

CRYSTAL SPECIFICATION



Customer : AKIZUKI DENSHI TSUSHO CO., LTD.
Customer P/N :
Agent :
Agent Code :
SIWARD P/N : XTL241300-B43-252

Customer Approval :

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SIWARD CRYSTAL TECHNOLOGY CO., LTD.

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DATE : 2010/11/24

Approved By : *Cat*

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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	2008/11/12	Sally	Tom

CRYSTAL SPECIFICATION

- 1. Description : Quartz Crystal
- 2. Nominal Frequency : 9.216000 MHz
- 3. Center Frequency : 9.216000 MHz
- 4. Dimension & Drawing No. : LP-3.5S.2S ; SXD-00201
- 5. Oscillation Mode : Fundamental
- 6. Cutting Mode : AT cut
- 7. Packing Style : TP-068
- 8. Measurement Instrument : S&A 250B(Measured FL)
- 9. Electrical Characteristics :

[1] Operating Conditions :

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Operating Temperature Range	T _{opt}	-10		60	°C	
Storage Temperature Range	T _{stg}	-40		90	°C	
Load Capacitance	CL		30		pF	
Drive Level	DL			300	μW	

[2] Frequency Stability :

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Tolerance	dF/F _o	-30		30	ppm	Refer to Center Frequency @25±3°C
Stability Over Temperature	dF/F ₂₅	-30		30	ppm	Refer to Operating Temperature
Aging	dF/F ₂₅	-5		5	ppm	Per Year

dF/F_o: 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			60	Ω	@Series
Shunt Capacitance	Co			5	pF	
Insulation Resistance	IR	500			M Ω	@DC 100 Volt

10. Marking : Laser or Ink

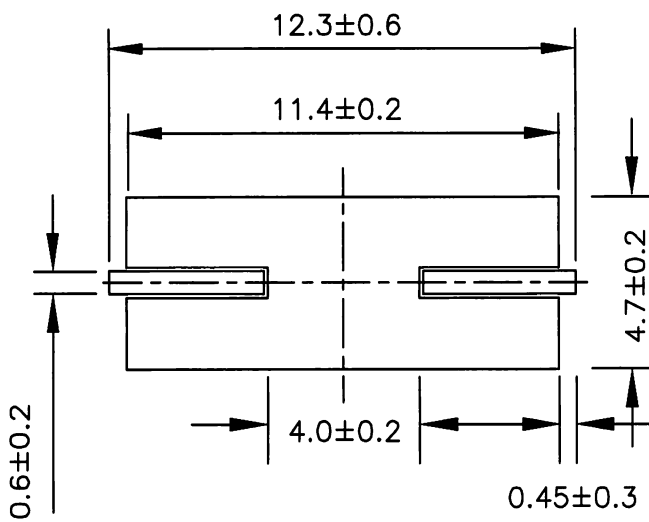
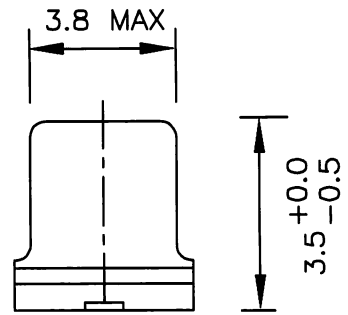
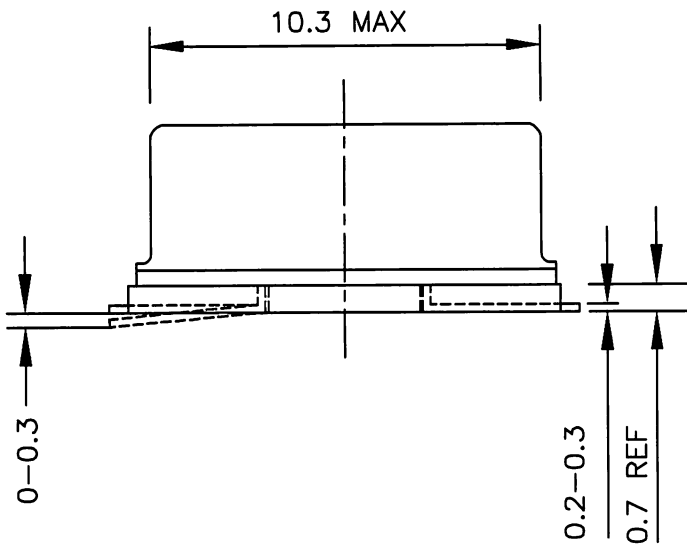
* YEAR -> 5 (2005) MONTH -> A
 MONTH : 1 2 3 4 5 6 7 8 9 10 11 12
 CODE : A B C D E F G H J K L M

