

Date: 2009/12/22

Messrs: _____**Specification**

※In the case of specification change, KKC Part Number also will change.

Customer part number	-
Customer specification Number	-
Product	Quartz Crystal
Model	CX3225SB
Frequency	24576kHz
KKC Part Number	CX3225SB24576H0KESZZ

Pb Free, RoHS Compliant**MSL 1**

[STAMP]

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DesignKYOCERA KINSEKI Yamagata Co.
Crystal Product Division**Issued by****Approved by**

※Recycled paper is being used for the conservation of nature.

No. K1101-09622-431

2(12)

Date: 2009/12/22

Change History

Rev	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
0	Spec release	2009/12/22	<i>A. Sato</i>		<i>[Signature]</i>

Date: 2009/12/22

1. APPLICATION

This specification sheet is applied to quartz crystal "CX3225SB".

2. KKC PART NUMBER

CX3225SB24576H0KESZZ

3. RATINGS

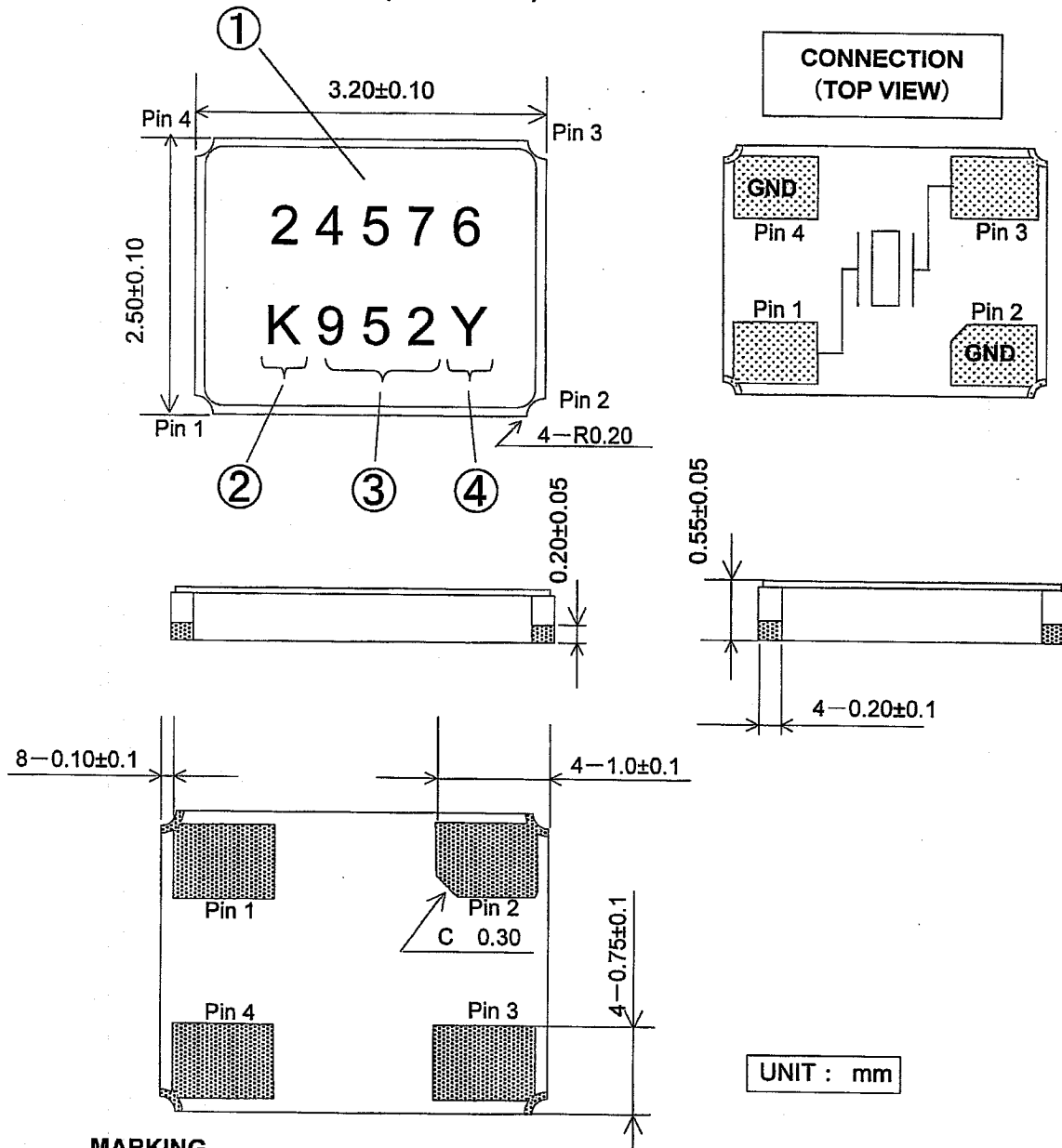
Items	SYMB.	Rating	Unit	Remarks
Operating Temperature	Topr	-10~+70	°C	
Storage Temperature range	Tstg	-40~+85	°C	

