## 一、功能特性

1、显示内容：分、秒、1/100秒
2、可精确到1/100秒的倒计时功能
3、快速设置倒计时的时间
4、倒计时报警功能
5、带提示音的6个功能按键
6、倒计时时动画显示功能

## 二、ELECTRICAL CHARACTERISTICS

### 2.1 Absolute Maximum Ratings

| Parameter | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Supply Voltage (1) | Vss1 | -3.0 | -1.5 | -1.2 | V |
| Oscillation Frequency | Fosc | --- | 32.768 | --- | KHz |
| Booster Capacitor | C1 | --- | 0.1 | --- | μF |
| Capacitor Between Vdd – Vss2 | C2 | --- | 0.1 | --- | μF |
| Capacitor Between Vdd – Vss3 | C3 | --- | 0.1 | --- | μF |

### 2.2 Operating Conditions

| Parameter | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| Supply Voltage (1) | Vss1 | -3.0 | +0.2 | V |
| Supply Voltage (2) | Vss2, Vss3 | -0.5 | +0.2 | V |
| Vss1 Terminal Voltage | $V_{I01}$ | VSS1-0.2 | +0.2 | V |
| Vss2 Terminal Voltage | $V_{I02}$ | VSS2-0.2 | +0.2 | V |
| Vss3 Terminal Voltage | $V_{I03}$ | VSS3-0.2 | +0.2 | V |
| Operating temperature | Topr | -20 | 70 | °C |
| Storage temperature | Tstg | -40 | 125 | °C |

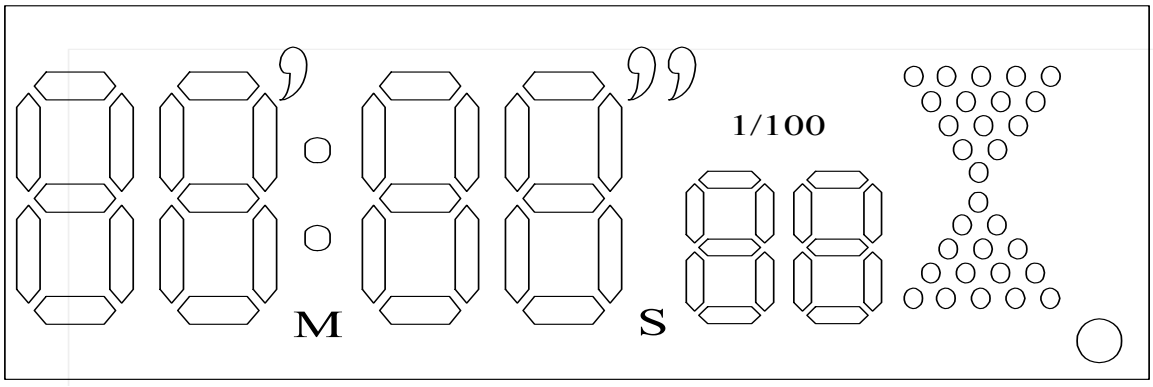
* Ground is VDD ( = 0V )
* Supply Voltage should be |Vss1| </= |Vss2| </= |Vss3|

### 2.3 DC Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition | Terminals |
|---|---|---|---|---|---|---|---|
| "H" Level input voltage | VIH | -0.2 | --- | 0 | V | | Input 0-7 |
| "L" Level input voltage | VIL | -1.5 | --- | -1.3 | V | | Input 0-7 |
| "H" Level input Current | IIH1<br>IIH2 | ---<br>2.0 | ---<br>--- | 0.5<br>20 | μA | VIH1 = 0V<br>V1H2 = 0V | Input 0-7 |
| "L" Level input Current | IIL | -0.5 | --- | --- | μA | VIL = 1.5V | Input 0-7 |
| "H" Level output Current | IOH1<br>IOH2 | ---<br>--- | ---<br>--- | -200<br>-1.0 | μA | VOHI1 = 0.5V<br>VOHI2 = 0.5V | ALOUT1, 2 |
| "L" Level output Current | IOL1<br>IOL2 | 200<br>2.0 | ---<br>--- | -5.0<br>--- | μA | VOL1 = 1.0V<br>VOL2 = 1.0V | ALOUT1, 2 |
| Oscillation starting voltage | VSTA | --- | --- | -1.45 | V | TSTA </= 10 Sec Resonance | |
| Common output current | IOH3<br>IOL3 | ---<br>5.0 | ---<br>--- | -5.0<br>--- | μA | VOH3 = -0.05V<br>VOL3 = -0.05V | COM 1,2,3 |
| Common output current | IOL4 | 5.0 | --- | --- | μA | VOL4 = -4.45V | COM 1,2,3 |
| Segment output current | IOH4<br>IOL5 | ---<br>1.0 | ---<br>--- | -1.0<br>--- | μA | VOE4 = -005V<br>VOL5 = -2.95V | SEG 0-26 |
| Segment output current | IOL6 | 1.0 | --- | --- | μA | VOL5 = -2.95V | SEG 0-26 |
| Booster output voltage | VSS3 | -4.5 | --- | -4.1 | V | 1MΩ load is connected between VDD – VSS2 | |
| Booster output voltage | VSS2 | -3.0 | --- | -2.8 | V | 1MΩ load is connected between VDD – VSS3 | |
| Booster ripple voltage | VRP1 | --- | --- | 0.2 | V | 1MΩ load is connected between VDD – VSS2 | |
| Booster ripple voltage | VRP2 | --- | --- | 0.2 | V | 1MΩ load is connected Between VDD – VSS3 | |
| Operation current | ISS1 | --- | 2.5 | --- | μA | No load base Time Mode | |

