



DATA SHEET

BIPOLAR ANALOG INTEGRATED CIRCUIT μ PC1474HA, μ PC1475HA

REMOTE CONTROL PREAMPLIFIER

DESCRIPTION

The μ PC1474HA and μ PC1475HA are silicon monolithic integrated circuit designed for remote control preamplification of infrared signals. A PIN photo diode can be directly connected to the input terminal.

The μ PC1474HA and μ PC1475HA contain a high-gain amplifier, a peak detector and an output waveform shaper which are necessary for a remote control preamplifier.

The μ PC1474HA and μ PC1475HA have improved light interference-rejection characteristics, by use of a two-stage tuning circuit.

The μ PC1474HA's output polarity is active "Low" and the μ PC1475HA's output polarity is active "High".

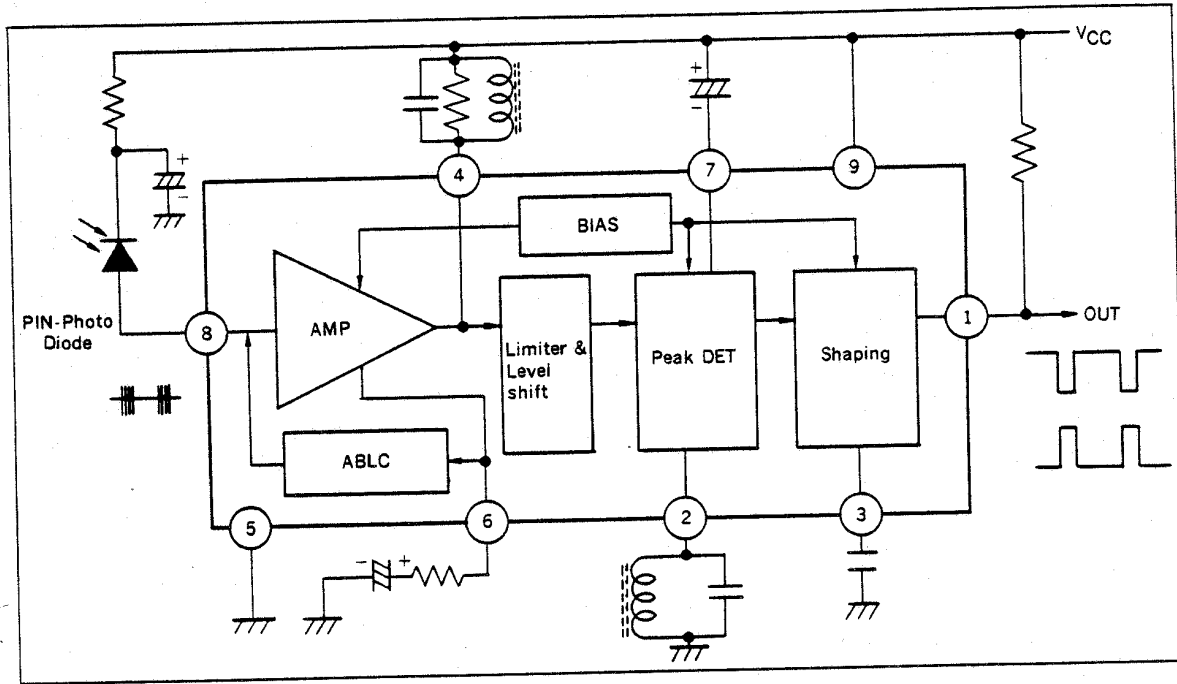
FEATURES

- Good immunity from light interference: Narrow band width: ± 1.3 kHz TYP.
- Operation voltage: 5 V ± 10 %
- Low power consumption: 2.4 mA TYP.
- High input sensitivity: 50 μ V_{p-p} TYP.
- Peak detector: The detector level is varied with the input signal level.
- Out terminal: Open collector output Easy to interface to other devices.
- Application: Designed for use with the μ PD1913C, μ PD1943G, μ PD6102G remote control transmitter IC.

