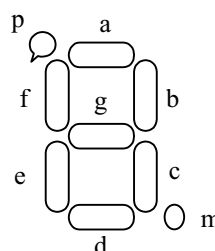


# DL5652      14/16 DIGIT CALCULATOR ( BATTERY / SOLAR / DUAL POWER TYPE )

- (4) When division by zero is attempted, an overflow condition will result, and error symbol "E" and a zero are displayed.
- (5) When the integer part of result in memory register exceeds 14 digits (or 16 digits) at memory calculation, display will show a zero and "E", and previous data will be kept in memory register.
- (6) In overflow condition, any operation or numeral entry will be inhibited.

## LCD Panel Description

can directly voltage 3V and drive 16-digit 1/3 duty and 1/2 bias LCD panel. The following tables exhibit the relationship between the LCD segment, and common pins and corresponding pattern on the display.



## LCD Table

SEG				A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
COM1	COM1			b1	a1	f1	C1	b2	a2	f2	C5	b3	a3	f3	RATE
COM2		COM2		c1	g1	e1	C2	c2	g2	e2	Euro	c3	g3	e3	% "T"
COM3			COM3	m1	d1	2nd	C3	m2	d2	C4	Local	m3	d3	p3	X

SEG	A4	B4	C4	D4	A5	B5	C5	D5	A6	B6	C6	D6	A7	B7	C7
COM1	b4	a4	f4	TAX	b5	a5	f5	M	b6	a6	f6	G	b7	a7	f7
COM2	c4	g4	e4	+ "T"	c5	g5	e5	-	c6	g6	e6	MII	c7	g7	e7
COM3	m4	d4	p4	- "T"	m5	d5	p5	E	m6	d6	p6	X	m7	d7	p7

SEG	A8	B8	C8	A9	B9	C9	A10	B10	C10	A11	B11	C11	A12	B12	C12
COM1	b8	a8	f8	b9	a9	f9	b10	a10	f10	b11	a11	f11	b12	a12	f12
COM2	c8	g8	e8	c9	g9	e9	c10	g10	e10	c11	g11	e11	c12	g12	e12
COM3	m8	d8	p8	m9	d9	p9	m10	d10	p10	m11	d11	p11	m12	d12	p12

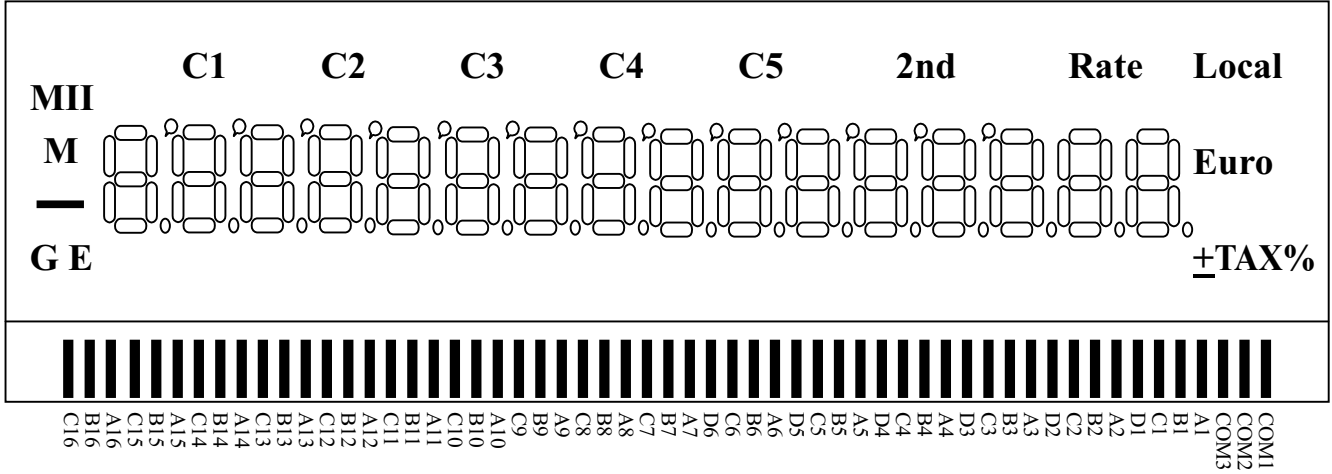
SEG	A13	B13	C13	A14	B14	C14	A15	B15	C15	A16	B16	C16
COM1	b13	a13	f13	b14	a14	f14	b15	a15	f15	b16	a16	f16
COM2	c13	g13	e13	c14	g14	e14	c15	g15	e15	c16	g16	e16
COM3	m13	d13	p13	m14	d14	p14	m15	d15	p15	m16	d16	X

