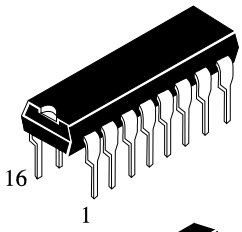
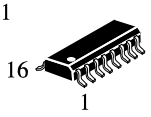
Melody Generator with Accompaniment

BT8040



N SUFFIX
PLASTIC



D SUFFIX
SOIC

ORDERING INFORMATION

BT8040N Plastic
BT8040D SOIC
T_A = -40° to 85° C for all packages

FEATURES

- Two Sound Sources with Envelope (CR Envelope)
- Melody is inserted up to four.
- According to customer's request, the inserted melody is flexible.
- 3.0V to 5.0V Operating Voltage
- DC or AC Triggered Performance Start Mode (Mask Selected)
- Can Drive an 8 Ohm Dynamic Loudspeaker if Provided Externally with a Transistor
- Bare chip or 16-pin DIP (Plastic) Package available

DESCRIPTION

The BT8040 is a CMOS LSI chip, which plays a prearranged melody.

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^oC$)

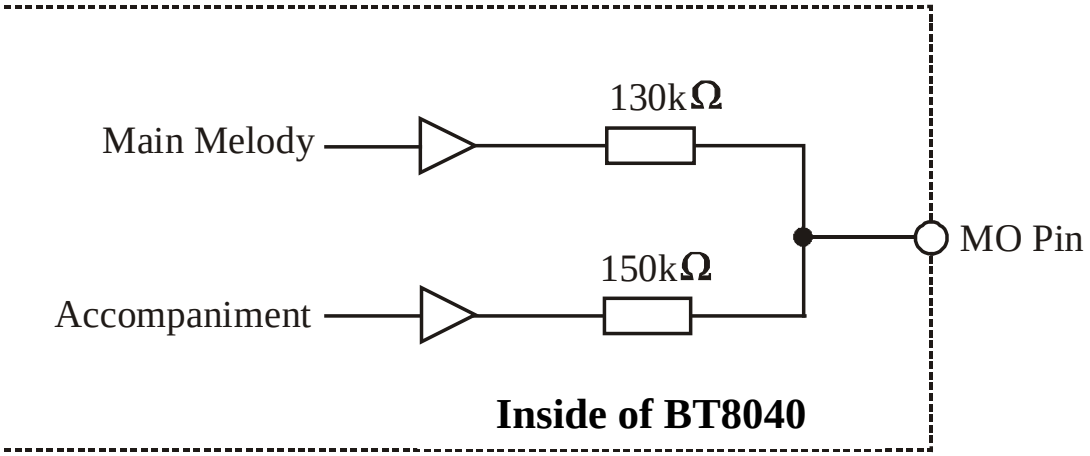
Characteristic	Symbol	Value	Unit
Power Supply Voltage	V_{DD}	- 0.3 to + 7.0	V
Input Terminal Voltage	V_{10}	- 0.2 to V_{DD} + 0.2	V
Operating Temperature	T_a	-40 to + 85 (V_{SS} = 1.5V)	^oC
Storage Temperature	T_{stg}	- 65 to + 150	^oC
Soldering Temperature and Time	T_{sol}	260^oC, 10s (at lead)	

* Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied.
Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

