

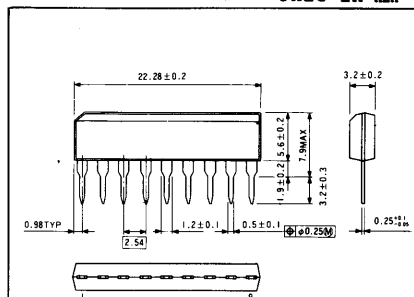
TD6321P

PLUNGER DRIVER FOR AUTO-REVERSE

TD6321P, an IC designed for auto-reverse of car stereo set, detects the rotation signal of reel, and generates the plunger drive output and the muting signal for reverse after the reel rotation stops.

- Reverse output is generated by forced reverse input (program input).
- Two circuits of input terminal for detecting the rotation is included.
- Muting output is generated at power-on.
- Time from rotation signal stop to output pulse generation, and output pulse width can be varied by changing the capacitor C for oscillation.

Unit in mm



Package width and length do not include mold protrusion.
All owable mold protrusion is 0.15mm.

JEDEC

TOSHIBA

SIP9-P-A

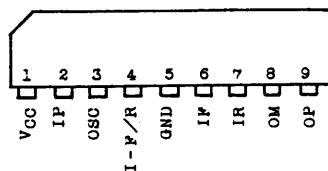
Weight : 0.92g

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Supply Voltage	V _{CC}	-0.3~18	V
Input Voltage	V _{IN}	-0.3~V _{CC} +0.3	V
Power Dissipation (Note)	P _D	750	mW
Operating Temperature	T _{opr}	-40~85	°C
Storage Temperature	T _{stg}	-65~150	°C
Output Current	I _{OP}	500	mA

Note: Derated linearly above Ta=25°C in the propotion of 4mW/°C.