**3.0V, 1/3DUTY, 1/2BIAS**

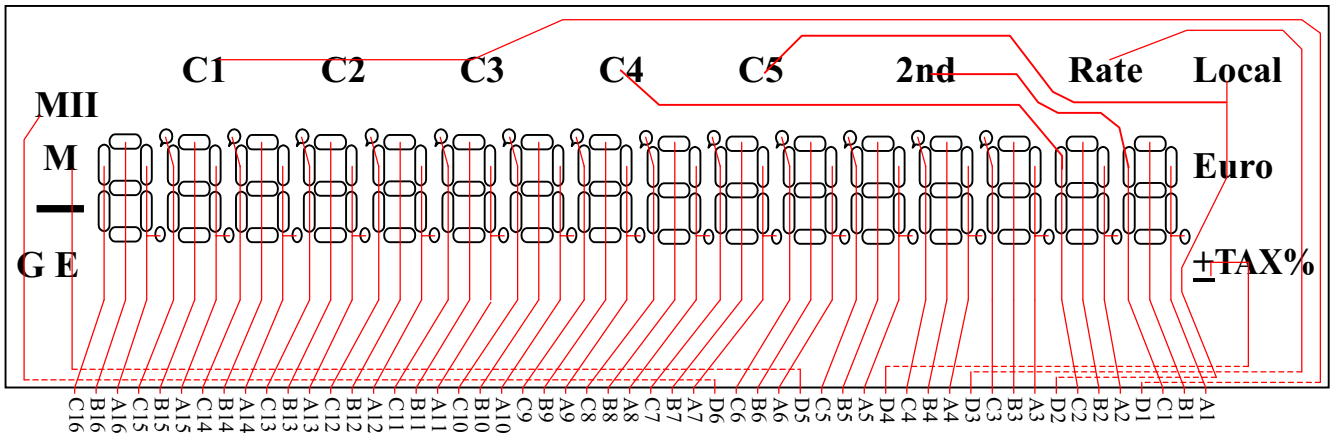
**DL5652**    14/16 DIGIT CALCULATOR  
( BATTERY / SOLAR / DUAL POWER TYPE )

