

## $\mu$ PD1987C

### REMOTE CONTROL RECEIVER P MOS LSI

#### DESCRIPTION

The  $\mu$ PD1987C is P MOS IC for decoding the signal from receiver of remote control system for TV etc. By using with  $\mu$ PD1986C which is the transmitter control IC, this IC will provide direct channel selection signal. When  $\mu$ PC1360C is used as channel selection IC, complete remote control system can be realized. The package is 16 pins plastic dual in-line.

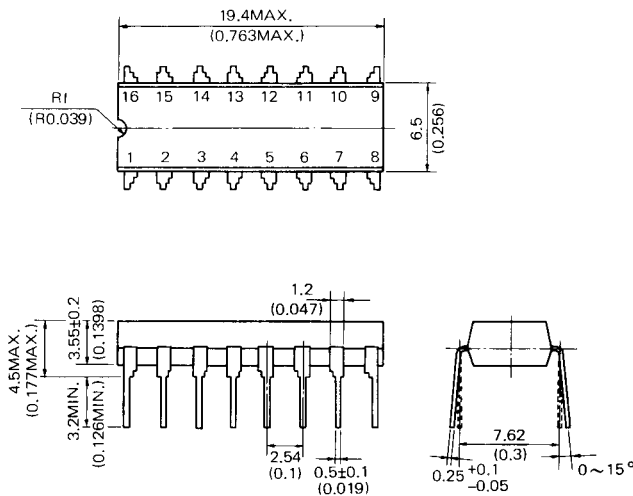
#### FEATURES

- Capable to receive 26 commands;
 

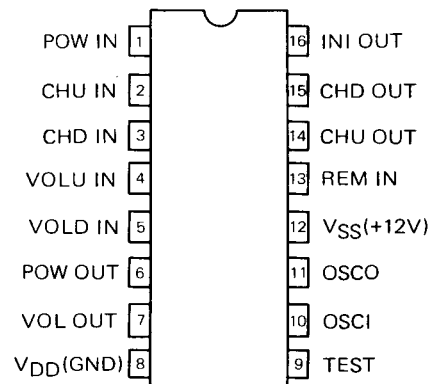
Channel 1 – 20	Channel up, down	
Volume up, down	Mute on/off	Power on/off
- Capable to control 5 commands directly;
 

Channel up, down	Volume up, down	Power on/off
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- Using with  $\mu$ PC1360C, direct addressing is easily realized.
- Capable to control the volume for 32 steps.

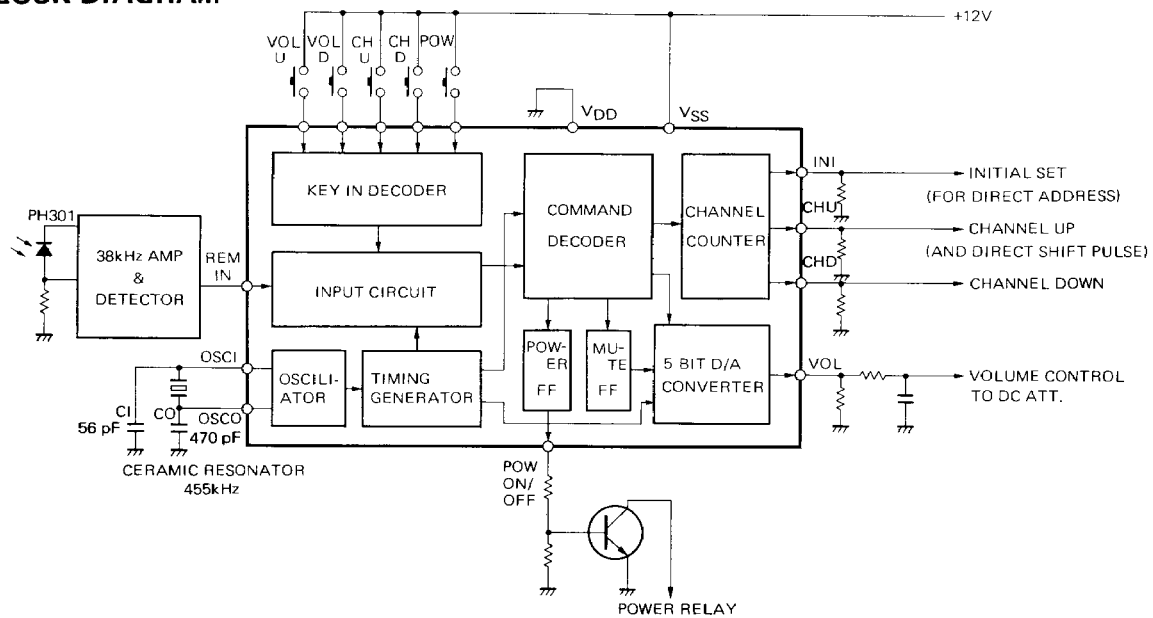
#### PACKAGE DIMENSIONS in millimeters (inches)