4. CHARACTERISTICS**ELECTRICAL CHARACTERISTICS**

Items	Electrical Specification					Test Condition	Remarks
	SYMB.	Min	Typ	Max	Unit		
Mode of Vibration		Fundamental					
Nominal Frequency	F0		24.576		MHz		
Nominal Temperature	T _{NOM}		+25		°C		
Load Capacitance	CL		12.0		pF		
Frequency Tolerance	df/F	-30.0		+30.0	PPM	+25±3°C Network Analyzer E5100A 200 μA	
Frequency Temperature Characteristics	df/F	-50.0		+50.0		-10~+70°C	+25±3°C
Frequency Ageing Rate		-1.0		+1.0		1year	+25±3°C
Equivalent Series Resistance	ESR			100	Ω	Network Analyzer E5100A 200 μA	
Drive Level	Pd	0.01		100	μW		
Insulation Resistance	IR	500			MΩ	100V(DC)	

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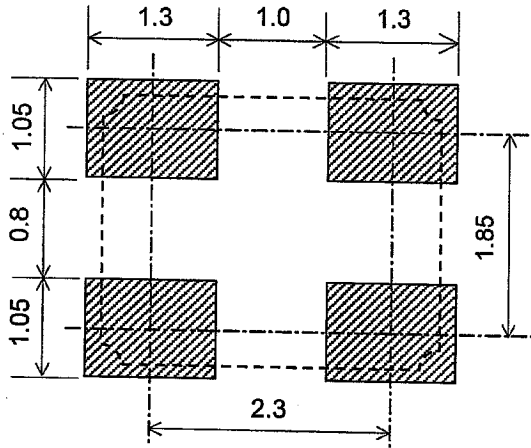
5. APPEARANCES, PHYSICAL DIMENSION OUTLINE DIMENSION (not to scale)



MARKING

- ① Nominal Frequency Move the number of maximum indication beams of the frequency to five digits, and omit less than kHz.
- ② Identification
- ③ Date Code Year...LAST 1 DIGIT of YEAR AND WEEK ※For details to P11
(Ex) December 22, 2009 → 952
- ④ Manufacturing Location
Y...Yamagata
Z...Shiga Yohkaichi
T...Thailand
※The font of marking is reference.