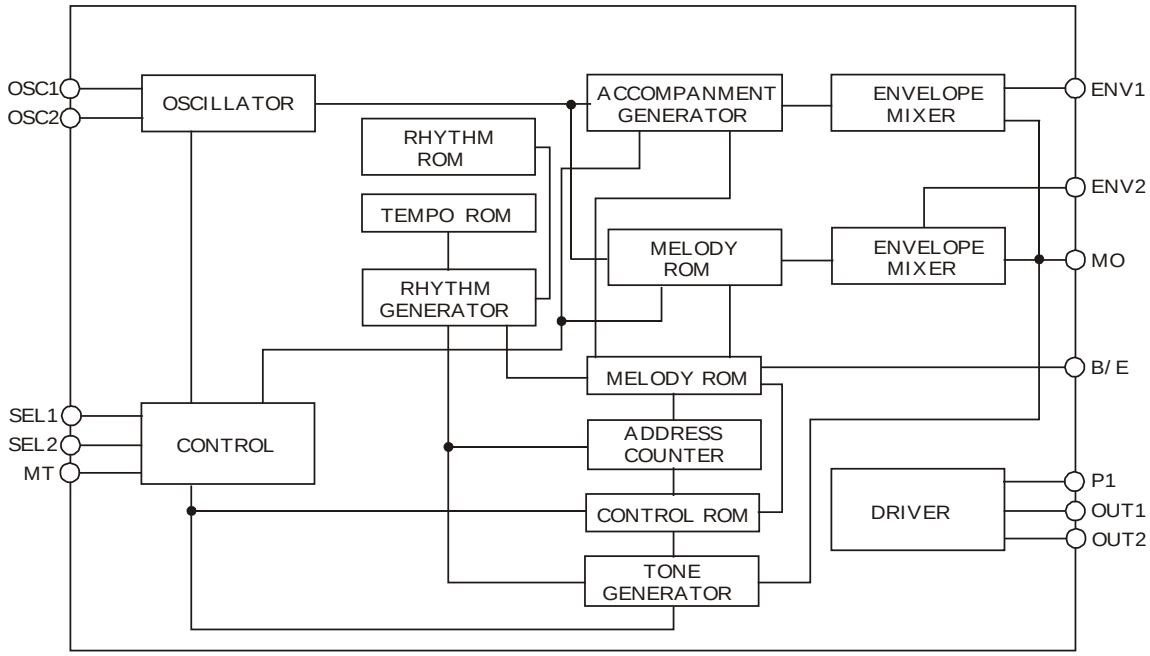
ELECTRICAL CHARACTERISTICS (V_{DD} = 5V, T_a = 25°C; unless otherwise specified)

Characteristic		Symbol	Test Condition	Min	Typ	Max	Unit
Operating Voltage		V_{DD}		3.0	5.0	5.5	V
Input Voltage	"1"	V_{IH}		V_{DD} - 0.3	-	V_{DD}	V
	"0"	V_{IL}		V_{SS}	-	V_{SS} + 0.3	
MT Power Supply Time				150			ms
Response Time						600	ms