TOP VIEW:

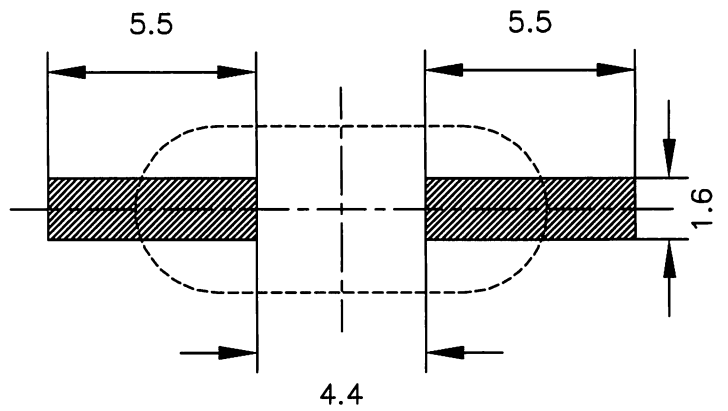
S9.216 5A

11. Remark :

*Lead Free, RoHS compliant

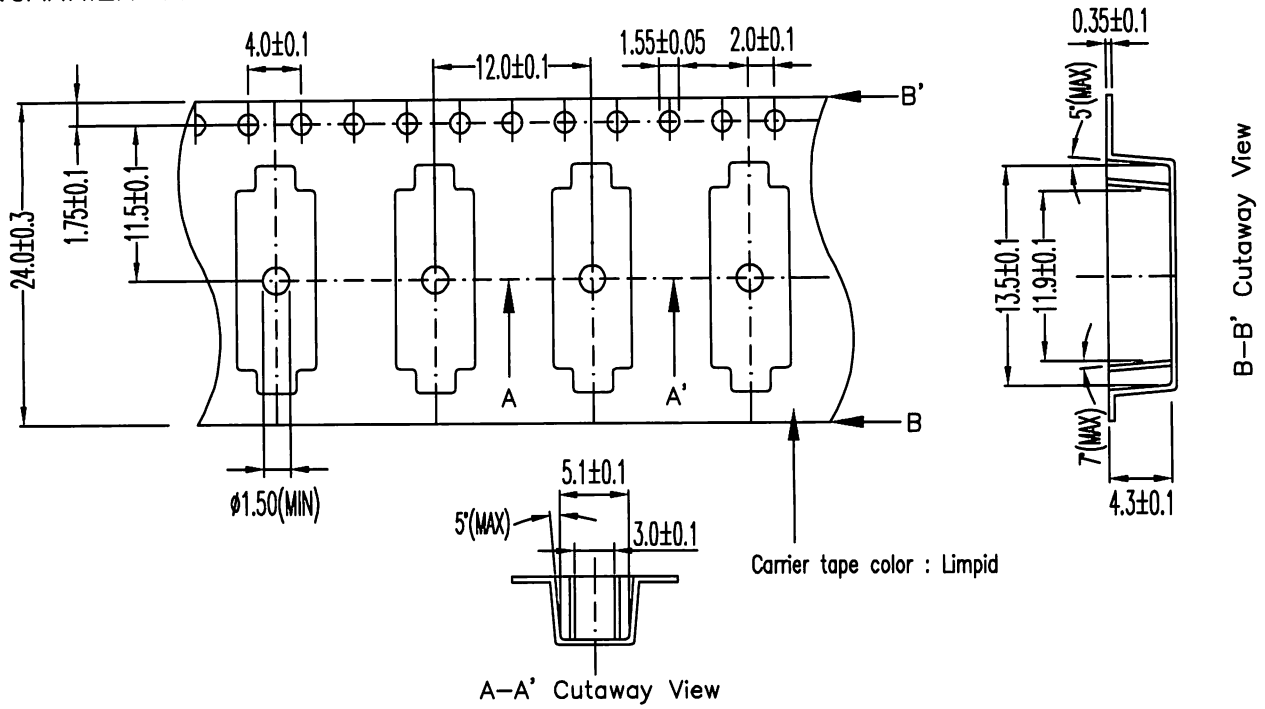


LAND PATTERN (REFERENCE)

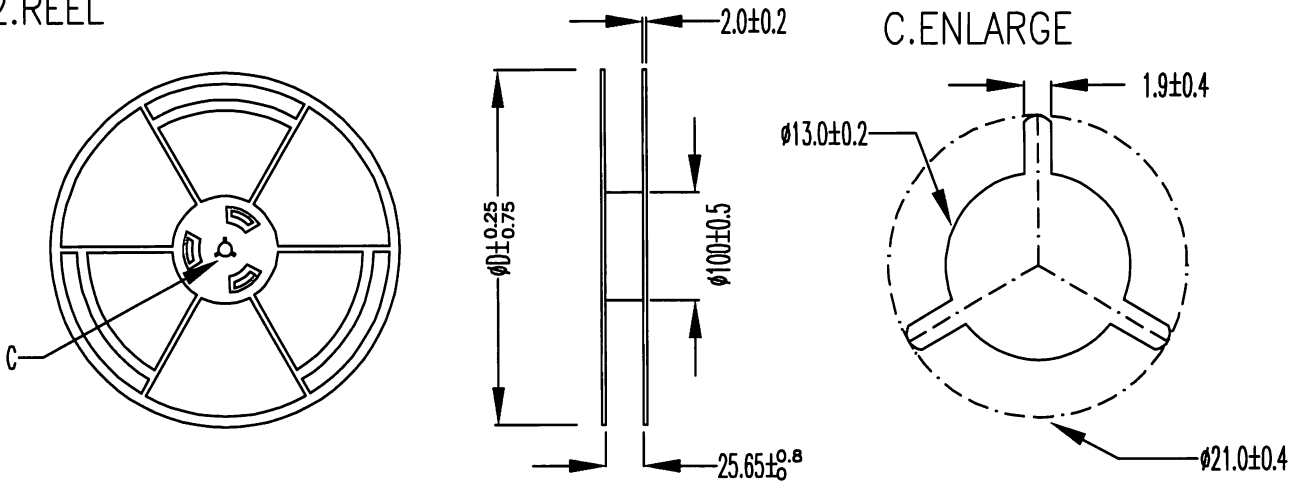


			DRAWING NAME	LP-3.5S.2S(SMD) (XTL24)		
5	MODIFY HEIGHT $3.5^{+0.0}_{-0.3} \rightarrow 3.5^{+0.0}_{-0.5}$	06.01.24	DRAWING NO.	SXD-00201		
4	MODIFY LEAD (101A0410-013)	04.10.19	SCALE		UNIT	mm
NO.	MODIFY CONTENTS	DATE	APPROVE	<i>Casta</i>	DESIGNER	<i>Jane</i>