6. RECOMMENDED LAND PATTERN (not to scale)

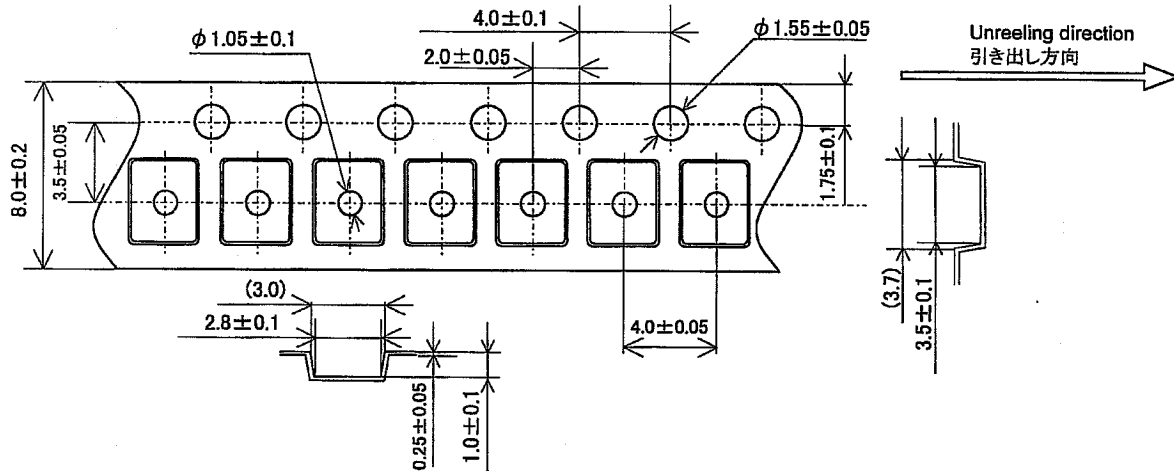


UNIT : mm

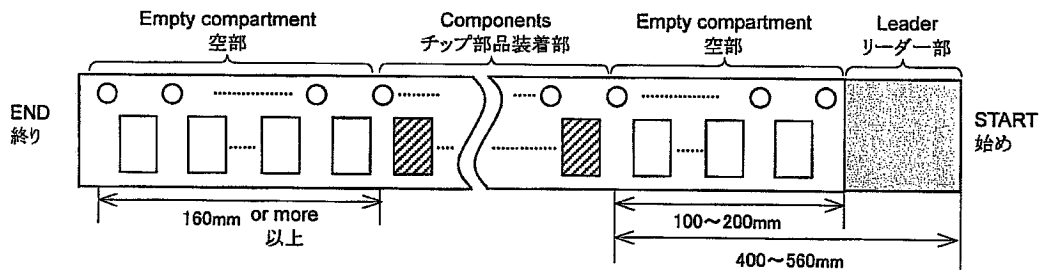
Date: 2009/12/22

7. TAPING & REEL

7-1. Dimensions (寸法図)

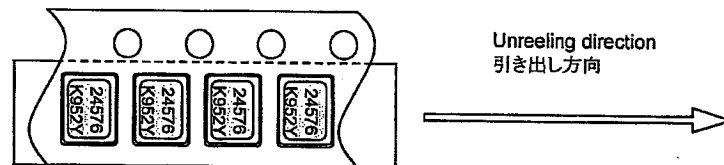


7-2. Leader and trailer tape (リーダー部テープ部及び終末端部テープ)



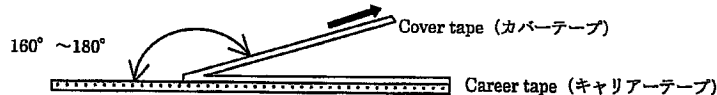
7-3. Direction (The direction shall be seen from the top cover tape side)

テーピング方向 (トップカバーテープ側から見る。)

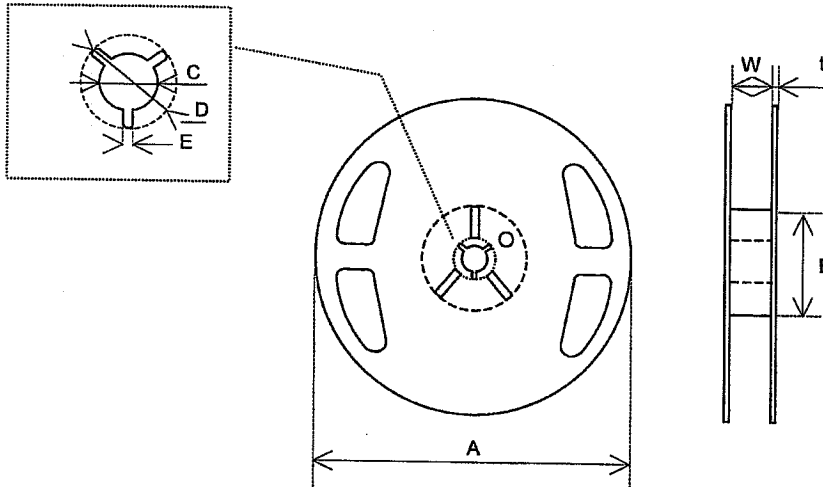


7-4. Specification (記事)

