NEC ELECTRON DEVICE

BIPOLAR ANALOG INTEGRATED CIRCUIT

μPC1290C

REC/PB AUDIO HEAD SWITCH

DESCRIPTION

The μPC1290C is a monolithic integrated circuit designed for the recording/playback head turnover switch of a tape deck.

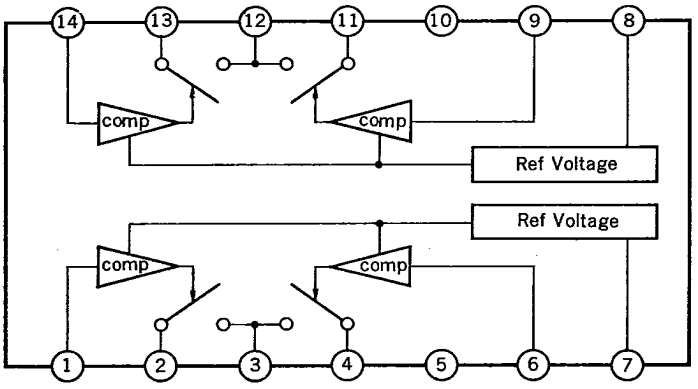
It is composed of two reference voltage source, four comparators and REC/PB switches.

The IC is encapsulated in 14 pin dual-in-line plastic package.

FEATURES

- High Isolation Voltage: 100 V_{p-p} MIN. (100 kHz)
- Low On Resistance.
- TTL Level Operation.
- High Reliability by Electric Switch.
- 2 Switch Circuits are Built-In.

BLOCK DIAGRAM



CONNECTION DIAGRAM

PIN NO.	SYMBOL	CONNECTION
1	IN_{R1}	REC SW_1 Control Terminal
2	SW_{R1}	REC SW_1 Terminal
3	GND	GND Terminal
4	SW_{P1}	PB SW_1 Terminal
5	GND	GND Terminal
6	IN_{P1}	PB SW_1 Control Terminal
7	V_{CC1}	V_{CC1} Terminal
8	V_{CC2}	V_{CC2} Terminal
9	IN_{P2}	PB SW_2 Control Terminal
10	GND	GND Terminal
11	SW_{P2}	PB SW_2 Terminal
12	GND	GND Terminal
13	SW_{R2}	REC SW_2 Terminal
14	IN_{R2}	REC SW_2 Control Terminal

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

Supply Voltage	V_{CC}	16	V
Power Dissipation	P_D	400*	mW
Operating Temperature Range	T_{opt}	−20 to +70	°C
Storage Temperature Range	T_{stg}	−40 to +125	°C
Pin 4, 11 Input Voltage (DC)	$V_{in\ 4}$, $V_{in\ 11}$	±65	V_{p-p}
Pin 4, 11 Input Current	$I_{in\ 4}$, $V_{in\ 11}$	±1.5	mA
Pin 2, 13 Input Voltage	$V_{in\ 2}$, $V_{in\ 13}$	±0.2	V
Pin 2, 13 Input Current	$I_{in\ 2}$, $I_{in\ 13}$	±10	mA

*Value at T_a = 70 °C

RECOMMENDED OPERATING CONDITION (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	4.5	9	14.4	V
Input Voltage (4, 11 pin)	V_{i4}, V_{i11}	–	–	100*	V_{p-p}
High Level Input Voltage R, P	V_{CRH}, V_{CPH}	2.5	–	8.0**	V

* f = 100 kHz, when Input Voltage (4, 11 pin) is more than 100 V_{p-p} AC, input voltage waveform has large distortion.