**3.0V, 1/3 DUTY, 1/2 BIAS**

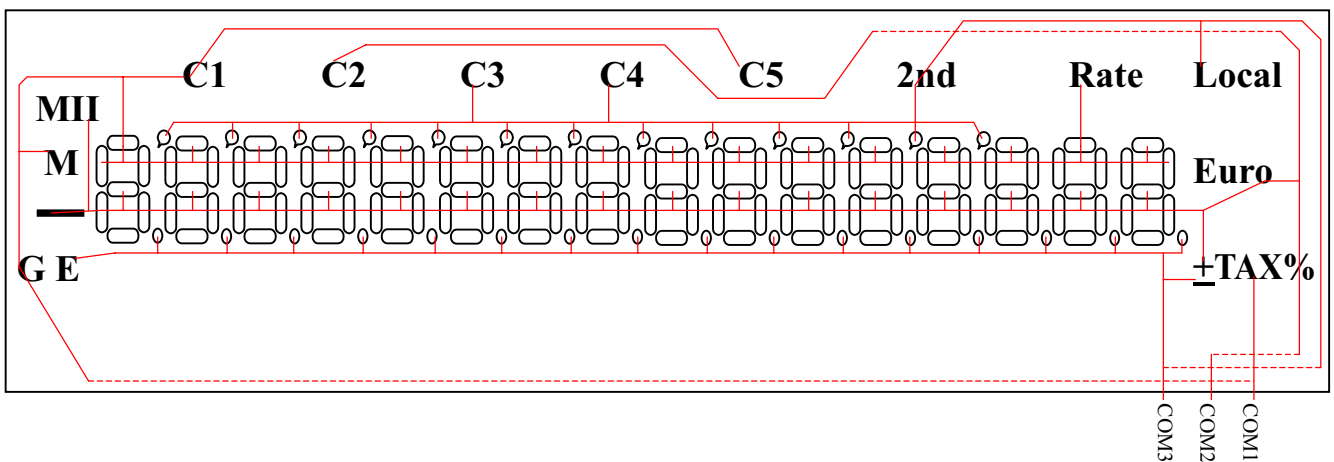
- LCD Panel outlines drawing



- LCD Segment



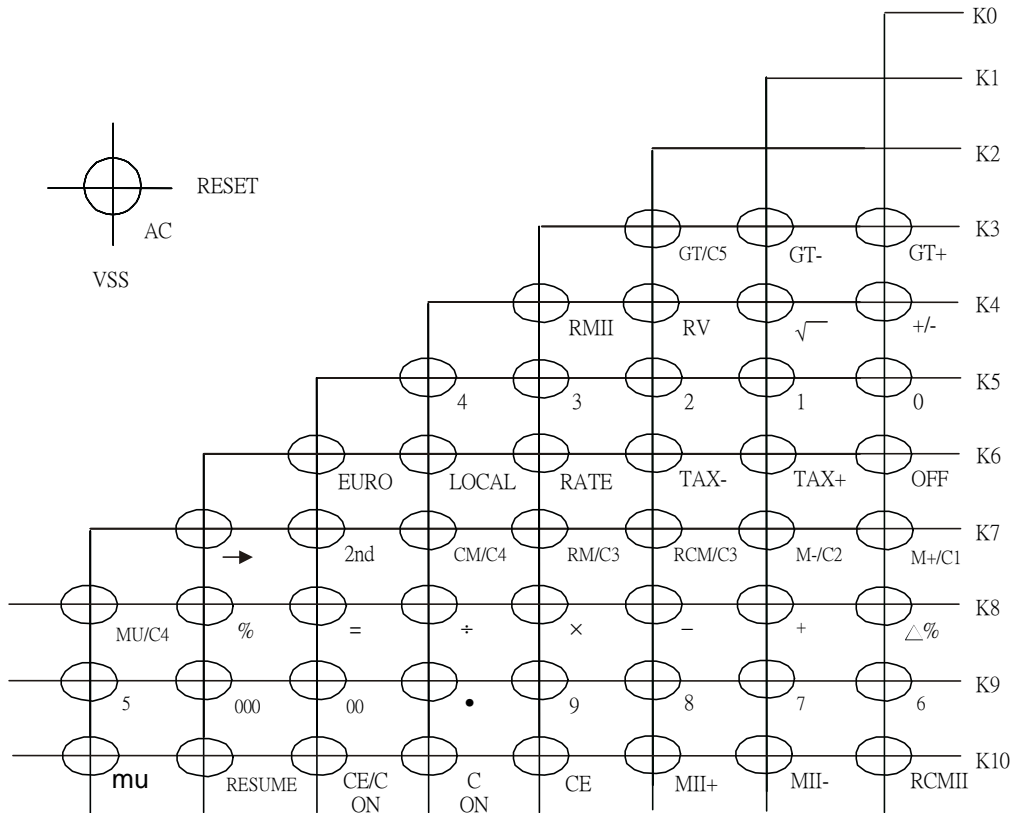
- LCD Common



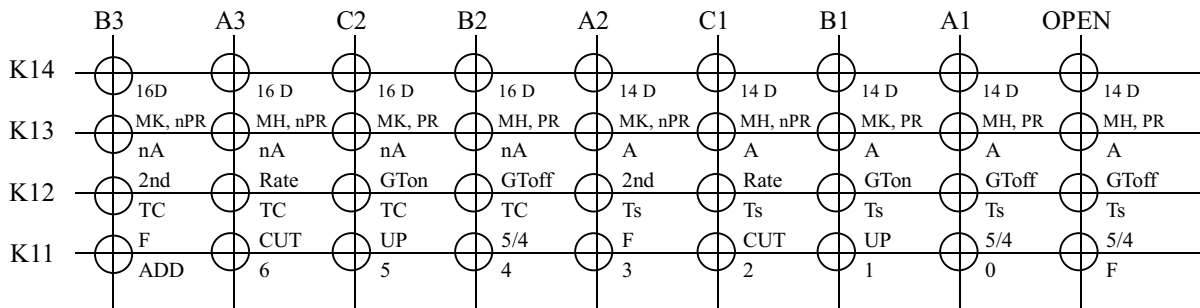
# DL5652    14/16 DIGIT CALCULATOR ( BATTERY / SOLAR / DUAL POWER TYPE )

## CONNECTION OF KEYBOARD

- Keyboard arrangement



- Connection of switch



**K14:** Select with Calculated Digits (14 digit or 16 digit) and Memory Hold Status, MH (Memory Hold), MK (Memory Kill) at Auto Power OFF or OFF key and Pre-Rate value selection nPR (Pre-Rate disable), PR (Pre-Rate enable).

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K13: Select with Auto Power OFF mode and Grand total on/off, Rate or 2nd switch.

K12: Select with TAX symbol option and Rounding switches or floating mode (F, CUT, UP, 5/4).

