

CRYSTAL SPECIFICATION



Customer : _____
Customer P/N : _____
Agent : _____
Agent Code : _____
SIWARD P/N : XTL721-S349-005

Customer Approval :

希華晶體科技股份有限公司
SIWARD CRYSTAL TECHNOLOGY CO., LTD.

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DATE : 2011/01/24

Approved By : Steve

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Checked By : Tom

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TEL: (04)25347909 EXT 1533

Designer : Sally

Address: 1-1, LANE 111, JUNG-SHAN RD., SEC.3, TANTZU HSING, TAICHUNG 427, TAIWAN, R.O.C.

Rev.	Description of Revision History	Date	Designer	Checked By
1	New Publication	2010/09/13	Sally	Tom

CRYSTAL SPECIFICATION

- 1. Description : Quartz Crystal
 - 2. Nominal Frequency : 32.768 KHz
 - 3. Center Frequency : 32.768 KHz
 - 4. Dimension & Drawing No. : SX-3215 ; SXD-00281
 - 5. Oscillation Mode : Fundamental
 - 6. Cutting Mode :
 - 7. Packing Style : TP-125
 - 8. Measurement Instrument : S&A 250B(Measured FL)
 - 9. Electrical Characteristics :
- [1] Operating Conditions :

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Operating Temperature Range	Topt	-40		85	°C	
Storage Temperature Range	Tstg	-55		125	°C	
Load Capacitance	CL		7		pF	
Drive Level	DL		0.1	0.5	μW	

[2] Frequency Stability :

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Tolerance	dF/Fo	-20		20	ppm	Refer to Center Frequency @25±3°C
Freq. vs Temp. Coefficient	dF/dT	-0.04	-0.036		ppm/°C ²	
Turnover Temperature	TT	20	25	30	°C	
Aging	dF/F25	-3		3	ppm	Per Year

dF/Fo: Frequency Deviation Refer to Center Frequency

dF/F25: Frequency Deviation Refer to 25 °C Frequency

[3] Electrical Performance :

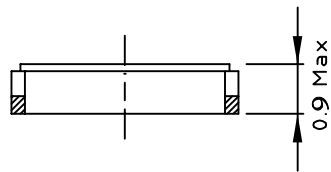
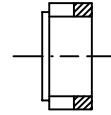
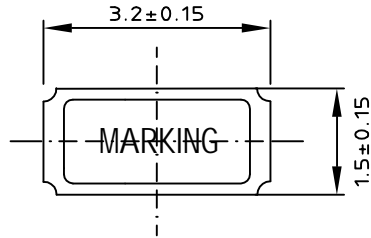
Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Equivalent Series Resistance	ESR			65	KΩ	@Series
Shunt Capacitance	Co	0.6	0.9	1.2	pF	
Motional Capacitance	C1	3	3.7	4.4	fF	
Quality Factor	Q	13000				
Insulation Resistance	IR	500			MΩ	@DC 100 Volt

10. Marking : Laser

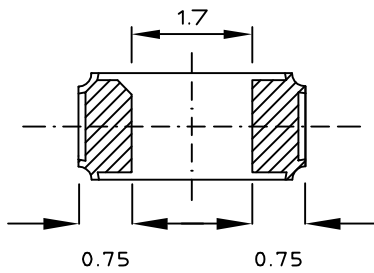
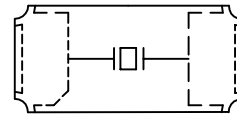
<p>*MARKING : D ->YEAR C -> MONTH YEAR : 1 2 3 4 5 6 7 8 9 0 CODE : A B C D E F G H J K MONTH: 1 2 3 4 5 6 7 8 9 10 11 12 CODE : A B C D E F G H J K L M * S-> SIWARD * ### -> Lot No</p>	<div style="border: 1px solid black; width: 150px; height: 80px; margin: 0 auto;"> <p style="text-align: center; margin: 0;">SDC###</p> </div>
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11. Remark :

