

BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC1363C

ELECTRONIC CHANNEL SELECTOR

DESCRIPTION

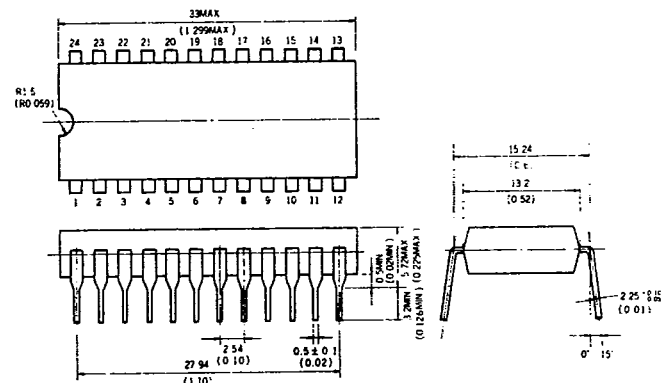
The μ PC1363C is an electronic channel selector integrated circuit. It is capable of selecting up to 16 channels. The output terminals are design to permit the direct driving of LED lamps or neon tubes.

This IC consists of Clock Oscillator circuit, Channel Up and Down circuit, Channel skip circuit, 4 bit Up and Down Counter circuit, 1-16 Decoder circuit and 16 channel Output Buffer circuit, all of which are contained in a 24 pins dual in-line package.

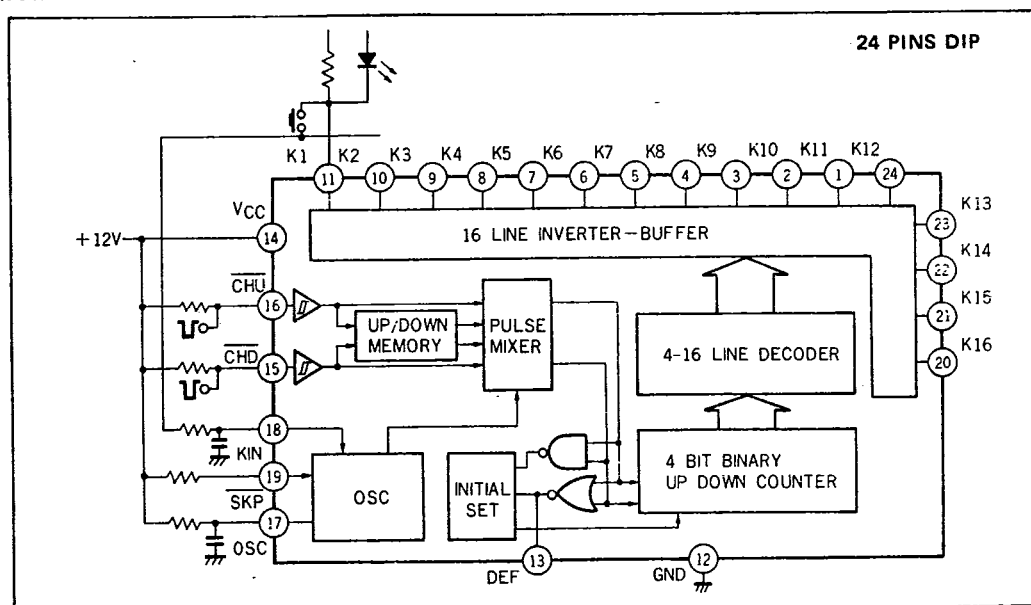
FEATURES

- LED direct drive.
 $1k=15mA$, V_{KSAT} 150mV MAX.
- Low power consumption.
 $V_{CC}=12V$, $I_{CC}=15mA$ TYP.
- Up to 16 channel selection.
- Internal schmitt trigger circuit. (CHU, CHD INPUT)
- Power ON initial channel set.
- μ PC1360C pin compatible. ($V_{CC}=6V$)
- TV, Radio etc. channel selection use.
- Using with μ PD1986C (TX), μ PD1937C (RX),
direct address remote control system is realized.