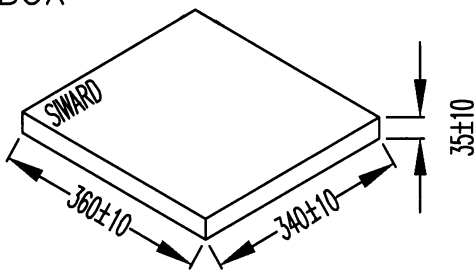
1. CARRIER TYPE



2. REEL

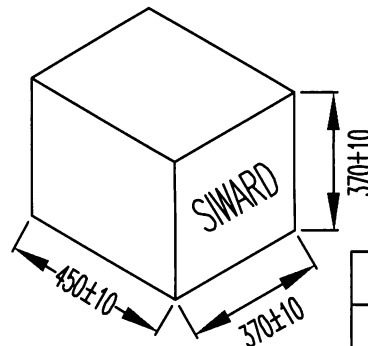


3. BOX



BOX/1000PCS

4. CARTON

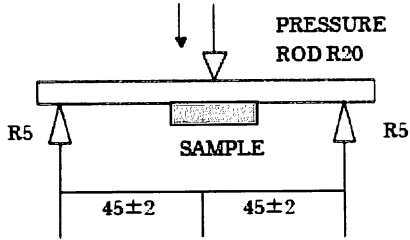