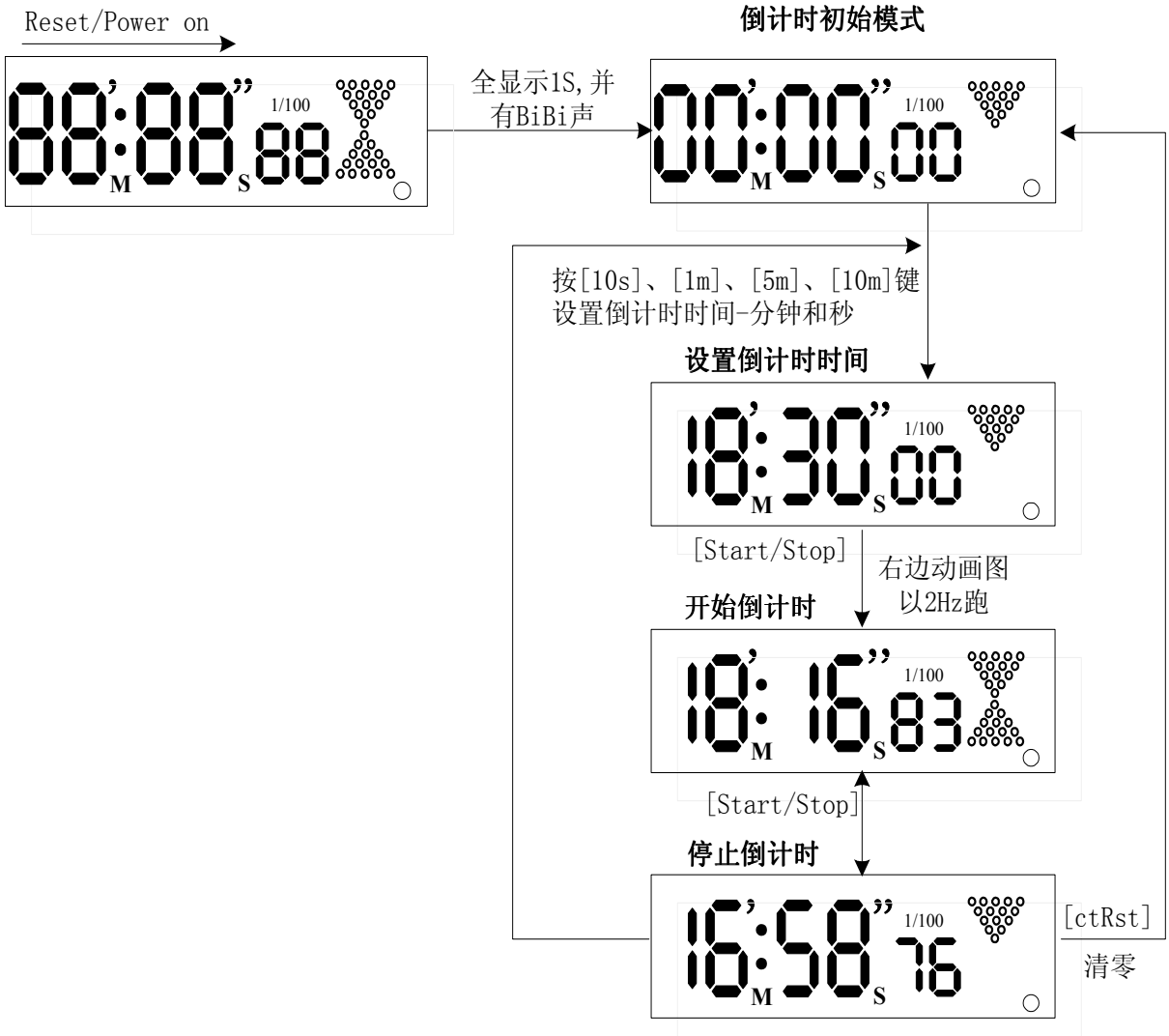
Note : 1) Ground Vdd = 0V
2) Supply Voltage should be |Vss1| </= |Vss2| </= |Vss3|
3) Current flowing into IC is positive and flowing out of IC is negative.
4) Crystal oscillation.
5) Operation current may differ depending on the duty.