PACKAGE DIMENSIONS in millimeters (inches)



BLOCK DIAGRAM



6427525 N E C ELECTRONICS INC

72C 08770

DT-77-07-05

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

Supply Voltage	V_{CC}	15.0	V
Input Current to Channel Selection Circuit	$I_{K1\sim11, 20\sim24}$	-5 to 50	mA
Input Current to Control Circuit	$I_{C15\sim19}$	-5 to 10	mA
Input Current to Control Circuit	I_{C13}	-5 to 20	mA
* Output Voltage to Channel Selection Circuit	$V_{K1\sim11, 20\sim24}$	-0.5 to 50	V
* Output Voltage to Control Circuit	V_{13}	-0.5 to 14.4	V
* Input Voltage to Control Circuit	V_{17}	-0.5 to V_{CC}	V
Power Dissipation	P_d	350	mW
Operating Temperature Range	T_{opt}	-20 to +75	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +125	$^\circ\text{C}$

* At $V_{CC}=12\text{V}$

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	9.6	12.0	14.4	V
Channel Selection Input Current	I_K		15.0		mA
Clock Oscillation Frequency	f_{OSC}		2.0	10.0	kHz

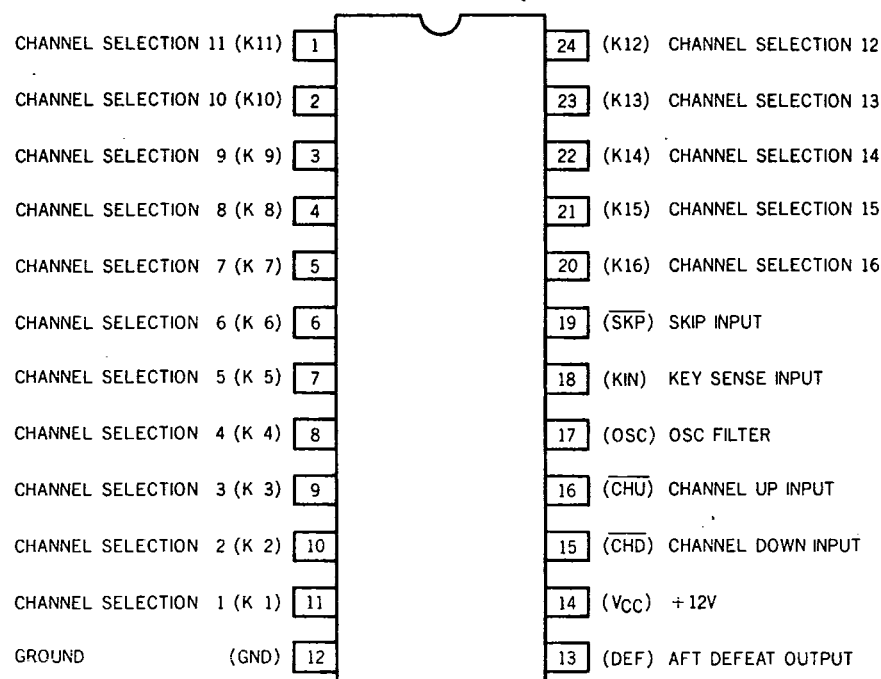
ELECTRICAL CHARACTERISTICS ($T_a=25 \pm 3^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Supply Current	I_{DD}	7.0	15.0	22.0	mA	$V_{CC}=12\text{V}$
Channel Selection Saturation Voltage	$V_{OL(K)}$			150	mV	$V_{CC}=9.6\text{V}$, $I_{OL}=15\text{mA}$
Channel Selection Leakage Current	$I_{OH(K)}$			10	μA	$V_{CC}=14.4\text{V}$, $V_{OH}=35\text{V}$
AFT Defeat Output Voltage	$V_{OL(D)}$			6	V	$V_{CC}=9.6\text{V}$, $I_{OL}=12\text{mA}$
AFT Defeat Leakage Current	$I_{OH(D)}$			10	μA	$V_{CC}=14.4\text{V}$, $V_{OH}=14.4\text{V}$
Channel Input High Threshold Voltage	$V_{TH(CH)}$	3.5		7.0	V	$V_{CC}=12\text{V}$, $R_i=15\text{k}\Omega$
Channel Input Low Threshold Voltage	$V_{TL(CH)}$	1.5		2.5	V	$V_{CC}=12\text{V}$, $R_i=15\text{k}\Omega$
Channel Input Leakage Current	$I_{CH(CH)}$	-5			μA	$V_{CC}=14.4\text{V}$, $V_{IL}=0\text{V}$
Key Input Current	$I_{IH(KI)}$	200			μA	$V_{CC}=9.6\text{V}$
Key Input Leakage Current	$I_{IL(KI)}$	-10			μA	$V_{CC}=14.4\text{V}$, $V_{IL}=0\text{V}$
Skip Input Current	$I_{IH(SK)}$	50			μA	$V_{CC}=9.6\text{V}$
Skip Input Leakage Current	$I_{IL(SK)}$	-5			μA	$V_{CC}=14.4\text{V}$, $V_{IL}=0\text{V}$
OSC Input Current	$I_{IH(OSC)}$	1.5		3.0	mA	$V_{CC}=9.6\text{V}$, $V_{IH}=4\text{V}$
OSC Leakage Current	$I_{IL(OSC)}$			10	μA	$V_{CC}=14.4\text{V}$, $V_{IL}=1.0\text{V}$
OSC Frequency	f_{OSC}	1.5		2.5	kHz	$V_{CC}=12\text{V}$, $R=68\text{k}\Omega$, $C=0.022\mu\text{F}$

