

24 Key Piano with a Demo Song and a Memory

900-7556

Faxback Doc. # 9007556

Features

- CMOS Metal-Gate technology
- Operating voltage: 2.4V~5.0V
- 24 direct key inputs
- A demo song (of 48 notes)
- Programmable 48-note memory
- A built-in oscillator with an external resistor
- Minimal external components required
- 40 pin dual-in-line package

General Description

The HT3242 is a CMOS LSI designed for use in keyboard instrument applications. The chip consists of 24 direct key inputs, a 48-note RAM

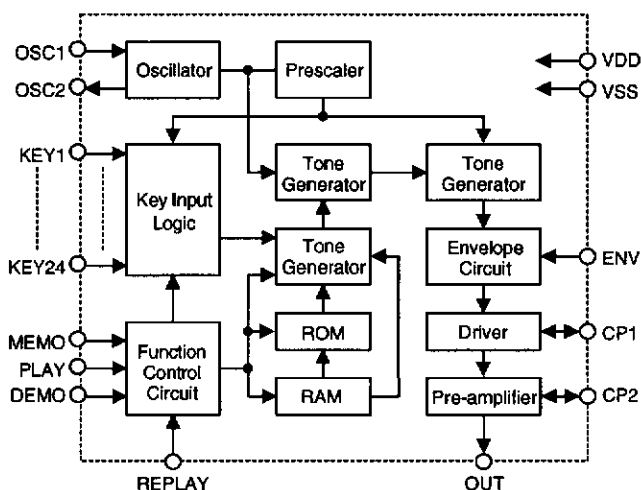
for memorization, and a 48-note ROM for song playing. It requires only 3 resistors, 3 capacitors, and 2 transistors for simple applications.

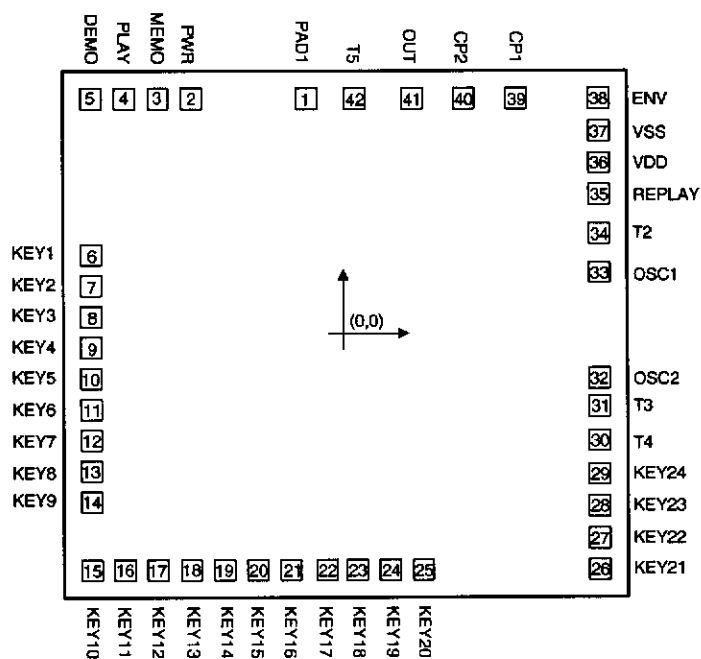
Pin Assignment

NC	1	40	NC
PWR	2	39	OUT
MEMO	3	38	CP2
PLAY	4	37	CP1
DEMO	5	36	ENV
KEY1	6	35	VSS
KEY2	7	34	VDD
KEY3	8	33	REPLAY
KEY4	9	32	NC
KEY5	10	31	OSC1
KEY6	11	30	OSC2
KEY7	12	29	KEY24
KEY8	13	28	KEY23
KEY9	14	27	KEY22
KEY10	15	26	KEY21
KEY11	16	25	KEY20
KEY12	17	24	KEY19
KEY13	18	23	KEY18
KEY14	19	22	KEY17
KEY15	20	21	KEY16

HT3242
- 40 DIP

Block Diagram



Pad Coordinates


Chip size: $135 \times 127 \text{ (mil)}^2$

* The IC substrate should be connected to VDD in the PCB layout artwork.