## 三、LCD圖樣

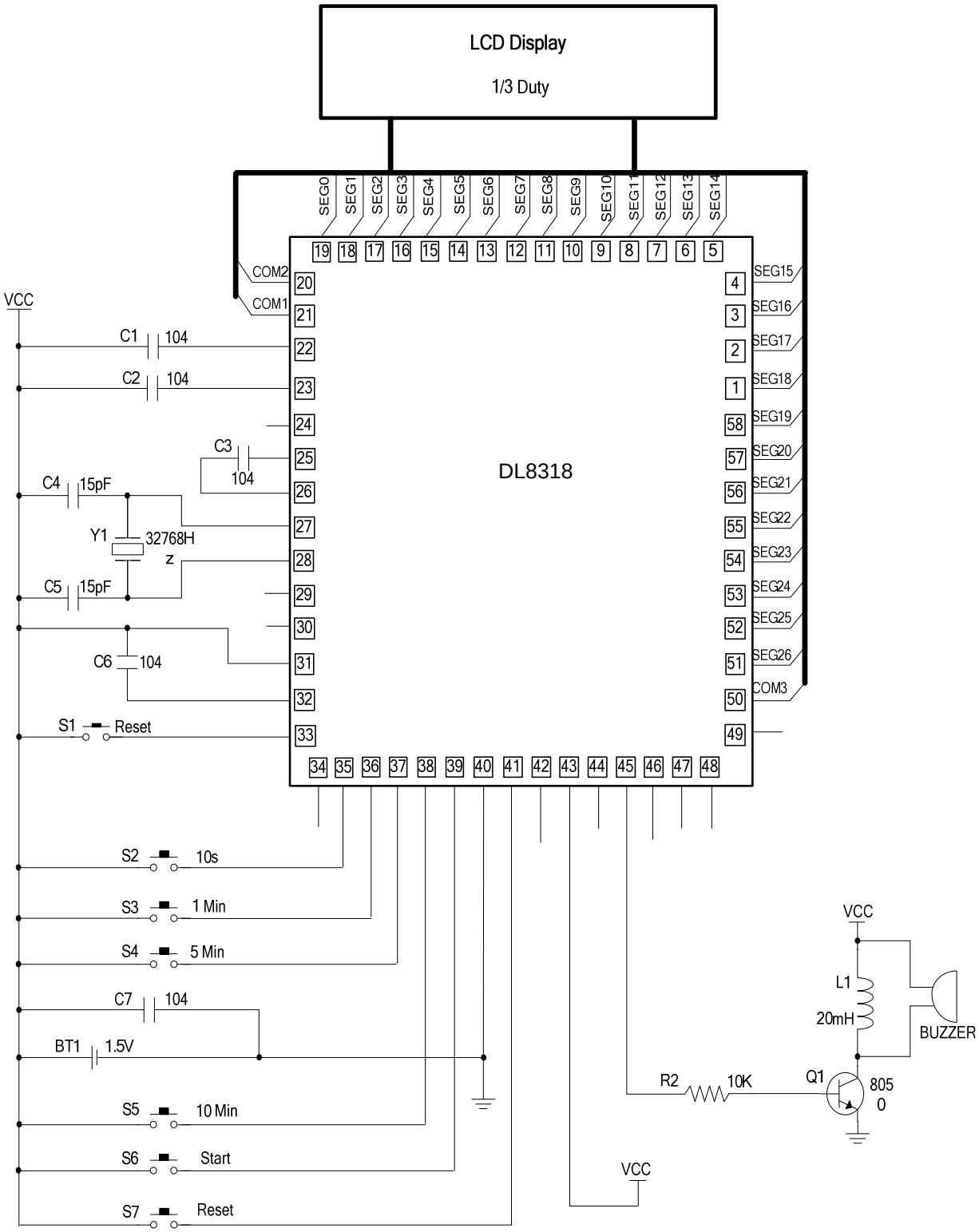



## 四、操作流程

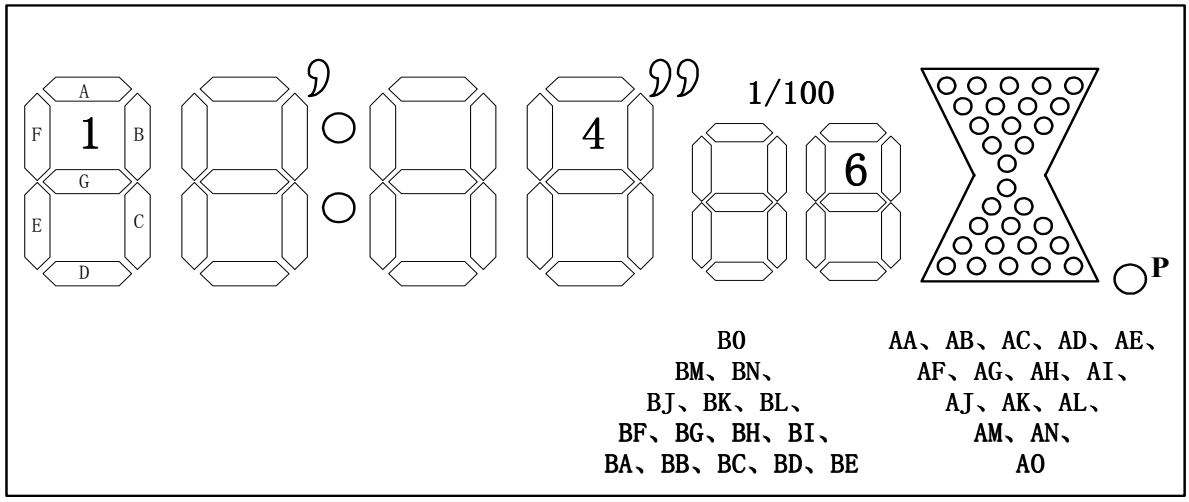
**6个Keys: [ctRst]、[10s]、[1m]、[5m]、[10m]、[Start/Stop]**



## 五、電路圖


LCD Display
1/3 Duty
DL8318
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
COM2
COM1
COM3
SEG15
SEG16
SEG17
SEG18
SEG19
SEG20
SEG21
SEG22
SEG23
SEG24
SEG25
SEG26
VCC
C1 104
C2 104
C3 104
C4 15pF
C5 15pF
C6 104
Y1 32768H z
S1 Reset
S2 10s
S3 1 Min
S4 5 Min
S5 10 Min
S6 Start
S7 Reset
C7 104
BT1 1.5V
R2 10K