ORDERING INFORMATION

Order Code	Package	Output Data
μ PC1474HA	8-pin plastic SIP	active low
μ PC1475HA	8-pin plastic SIP	active high

BLOCK DIAGRAM



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

Supply Voltage	V_{CC}	8	V
Power Dissipation	P_D	270	mW
Operating Temperature	T_{opt}	-20 to $+75$	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to $+125$	$^\circ\text{C}$
Output Terminal Voltage	V_{out}	15.0	V

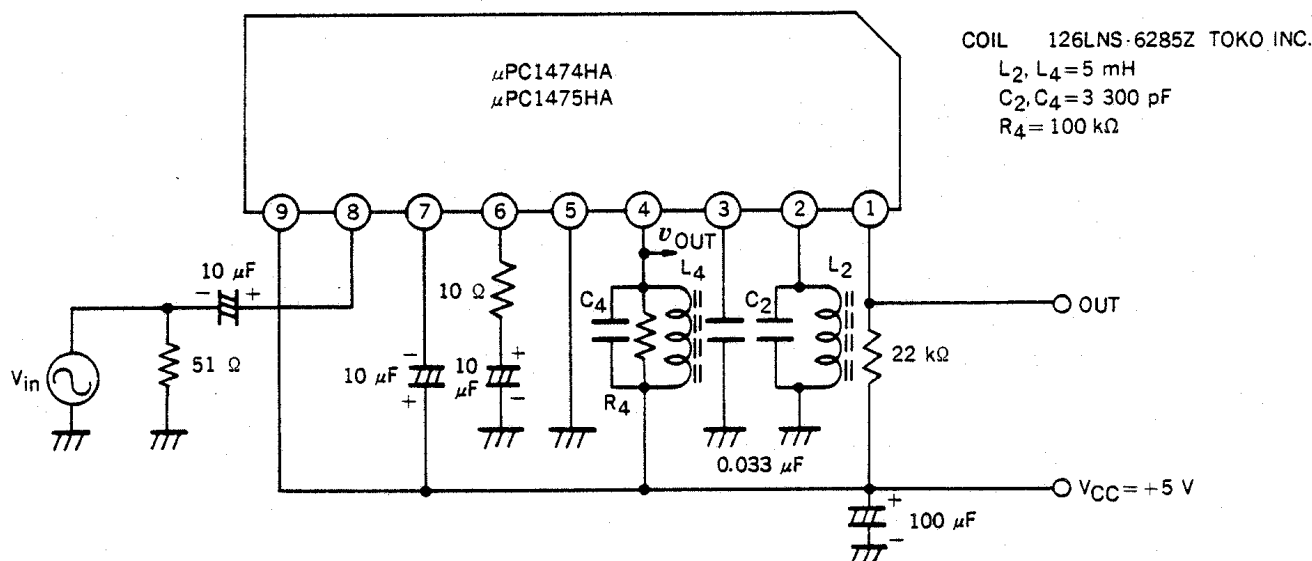
RECOMMENDED OPERATING CONDITION

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Power Supply	V_{CC}	4.5	5.0	5.5	V
Input Frequency	f_{in}	30		60	kHz

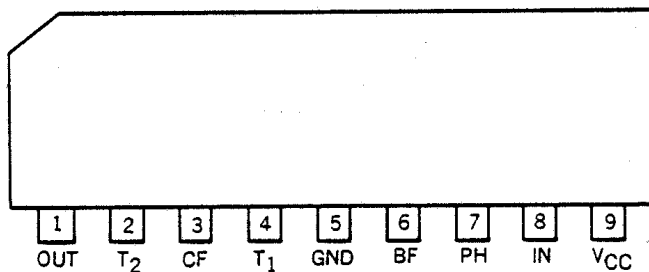
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $f_{in} = 40\text{ kHz}$)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Supply Current	I_{CC}	1.6	2.4	3.5	mA	
Input Terminal Voltage	V_{IN1}	1.0	1.25	1.45	V	
Input Terminal Voltage	V_{IN2}	2.0	2.35	2.5	V	$I_{in} = 30\text{ }\mu\text{A}$
1st Stage Voltage Gain	A_{vL}		66		dB	#8 - #4, $v_{out} = 500\text{ mV}_{p-p}$
Detection Input Voltage	v_{in}		50	100	μV	
Input Impedance	r_{in}	40	60	80	$k\Omega$	
Output Voltage	V_{OL}			0.5	V	$I_{OL} = 0.5\text{ mA}$, $v_{in} = 1\text{ mV}_{p-p}$
Output Leak Current	I_{OH}			2	μA	$V_{OH} = 14.4\text{ V}$