** When the V_{CC} is less than 8 V, V_{CRH}, V_{CPH} MAX. are V_{CC}.

ELECTRICAL CHARACTERISTICS (T_a = 25 °C, V_{CC} = 9.0 V)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Supply Current 1	$I_{CC\ 1}$			2	mA	V_{CR} = 0 V, V_{CP} = 0 V
Supply Current 2	$I_{CC\ 2}$			15	mA	V_{CR} = 5 V, V_{CP} = 5 V
Low Level Input Voltage R	V_{CRL}	0		1.5	V	
High Level Input Voltage R	V_{CRH}	2.5		8	V	
Low Level Input Voltage P	V_{CPL}	0		1.5	V	
High Level Input Voltage P	V_{CPH}	2.5		8	V	
High Level Input Current R	I_{CR}		50	100	μA	V_{CR} = 5 V
High Level Input Current P	I_{CP}		50	100	μA	V_{CP} = 5 V
Pin 2, 13 ON Resistance	R_R		5	10	Ω	V_{CR} = 5 V, I_R = ±1 mA
Pin 4, 11 ON Resistance	R_P		10	20	Ω	V_{CP} = 5 V, I_P = ±1 mA
Pin 2, 13 Leak Current	I_{LR}			±2	μA	V_B = ±0.1 V
Pin 4, 11 Leak Current	I_{LP}			±10	μA	V_B = ±50 V
Pin 2, 13 Offset Voltage	V_{RO}		3	6	mV	V_{CR} = 5 V
Pin 4, 11 Offset Voltage	V_{PO}		4	15	mV	V_{CP} = 5 V

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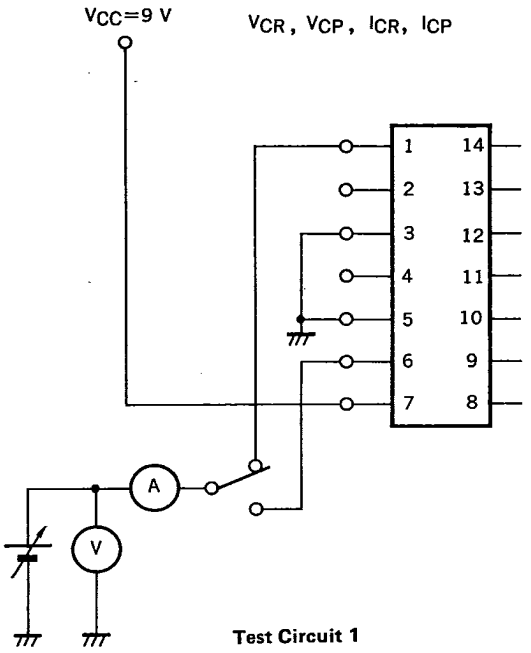
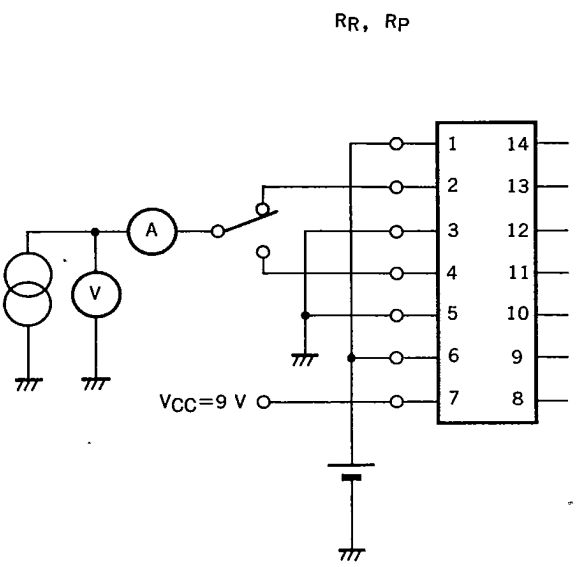
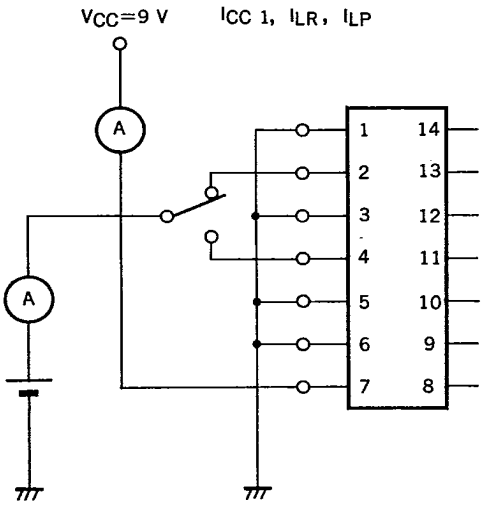
TEST CIRCUIT (CH1 ONLY)



