

MOS DIGITAL INTEGRATED CIRCUIT

μ PD1986C

REMOTE CONTROL TRANSMITTER CMOS LSI

DESCRIPTION

μ PD1986C is CMOS IC for controlling the transmitter of remote control system for TV set etc. By using with μ PD1987C which is the receiver control IC, the direct channel control system can be obtained. When infrared emitting diode is used as transmitter element, this system will be very stable against any interference. The package is 16 pins plastic dual in-line package type.

FEATURES

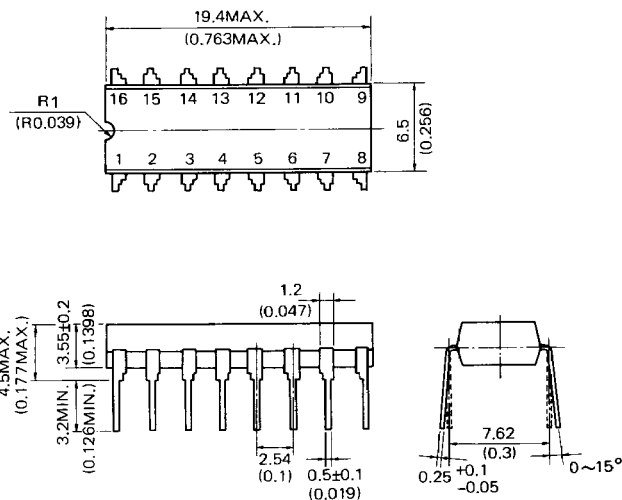
- Capable to transmit 27 commands;

Channel 1 – 10	Channel up, down	Volume up, down
Mute on/off	Power on/off	Option*

* μ PD1987C is not able to decode this option code.
- Minimum misoperation by infrared transmission
- Wide operation voltage range (2.7 – 7.2V)
- Low power consumption ($I_{DD} = 1 \mu A$ at KEY OFF condition)

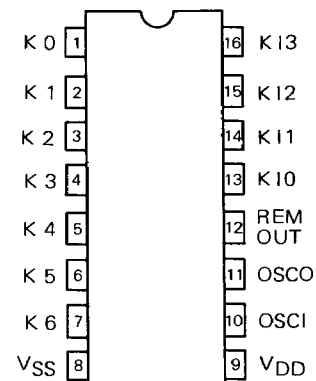
PACKAGE DIMENSIONS

in millimeters (inches)

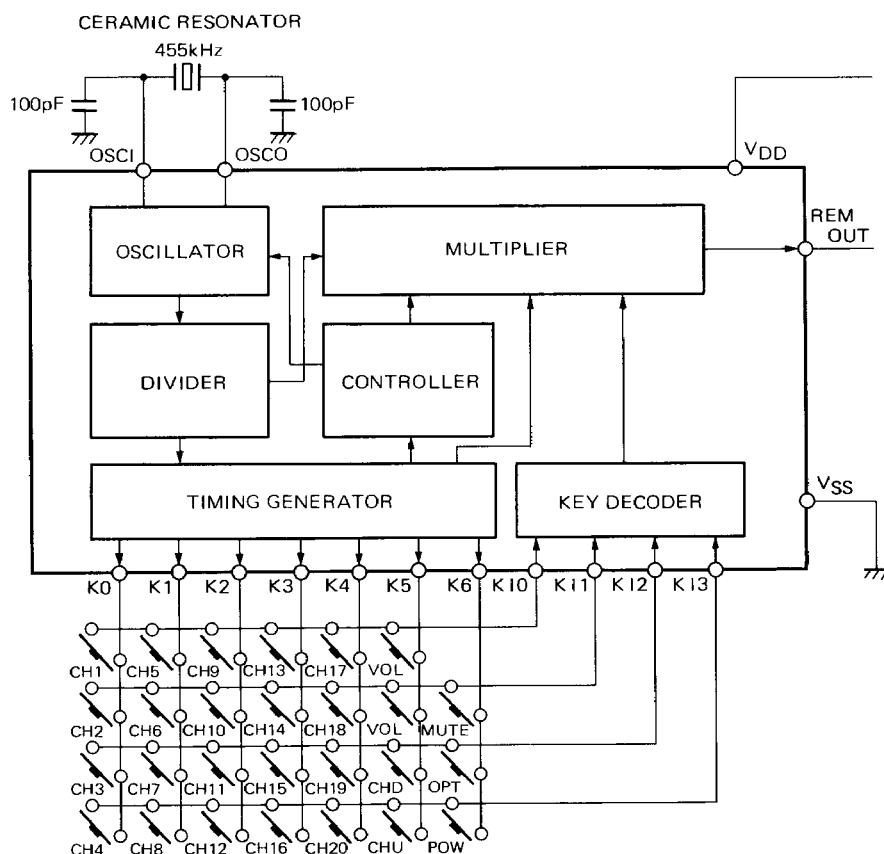


CONNECTION DIAGRAM

(Top View)