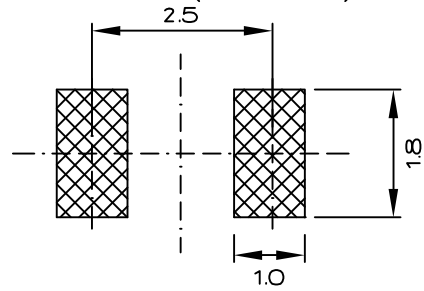
<p>*Lead Free, RoHS compliant</p>



TOP VIEW

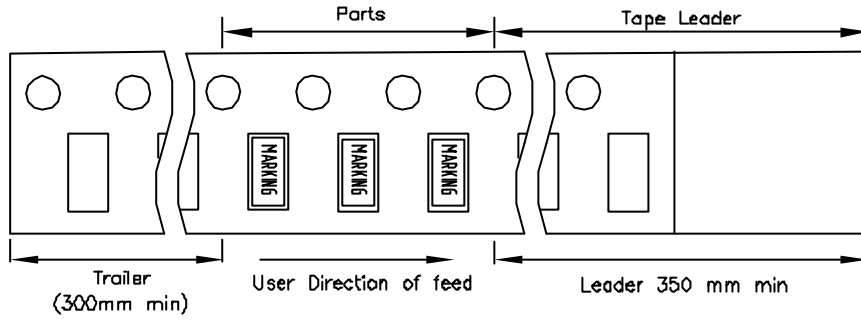
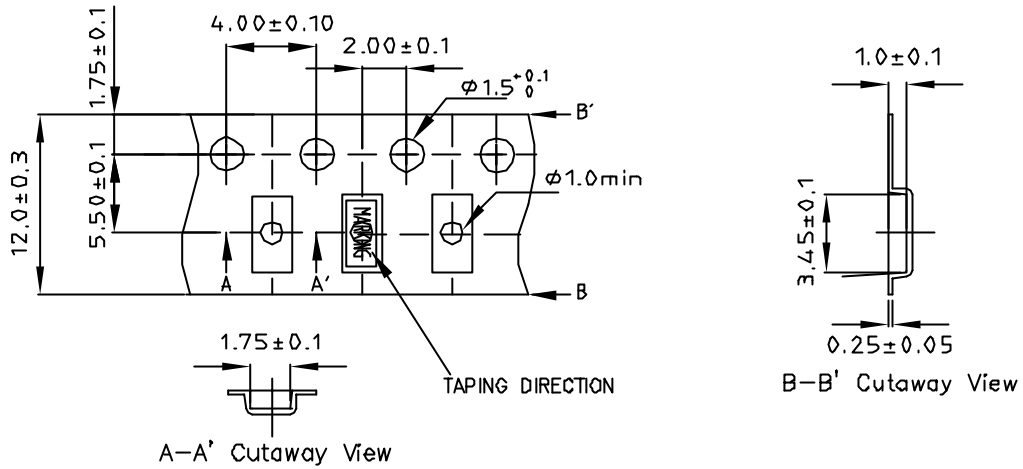


LAND PATTERN (REFERENCE)

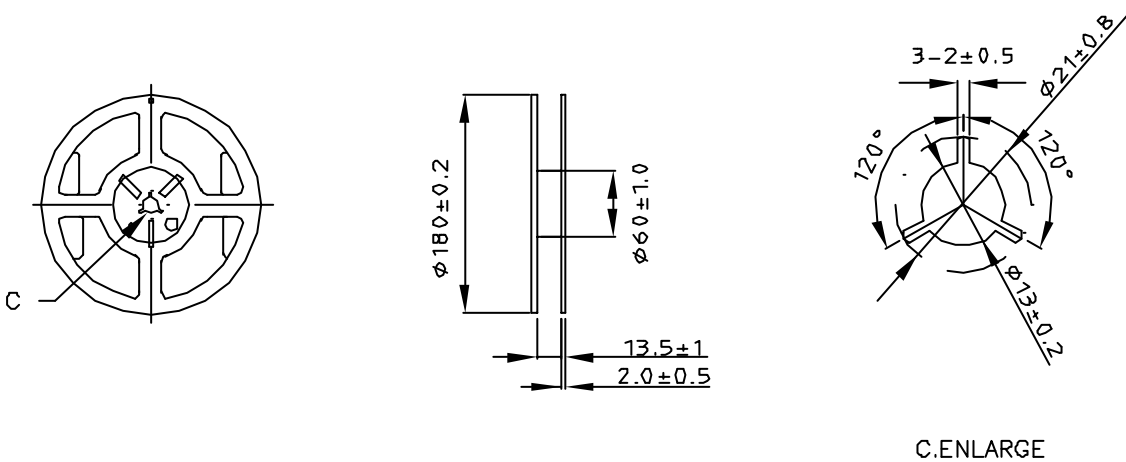


4	ADD PAD SIZE =>0.75	'10.08.04	DRAWING NAME	SX-3215		
3	MODIFY HEIGHT 0.8Max=>0.9Max	'10.05.06	DRAWING NO.	SXD-00281		
1	NEW EDITION	'07.07.19	SCALE		UNIT	mm
NO.	MODIFY CONTENTS	DATE	APPROVE	<i>Avery</i>	DESIGNER	<i>Audi</i>