TEST CIRCUITS



CONNECTION DIAGRAM DIMENSIONS



TERMINAL

1	OUT	Output
2	T ₂	2nd stage tuning coil
3	CF	Carrier filter
4	T ₁	1st stage tuning coil
5	GND	Ground
6	BF	Bias filter
7	PH	Peak hold
8	IN	Input
9	V _{CC}	Power supply

- **Peak hold terminal (PH: 7 Pin)**

The signal of tuning coil terminal is detected by peak detector circuit.

In this case, detecting level depend on input signal strength, so noise wave is suppressed.

Time constant of peak hold is changed by capacitor C7.

- **2nd Stage tuning coil terminal (T_2 : 2 Pin)**

The peak detection signal is tuned again by this 2nd stage tuning circuit, so the band width is narrow.

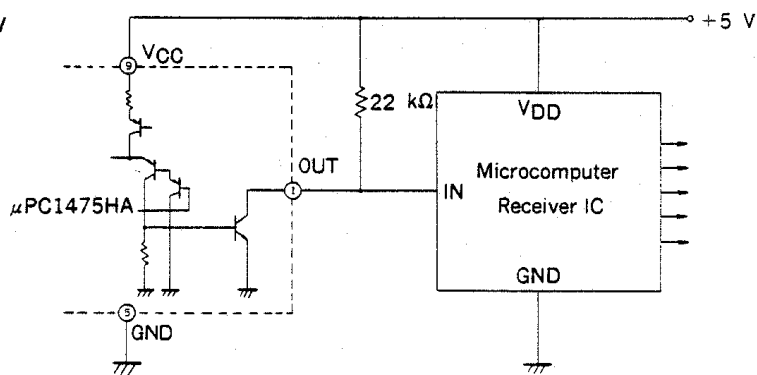
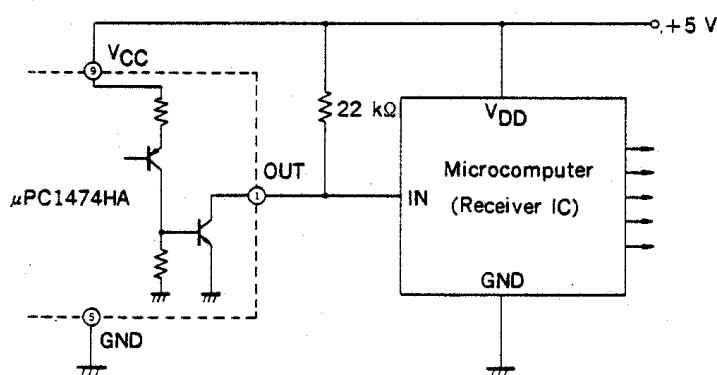
- **Carrier filter terminal (CF: 3 Pin)**

The carrier waveform is deleted by this capacitor C3.