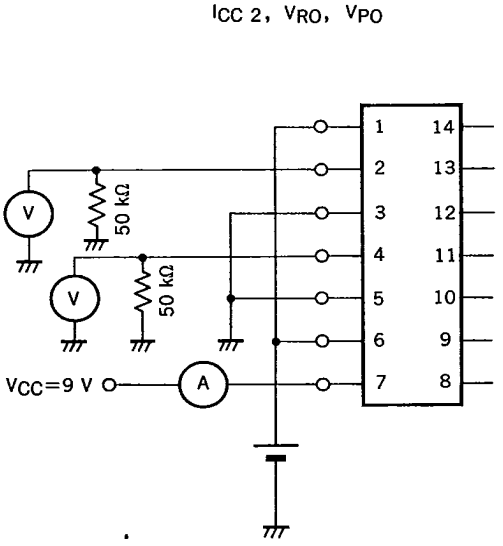
Test Circuit 1



Test Circuit 2



Test Circuit 3



Test Circuit 4

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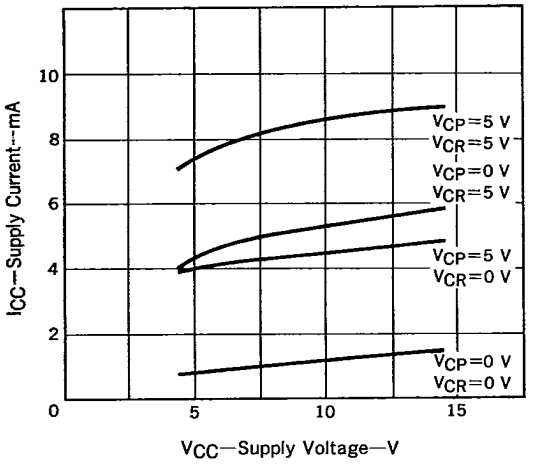
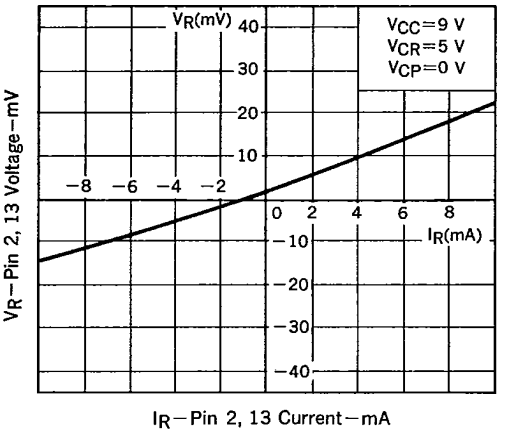
TYPICAL CHARACTERISTICS (T_a = 25 °C)

