

CRYSTAL SPECIFICATION



Customer : _____

Customer P/N : _____

Agent : _____

Agent Code : _____

SIWARD P/N : XTL721-S999-286

Customer Approval :

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

業務部/ SALE DEPARTMENT

TEL: (04)25347909

FAX: (04)25327885 / 25337396

URL HTTP://www.siward.com.tw

DATE : 2011/04/29

Approved By :

Cat

品質保證部/ QUALITY ASSURANCE DEPT.

TEL: (04)25347909 EXT 1340/1341

Checked By :

Tom

研發部/R & D DEPT.

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.

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(Calculated 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		12.5		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 DL = 0.1 μW
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			70	K Ω	@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			M Ω	@DC 100 Volt

10. Marking : Laser

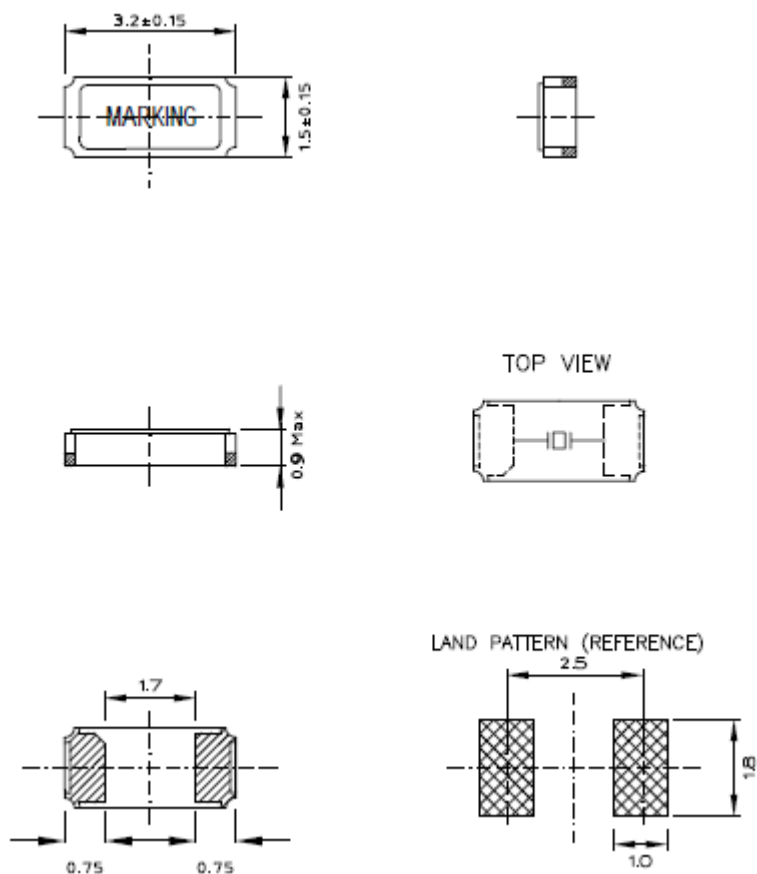
*MARKING : D -> YEAR C -> MONTH
 YEAR : 1 2 3 4 5 6 7 8 9 0
 CODE : A B C D E F G H J K
 MONTH: 1 2 3 4 5 6 7 8 9 10 11 12
 CODE : A B C D E F G H J K L M
 * S -> SIWARD * ### -> Lot No

SDC###

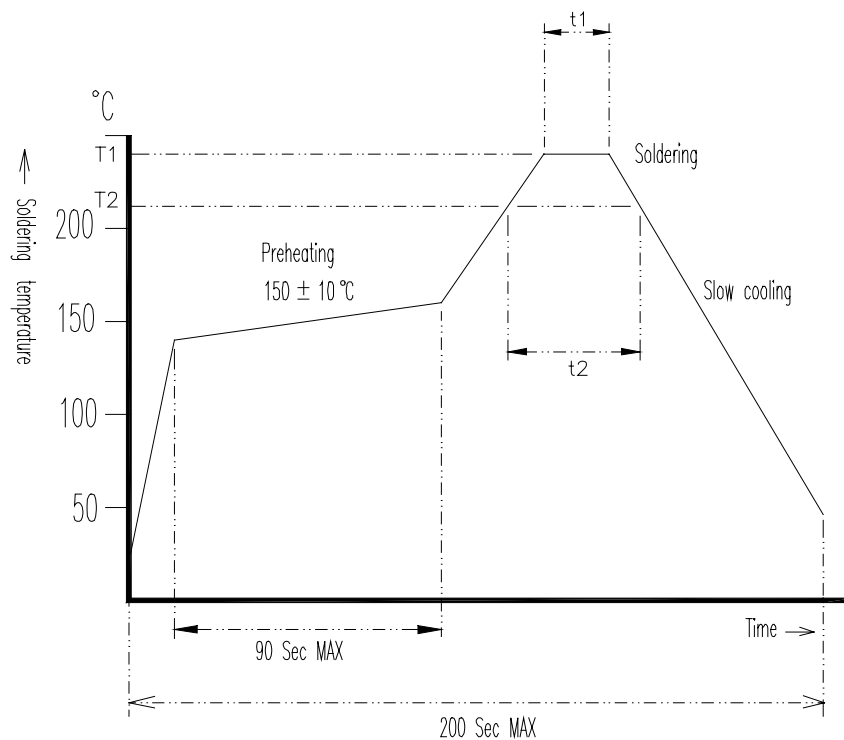
11. Remark :