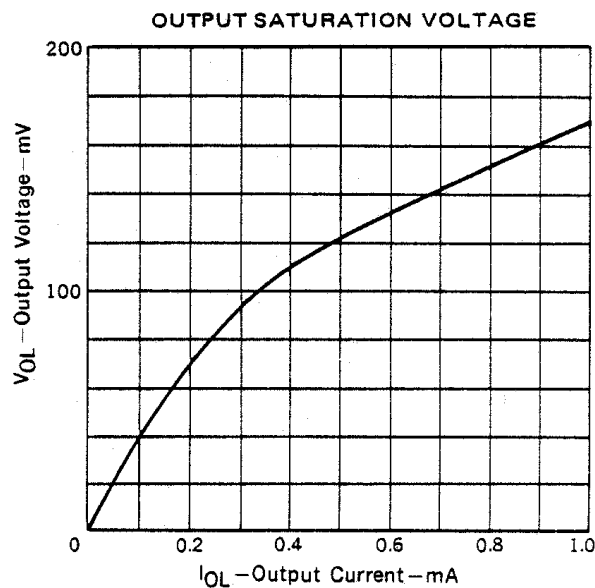
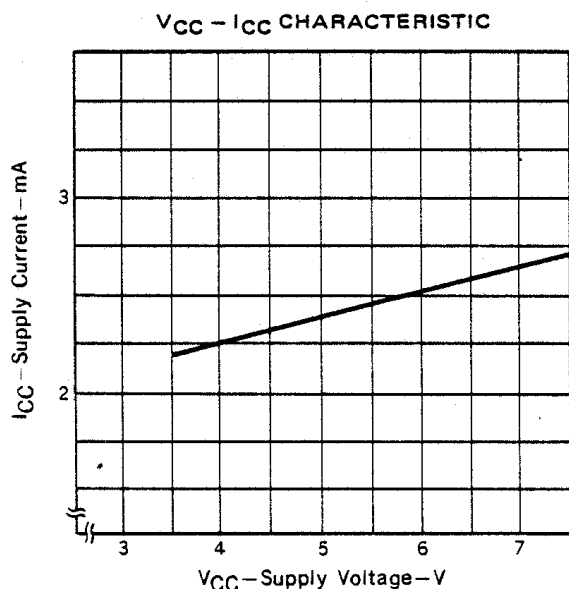
- **Output terminal (OUT: 1 Pin)**

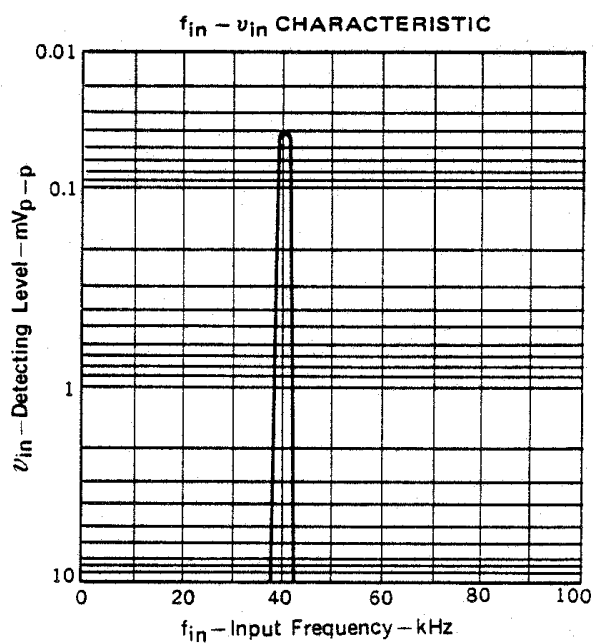
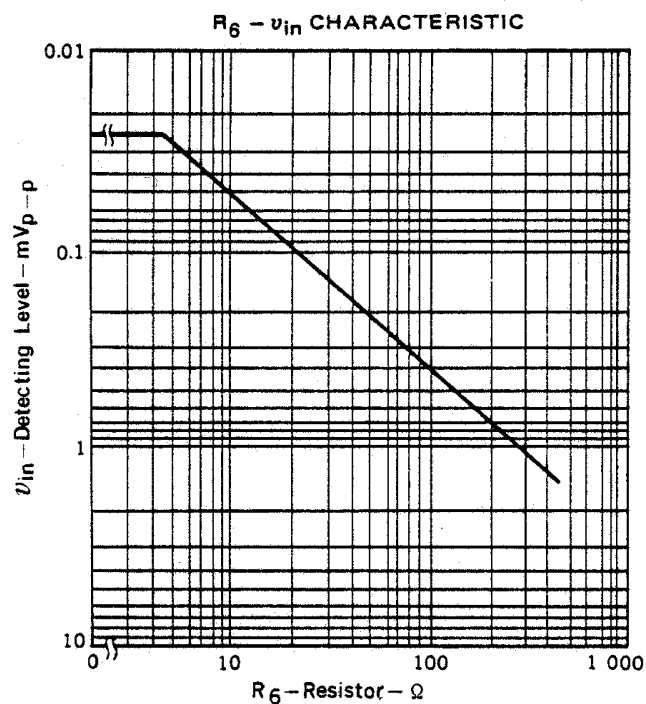
This Output terminal is open collector transistor.