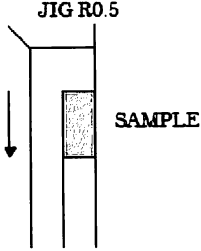
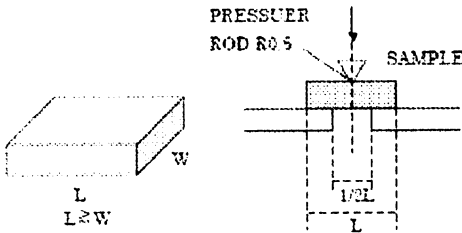


CARTON/12BOX

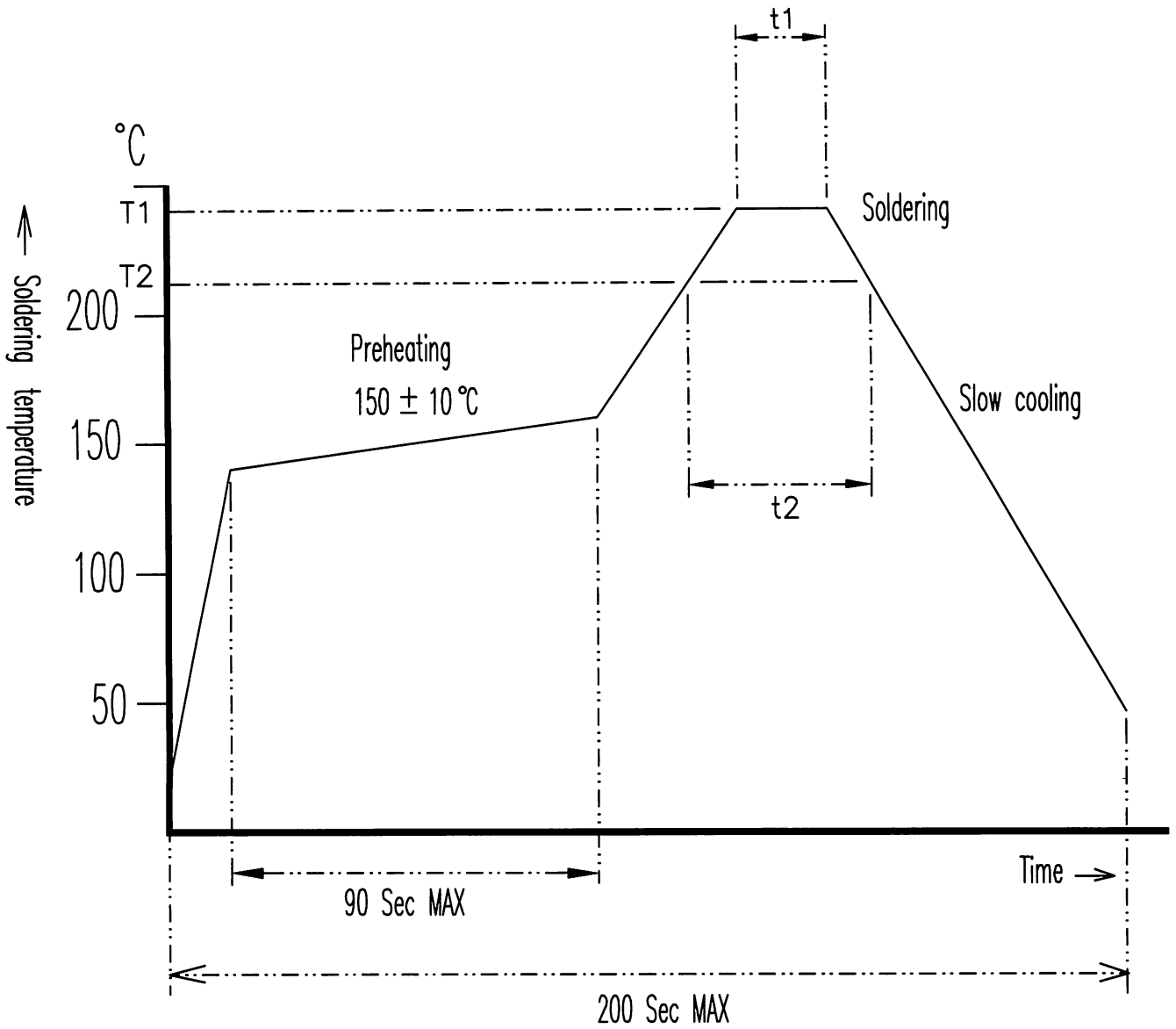
ØD	MATERIAL
300	PAPIER-MACHE
330	PLASTICS