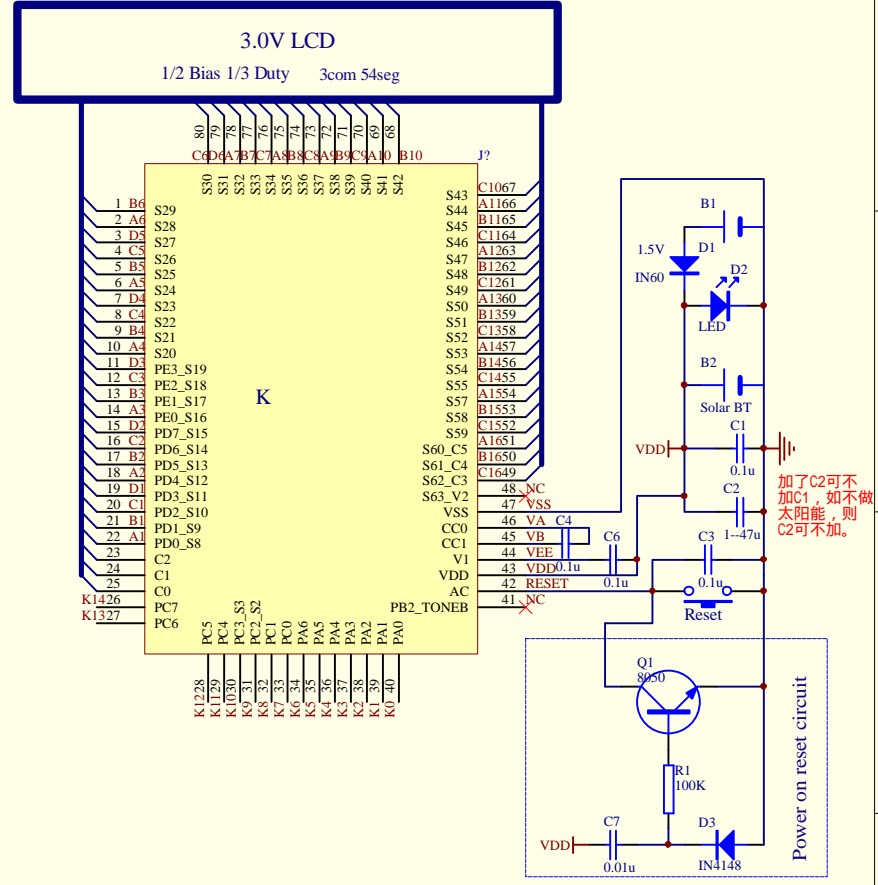
TC: TAX("TAX"), TAX+("TAX" and "+"), TAX-("TAX" and "-"), TAX%("TAX" and "%"); ----组合显示

Ts: TAX("TAX"), TAX+("+"), TAX-("-"), TAX%("%") ----单独点显示

K11: Select with Fixed point or floating mode (ADD, 6, 5, 4, 3, 2, 1, 0, F).

	NC	A1(PD0)	B1(PD1)	C1(PD2)	A2(PD4)	B2(PD5)	C2(PD6)	A3(PE0)	B3(PE1)
K14(PC7)	14D MH PR	14D MH PR	14D MK PR	14D MH nPR	14D MK nPR	16D MH PR	16D MK PR	16D MH nPR	16D MK nPR
K13(PC6)	GToff	GToff	GTon	Rate	2nd	GToff	GTon	Rate	2nd
K12(PC5)	TS	TS	TS	TS	TS	TC	TC	TC	TC
K11(PC4)	F	0	1	2	3	4	5	6	ADD2