#### CONNECTION DIAGRAM (Top View)



## BLOCK DIAGRAM



## ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Supply Voltage	V <sub>DD</sub> -V <sub>SS</sub>	-15.0 to +0.3	V
Input Voltage	V <sub>IN</sub> -V <sub>SS</sub>	-V <sub>DD</sub> to +0.3	V
Output Current	I <sub>OH</sub> (CHU, CHD, INI)	-5.0	mA
	I <sub>OH</sub> (VOL, POW)	-10.0	mA
Power Dissipation	P <sub>d</sub>	360	mW
Operating Temperature Range	T <sub>opt</sub>	-20 to +75	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +125	°C

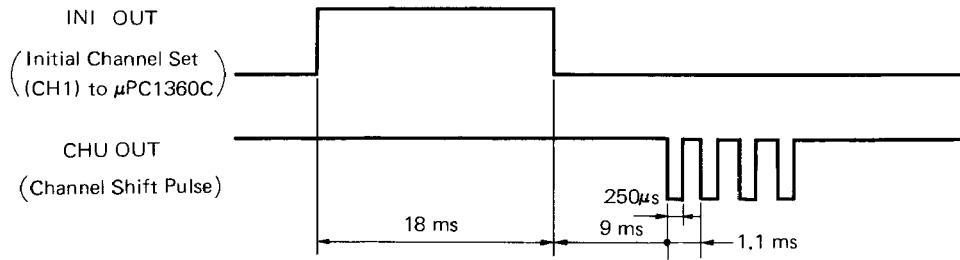
## ELECTRICAL CHARACTERISTICS (Ta=-20 to 75°C, V<sub>DD</sub>=-9.6 to 14.4V)

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

PIN	FUNCTION		
8	VDD	Negative supply GND normal	
12	VSS	Positive supply +12V normal (9.6~14.4V)	
10	OSCI	Oscillator Input	} 455kHz Ceramic Resonator CSB455A (MURATA JAPAN) 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	INI OUT	Initial Channel Output For Direct Channel	

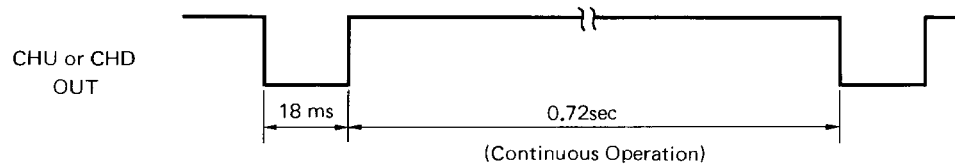
# 1) CHANNEL SELECTION OUTPUT

- Direct Channel Operation

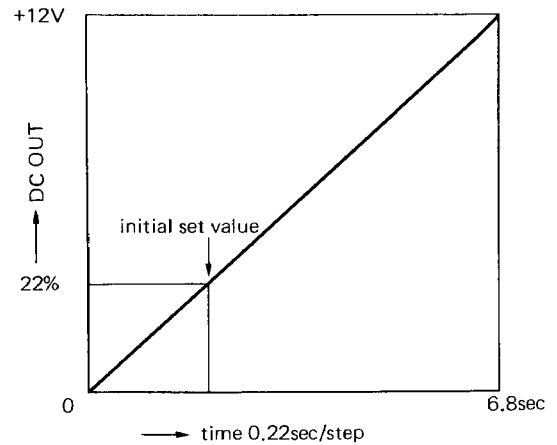
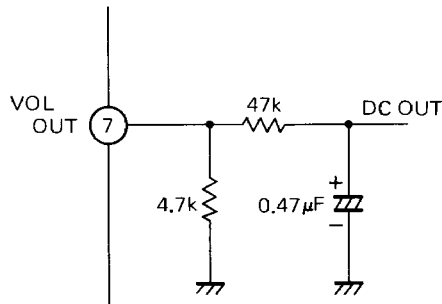


shift pulse = CH number - 1 MAX. 19

- UP, DOWN Channel Operation



# 2) VOLUME OUTPUT



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