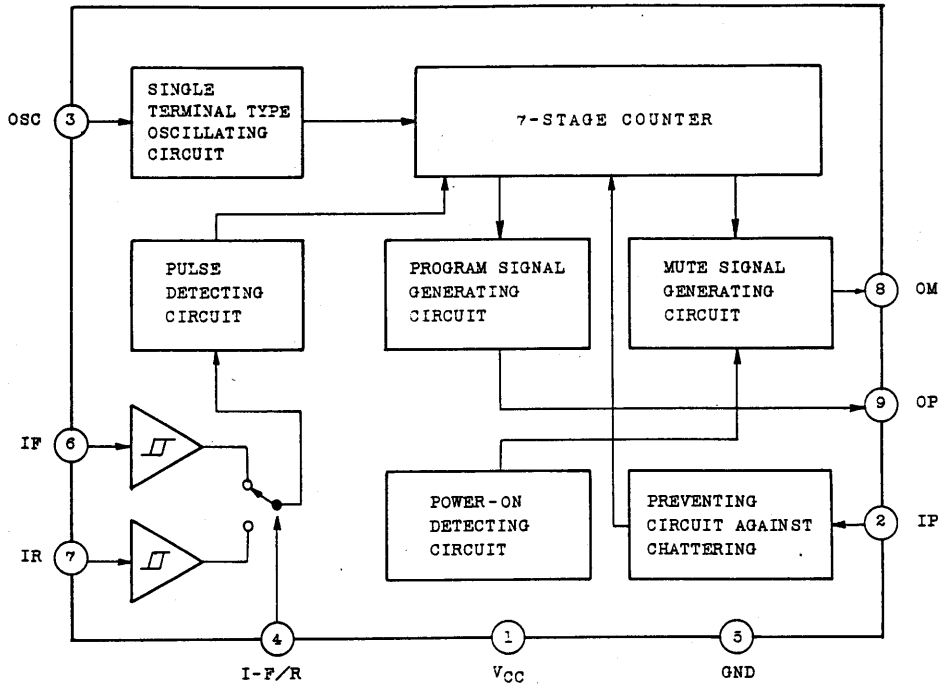
PIN CONFIGURATION



AUDIO DIGITAL IC

TD6321P

BLOCK DIAGRAM



FUNCTIONAL DESCRIPTION OF EACH PIN

PIN No.	SYMBOL	NAME	FUNCTION	REMARKS
1	VCC	Power Supply	Power supply voltage terminal.	
5	GND	Ground		
4	I-F/R	Forward/Reverse Input	Input terminal for specifying tape direction. At "H" level, input from IR(7 PIN) is detected. At "L" level, input from IF(6 PIN) is detected.	Built-in pull-down resistance
3	OSC	Oscillator	Operates as oscillator for generating the timing by connecting external capacitor.	
2	IP	Program Input	Forced reverse (program) input terminal. By inputting "L" level, output for reverse is generated. Preventing circuit against chattering is provided.	Built-in pull-up resistance
6	IF	Forward Input	Input terminal for detecting tape operation.	Built-in pull-up resistance
7	IR	Reverse Input	The tape-rotation signal detected by lead switch or photo-sensor is input.	
8	OM	Muting Output	Output terminal for muting. Outputs "H" level during the specified period at applying the supply voltage and reversing the program.	
9	OP	Plunger Output	Output terminal for driving program reverse plunger. Maked output for driving the plunger for a specified period when the tape stops and the forced reverse input is made.	

TD6321P

OPERATIONAL DESCRIPTION

TD6321P performs the operations below.

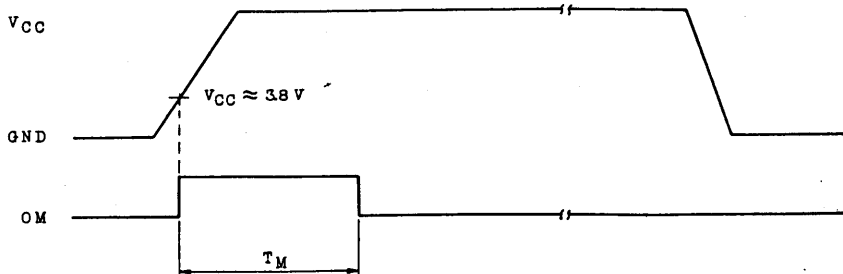
1. When "H" or "L" level is input successively to the terminals IF (6 PIN) and IR (7 PIN), the plunger output for reverse (OP) and the muting output (OM) are generated after a specified time.
2. "L" level of IP (2 PIN) input is detected, and the plunger output for reverse and the muting output are generated for a specified period.
3. At threshold voltage of the power supply, the muting output is generated.

(1) Determination of output timing

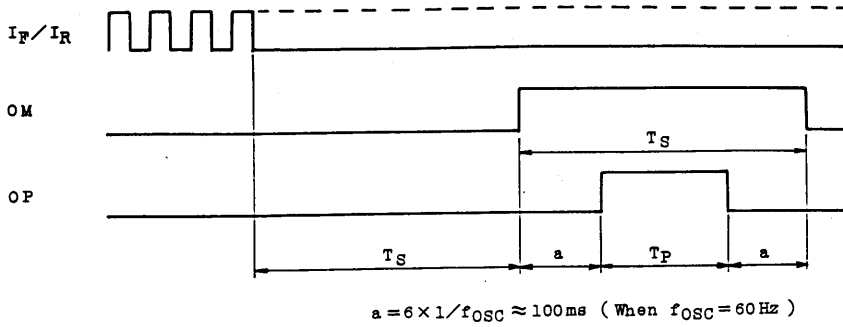
When the oscillation frequency of OSC (3 PIN) is f_{OSC} , the output timing is determined as described below. (When $f_{OSC}=60\text{Hz}$)

1. Chattering preventing time of IP terminal : $t=1-2 \times 1/f_{OSC} \approx 17-34\text{ms}$
2. Reverse outputting time of OP terminal : $T_p=9 \times 1/f_{OSC} \approx 150\text{ms}$
3. Muting time of OM terminal : $T_M=21 \times 1/f_{OSC} \approx 350\text{ms}$
4. Detecting time of tape operation : $T_S=64 \times 1/f_{OSC} \approx 1.07\text{sec}$