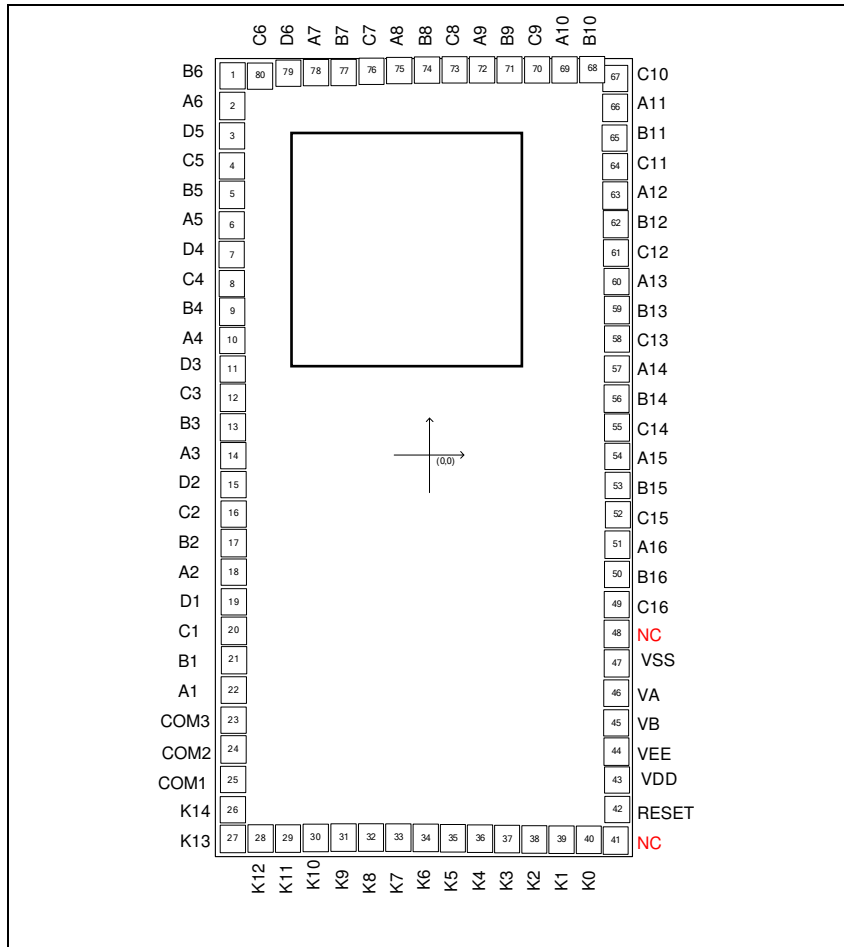
	K10(PC3)	K9(PC2)	K8(PC1)	K7(PC0)	K6(PA6)	K5(PA5)	K4(PA4)	K3(PA3)	
RCMI	6		M+/C1	OFF	0	+/-			K0(PA0)
MIL-	7	+	M-/C2	TAX+	1	SQRT			K1(PA1)
MIL+	8	-	RCM/C3	TAX-	2	RV	GT/CS		K2(PA2)
CE	9	*	MR/C3	RATE	3				
ON/C	.	/	MC/C4	Local	4				
ON/C/CE	00	=	2nd	EURO					
Resume	000	%	----->						
MU	5	MU/C4							



Title		
Size	Number	Revision
Date:		1.0
File:		Drawn By:

# DL5652      14/16 DIGIT CALCULATOR ( BATTERY / SOLAR / DUAL POWER TYPE )

## Pad Description



# DL5652 14/16 DIGIT CALCULATOR PAD ( BATTERY / SOLAR / DUAL POWER TYPE )

## Pad Assignment:

No.	Name	X	Y	No.	Name	X	Y	No.	Name	X	Y
1	B6	-621.	1134	28	K12	-522.	-1134	55	C14	621.	85.5
2	A6	-621.	1035	29	K11	-431.1	-1134	56	B14	621.	171
3	D5	-621.	944.1	30	K10	-342.9	-1134	57	A14	621.	256.5
4	C5	-621.	855.9	31	K9	-256.5	-1134	58	C13	621.	342
5	B5	-621.	769.5	32	K8	-171.	-1134	59	B13	621.	427.5
6	A5	-621.	684	33	K7	-85.5	-1134	60	A13	621.	513
7	D4	-621.	598.5	34	K6	0.	-1134	61	C12	621.	598.5
8	C4	-621.	513	35	K5	85.5	-1134	62	B12	621.	684
9	B4	-621.	427.5	36	K4	171.	-1134	63	A12	621.	769.5
10	A4	-621.	342	37	K3	256.5	-1134	64	C11	621.	855.9
11	D3	-621.	256.5	38	K2	342.9	-1134	65	B11	621.	944.1
12	C3	-621.	171	39	K1	431.1	-1134	66	A11	621.	1035
13	B3	-621.	85.5	40	K0	522	-1134	67	C10	621.	1134
14	A3	-621.	0	41	NC	621.	-1134	68	B10	522.	1134
15	D2	-621.	-85.5	42	RESET	621.	-1035	69	A10	431.1	1134
16	C2	-621.	-171	43	VDD	621.	-944.1	70	C9	342.9	1134
17	B2	-621.	-256.5	44	VEE	621.	-855.9	71	B9	256.5	1134
18	A2	-621.	-342	45	VB	621.	-769.5	72	A9	171.	1134
19	D1	-621.	-427.5	46	VA	621.	-684	73	C8	85.5	1134
20	C1	-621.	-513	47	VSS	621.	-598.5	74	B8	0.	1134
21	B1	-621.	-598.5	48	NC	621.	-513	75	A8	-85.5	1134
22	A1	-621.	-684	49	C16	621.	-427.5	76	C7	-171.	1134
23	COM3	-621.	-769.5	50	B16	621.	-342	77	B7	-256.5	1134
24	COM2	-621.	-855.9	51	A16	621.	-256.5	78	A7	-342.9	1134
25	COM1	-621.	-944.1	52	C15	621.	-171	79	D6	-431.1	1134
26	K14	-621.	-1035	53	B15	621.	-85.5	80	C6	-522.	1134
27	K13	-621.	-1134	54	A15	621.	0				

\*The IC substrate should be connected to Vss in the PCB layout artwork.