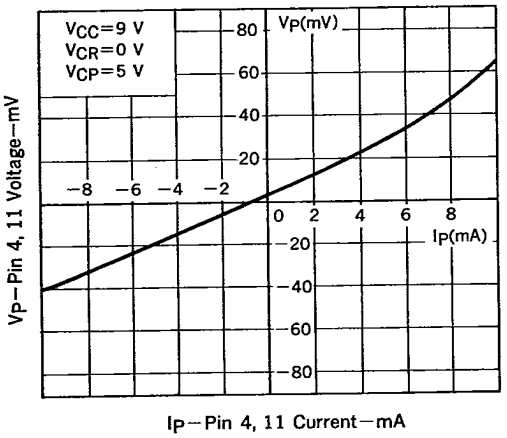
SUPPLY CURRENT vs. SUPPLY VOLTAGE



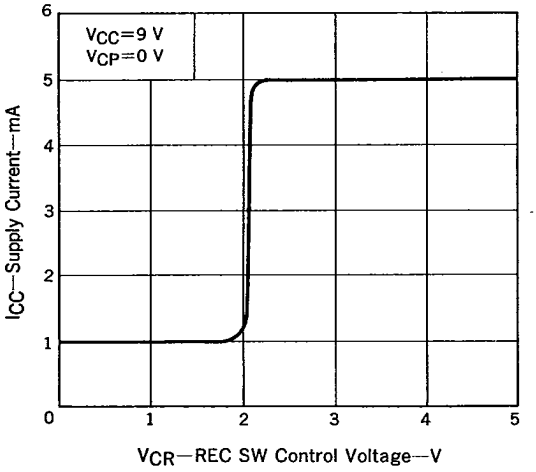
REC SW ON RESISTANCE CHARACTERISTICS



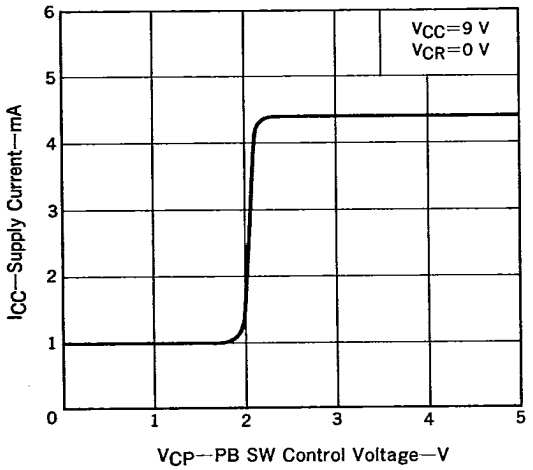
PB SW ON RESISTANCE CHARACTERISTICS



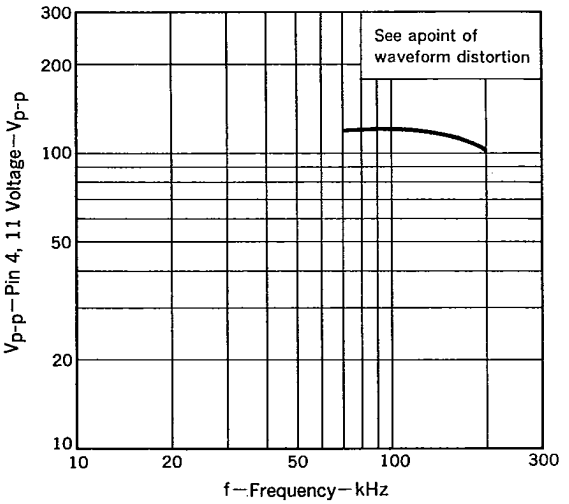
SUPPLY CURRENT vs. REC SW CONTROL VOLTAGE



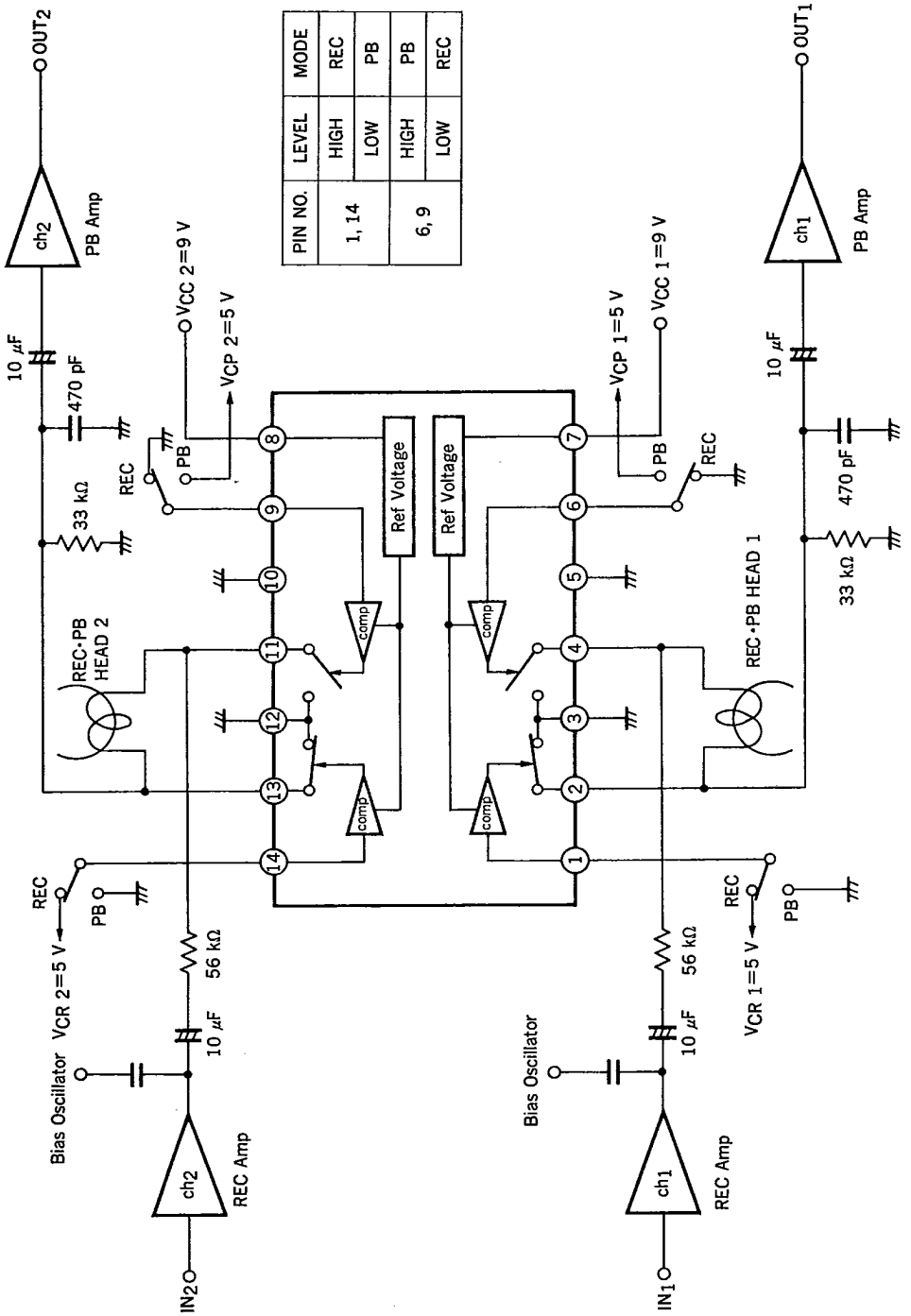
SUPPLY CURRENT vs. PB SW CONTROL VOLTAGE