- Material of the carrier tape shall be polystyrene or A-PET (ESD).
{装着テープの材質は、PS もしくは A-PET とする。 (静電対策品)}
- Material of the seal tape shall be polyester(ESD). { シールテープの材質はポリエステルとする。 (静電対策品) }
- The seal tape shall not cover the sprocket holes. And not protrude from the carrier tape. {シールテープは送り穴をふさいだり、装着テープからはみ出していないこと。}
- Tensile strength of the tape : 10N or more. {テープの引張り強度は 10N 以上}
- The R of the corner without designation is 0.2RMAX. {指定無きコーナーの R は 0.2RMAX}
- Disalignment between centers of the cavity and sprocket hole shall be 0.05mm or less. {角穴の中心と送り穴の中心とのずれは、0.05mm 以下とする。}
- Cumulative pitch tolerance of "P₀" shall be ± 0.2 mm at 10 pitches. {"P₀"の累積ピッチ許容差は、10 ピッチで ± 0.2 mm とする。}
- Suppose that it unifies as shown in the above-mentioned figure to the directivity of printing in an embossing tape. {エンボステープ内における印字の方向性は上記図のように統一することとする。}
- Peeling force of the seal tape: 0.3 to 0.7N. {シールテープ剥離強度 0.3~0.7N}



Reel specifications



In the case of $\Phi 180$ Reel(1000 or 3000 pcs)

Symbol	A	B	C	D
Dimension	$\phi 180 +0/-3$	$\phi 60 +1/-0$	$\phi 13 \pm 0.2$	$\phi 21 \pm 0.8$
Symbol	E	W	t	
Dimension	2.0 ± 0.5	9 ± 1	2.0 ± 0.5	

(Unit : mm)

In the case of $\Phi 330$ Reel(1000 or 3000 or 5000 pcs)

Symbol	A	B	C	D
Dimension	$\phi 330 \pm 0.2$	$\phi 100 \pm 1.0$	$\phi 13 \pm 0.2$	$\phi 21 \pm 0.8$
Symbol	E	W	t	
Dimension	2.0 ± 0.5	13.5 ± 0.5	2.2 ± 0.1	

(Unit : mm)

Date: 2009/12/22

8. Environmental requirements

After following test, frequency shall not change more than $\pm 10 \times 10^{-6}$

And CI, $\pm 20\%$ or 5Ω .

- | | |
|-----------------------------|---|
| 8.1 Resistance to Shock | <p>Test condition</p> <p>Natural dropped from height 100cm onto hard wood board in 3 times</p> |
| 8.2 Resistance to Vibration | <p>Test condition</p> <p>frequency : 10 - 55 -10 Hz</p> <p>Amplitude : 1.5mm</p> <p>Cycle time : 15 minutes</p> <p>Direction : X,Y,Z (3direction),2 h each.</p> |
| 8.3 Resistance to Heat | <p>Test condition</p> <p>The quartz crystal unit shall be stored at a temperature of $+85 \pm 2^\circ\text{C}$ for 500 h.</p> <p>Then it shall be subjected to standard atmospheric conditions for 1 h ,after which measurement shall be made.</p> |
| 8.4 Resistance to Cold | <p>Test condition</p> <p>The quartz crystal unit shall be stored at a temperature of $-40 \pm 2^\circ\text{C}$ for 500 h.</p> <p>Then it shall be subjected to standard atmospheric conditions for 1 h ,after which measurement shall be made.</p> |
| 8.5 Thermal Shock | <p>Test condition</p> <p>The quartz crystal unit shall be subjected to 500 successive change of temperature cycles , each as shown in table below, Then it shall be subjected to standard atmospheric conditions for 1h, after which measurements shall be made.</p> <p>Cycle : $-40 \pm 2^\circ\text{C}$ (30min.) $\sim +25 \pm 2^\circ\text{C}$ (5min.)
 $\sim +85 \pm 2^\circ\text{C}$ (30min.) $\sim +25 \pm 2^\circ\text{C}$ (5min.)</p> |

8.6 Resistance to Moisture

Test condition

The quartz crystal unit shall be stored at a temperature of $+60 \pm 2^\circ\text{C}$ with relative humidity of 90% to 95% for 240 h. Then it shall be subjected to standard atmospheric conditions for 1h, after which measurements shall be made