## 长方形 IC 的 PCB 画板和邦定注意事项

- 1、由于 IC 的形状是长方形且邦线较多，所以 PCB 打线焊盘设计成类似圆形或把远端的线伸进去会比方形大大有利于邦定生产，因为它可以减小 IC 拐角处邦线的拉偏角度，使邦线不会因靠的太紧密而发生邦线或线头碰线断线的不良现象。（邦线的拉偏角度应尽量不大于  $45^{\circ}$ ）
- 2、一个 IC 和 PCB 板好不好邦定，PCB 设计人员在画邦定图的时候就可以模拟出效果并判定出来，由于 PCB 画图是 1: 1 的尺寸大小，所以只要把 IC 的 PAD 图也画成 1: 1 的尺寸大小，那么画出的邦线效果就和生产的邦线效果基本一致了（我司可为 PCB 厂家提供 IC 1: 1 比例的 PAD 图）。
- 3、画 PCB 的 IC 衬底尺寸要与 IC 的实物面积基本一样大，这样会有助于粘 IC 的工人识别放置位置，不会因摆偏位置而造成邦定难度加大。
- 4、PCB 的焊盘处的线宽和线距尽量小，焊盘排列更紧靠，邦线拉的角度就越小，焊头就更不会短路。
- 5、PCB 上的焊点还和对应 IC 的 PAD 脚要在同一边，如果不在同边，邦线要转弯，会容易脱线和短路。