1. CARRIER TYPE

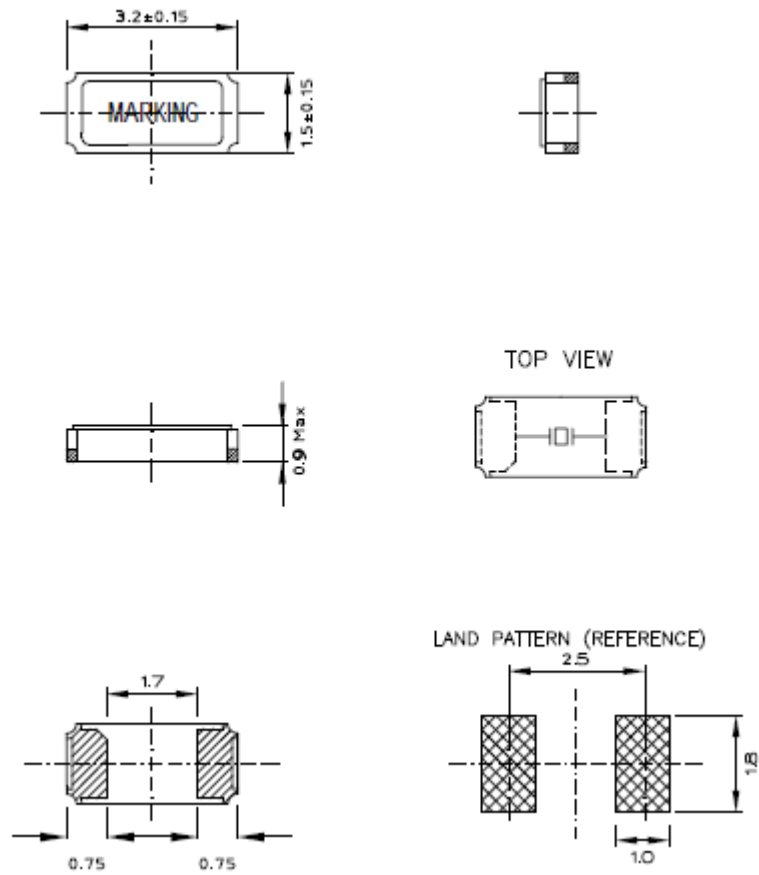


2. REEL: 3000PCS

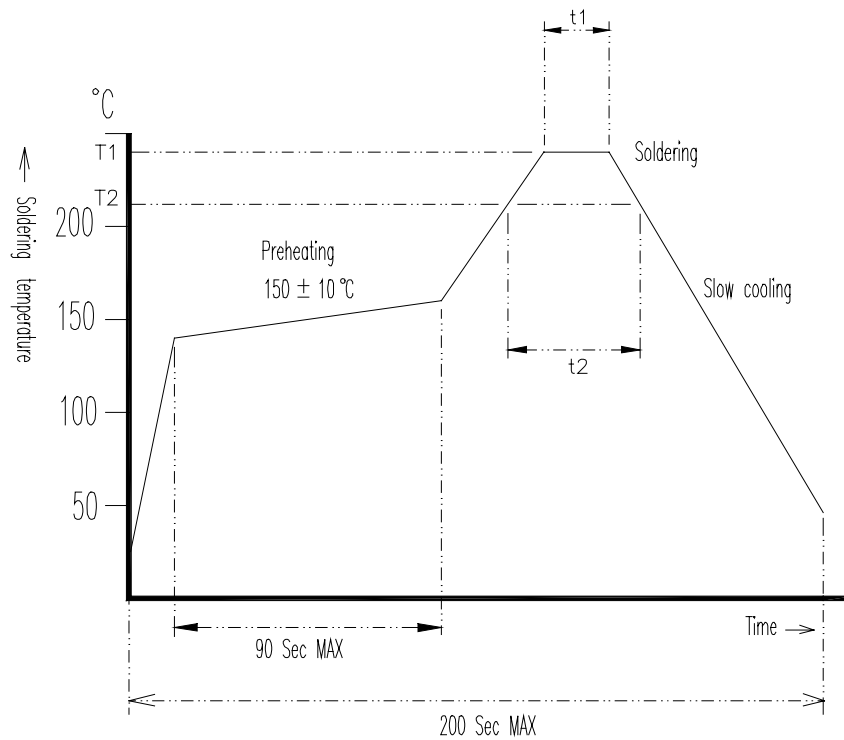


4	MODIFY CARRIER & DRAWING NAME DELETE BOX & CARTON	10.11.15	DRAWING NAME	SX-3215 REEL PACKING		
3	MODIFY CARRIER & REEL	10.08.04	DRAWING NO.	TP-125		
1	NEW EDITION	07.07.19	SCALE		UNIT	mm
NO.	MODIFY CONTENTS	DATE	APPROVE	<i>Jason</i>	DESIGNER	<i>Audi</i>

■ DIMENSIONS



■ SUGGESTED REFLOW PROFILE



Application\Temperature Time	T1 / t1	T2 / t2
Lead Free	260 ± 5 °C / 10 Sec Max	225Min / 60 Sec Max
Non Lead Free	240 ± 5 °C / 10 Sec Max	200Min / 40 Sec Max

■ RELIABILITY SPECIFICATION

1. ENVIRONMENTAL PERFORMANCE

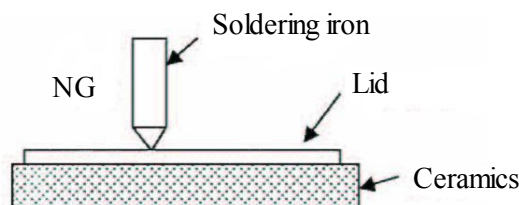
ITEM	CONDITION										
1. DRY HEAT(AGING)	STORED AT 85±2°C FOR 500±12H. THEN 25±2°C OVER 2H BEFORE TESTING.										
2. COLD	STORED AT -40±2°C FOR 500±12H. THEN 25±2°C OVER 2H BEFORE TESTING.										
3. DAMP HEAT	STORED AT 60±2°C AND HUMIDITY 90~95% FOR 500±12 H. THEN 25±2°C OVER 2H BEFORE TESTING.										