6427525 N E C ELECTRONICS INC

72C 08772 DT-77-07-05

CONNECTION DIAGRAM (Top View)



PIN FUNCTION

K1~16 (#11~1, #24~20) CHANNEL SELECTION OUTPUT

These are the output terminals constructed of collector-opened transistors, so they can drive potentiometers and indicators, and key output. They have saturation voltage of 150mV at $I_K = 15\text{mA}$, so they can drive LEDs directly.

GND (#12) GROUND

DEF (#13) AFT DEFEAT OUTPUT

This terminal is made of open collector transistor output through a resistor of 330 Ω . It is used for AFT (Automatic Fine Tuning ... TV use) defeat, sound muting and LED indicate erasing.

V_{CC} (#14) +12V (9.6~12V)

CHD (#15) CHANNEL DOWN INPUT

Usually pulled up to V_{CC} through a resistor, Channel selector changes at positive going edge of input signal of this terminal and the channel selector works orderly from K16 to K1.

CHU (#16) CHANNEL UP INPUT

Usually pull up to V_{CC} through a resistor, Channel selector changes at positive going edge of input signal of this terminal and the channel selector works orderly from K1 to K16. If CHU and CHD terminals put down to ground at same time, initial channel is selected. So, it is very useful to power on channel set or remote control operation use.

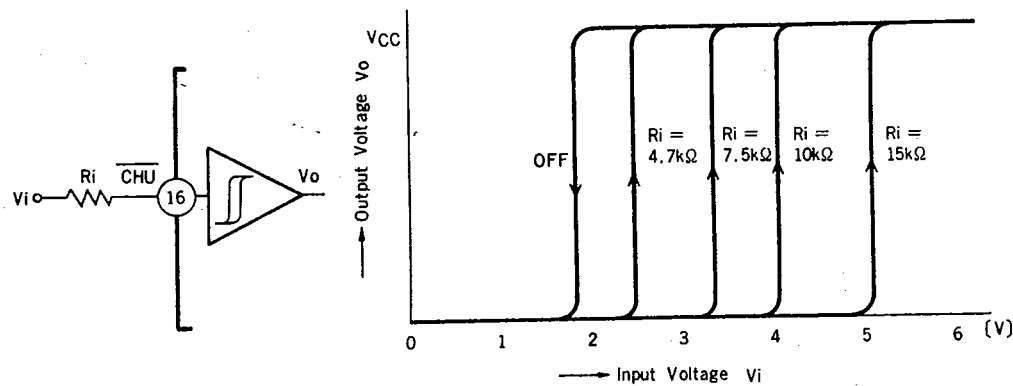
These terminals include schmitt trigger circuit and this hysteresis level is controlled by external resistors.