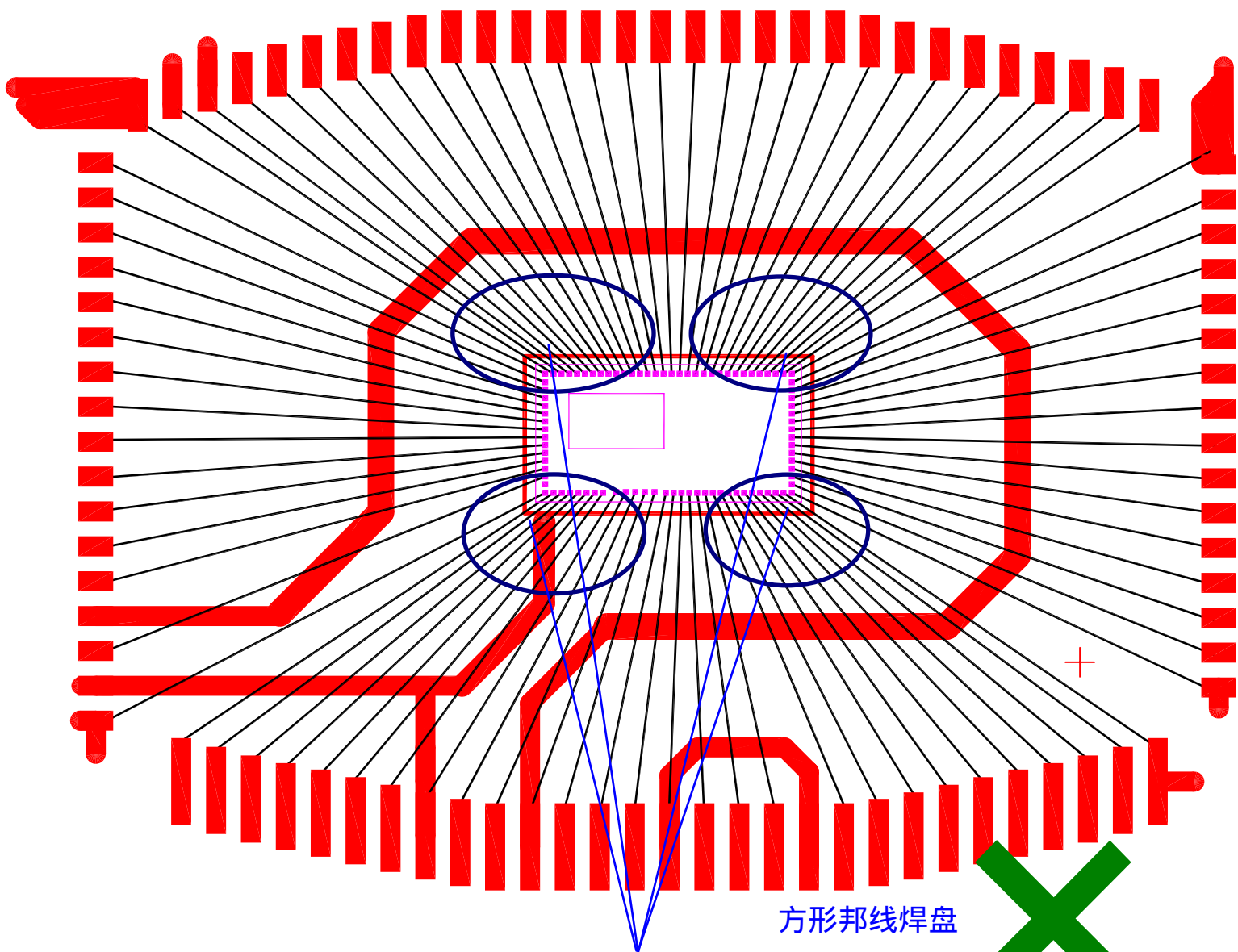
### 以下为邦线注意事项：

- 1、粘 IC 要放正，不要因为摆偏位置而造成邦定难度加大。
- 2、由于 PAD 焊点面积较小且距离较近，需调整邦机时间和功率大小，不要让邦线焊点打的太扁太宽，否则容易造成焊点间的短路。
- 3、请使用 1.0 或以下的铝线（即正常情况下选细一些的线），邦机选用 520 或 530.