Unit: mil

Pad No.	X	Y	Pad No.	X	Y	Pad No.	X	Y
1	-8.75	56.75	15	-60.70	-57.15	29	61.45	-34.20
2	-36.50	56.75	16	-52.70	-57.15	30	61.45	-25.95
3	-44.55	56.75	17	-44.75	-57.15	31	61.45	-17.70
4	-52.65	56.75	18	-36.75	-57.15	32	61.45	-10.90
5	-60.70	56.75	19	-28.75	-57.15	33	61.45	14.70
6	-60.70	19.10	20	-20.75	-57.15	34	61.45	24.10
7	-60.70	11.60	21	-12.80	-57.15	35	61.45	33.55
8	-60.70	4.10	22	-4.08	-57.15	36	61.45	41.20
9	-60.70	-3.35	23	3.20	-57.15	37	61.45	48.85
10	-60.70	-10.85	24	11.20	-57.15	38	61.45	56.75
11	-60.70	-18.30	25	19.20	-57.15	39	41.65	56.75
12	-60.70	-25.80	26	61.45	-57.15	40	29.05	56.75
13	-60.70	-33.3	27	61.45	-49.50	41	16.70	56.75
14	-60.70	-40.75	28	61.45	-41.85	42	2.80	56.75

Pin Description

Pin No.	Pin Name	I/O	Internal Connection	Description
1	NC	—	—	No connection
2	PWR	I	—	Power-on reset
3	MEMO	I	CMOS Pull-High	Memory mode control
4	PLAY	I	CMOS Pull-High	Play mode control
5	DEMO	I	CMOS Pull-High	Demo mode control The title of the demo song is "Twinkle, Twinkle Little star".
6~29	KEY1~KEY24	I	CMOS Pull-High	Direct key input pins
30	OSC2	O	—	Oscillator output
31	OSC1	I	—	Oscillator input
32	NC	O	—	No connection
33	REPLAY	I	CMOS Pull-High	Memory replay control pin
34	VDD	—	—	Power supply (positive)
35	VSS	—	—	Power supply (ground)
36	ENV	I/O	—	Tone envelope pin
37, 38	CP1, CP2	I/O	—	Signal output/input pins
39	OUT	O	CMOS	Piano tone output
40	NC	—	—	No connection

Absolute Maximum Ratings

Supply Voltage -0.3V to 5.5V

Input Voltage..... VSS-0.3V to VDD+0.3V

Storage Temperature..... -50°C to 125°C

Operating Temperature..... 0°C to 70°C

Electrical Characteristics

(Ta=25°C)

Symbol	Parameter	Test Condition		Min.	Typ.	Max.	Unit
		V _{DD}	Condition				
V _{DD}	Operating Voltage	—	—	2.4	3	5	V
I _{DD}	Operating Current	3V	F _{OSC} =200KHz, No load	—	800	2400	μA
I _{OH1}	OUT Source Current	3V	V _{OH} =2.5V	-0.1	-0.2	—	mA
I _{OL1}	OUT Sink Current	3V	V _{OL} =0.5V	0.1	0.2	—	mA
I _{OH2}	CP1 Source Current	3V	V _{OH} =2.7V	-0.4	-0.8	—	mA
I _{OL2}	CP1 Sink Current	3V	V _{OL} =0.3V	0.1	0.2	—	mA
I _{OL3}	ENV Sink Current	3V	V _{OH} =0.3V	1	2	—	mA
V _{IL}	"L" Input Voltage	—	—	—	—	0.2V _{DD}	V
V _{IH}	"H" Input Voltage	—	—	0.7V _{DD}	—	—	V
F _{OSC}	Oscillator Frequency	3V	R _{OSC} =150KΩ	—	200K	—	Hz