Q1 8050
L1 20mH
BUZZER

## 六、LCD 走線圖

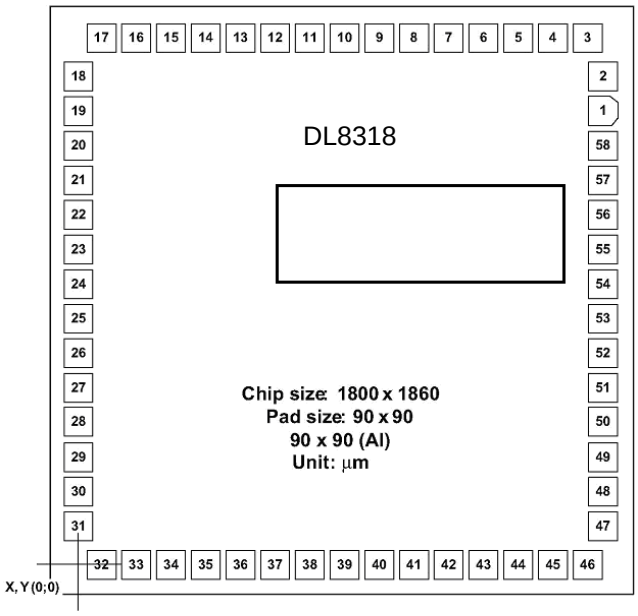



注：請預留3至4腳之NCPIN。

| PIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COM-SEG | C1 | C2 | S0 | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | S13 |
| COM2 | | C2 | | 1A | 1B | 2A | 2B | ’ | 3F | 3A | 3B | 4F | 4A | ” | 5A | 5B |
| COM1 | C1 | | | 1F | 1G | 2F | 2G | 2C | COL | 3G | 3C | 4E | 4G | 4B | 5F | 5G |
| COM3 | | | 1D | 1E | 1C | 2E | 2D | ∠\ | | 3E | 3D | 4D | 4C | P | 5E | 5D |