*Lead Free, RoHS compliant

■ DIMENSIONS



■ SUGGESTED REFLOW PROFILE



Application\Temperature Time	T1 / t1	T2 / t2
Lead Free	$260 \pm 5^\circ\text{C}$ / 10 Sec Max	225Min / 60 Sec Max
Non Lead Free	$240 \pm 5^\circ\text{C}$ / 10 Sec Max	200Min / 40 Sec Max

■ RELIABILITY SPECIFICATION

1. ENVIRONMENTAL PERFORMANCE

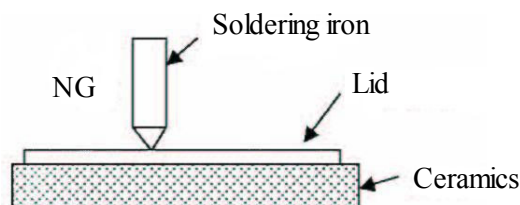
ITEM	CONDITION										
1. DRY HEAT(AGING)	STORED AT $85\pm 2^{\circ}\text{C}$ FOR $500\pm 12\text{H}$. THEN $25\pm 2^{\circ}\text{C}$ OVER 2H BEFORE TESTING.										
2. COLD	STORED AT $-40\pm 2^{\circ}\text{C}$ FOR $500\pm 12\text{H}$. THEN $25\pm 2^{\circ}\text{C}$ OVER 2H BEFORE TESTING.										
3. DAMP HEAT	STORED AT $60\pm 2^{\circ}\text{C}$ AND HUMIDITY 90~95% FOR $500\pm 12\text{H}$. THEN $25\pm 2^{\circ}\text{C}$ OVER 2H BEFORE TESTING.										
4. TEMPERATURE CYCLE	THE CRYSTAL UNIT SHALL BE SUBJECTED TO 100 SUCCESSIVE CHANGE OF TEMPERATURE CYCLES, THEN $25\pm 2^{\circ}\text{C}$ OVER 2H BEFORE TESTING, EACH CYCLE AS BELLOW : <table border="1"> <thead> <tr> <th>TEMPERATURE</th><th>DURATION</th></tr> </thead> <tbody> <tr> <td>1. $-40+0/-6^{\circ}\text{C}$</td><td>30$\pm$3 MINUTES</td></tr> <tr> <td>2. $25^{\circ}\text{C}\pm 2^{\circ}\text{C}$</td><td>2~3 MINUTES</td></tr> <tr> <td>3. $85+4/-0^{\circ}\text{C}$</td><td>30$\pm$3 MINUTES</td></tr> <tr> <td>4. $25^{\circ}\text{C}\pm 2^{\circ}\text{C}$</td><td>2~3 MINUTES</td></tr> </tbody> </table>	TEMPERATURE	DURATION	1. $-40+0/-6^{\circ}\text{C}$	30 $\pm$ 3 MINUTES	2. $25^{\circ}\text{C}\pm 2^{\circ}\text{C}$	2~3 MINUTES	3. $85+4/-0^{\circ}\text{C}$	30 $\pm$ 3 MINUTES	4. $25^{\circ}\text{C}\pm 2^{\circ}\text{C}$	2~3 MINUTES
TEMPERATURE	DURATION										
1. $-40+0/-6^{\circ}\text{C}$	30 $\pm$ 3 MINUTES										
2. $25^{\circ}\text{C}\pm 2^{\circ}\text{C}$	2~3 MINUTES										
3. $85+4/-0^{\circ}\text{C}$	30 $\pm$ 3 MINUTES										
4. $25^{\circ}\text{C}\pm 2^{\circ}\text{C}$	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) : $1.5\text{mm}\pm 15\%$, SWEEP TIME : 2~3MIN, 3 DIRECTION(X, Y, Z) EACH 2H.
8. SEALING	TAKE MEASUREMENTS WITH A HELIUM LEAKAGE DETECTOR. SPEC... $2.1 \times 10^{-9} \text{ Pa} \cdot \text{m}^3/\text{s}$ ($2.1 \times 10^{-8} \text{ mbar} \cdot \text{l/s}$) MAX.