4. TEMPERATURE CYCLE	<p>THE CRYSTAL UNIT SHALL BE SUBJECTED TO 100 SUCCESSIVE CHANGE OF TEMPERATURE CYCLES, THEN 25±2°C OVER 2H BEFORE TESTING, EACH CYCLE AS BELLOW :</p> <table style="margin-left: 40px;"> <thead> <tr> <th>TEMPERATURE</th> <th>DURATION</th> </tr> </thead> <tbody> <tr> <td>1. -40+0/-6°C</td> <td>30±3 MINUTES</td> </tr> <tr> <td>2. 25°C±2°C</td> <td>2~3 MINUTES</td> </tr> <tr> <td>3. 85+4/-0°C</td> <td>30±3 MINUTES</td> </tr> <tr> <td>4. 25°C±2°C</td> <td>2~3 MINUTES</td> </tr> </tbody> </table>	TEMPERATURE	DURATION	1. -40+0/-6°C	30±3 MINUTES	2. 25°C±2°C	2~3 MINUTES	3. 85+4/-0°C	30±3 MINUTES	4. 25°C±2°C	2~3 MINUTES
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4. 25°C±2°C	2~3 MINUTES										

2. MECHANICAL PERFORMANCE

ITEM	CONDITION
5. RESISTANCE TO SOLDERING HEAT	260°C MAX x 2 TIMES REFLOW CHART AS ATTACH SHEET.
6. FREE FALL	Weight : 100 g, Height : 150 cm, Dropped Cycle : 3 Cycle, DROP IT ONTO A CONCRETE BOARD FOR 6 DIRECTIONS (XX',YY'ZZ'), THIS SHOULD BE 1 CYCLE.
7. VIBRATION	FREQUENCY : 10~60Hz, AMPLITUDE (TOTAL EXCURSION) : 1.5mm±15%, SWEEP TIME : 2~3MIN, 3 DIRECTION(X, Y, Z) EACH 2H.
8. SEALING	TAKE MEASUREMENTS WITH A HELIUM LEAKAGE DETECTOR. SPEC... 2.1 x 10-9 Pa · m3/s (2.1 x 10-8 mbar · l/s) MAX.

