

### ◆ Features

- \* Built in 1024 musical notes ROM memory
- \* Built in audio amplifier , do not need transistor on output for sound amplifier
- \* Built in alone motor driver signal output ( MD pin ) , not be effect to sound quality during motor is derived
- \* Built in 1 LED flash circuit , flash speed follows sound output of melody tempo
- \* 5 different trigger mode by MODE & SL pin option .
  - Power on/off control mode
  - One shot non re-trigger mode
  - One shot re-trigger mode
  - On/off switch mode ( TG key control sound on or off )
  - Single touch plays all songs ( one touch TG pin playing all songs )

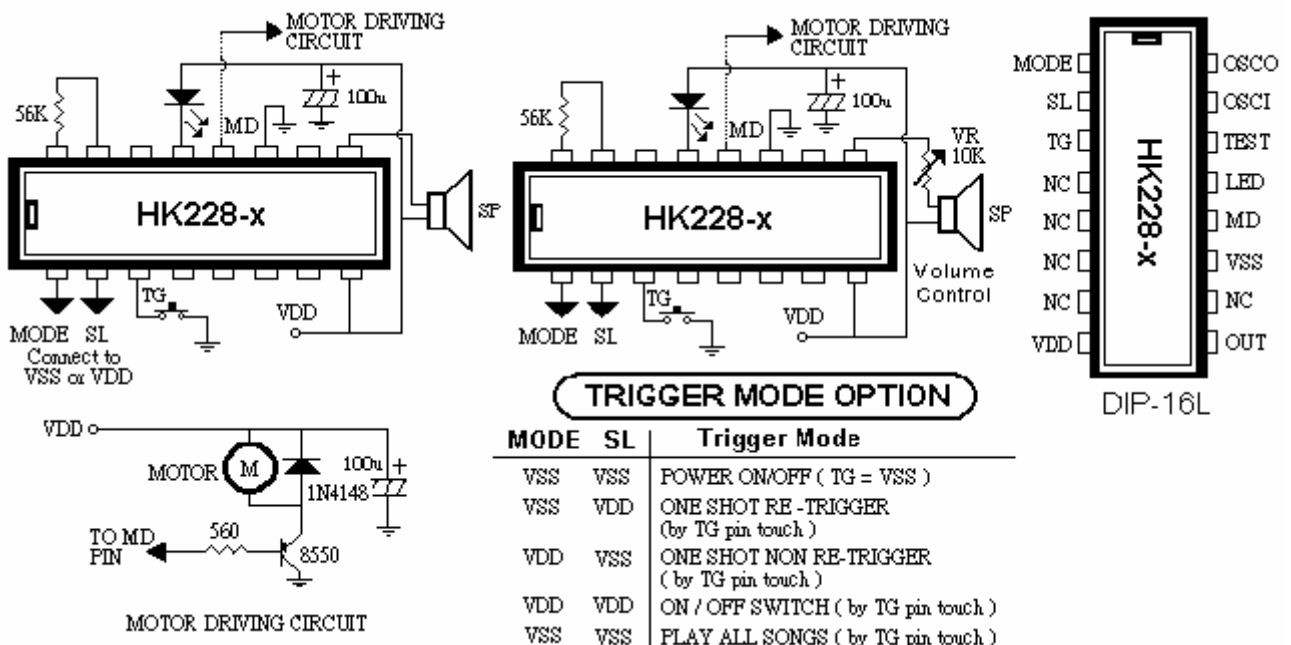
### ◆ Application

Home appliance, Toys, Clock melody, Key chain, Musical box

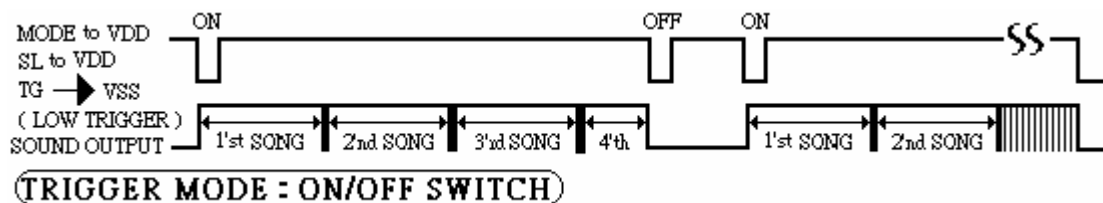
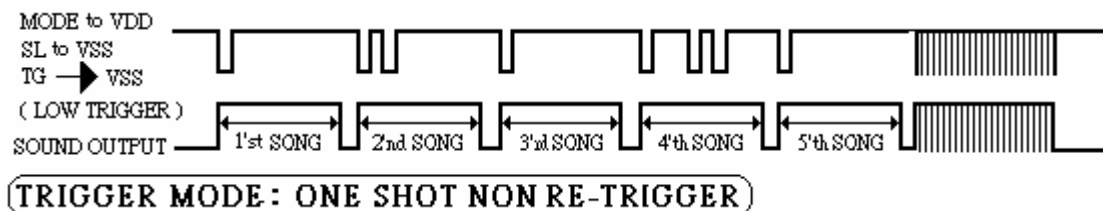
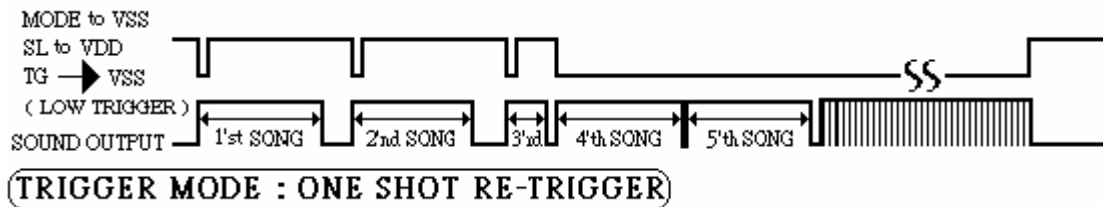
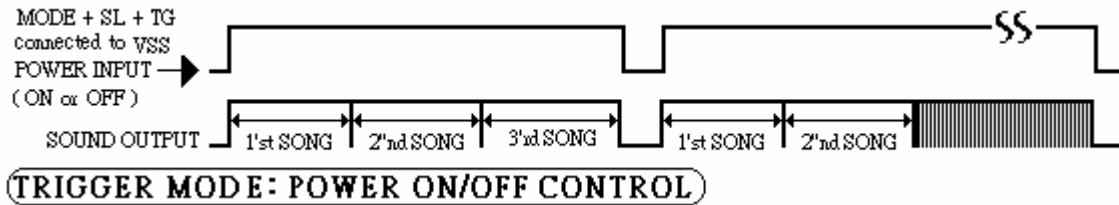
### ◆ Electrical Characteristics

Characteristics	Sym.	Min.	Typ.	Max.	Unit	Remark
Operating voltage	V <sub>DD</sub>	1.8	3.0	4.8	V	
Operating current	I <sub>OP</sub>	----	0.1	0.5	mA	
Stand by current	I <sub>SB</sub>	----	0.4	1	uA	
Oscillator frequency	F <sub>OSC</sub>	----	500	----	KHz	±30% R <sub>osc</sub> = 56KΩ
Operating temperature	T <sub>EMP</sub>	0	25	60	°C	
Driving current	I <sub>O</sub>	----	18	----	mA	@ V <sub>DS</sub> =1V

### ◆ Application circuit



- ★ Package Type : DIP-16L