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C)

Supply Voltage	V _{DD} -V _{SS}	-0.3 to +8.0	V
Input Voltage	V _{IN} -V _{SS}	-0.3 to V _{DD}	V
Output Current	I _{OH} (REM)	-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} = 6.0 V)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Supply Voltage	V _{DD}	2.7	6.0	7.2	V	
Supply Current	I _{DD} (OP)		0.3	1.0	mA	OSC=455kHz
Supply Current	I _{DD} (ST)			1.0	μA	OSC STOP, Ta=25 °C
Input High Voltage	V _{IH} (KI)	0.7V _{DD}		V _{DD}	V	
Input Low Voltage	V _{IL} (KI)	0		0.3V _{DD}	V	
Output High Voltage	V _{OH} (REM)	V _{DD} -1		V _{DD}	V	I _{OL} =-1.0mA
Input Pulldown Current	I _{IL} (KI)	-10		-100	μA	V _{IN} =V _{DD} , Ta=25 °C

PIN	FUNCTION		
8	V _{SS}	Ground	
9	V _{DD}	Positive supply 2.7 to 7.2 Volt.	Operating voltage is wideband
10	OSCI	Oscillator Input	455kHz Ceramic Resonator CSB455A (MURATA JAPAN)
11	OSCO	Oscillator Output	
12	REM OUT	Remote Signal Output	See Fig 1 and Table 1
13~16	K I0~K I3	Key Input 0~3	
1~7	K O~K 7	Key Output 0~7	