8.7 Soldering condition

1.) Material of solder

Kind ... lead free solder paste

Melting point ... $+220 \pm 5^\circ\text{C}$

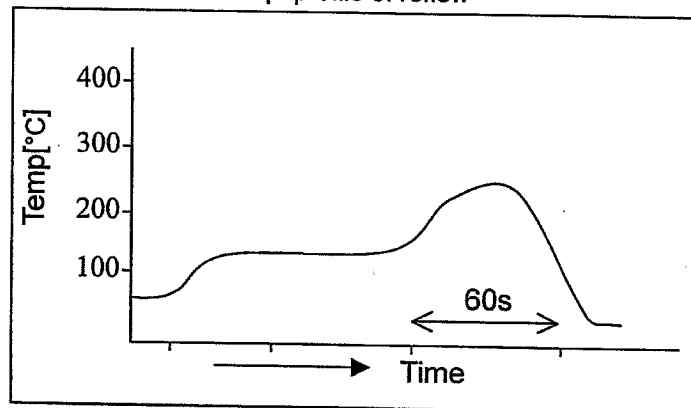
2.) Temp.profile of reflow soldering system

	Temp [$^\circ\text{C}$]	Time[sec]
Peak	$+260 \pm 5$	10 (max.)
Preheating	$+180$ (typ.)	100 (typ.)
Total	—	200 (max.)

3.) Hand Soldering

$+350^\circ\text{C}$ 3sec MAX

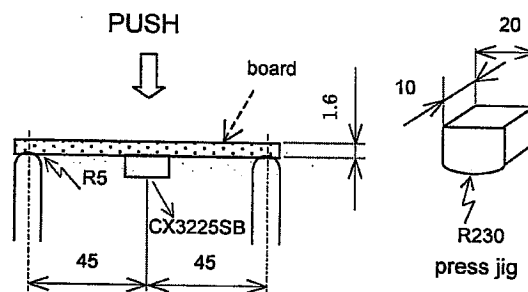
Temp. profile of reflow



8.8 Intensity for bending in circuit board

Solder this product in center of the circuit board of $40\text{mm} \times 100\text{mm}$, and add the deflection of 3mm as the bottom figure.

Test board : $t = 1.6\text{mm}$



UNIT : mm

Date: 2009/12/22

9. Cautions for use**(1) Automatic mounting machine use**

Please use after affirmation that select the mounting machine model with a shock small if possible in the case of use of an automatic mounting machine, and it does not have breakage. There is a risk of a quartz crystal unit breakage occurring and not functioning normally by too much shock etc.

(2) Conformity of a circuit

In case of use of an oscillation circuit, please insert in a quartz crystal unit in series resistance 5 time as many as the standard value of equivalent in-series resistance, and confirm oscillating. Please remove resistance which inserted after the notes above-mentioned examination in the quartz crystal unit in series, and use it.

10. Storage conditions

Storage at prolonged high temperature or low temperature and the storage by high humidity cause degradation of frequency accuracy, and degradation of soldering nature. Storage is performed at the temperature of +18~+30°C, and the humidity of 20~70 % in the state of packing, and a term is 6 months.

11. Quality Assurance

Location

Kyocera Kinseki Yamagata Corporation ... Kyocera Kinseki Yamagata

Quality Assurance Division

Kyocera Kinseki Corporation Shiga Yohkaichi Plant ... Kyocera Kinseki

Quality Assurance Division

Kyocera Kinseki (Thailand) Co., Ltd.: Kyocera Kinseki (Thailand) Co., Ltd

Quality Assurance Division

12. Quality guarantee

When the failure by the responsibility of our company occurs clearly after delivery within 1 year, a substitute article etc. is appropriated gratuitously and this is guaranteed. However, when passing 1 year after delivery, there is a case where I am allowed to consider as onerous repair after both consultation.

13. Others

When any questions and opinions are in the written matter of these delivery specifications, I will ask connection of you from the our company issue day within 45 days. In a connection no case, a written matter is consented to it and employed within a term.