- ★ Trigger Mode and Timing Chart :



## ◆ Song list

### HK228-1

1. ANGELS WE HAVE HEARD ON HIGH
2. WE WISH YOU A MERRY CHRISTMAS
3. IT CAME UPON THE MIDNIGHT CLEAR
4. THE FIRST NOEL
5. SILENT NIGHT
6. O CHRISTMAS TREE
7. UPON ON THE HOusetop
8. O LITTLE TOWN OF BETHLEHEM
9. HARK ! THE HERALD ANGELS SING
10. JOY TO THE WORLD
11. DECK THE HALLS
12. SANTA CLAUS IS COMING TO TOWN

### HK228-2

1. HUSH LITTLE BABY
2. DOWN THE MOUNTAINside WE GO
3. TWINKLE TWINKLE LITTLE STAR
4. HOME ON THE RANGE
5. THE FIRE MAN
6. SPRING IS COMING
7. OH! MY DARLING
8. DID YOU EVER SEE A LASSIE
9. ROCKABYE BABY
10. THREE BLIND MICE
11. THE FARMER IN THE DELL
12. BINGO

### HK228-6 ( MUSICAL SONG + CLOCK CHIME )

1. 6:00 "THE BLUE-BELL OF SCOTLAND" + 6 CLOCK CHIME
2. 7:00 "THE FARMER IN THE DELL" + 7 CLOCK CHIME
3. 8:00 "FOR ELISE" + 8 CLOCK CHIME
4. 9:00 "HOME ON THE RANGE" + 9 CLOCK CHIME
5. 10:00 "LONG LONG AGO" + 10 CLOCK CHIME
6. 11:00 "MINUTE" + 11 CLOCK CHIME
7. 12:00 "TRAUMEREI" + 12 CLOCK CHIME
8. 13:00 "SLUMBER" + 1 CLOCK CHIME
9. 14:00 "TOY SYMPHONY" + 2 CLOCK CHIME
10. 15:00 "OLD BLACK JOE" + 3 CLOCK CHIME

## ◆ Song list

11. 16:00 "DIE LORELEI" + 4 CLOCK CHIME
12. 17:00 "THE HAPPY FARMER" + 5 CLOCK CHIME
13. 18:00 "HOME SWEET HOME" + 6 CLOCK CHIME
14. 19:00 "SWAN LAKE" + 7 CLOCK CHIME
15. 20:00 "HUSH LITTLE BABY" + 8 CLOCK CHIME
16. 21:00 "SERENADE" + 9 CLOCK CHIME