μPC1363C

6427525 N E C ELECTRONICS INC

72C 08773

D T-77-07-05



CHU, CHD Input Schmitt Characteristic

OSC (#17) OSC FILTER

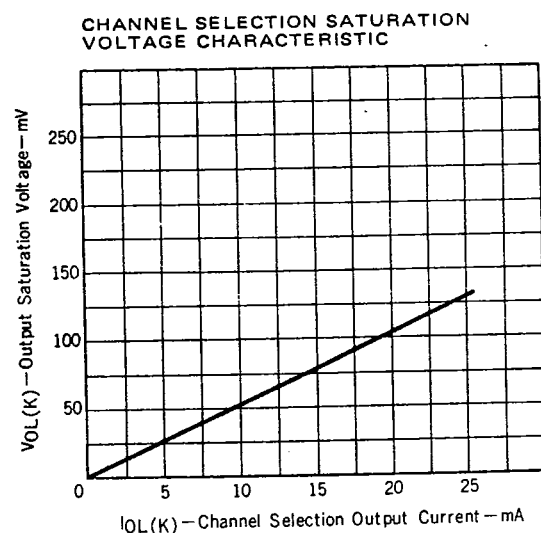
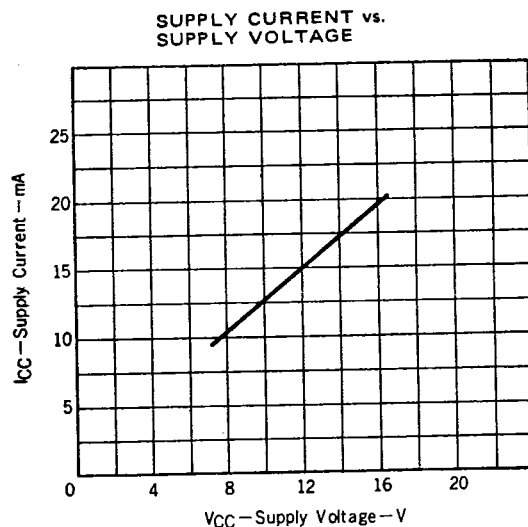
When a Channel key is pushed or skip function is operated, oscillator contained in this IC oscillate with C, R connected to this terminal. Typical oscillation frequency is 2kHz. ($R = 68k$, $C = 0.022\mu F$)

KIN (#18) KEY INPUT

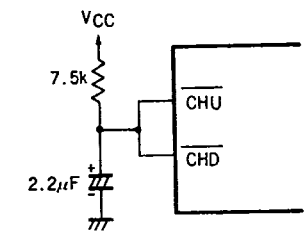
When channel selection key is pushed, as pushed channel is not selected, "High" level of signal is applied to this terminal through a potentiometer. Then channel selector scans terminals of K1 ~ K16. And when sense up this terminal, it pull down the voltage of this terminal and stop the scanning.

SKP (#19) SKIP INPUT

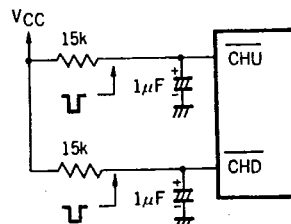
Usually pull up to V_{CC} through resistor. When only 12 channels are used, connect terminals (K13 ~ K16) to this terminal.

CHARACTERISTICS

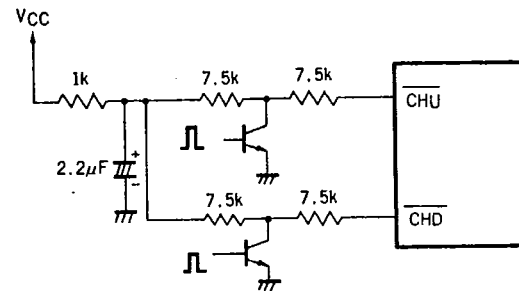
INITIAL CHANNEL SET and REMOTE CONTROL CIRCUIT