| PIN | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COM-SEG | S14 | S15 | S16 | S17 | S18 | S19 | S20 | S21 | S22 | S22 | S23 | S24 | S25 | S26 | C3 |
| COM2 | 1/100 | 6A | 6B | AA | AB | AC | AD | AE | ▽ | BE | BD | BC | BB | BA | |
| COM1 | 6F | 6G | 6C | AF | AG | AH | AI | AO | | BO | BI | BH | BG | BF | |
| COM3 | 5C | 6E | 6D | AJ | AK | AL | AN | AM | | BM | BN | BL | BK | BJ | C3 |

## 七、IC腳點陣圖




注意 : 芯片底部接 Vdd

| | 名稱 | X | Y | 腳位 | 名稱 | X | Y |
|---|---|---|---|---|---|---|---|
| 1 | SEG18 | 1520.0 | 1367.6 | 30 | 30 | 0.0 | 212.6 |
| 2 | SEG17 | 1520.0 | 1472.6 | 31 | Vcc | 0.0 | 107.6 |
| 3 | SEG16 | 1495.0 | 1580.0 | 32 | 32 | 25.0 | 0.0 |
| 4 | SEG15 | 1390.0 | 1580.0 | 33 | 33 | 130.0 | 0.0 |
| 5 | SEG14 | 1285.0 | 1580.0 | 34 | 34 | 235.0 | 0.0 |
| 6 | SEG13 | 1180.0 | 1580.0 | 35 | 35 | 340.0 | 0.0 |
| 7 | SEG12 | 1075.0 | 1580.0 | 36 | 36 | 445.0 | 0.0 |
| 8 | SEG11 | 970.0 | 1580.0 | 37 | 37 | 550.0 | 0.0 |
| 9 | SEG10 | 865.0 | 1580.0 | 38 | 38 | 655.0 | 0.0 |
| 10 | SEG9 | 760.0 | 1580.0 | 39 | 39 | 760.0 | 0.0 |
| 11 | SEG8 | 655.0 | 1580.0 | 40 | Vss | 865.0 | 0.0 |
| 12 | SEG7 | 550.0 | 1580.0 | 41 | 41 | 970.0 | 0.0 |
| 13 | SEG6 | 445.0 | 1580.0 | 42 | 42 | 1075.0 | 0.0 |
| 14 | SEG5 | 340.0 | 1580.0 | 43 | Vcc | 1180.0 | 0.0 |
| 15 | SEG4 | 235.0 | 1580.0 | 44 | 44 | 1285.0 | 0.0 |
| 16 | SEG3 | 130.0 | 1580.0 | 45 | 45 | 1390.0 | 0.0 |
| 17 | SEG2 | 25.0 | 1580.0 | 46 | 46 | 1495.0 | 0.0 |
| 18 | SEG1 | 0.0 | 1467.6 | 47 | 47 | 1520.0 | 107.6 |
| 19 | SEG0 | 0.0 | 1367.6 | 48 | 48 | 1520.0 | 212.6 |
| 20 | COM2 | 0.0 | 1262.6 | 49 | 49 | 1520.0 | 317.6 |
| 21 | COM1 | 0.0 | 1157.6 | 50 | COM3 | 1520.0 | 422.6 |
| 22 | 22 | 0.0 | 1052.6 | 51 | SEG26 | 1520.0 | 527.6 |
| 23 | 23 | 0.0 | 947.6 | 52 | SEG25 | 1520.0 | 632.6 |
| 24 | 24 | 0.0 | 842.6 | 53 | SEG24 | 1520.0 | 737.6 |
| 25 | 25 | 0.0 | 737.6 | 54 | SEG23 | 1520.0 | 842.6 |
| 26 | 26 | 0.0 | 632.6 | 55 | SEG22 | 1520.0 | 947.6 |
| 27 | 27 | 0.0 | 527.6 | 56 | SEG21 | 1520.0 | 1052.6 |
| 28 | 28 | 0.0 | 422.6 | 57 | SEG20 | 1520.0 | 1157.6 |
| 29 | 29 | 0.0 | 317.6 | 58 | SEG19 | 1520.0 | 1262.6 |