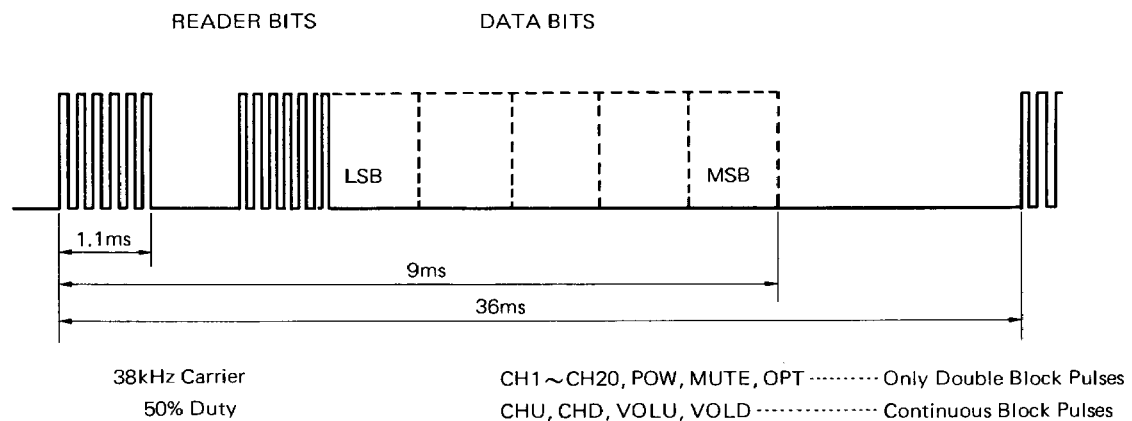


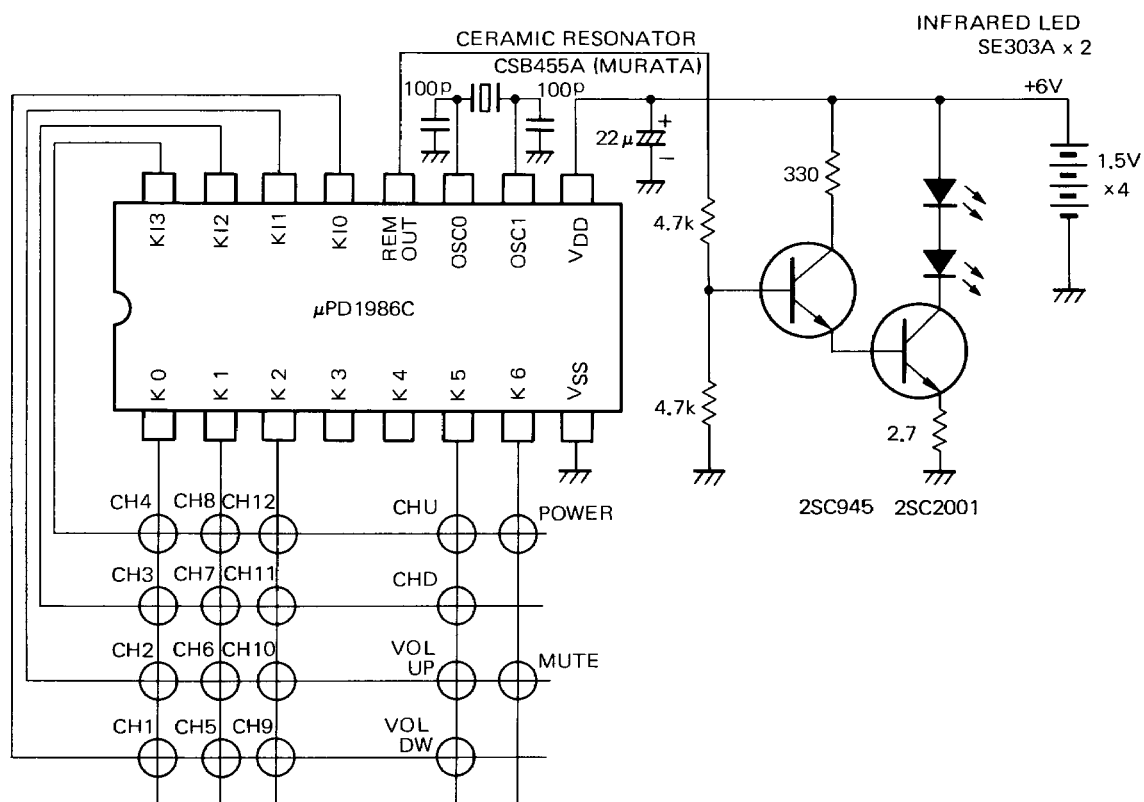
Fig. 1 Remote Signal Output (1 Block)

CONNECTION		FUNCTION		DATA BIT CODE				
K IN	K OUT			MSB		LSB		
K10	K0	CH 1	DIRECT ADDRESS CHANNEL 1	0	0	0	0	0
K11	K0	CH 2	DIRECT ADDRESS CHANNEL 2	0	0	0	0	1
K12	K0	CH 3	DIRECT ADDRESS CHANNEL 3	0	0	0	1	0
K13	K0	CH 4	DIRECT ADDRESS CHANNEL 4	0	0	0	1	1
K10	K1	CH 5	DIRECT ADDRESS CHANNEL 5	0	0	1	0	0
K11	K1	CH 6	DIRECT ADDRESS CHANNEL 6	0	0	1	0	1
K12	K1	CH 7	DIRECT ADDRESS CHANNEL 7	0	0	1	1	0
K13	K1	CH 8	DIRECT ADDRESS CHANNEL 8	0	0	1	1	1
K10	K2	CH 9	DIRECT ADDRESS CHANNEL 9	0	1	0	0	0
K11	K2	CH 10	DIRECT ADDRESS CHANNEL 10	0	1	0	0	1
K12	K2	CH 11	DIRECT ADDRESS CHANNEL 11	0	1	0	1	0
K13	K2	CH 12	DIRECT ADDRESS CHANNEL 12	0	1	0	1	1
K10	K3	CH 13	DIRECT ADDRESS CHANNEL 13	0	1	1	0	0
K11	K3	CH 14	DIRECT ADDRESS CHANNEL 14	0	1	1	0	1
K12	K3	CH 15	DIRECT ADDRESS CHANNEL 15	0	1	1	1	0
K13	K3	CH 16	DIRECT ADDRESS CHANNEL 16	0	1	1	1	1
K10	K4	CH 17	DIRECT ADDRESS CHANNEL 17	1	0	0	0	0
K11	K4	CH 18	DIRECT ADDRESS CHANNEL 18	1	0	0	0	1
K12	K4	CH 19	DIRECT ADDRESS CHANNEL 19	1	0	0	1	0
K13	K4	CH 20	DIRECT ADDRESS CHANNEL 20	1	0	0	1	1
K10	K5	VOLD	VOLUME DOWN	1	1	0	0	0
K11	K5	VOLU	VOLUME UP	1	1	0	0	1
K12	K5	CHD	CHANNEL DOWN	1	1	0	1	0
K13	K5	CHU	CHANNEL DOWN	1	1	0	1	1
K11	K6	MUTE	MUTE ON/OFF	1	1	1	0	1
K12	K6	OPT	OPTION	1	1	1	0	0
K13	K6	POW	POWER ON/OFF	1	1	1	1	1

Table 1 Data bit code

APPLICATION CIRCUIT

○ EXAMPLE OF 18 FUNCTION TRANSMITTER CIRCUIT



○ EXAMPLE OF CONSTANT CURRENT LED DRIVE CIRCUIT