MO OUTPUT PIN EQUIVALENT CIRCUIT



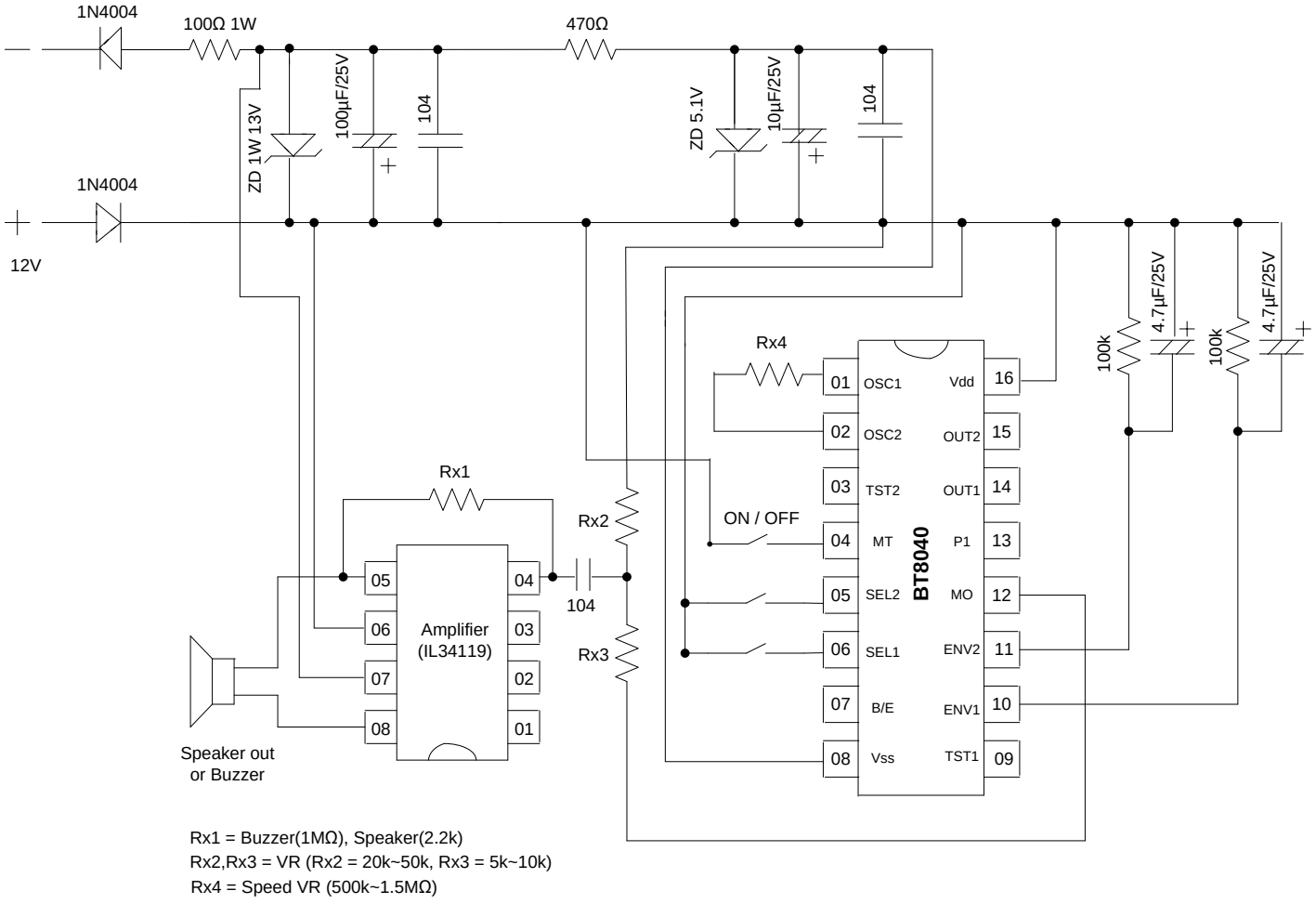
BLOCK DIAGRAM



PIN DESCRIPTION

Pin. No.	Pin Name	Pull-Down Resistor	Functions
1	OSC1	-	A resistor is connected between both terminals to from a ring oscillator, or external reference signals are applied to OSC1.
2	OSC2	-	
3	TST2	Provided	LSI Test Input/Output.
4	MT	Provided	For binary selection: Controls Start and Stop of Performance. For direct selection: Selects Melody 1 and Controls Start and Stop of it's Performance.
5	SEL2	Provided	For binary selection: this Terminal in Conjunction with SEL1, selects a Melody. For direct selection: Selects Melody 3 and Controls Start and Stop of it's Performance.
6	SEL1	Provided	For binary selection: this Terminal in Conjunction with SEL1, selects a Melody. For direct selection: Selects Melody 2 and Controls Start and Stop of it's Performance.
7	B/E	-	BUSY or END Signal Output Terminal.
8	V_{SS}	-	Power Supply Terminal (0V).
9	TST1	Provided	LSI Test Input.
10	ENV1	-	Connects Resistor and Capacitor to add Envelope to Main Melody.
11	ENV2	-	Connects Resistor and Capacitor to add Envelope to Accompaniment.
12	MO	-	Output Terminal or Acoustic Signals that have not been Amplified.
13	P1	Provided	Connects PNP/NPN Transistors, resistors and Capacitors to form a Low-Frequency Linear Amplifier Circuit.
14	OUT1		
15	OUT2		
16	VDD	-	3.0V to 5.0V Operating Voltage

APPLICATION CIRCUIT (basic external connection)



Rx1 = Buzzer(1MΩ), Speaker(2.2k)
Rx2,Rx3 = VR (Rx2 = 20k~50k, Rx3 = 5k~10k)
Rx4 = Speed VR (500k~1.5MΩ)

RECOMMENDED CONDITIONS FOR EXTERNAL DEVICES

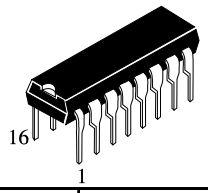
Symbol	Ratings	Unit	Symbol	Ratings	Unit
VR1	1 - 2	MΩ	C1	4.7	μF
VR2	50	kΩ	C2	4.7	μF
R1	100	kΩ	C3	0.1	μF
R2	100	kΩ	-	-	-

