

F10-38 首按键四合弦门铃芯片

一、产品参数

- 1、产品工作的电压范围：2-5.5V
- 2、喇叭输出方式：PWM

二、38 首曲目

| 序号 | 曲目 | 英文曲目 | 序号 | 曲目 | 英文曲目 |
|----|-------------|-------------------------|----|---------------|--------------------|
| 1 | 叮咚 叮咚 | DingDong+DingDong | 20 | 小调第四十交响曲 | symphony NO. 40 in |
| 2 | 叮咚 叮咚 回声 | dingdong02_x2 | 21 | 小步舞曲 | Minuet |
| 3 | 大调和弦 i351 | Chord ascending (135i) | 22 | 老式电话铃声 | Telephone ringing |
| 4 | 大调和弦 i531 | Chord descending (i531) | 23 | 天空之城 | City of sky |
| 5 | 叮咚一声 | DingDong | 24 | 红河谷 | Red River Valley |
| 6 | 快速叮咚 叮咚 | DingDongx2 (fast) | 25 | 铃儿响叮当 | Jingle Bells |
| 7 | 西敏寺 | Westminster Chimes | 26 | 泰坦尼克号 | Titanic |
| 8 | 致爱丽丝 | For Alice | 27 | 功夫插曲 | Kungfu |
| 9 | 音阶 5351 | vocal5351 | 28 | 诺基亚经典铃声 | Nokia Classic Ring |
| 10 | 音阶 13511531 | vocal13511531 | 29 | 默认铃声 | Default ringtone |
| 11 | 四小天鹅 | Four little swan | 30 | 摇篮曲 | Tim's Lullaby |
| 12 | 蓝色的爱 | Blue love | 31 | 斯卡布罗集市 | Scarborough fair |
| 13 | 雨声浪漫 | rain is romantic | 32 | 恭喜你 | Congratulations |
| 14 | 美人鱼 | The Little Mermaid | 33 | 威尔逊进行曲 | The William tell |
| 15 | 秋日的私语 | A Comme Amour | 34 | 爱的罗曼史 | Romance De Amor |
| 16 | 音阶 245 | vocal245 | 35 | 回忆 | Memory |
| 17 | 土耳其进行曲 | Turkischer Marsch_01 | 36 | 拉德斯基进行曲 | Radetzky March |
| 18 | 梁祝 | The Butterfly Lovers | 37 | kiss the rain | kiss the rain |
| 19 | 大调弦乐小夜曲 | Eine Kleine Nachtmusik | 38 | 圣诞快乐 | Merry Christmas |

三、功能描述

PA1: 选曲键, 曲目选择, 可打断, 共38首。

PA2: 音量键, 音量分4级, 默认为最大声, 音量顺序为高-中-低-静音-高-中--。

PA3: 播放键, 播放当前曲目一遍, 不可打断。

PB1: LED灯, 音乐播放时以3HZ闪工作。

四、芯片参数
ELECTRICAL SPECIFICATIONS

| Characteristics | Symbol | Ratings |
|-----------------------|--------|--------------------------------|
| DC Supply Voltage | V_+ | < 7.0V |
| Input Voltage Range | VIN | (VSS-0.3V) to ($V_+ + 0.3V$) |
| Operating Temperature | T_A | 0°C to +70°C |
| Storage Temperature | TSTO | -65°C to +150°C |

Note: Stresses beyond those given in the Absolute Maximum Rating table may cause permanent damage to the device. For normal operational conditions, see DC Electrical Characteristics. **DC Characteristics (VDD = 3/4.5V (IOA ~ IOD), TA = 25°C)**