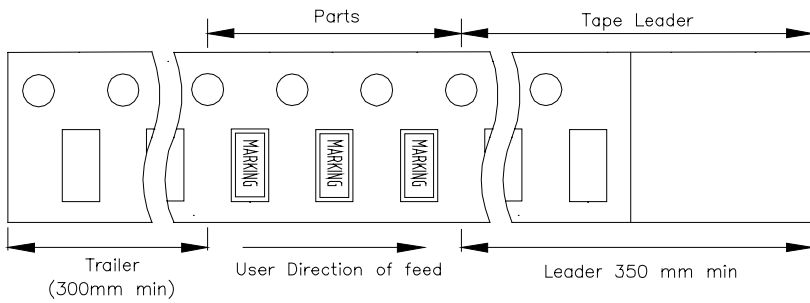
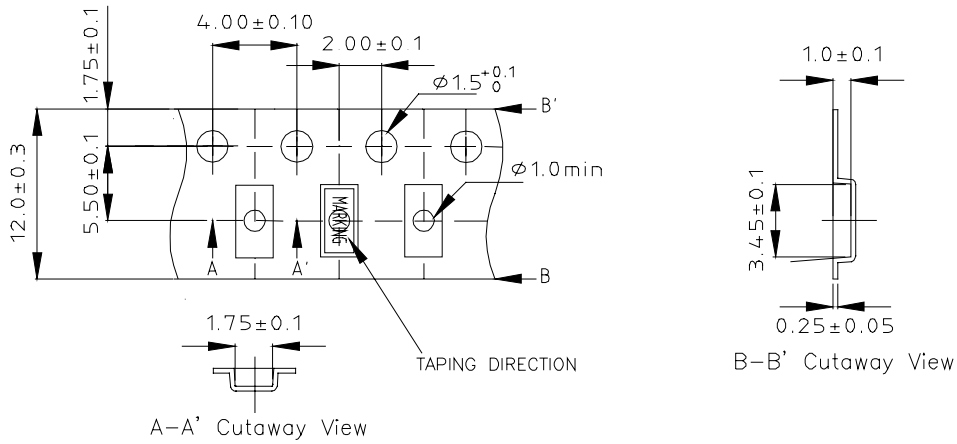
(Remark)

Please note that parts should specify above test condition each by each article not all at once. Also the variation of series resistance should ±20% min or ±15kΩ min which ever big value on above test. Please do not touch by hot soldering iron and do not put shock on top lid.

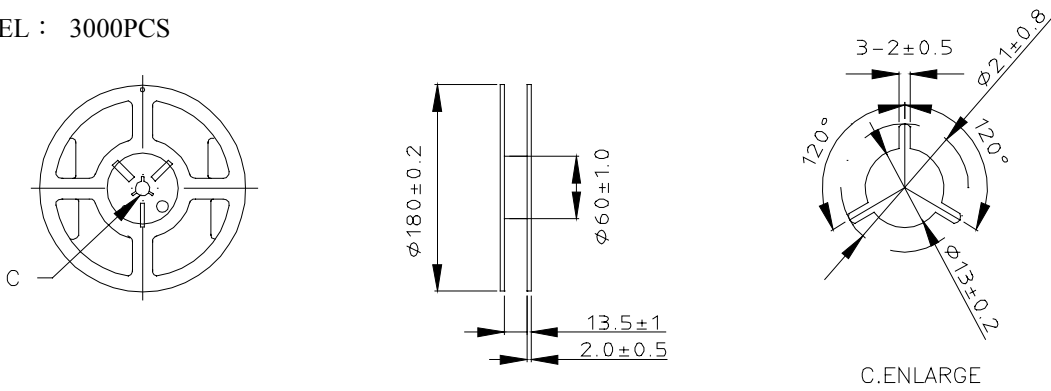


■ PACKING

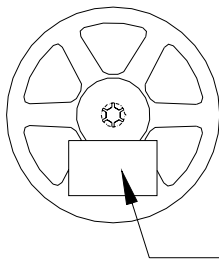
1. CARRIER TYPE



2. REEL : 3000PCS



3. LABEL



CUSTOMER :			
P.O.# :			
CUST.P/N :			
MFG.P/N :			
FREQ. :		MHZ	
		MHZ	
TYPE :	D.C. :		
Q'TY. :	SPEC. :		
LOT NO :			
REMARK 1 :			
REMARK 2 :			