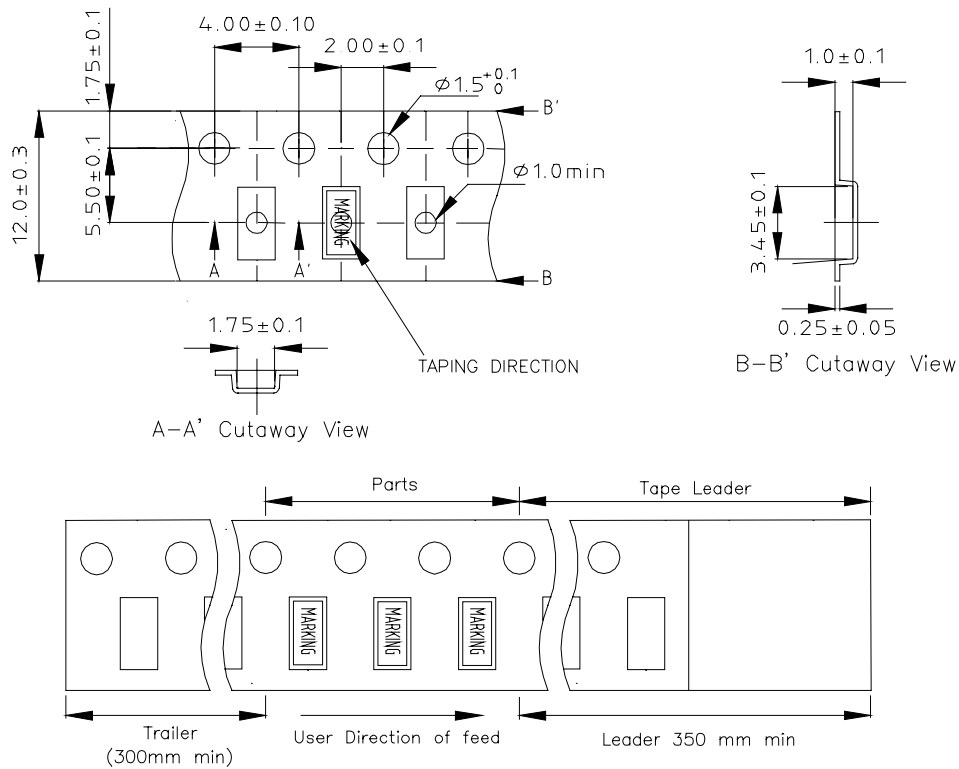
(Remark)

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

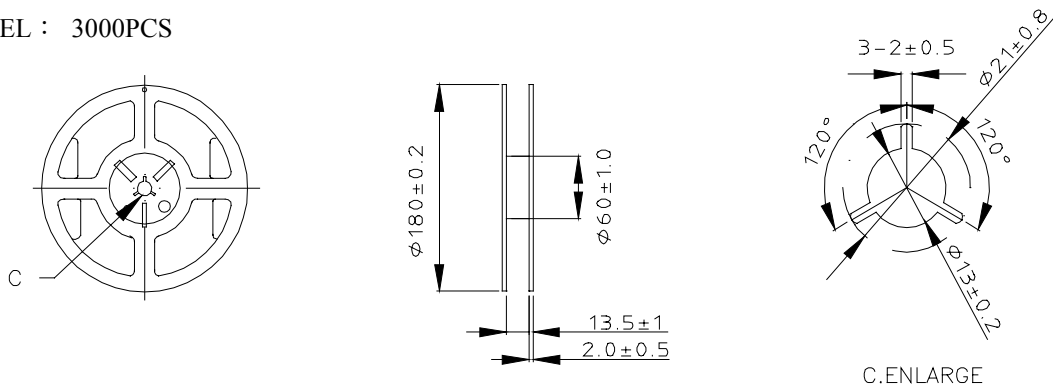


PACKING

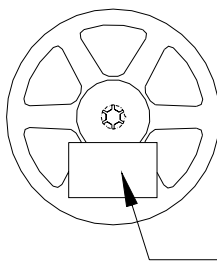
1. CARRIER TYPE



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 :	