Date: 2009/12/22

14.LOT CALENDAR

WEEK 週	MONTH 月	SUN 日	MON 月	TUE 火	WED 水	THU 木	FRI 金	SAT 土	WEEK 週	MONTH 月	SUN 日	MON 月	TUE 火	WED 水	THU 木	FRI 金	SAT 土
0901	1					1	2	3	0928	7	5	6	7	8	9	10	11
0902		4	5	6	7	8	9	10	0929		12	13	14	15	16	17	18
0903		11	12	13	14	15	16	17	0930		19	20	21	22	23	24	25
0904		18		20	21	22	23	24	0931	8	26	27	28	29	30	31	1
0905		25	26	27	28	29	30	31	0932		2	3	4	5	6	7	8
0906	2	1	2	3	4	5	6	7	0933		9	10	11	12	13	14	15
0907		8	9	10	11	12	13	14	0934		16	17	18	19	20	21	22
0908		15	16	17	18	19	20	21	0935		23	24	25	26	27	28	29
0909		22	23	24	25	26	27	28	0936	9	30	31	1	2	3	4	5
0910	3	1	2	3	4	5	6	7	0937		6	7	8	9	10	11	12
0911		8	9	10	11	12	13	14	0938		13	14	15	16	17	18	19
0912		15	16	17	18	19	20	21	0939		20	21	22	23	24	25	26
0913		22	23	24	25	26	27	28	0940	10	27	28	29	30	1	2	3
0914	4	29	30	31	1	2	3	4	0941		4	5	6	7	8	9	10
0915		5	6	7	8	9	10	11	0942		11	12	13	14	15	16	17
0916		12	13	14	15	16	17	18	0943		18	19	20	21	22	23	24
0917		19	20	21	22	23	24	25	0944		25	26	27	28	29	30	31
0918	5	26	27	28	29	30	1	2	0945	11	1	2	3	4	5	6	7
0919		3	4	5	6	7	8	9	0946		8	9	10	11	12	13	14
0920		10	11	12	13	14	15	16	0947		15	16	17	18	19	20	21
0921		17	18	19	20	21	22	23	0948		22	23	24	25	26	27	28
0922		24	25	26	27	28	29	30	0949	12	29	30	1	2	3	4	5
0923	6	31	1	2	3	4	5	6	0950		6	7	8	9	10	11	12
0924		7	8	9	10	11	12	13	0951		13	14	15	16	17	18	19
0925		14	15	16	17	18	19	20	0952		20	21	22	23	24	25	26
0926		21	22	23	24	25	26	27	0953		27	28	29	30	31		
0927	7	28	29	30	1	2	3	4									

2010 LOT CALENDAR

WEEK 週	MONTH 月	SUN 日	MON 月	TUE 火	WED 水	THU 木	FRI 金	SAT 土	WEEK 週	MONTH 月	SUN 日	MON 月	TUE 火	WED 水	THU 木	FRI 金	SAT 土
001	1						1	2	028	7	4	5	6	7	8	9	10
002		3	4	5	6	7	8	9	029		11	12	13	14	15	16	17
003		10	11	12	13	14	15	16	030		18	19	20	21	22	23	24
004		17	18	19	20	21	22	23	031		25	26	27	28	29	30	31
005		24	25	26	27	28	29	30	032	8	1	2	3	4	5	6	7
006	2	31	1	2	3	4	5	6	033		8	9	10	11	12	13	14
007		7	8	9	10	11	12	13	034		15	16	17	18	19	20	21
008		14	15	16	17	18	19	20	035		22	23	24	25	26	27	28
009		21	22	23	24	25	26	27	036	9	29	30	31	1	2	3	4
010	3	28	1	2	3	4	5	6	037		5	6	7	8	9	10	11
011		7	8	9	10	11	12	13	038		12	13	14	15	16	17	18
012		14	15	16	17	18	19	20	039		19	20	21	22	23	24	25
013		21	22	23	24	25	26	27	040	10	26	27	28	29	30	1	2
014	4	28	29	30	31	1	2	3	041		3	4	5	6	7	8	9
015		4	5	6	7	8	9	10	042		10	11	12	13	14	15	16
016		11	12	13	14	15	16	17	043		17	18	19	20	21	22	23
017		18	19	20	21	22	23	24	044		24	25	26	27	28	29	30
018	5	25	26	27	28	29	30	1	045	11	31	1	2	3	4	5	6
019		2	3	4	5	6	7	8	046		7	8	9	10	11	12	13
020		9	10	11	12	13	14	15	047		14	15	16	17	18	19	20
021		16	17	18	19	20	21	22	048		21	22	23	24	25	26	27
022		23	24	25	26	27	28	29	049	12	28	29	30	1	2	3	4
023	6	30	31	1	2	3	4	5	050		5	6	7	8	9	10	11
024		6	7	8	9	10	11	12	051		12	13	14	15	16	17	18
025		13	14	15	16	17	18	19	052		19	20	21	22	23	24	25
026		20	21	22	23	24	25	26	053		26	27	28	29	30	31	
027	7	27	28	29	30	1	2	3									