

■ FUNCTIONS

- 5 Functions : month, date, hour, minute and second.
- Selective alternation of time-date display mode.
- One-touch correction of time error within ± 30 seconds.
- 4-year calendar.
- 2-switch sequential operating
- LCD test

■ FEATURES

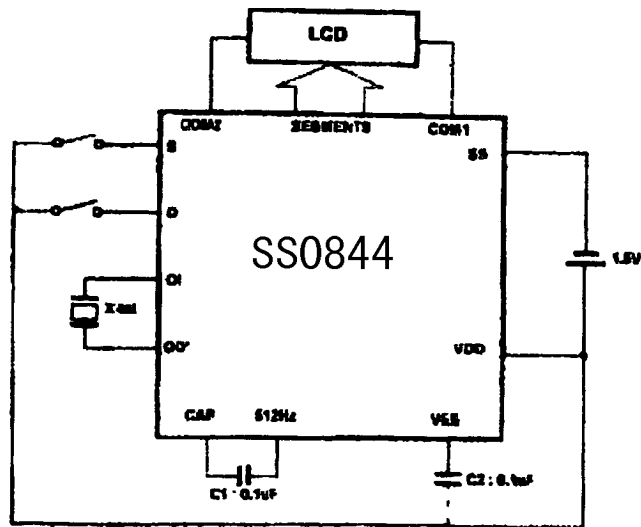
- Single-chip CMOS construction
- Drives 3.5-digit duplexed LCD
- Low power dissipation (I_{DD} : Typ. 1.5 μ A, Max. 2.5 μ A; 1.5V operation).
- 32,768Hz crystal controlled operation
- Single 1.5V battery operation
- On-chip capacitive voltage doubler
- Debounce circuitry on switch inputs
- Protection against static discharge
- Built-in crystal oscillator π -network input capacitor
- Trimmer capacitor is user selectable (bonding option)

■ ELECTRICAL CHARACTERISTICS

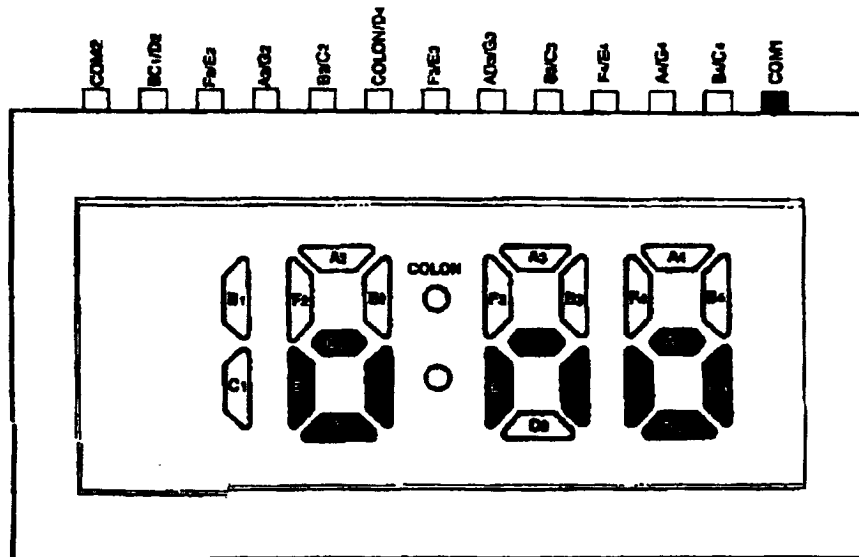
($T_a = 25^\circ\text{C}$, $V_{SS} = -1.5\text{V}$, $V_{DD} = 0\text{V}$; unless otherwise specified)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|----------------------------|-------------|---|--------------|--------|----------|---------------|
| Operating Voltage | $ V_{SS} $ | | 1.3 | 1.5 | 1.7 | V |
| Operating Voltage | $ V_{EE} $ | | 2.6 | 3.0 | 3.4 | V |
| Supply Current | I_{DD} | Without load | | 1.5 | 2.5 | μA |
| Input High Voltage | V_{IH} | | $V_{SS}+0.3$ | | V_{SS} | V |
| Input Low Voltage | V_{IL} | | -0.3 | | 0 | V |
| Switch Activation Current | I_{SW} | $V_{IN} = V_{DD}$ | 0.1 | 1.0 | 10 | μA |
| Oscillator Start Voltage | $ V_{OSC} $ | Within 5 sec | | | 1.45 | V |
| Oscillator Input Capacitor | CI | | | 25 | | pF |
| Oscillator Frequency | F_{OSC} | $C_1 = 25\text{pF}$, $C_0 = 20\text{pF}$ | | 32,768 | | Hz |
| DC-DC Conversion Freq. | F_{CON} | $C_1 = C_2 = 0.1\mu\text{F}$ | | 512 | | Hz |
| LCD Frequency | FD | | | 32 | | Hz |
| SW Debouncing Time | TD | | | | 62.5 | msec |