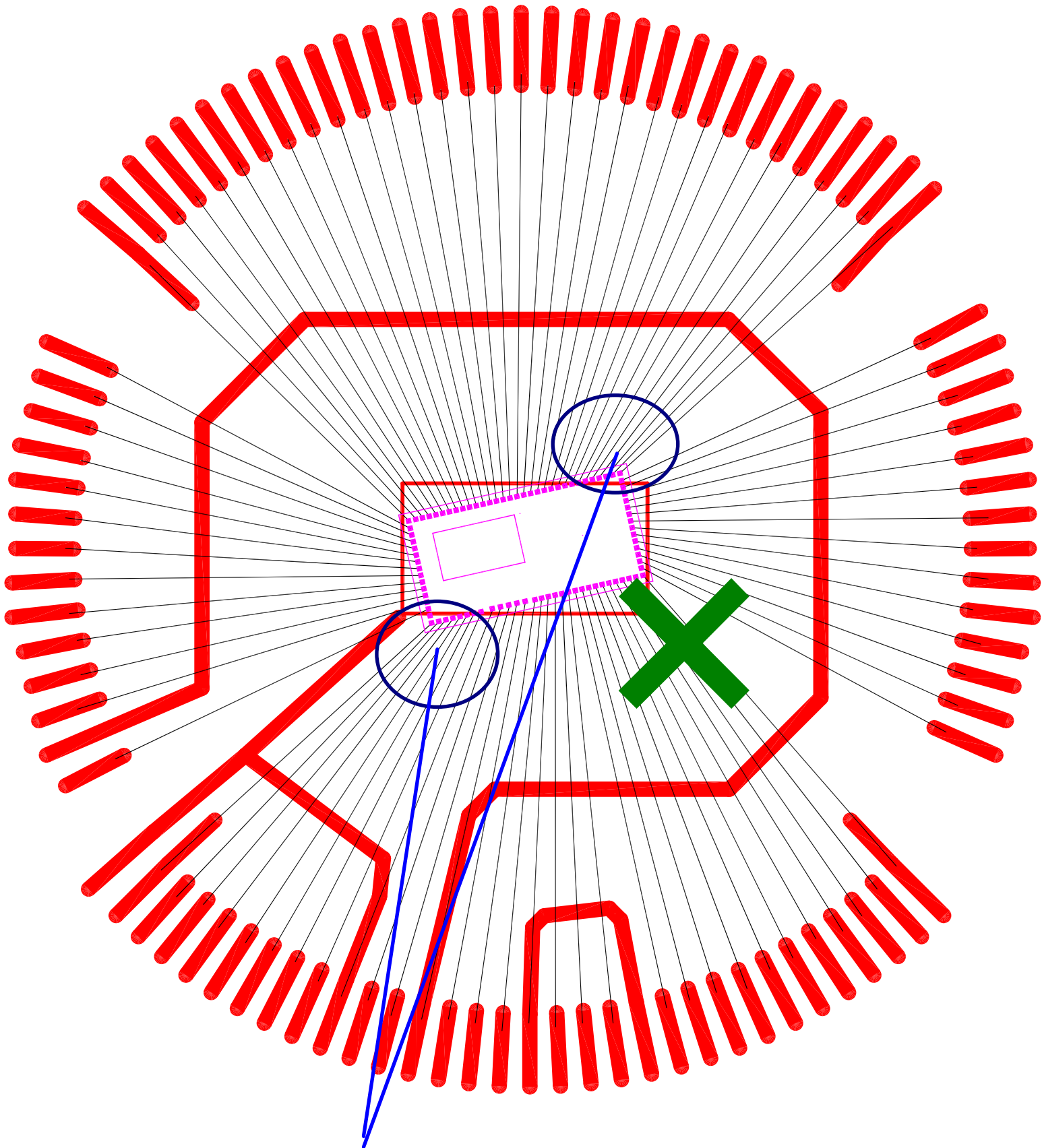
## 布板注意

PCB的打线焊盘画的不合理会降低邦定良率



圆圈处由于邦线拉偏角度太大，邦线很密，容易发生邦线或线头碰线断线，降低良率。

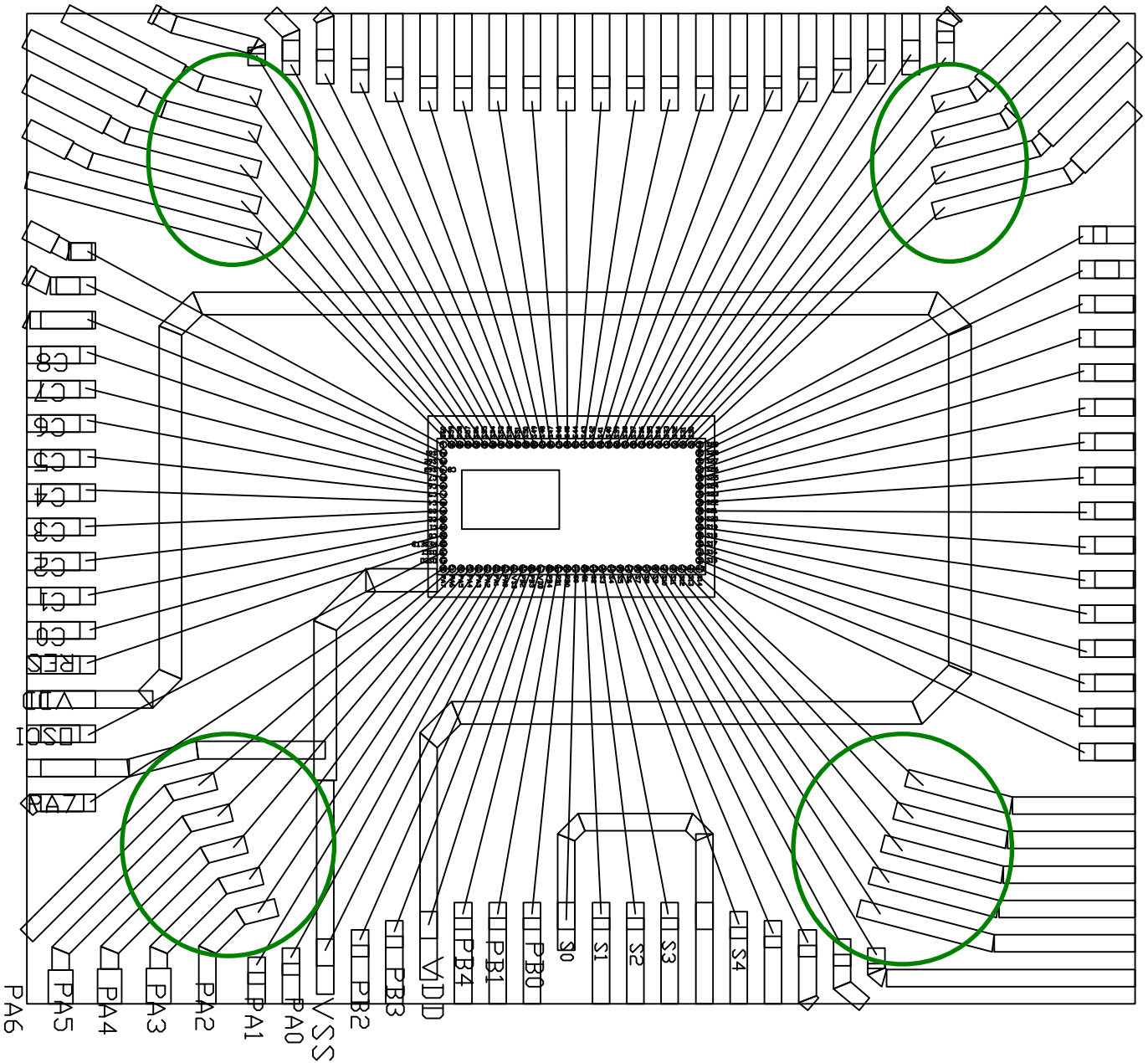
IC粘片位置摆放不正会降低邦定良率



圆圈处由于邦线拉偏角度太大，邦线很密，容易发生邦线或线头碰线短路，降低良率。

## 推荐PCB画法一

合理的PCB布线，正确的IC摆放使得邦定良率非常高



将焊盘远端的线往里面伸，可以让邦线更往中间靠、更趋平行，偏离角度变小，邦线和线头发生碰线断线的几率变小，生产良率更高。

合理的PCB布线，正确的IC摆放使得邦定良率非常高

