

SVM7560 Series

Melody IC

- Wider choices of working voltage
- Low power consumption and low voltage
- SOP3A-8pin small-sized package

■ DESCRIPTION

SVM7560 Series devices are CMOS LSIs which can play music melodies and generate chime or alarm sound according to musical information previously programmed into a mask ROM integrated into them.

The capacity of the ROM being used for storage of such music information is of 128 words and upto two numbers of music melodies under two different sound sources can be optioned for storage into it.

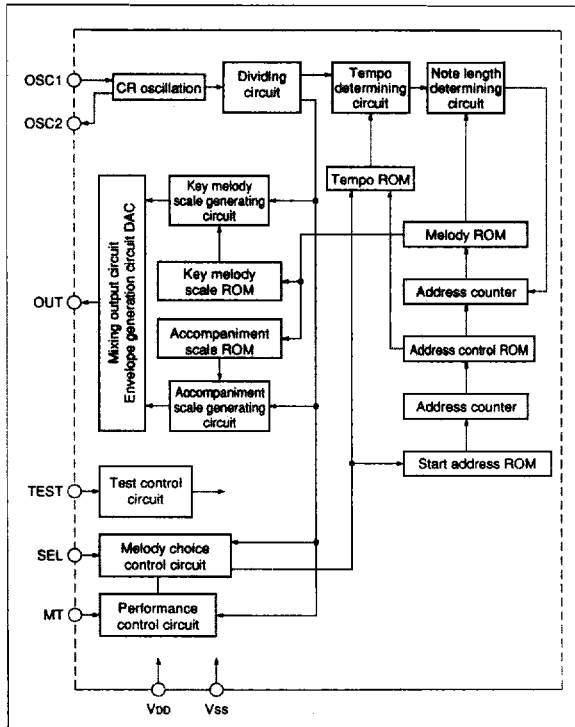
Also, the total integration (for mask option) of the CR oscillation circuit and integration of the envelope adding circuit for attenuation of performed music sound eliminate the need of external parts. Moreover, employing a small-sized package, they are most suitable for space-saving applications but requiring comfortable sound quality such as of holding time melody source of telephones.

■ FEATURES

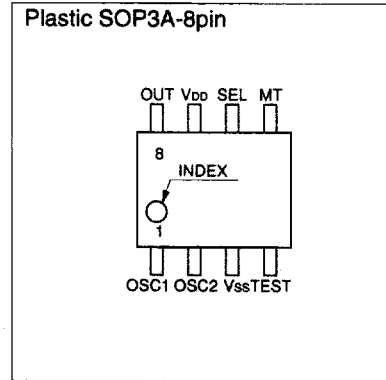
- Number of melodies Upto 2 (selection by a single terminal)
- ROM capacity 128 words (optional word allocation for each melody)
- Address control ROM 24 words (optional word allocation for each melody)
- Performance output Dual sound sources
- Reference signal source frequency 32.768KHz, 47.520KHz(mask option selection)
- Options
 - 1) Changing the melody midway during performance:
Possible or Not possible (mask option selection)
 - 2) Selection of the reference sound frequency:
When selecting the signal source frequency of 32.768KHz: A4 = 440Hz (standard) or C4 = 256Hz
When selecting the signal source frequency of 47.520KHz: A4 = 440Hz
 - 3) Choices of the reference signal source: External clock input or integrated CR oscillation (using both of the integrated C and R) or integrated CR oscillation (using the integrated C only but the R is for external installation)
 - 4) Performance method choice: Level hold or one-shot C
- Attenuation of sound Integrated envelope adding circuit
- Loudspeaker drive Not equipping an amplifier (an externally installed amplifier should be used)
- Low voltage operation 0.9 to 5.5V
- Package SOP3A-8pin (plastic)

SVM7560 Series

■ BLOCK DIAGRAM



■ PIN CONFIGURATION



■ PIN DESCRIPTION

Pin No.	Pin name	I/O	Integrated pull down	Function
1	OSC1	I/NC	Not equipped	(1) When the external clock input mode is selected by mask option: Enter square waves of 32.768KHz or 47.520KHz to the OSC1 pin as the reference signal source. (2) When the integrated CR oscillation is selected by mask option: When using an external "R", insert a resistor between the OSC1 and OSC2 to adjust the oscillation frequency by the resistance of the resistor. When using integrated CR, keep the OSC1 and OSC2 open.
2	OSC2	O		
3	Vss	—	—	Negative supply pin or grounding pin
4	TEST	I	Equipped	This is the IC test input pin.
5	MT	I	Equipped	When "High" level is input, the device goes into working mode to control starting and stopping of the performance in accordance with the performance method being designated by the option.
6	SEL	I	Equipped	Melody 1 and melody 2 can be selected in the binary code order by entering "0" or "1" into this pin. (1) When "changing the melody midway during performance - not possible" is selected by mask option: After going into the working mode on input of "High" to the MT pin, the input level of either "Low" or "High" which was applied to the SEL pin just before starting performance is adopted and the performing melody shall not thereafter change even if the input level to the SEL pin changes. (2) When "changing the melody midway during performance - possible" is selected by mask option: Each time the level of the input to the SEL pin changes during a working mode, the melody changes and, when changing the melody, performance shall be resumed from the beginning of the melody.
7	VDD	—	—	This pin outputs square wave signals.
8	OUT	O	—	With the audio signals, the key melody and accompaniment, respectively, are attenuated under a certain time constant and respective audio outputs of the key melody and accompaniment are mixed by the mixing resistor before being output. This pin should therefore be connected to the input pin of a pre-amp via a variable resistor for volume control, coupling-capacitor, etc.