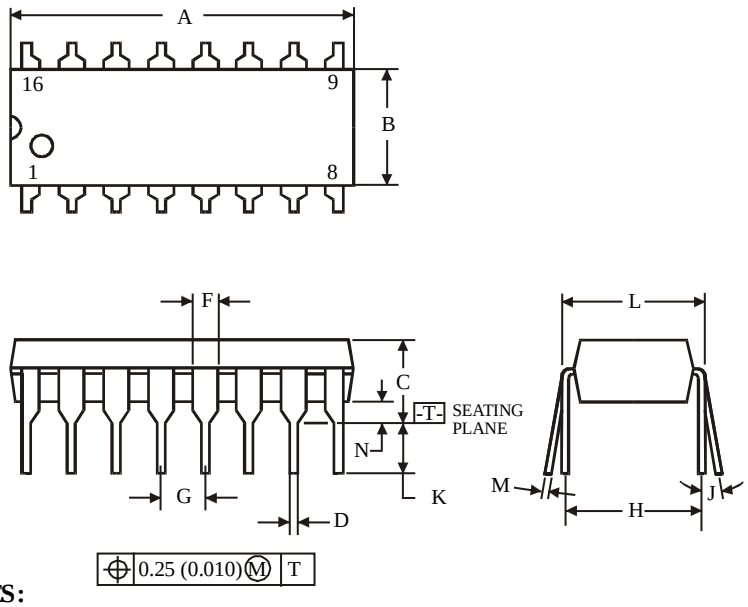
SELECTION CONDITION FOR MELODY

Condition		Melody
#5	#6	
High	High	*Test melody
High	Low	*Ding – Dong
Low	High	*Do – Mi – Sol – Do
Low	Low	*Do- Sol – Mi - Do

* Revision & Injection of Melody is possible according to customer's request.

N SUFFIX PLASTIC DIP
(MS - 001BB)



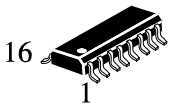


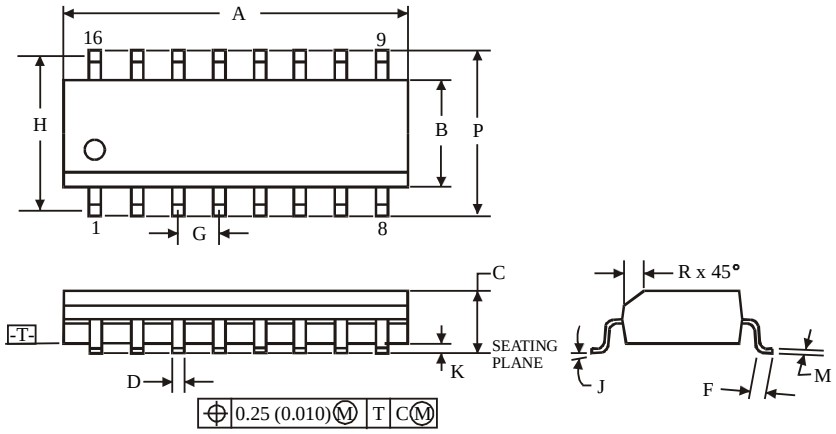
	Dimension, mm	
Symbol	**MIN**	**MAX**
A	18.67	19.69
B	6.10	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.20	0.36
N	0.38	

NOTES:

1. Dimensions “A”, “B” do not include mold flash or protrusions.
   Maximum mold flash or protrusions 0.25 mm (0.010) per side.

D SUFFIX SOIC
(MS - 012AC)





	Dimension, mm	
Symbol	**MIN**	**MAX**
A	9.80	10.00
B	3.80	4.00
C	1.35	1.75
D	0.33	0.51
F	0.40	1.27
G	1.27	
H	5.72	
J	0°	8°
K	0.10	0.25
M	0.19	0.25
P	5.80	6.20
R	0.25	0.50

NOTES:

1. Dimensions A and B do not include mold flash or protrusion.
2. Maximum mold flash or protrusion 0.15 mm (0.006) per side
   for A; for B – 0.25 mm (0.010) per side.