■ APPLICATION CIRCUIT



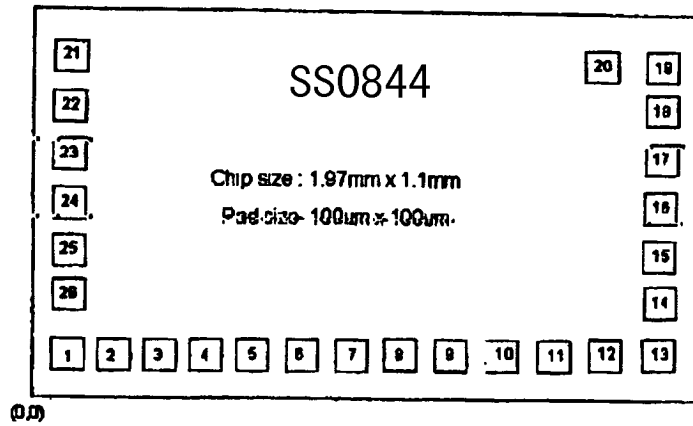
■ LCD FORMAT



SUNSTAR

SS0844

■ PAD LOCATION



■ PAD LOCATION

| Pad | Name | X | Y | Pad | Name | X | Y |
|-----|--------|------|-----|-----|-----------------|------|-----|
| 1 | B4/C4 | 140 | 120 | 14 | OO | 1830 | 290 |
| 2 | A4/G4 | 285 | 120 | 15 | OI | 1830 | 440 |
| 3 | F4/E4 | 430 | 120 | 16 | OI' | 1830 | 555 |
| 4 | B3/C3 | 570 | 120 | 17 | V _{DD} | 1830 | 700 |
| 5 | AD3/G3 | 710 | 120 | 18 | VCP | 1830 | 840 |
| 6 | F3/E3 | 850 | 120 | 19 | VCM | 1830 | 980 |
| 7 | COL/D4 | 990 | 120 | 20 | T2 | 1705 | 985 |
| 8 | B2/C2 | 1130 | 120 | 21 | V _{SS} | 140 | 980 |
| 9 | A2/G2 | 1270 | 120 | 22 | S | 140 | 840 |
| 10 | F2/E2 | 1410 | 120 | 23 | V _{DD} | 140 | 700 |
| 11 | BC1/D2 | 1550 | 120 | 24 | V _{EE} | 140 | 560 |
| 12 | COM2 | 1690 | 120 | 25 | D | 140 | 420 |
| 13 | T1 | 1835 | 115 | 26 | COM1 | 140 | 260 |

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E-MAIL：xjr5@163.com szss20@163.com

MSN：suns8888@hotmail.com

QQ: 195847376

地址：深圳市福田区福华路福庆街鸿图大厦 1602 室

电话：0755-83376549 83376489 83387030 83387016

传真：0755-83376182 83338339 邮编：518033 手机：(0)13902971329

深圳展销部：深圳华强北路赛格电子市场 2583 号 TEL/FAX：
0755-83665529 25059422

北京分公司：北京海淀区知春路 132 号中发电子大厦 3097 号

TEL：010-81159046 82615020 13501189838 FAX：010-82613476

上海分公司：上海市北京东路 668 号上海赛格电子市场 2B35 号

TEL：021-28311762 56703037 13701955389 FAX：021-56703037

西安分公司：西安高新开发区 20 所(中国电子科技集团导航技术研究所)
西安劳动南路 88 号电子商城二楼 D23 号

TEL：029-81022619 13072977981 FAX:029-88789382

成都：TEL:(0)13717066236

技术支持：0755-83394033 13501568376