The μ PC1474HA is active "Low" output. The μ PC1475HA is active "High" output.

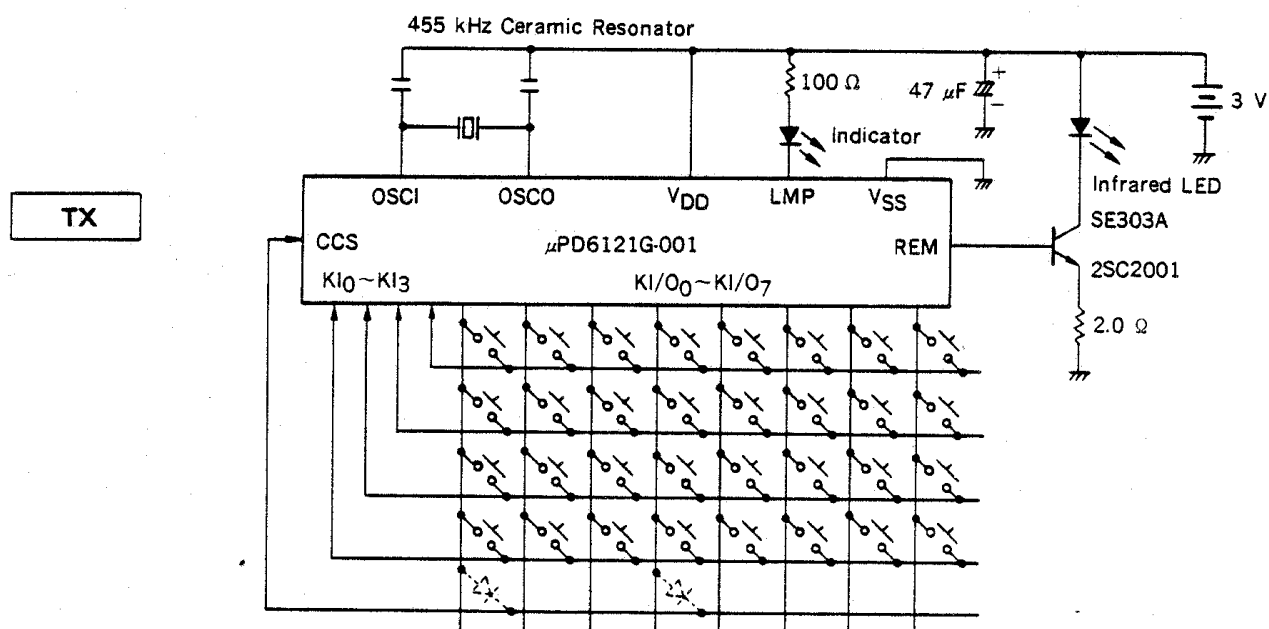


TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

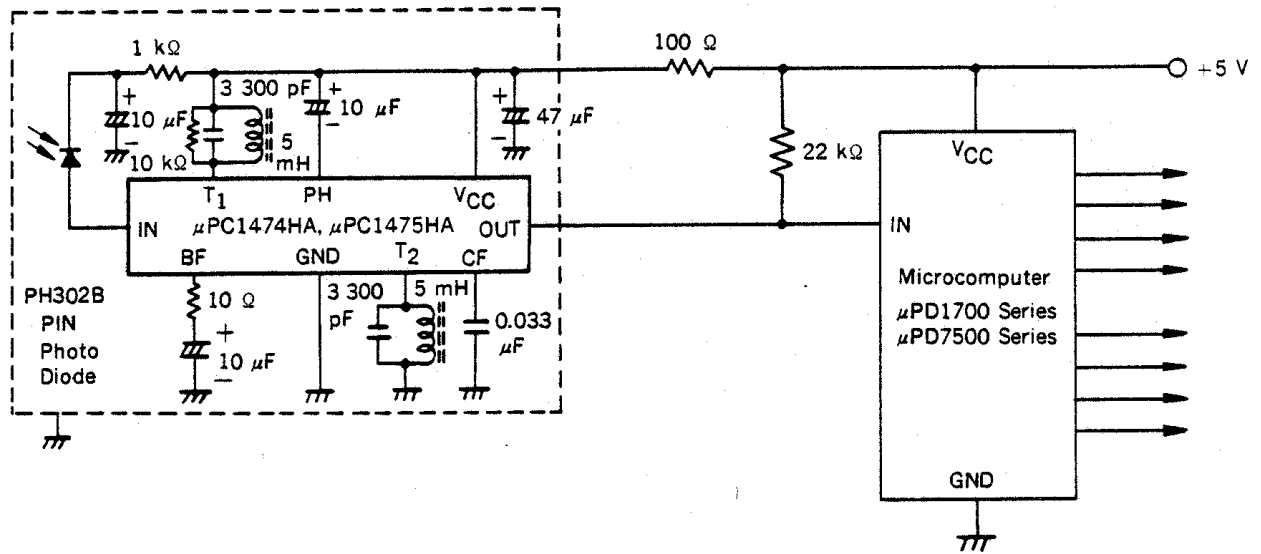




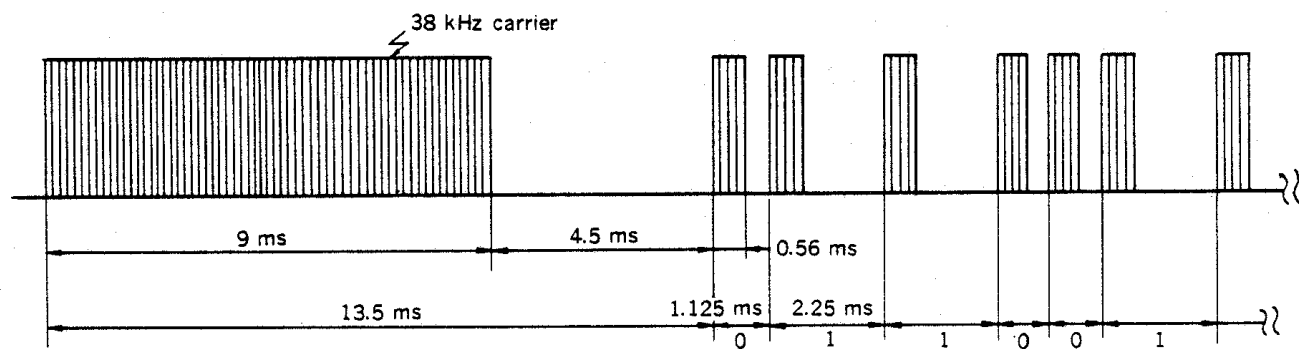
APPLICATION