PIN 4, 11 VOLTAGE vs. FREQUENCY

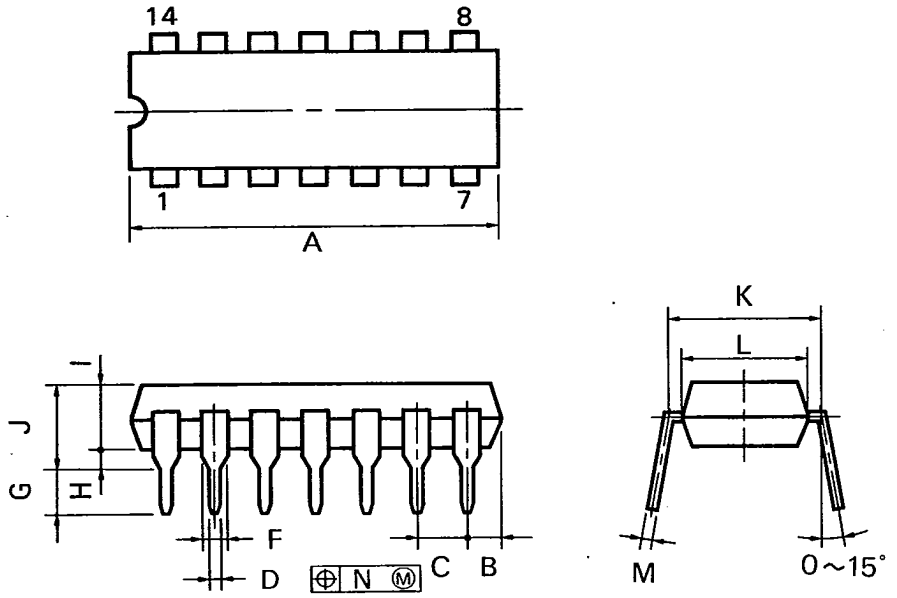


APPLICATION CIRCUIT



PIN NO.	LEVEL	MODE
1, 14	HIGH	REC
	LOW	PB
6, 9	HIGH	PB
	LOW	REC

14PIN PLASTIC DIP (300 mil)



P14C-100-300B2

NOTES

1) Each lead centerline is located within 0.25 mm (0.01 inch) of its true position (T.P.) at maximum material condition.

2) Item "K" to center of leads when formed parallel.

ITEM	MILLIMETERS	INCHES
A	20.32 MAX.	0.800 MAX.
B	2.54 MAX.	0.100 MAX.
C	2.54 (T.P.)	0.100 (T.P.)
D	$0.50^{\pm 0.10}$	$0.020^{+0.004}_{-0.005}$
F	1.1 MIN.	0.043 MIN.
G	$3.5^{\pm 0.3}$	$0.138^{\pm 0.012}$
H	0.51 MIN.	0.020 MIN.
I	4.31 MAX.	0.170 MAX.
J	5.08 MAX.	0.200 MAX.
K	7.62 (T.P.)	0.300 (T.P.)
L	6.5	0.256
M	$0.25^{+0.10}_{-0.05}$	$0.010^{+0.004}_{-0.003}$
N	0.25	0.01

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