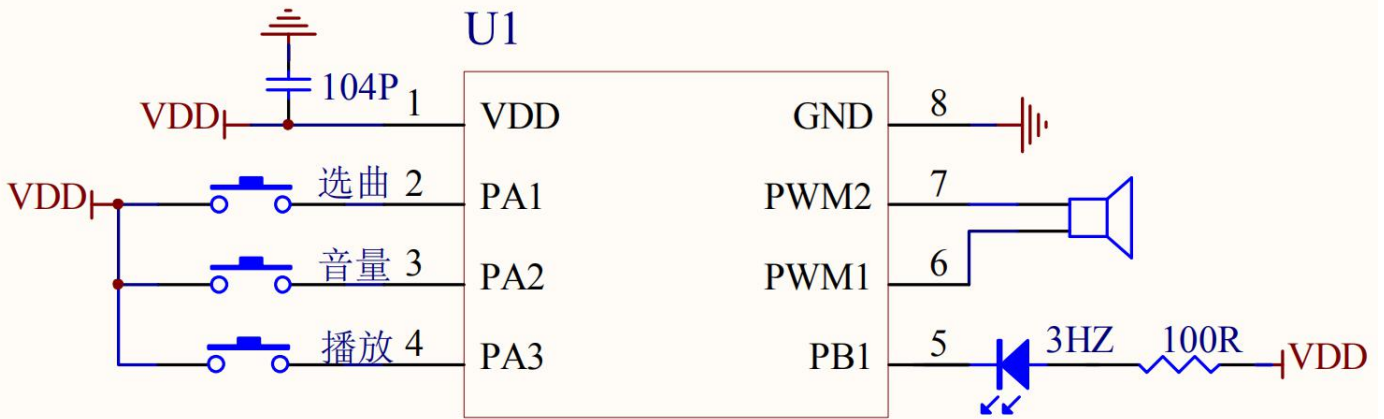
| Characteristics | Symbol | Limit | | | Unit | Test Condition |
|--|--------------|--------|------|--------|------|---|
| | | Min. | Typ. | Max. | | |
| Operating Voltage | VDD | 2.0 | - | 5.5 | V | |
| Operating Current | IOP | - | 1.5 | - | mA | $F_{CPU} = 2MHz @ 3.0V$, PWM output off |
| | | - | 2 | - | mA | $F_{CPU} = 2MHz @ 4.5V$, PWM output off |
| Standby Current | ISTBY | - | - | 5 | uA | VDD = 3.0V |
| | | - | - | 5 | uA | VDD = 4.5V |
| GPIO Input High Level (IOA, IOB, IOC, IOD) | VIH | 0.5VDD | - | - | V | VDD = 4.5V |
| GPIO Input Low Level (IOA, IOB, IOC, IOD) | VIL | - | - | 0.5VDD | V | VDD = 4.5V |
| Output High Current (IOA, IOB, IOC, IOD) | IOH | - | 10 | - | mA | VDD = 3.0V, $V_{OH} = 0.7*VDD$ |
| | | - | 20 | - | mA | VDD = 4.5V, $V_{OH} = 0.7*VDD$ |
| Output Low Current (Normal) | IOL1 | - | 10 | - | mA | VDD = 3.0V, $V_{OL} = 0.3*VDD$ |
| | | - | 20 | - | mA | VDD = 4.5V, $V_{OL} = 0.3*VDD$ |
| Output Low Current (High sink, by Body Option) | IOL2 | - | 20 | - | mA | VDD = 3.0V, $V_{OL} = 0.3*VDD$ |
| | | - | 40 | - | mA | VDD = 4.5V, $V_{OL} = 0.3*VDD$ |
| Input Pull Low Resistor (IOA, IOB, IOC, IOD) | RL1 | - | 200 | - | Kohm | VDD = 3.0V, IO = 0V |
| | | - | 100 | - | Kohm | VDD = 4.5V, IO = 0V |
| Input Pull Low Resistor (IOA, IOB, IOC, IOD) | RL2 | - | 1000 | - | Kohm | VDD = 3.0V, IO = 3.0V |
| | | - | 500 | - | Kohm | VDD = 4.5V, IO = 4.5V |
| PWM Driver Current | IPWM | - | 180 | - | mA | VDD = 3.0V, 8 Ohms load |
| | | - | 280 | - | mA | VDD = 4.5V, 8 Ohms load |
| Frequency deviation by voltage drop | $\Delta F/F$ | -1 | - | +1 | % | $\frac{F_{osc}(5.5v) - F_{osc}(2.4v)}{F_{osc}(3.0v)}$ $F_{CPU} = 2MHz$ |
| Frequency lot deviation | $\Delta F/F$ | -1 | - | 1 | % | $\frac{F_{max}(3.0v) - F_{min}(3.0v)}{F_{max}(3.0v)}$ $F_{CPU} = 2MHz$ @3.0V (tentative) |
| | | -1 | - | 1 | % | $\frac{F_{max}(4.5v) - F_{min}(4.5v)}{F_{max}(4.5v)}$ $F_{CPU} = 2MHz$ @4.5V (tentative) |

地址：深圳市宝安区西乡镇宝民二路好运来商务大厦 A 栋 7 楼 7003-7007 室

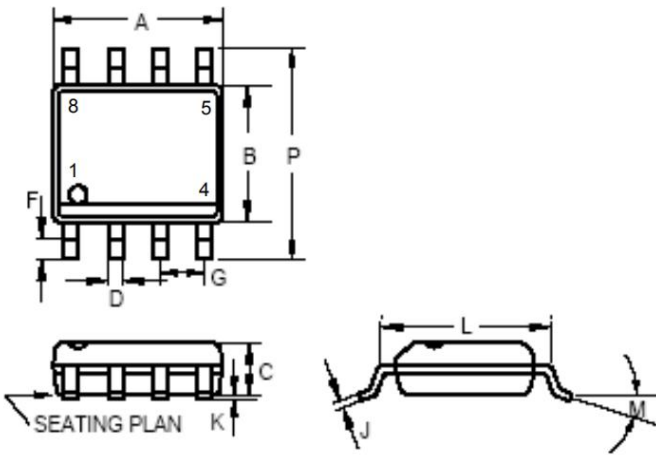
电话：0755-29112251/29556853 Fax：0755-29641852 网址：www.sizeyuan.cn

五、原理图

PWM 输出



六、封装尺寸



| | INCHES | | | MILLIMETERS | | |
|---|-----------|-----|-------|-------------|-----|------|
| | MIN. | TYP | MAX | MIN. | TYP | MAX |
| A | 0.183 | — | 0.202 | 4.65 | — | 5.13 |
| B | 0.144 | — | 0.163 | 3.66 | — | 4.14 |
| C | 0.068 | — | 0.074 | 1.35 | — | 1.88 |
| D | 0.001 | — | 0.02 | 0.25 | — | 0.51 |
| F | 0.015 | — | 0.035 | 0.38 | — | 0.89 |
| G | 0.050 BSC | | | 1.27BSC | | |
| J | 0.007 | — | 0.01 | 0.19 | — | 0.25 |
| K | 0.005 | — | 0.01 | 0.13 | — | 0.25 |
| L | 0.189 | — | 0.205 | 4.8 | — | 5.21 |
| M | — | — | 8° | — | — | 8° |
| P | 0.228 | — | 0.244 | 5.79 | — | 6.2 |

Note: For SOP8, 100 pcs per tube & 2.5K pcs per reel.