■ ABSOLUTE MAXIMUM RATINGS

(V_{SS}=0V)

Rating	Symbol	Ratings	Unit
Supply voltage	V _{DD}	-0.3 to +7.0	V
Terminal voltage	V _{IO}	-0.2 to V _{DD} +0.2	V
Working temperature range	T _{opr}	-20 to +85	°C
Storage temperature range	T _{stg}	-65 to +150	°C

■ ELECTRICAL CHARACTERISTICS

(V_{DD}=0.9 to 5.5V, V_{SS}=0V, T_a=25°C)

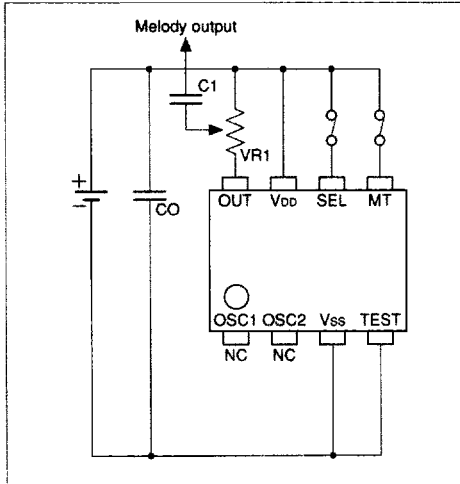
Characteristic	Symbol	Applicable Pin	Condition	Min.	Typ.	Max.	Unit	
Working voltage	V _{DD}	V _{DD}	OSC1=32.768 or 47.520KHz Where xternal clock input mode is selected. Note 1.	0.9	3.0	5.5	V	
High level input voltage	V _{IN}	MT, SEL	—	V _{DD}	—	V _{DD}	V	
		OSC1	External clock signal input	-0.3	—	—	—	
Low level input voltage	V _{IL}	MT, SEL	—	0	—	0.3	V	
		OSC1	External clock signal input	—	—	—	—	
High level input current (1)	I _{IH1}	SEL	V _{IH1} =V _{DD} , Standby mode	—	—	0.3	μA	
		OSC1	V _{IH1} =V _{DD} , External clock signal input	—	—	—	—	
High level input current (2)	I _{IH2}	SEL	Working mode V _{IH2} =V _{DD}	V _{DD} =1.5V	0.4	1.8	4.0	μA
				3.0V	3.0	10.0	30.0	μA
		MT	V _{IH2} =V _{DD}	5.0V	12.5	32.0	80.0	μA
Low level input current	I _{IL}	MT, SEL	V _{IL} =0V	-0.3	—	—	μA	
		OSC1	V _{IL} =0V, External clock signal input	—	—	—	—	
Output impedance	Z _{out}	OUT	When attacking both of the key melody and accompaniment at the same time and when determining the timing of respective DAC levels for them.	—	150	300	KW	
Standby mode current consumption	I _{DDs}	V _{DD}	All input terminals = 0V OUT = No load standby mode	—	0.1	1.0	μA	
Working mode average current consumption	I _{DDO}	V _{DD}	MT=V _{DD} SEL=TEST=0V When CR oscillation is selected: f _{ck} =32.768KHz or 47.520KHz OUT = No load standby mode	V _{DD} =1.5V	—	20 (Note 2)	80 (Note 2)	μA
				V _{DD} =3.0V	—	40 (Note 2)	100 (Note 2)	μA
				V _{DD} =5.0V	—	90 (Note 2)	200 (Note 2)	μA

Note 1 : Under the CR oscillation mode, when the supply voltage drops below the voltage being generated by the internal constant voltage circuit, the CR oscillation frequency goes down below the prescribed level to reduce the tempo and to bring down the pitch corresponding to the downward deviation of the oscillation frequency. Other circuits function normally under the prescribed specifications.

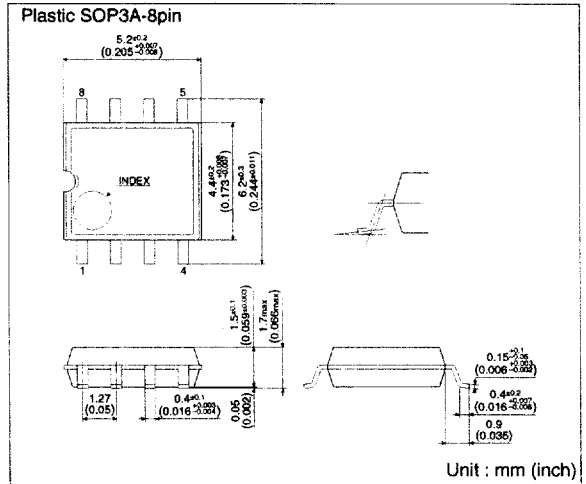
Note 2 : This value is a reference value, because current consumption varies depending on the programmed pitch, tempo, used notes and address location with each ROM.

SVM7560 Series

■ BASIC EXTERNAL CONNECTION DIAGRAM



■ PACKAGE DIMENSIONS



<Reference circuit constants>

Symbol	Reference values	Unit	Remarks
VR1	more than 1	MΩ	Volume controlling variable resistor
C0	1 to 100	μF	Power stabilizing capacitor
C1	0.1	μF	Audio output coupling capacitor