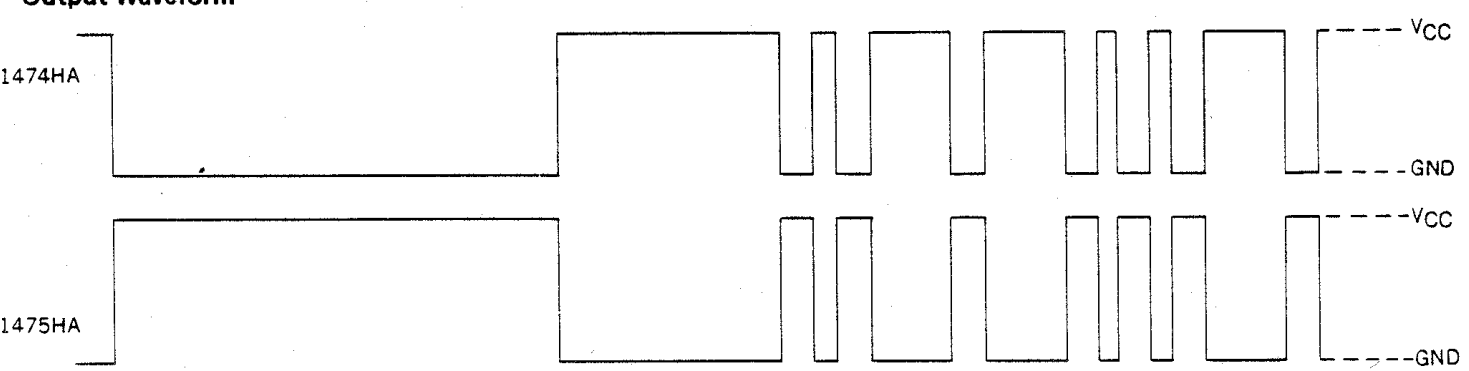
RX



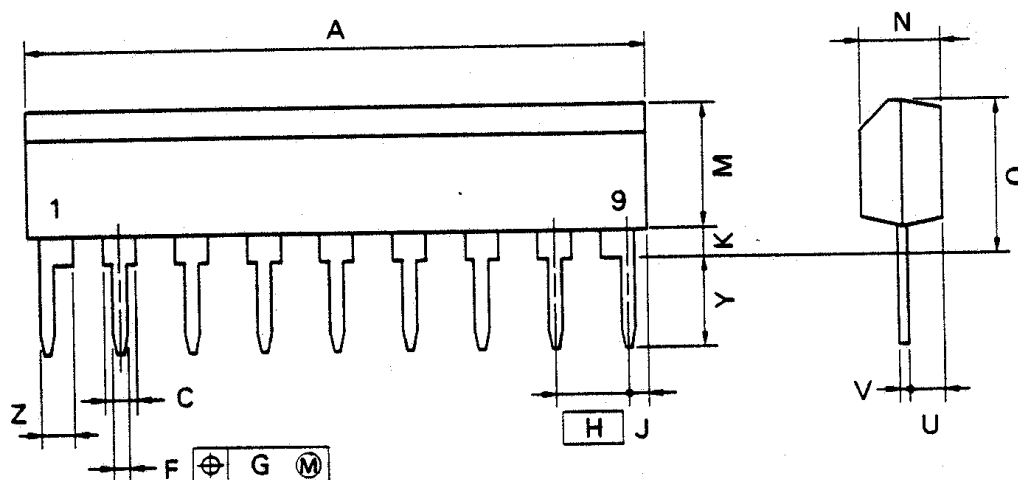
Transmitter Waveform



Output Waveform



9 PIN SIP PACKAGE DIMENSIONS

**NOTE**

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

P9HA-254B

ITEM	MILLIMETERS	INCHES
A	22.86 MAX.	0.9 MAX.
C	1.1 MIN.	0.043 MIN.
F	0.5 $\pm$ 0.1	0.02 $\pm$ 0.004
G	0.25	0.01
H	2.54	0.1
J	1.27 MAX.	0.05 MAX.
K	0.51 MIN.	0.02 MIN.
M	5.08 MAX.	0.2 MAX.
N	2.8 $\pm$ 0.2	0.11 $\pm$ 0.008
Q	5.75 MAX.	0.227 MAX.
U	1.5 MAX.	0.059 MAX.
V	0.25 $\pm$ 0.08	0.01 $\pm$ 0.003
Y	3.2 $\pm$ 0.5	0.126 $\pm$ 0.02
Z	1.1 MIN.	0.043 MIN.