(a) Only Channel Selection Use

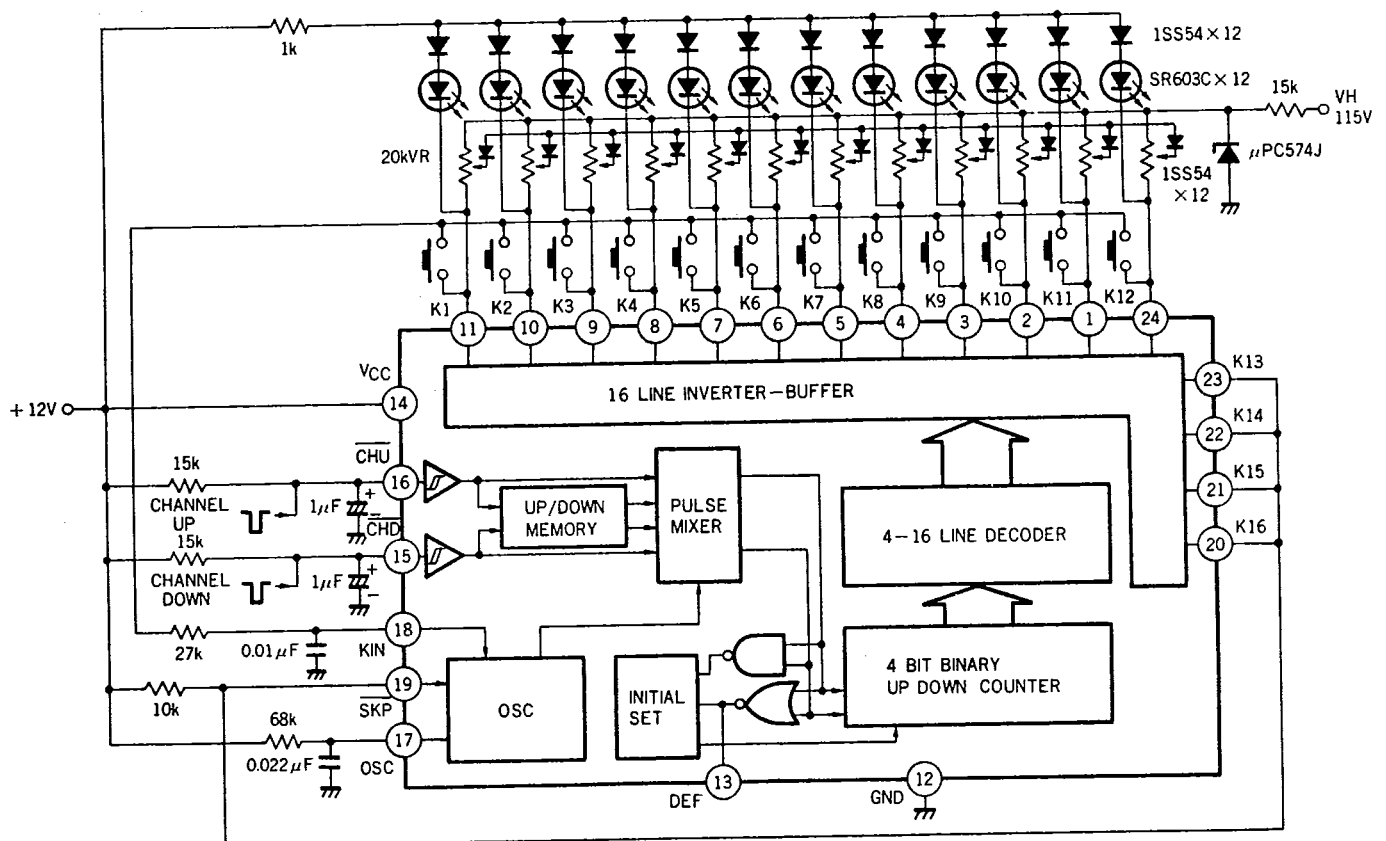


(b) Remote Control Use



(c) Remote Control Use (Short Pulse Width)

APPLICATION CIRCUIT 1



μPC1363C

6427525 N E C ELECTRONICS INC

72C 08775

DT-77-07-05

APPLICATION CIRCUIT 2**EXAMPLE OF TV CHANNEL SELECTION****12 POSITION SELECTION CIRCUIT (4 POSITION IS SKIPPED)**