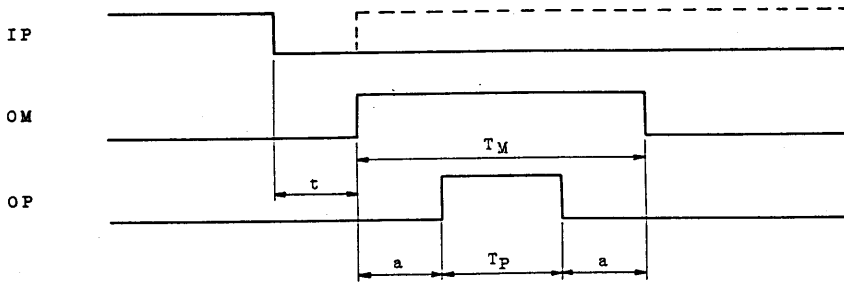
(2) Mute output timing at threshold voltage of power supply (Power on Mute)



(3) Program/mute output timing after tape stops

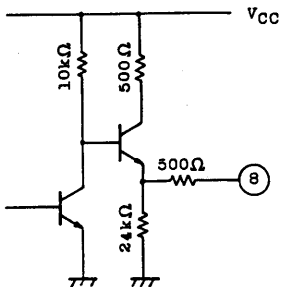


(4) Output timing by program key

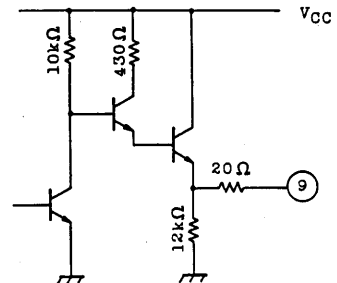


OUTPUT TERMINAL EQUIVALENT CIRCUIT

1. OM (8 PIN) terminal

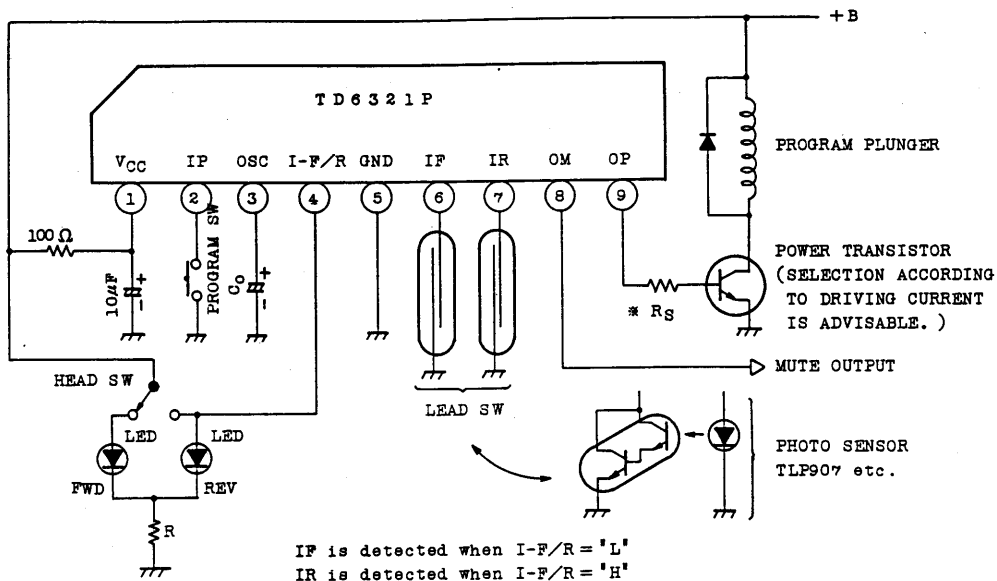


2. OP (9 PIN) terminal



TD6321P

EXAMPLE OF APPLICATION CIRCUIT



CAUTION ABOUT APPLICATION

Cautions must be taken for preventing the trouble in application and increasing the reliability.

1. Usage in the maximum rating is advisable. When the surge voltage is expected to be applied, provide the protection for keeping the IC within the rating.
2. Use OSC (3 PIN) external capacitor (Co) which has good characteristic of the temperature and the leak current.
3. For protecting the IC from the surge voltage of the power supply line, provide VCC (1 PIN) with the resistance (100Ω or over) and the capacitor (10μF or over).
4. The current limiting resistance Rs of OP (9 PIN) can be obtained by the formula below.

$$R_S \approx (V_{CC} - 3V_{BE}) \div I_{B \text{ MAX}} - 20 (\Omega)$$