6	ADD CARRIER TAPE COLOR : LIMPID	'08.04.17	DRAWING NAME	LP REEL PACKING	
5	MODIFY CARRIER TYPE (ORIGINAL 3.0 → 3.0 ± 0.1)	'06.03.09	DRAWING NO.	TP-068	
1	NEW EDITION	'00.08.24	SCALE	UNIT	mm
NO.	MODIFY CONTENTS	DATE	APPROVE	DESIGNER	
			<i>Steve</i>	<i>Oliver</i>	

X'TAL	RELIABILITY SPECIFICATION											
REFER TO	JIS C 6701											
APPLICATION	SMD TYPE											
ENVIRONMENTAL PERFORMANCE												
ITEM	CONDITION	SPECIFICATIONS										
1. DRY HEAT(AGING)	STORED AT 85±2°C FOR 720±12H. THEN 25±2°C OVER 2H BEFORE TESTING.	A										
2. COLD	STORED AT -40±2°C FOR 500±12H. THEN 25±2°C OVER 2H BEFORE TESTING.	A										
3. DAMP HEAT	STORED AT 60±2°C AND HUMIDITY 90~95% FOR 500±12 H. THEN 25±2°C OVER 2H BEFORE TESTING.	A,B										
4. TEMPERATURE CYCLE	<p>THE CRYSTAL UNIT SHALL BE SUBJECTED TO 100 SUCCESSIVE CHANGE OF TEMPERATURE CYCLES, THEN 25 ±2C OVER 2 H BEFORE TESTING, EACH CYCLE AS BELLOW :</p> <table border="1" data-bbox="357 954 1081 1152"> <thead> <tr> <th data-bbox="357 954 780 988">TEMPERATURE</th> <th data-bbox="780 954 1107 988">DURATION</th> </tr> </thead> <tbody> <tr> <td data-bbox="357 988 780 1022">1. -40+0/-6°C</td> <td data-bbox="780 988 1107 1022">30±3 MINUTES</td> </tr> <tr> <td data-bbox="357 1022 780 1056">2. 25°C±2°C</td> <td data-bbox="780 1022 1107 1056">2~3 MINUTES</td> </tr> <tr> <td data-bbox="357 1056 780 1090">3. 85+4/-0°C</td> <td data-bbox="780 1056 1107 1090">30 ±3 MINUTES</td> </tr> <tr> <td data-bbox="357 1090 780 1124">4. 25°C±2°C</td> <td data-bbox="780 1090 1107 1124">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	A
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2. 25°C±2°C	2~3 MINUTES											
3. 85+4/-0°C	30 ±3 MINUTES											
4. 25°C±2°C	2~3 MINUTES											
MECHANICAL PERFORMANCE												
ITEM	CONDITIONS	SPECIFICATIONS										
5. SOLDERABILITY	THE LEAD IS IMMERSSED IN A 260±5°C SOLDER BATH WITHIN 2±0.6 SECONDS.	A NEW UNIFORM COATING OF SOLDER SHALL COVER A MINIMUM 95% OF THE SURFACE										
6. RESISTANCE TO SOLDERING HEAT	REFLOW CHART AS ATTACH SHEET. TWICE PASS.	A										
7. FREE FALL	FREE DROPPING FROM 75 cm HEIGHT 3 TIMES ON A HARD WOODEN BOARD.	A										
8. VIBRATION	FREQUENCY : 10~55Hz, AMPLITUDE (TOTAL EXCURSION): 1.5mm±15%, SWEEP TIME : 1MIN, 3 DIRECTION (X, Y, Z) EACH 2 H.	A										
9. SEALING	MASS-SPECTROMETER-TYPE LEAK DETECTOR SHALL BE USED TO MEASURE THE LEAKAGE RATE OF GAS THROUGH ANY FAULTY SEAL.	C										

X'TAL	RELIABILITY SPECIFICATION	
REFER TO	JIS C 6701	
APPLICATION	SMD TYPE	
MECHANICAL PERFORMANCE		
ITEM	CONDITIONS	SPECIFICATIONS
10. TERMINAL STRENGTH	<p>SHALL BE PRESSURIZED AT A SPEED OF APPROX.0.5mm/sec IN THE DIRECTION INDICATED BY THE ARROW UNTIL THE BENDING WIDTH REACHES 3mm AND HELD FOR 5 SECONDS.</p> 	A
11. STICKING TENDENCY	<p>A R0.5 JIG SHALL BE USED TO APPLY A 10N DEAD LOAD IN THE DIRECTION INDICATED BY THE ARROW TO THE ELEMENT AND RETAIN IT FOR 10 SECONDS.</p> 	A
12. ELEMENT ASSEMBLY STRENGTH	<p>A R0.5 PRESSURIZED BAR SHALL BE USED TO APPLY A 10N LOAD IN THE CENTER OF ELEMENT AND RETAIN IT FOR 10 SECONDS.</p> 	

X'TAL	RELIABILITY SPECIFICATION	
REFER TO	JIS C 6701	
APPLICATION	SMD TYPE	
SPECIFICATIONS		
SYMBOL	STANDARD	NOTE
A	1. FREQUENCY CHANGE PERMITTED. $\Delta F \leq \pm 5 \text{ ppm}$. 2. EQUIVALENT SERIES RESISTANCE CHANGE PERMITTED. $\Delta CI \leq \pm 5.0 \Omega$ or $\pm 20\%$ WHICHEVER IS THE LARGE.	
B	INSULATION RESISTANCE 500M Ω MIN.	
C	LEAK RATE $2.1 \times 10^{-9} \text{ Pa} \cdot \text{m}^3/\text{s}$ ($2.1 \times 10^{-8} \text{ mbar} \cdot \text{l/s}$) MAX.	



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

5	MODIFY DRAWING NAME	'07.07.06	DRAWING NAME	QUARTZ DEVICE SMD REFLOW CHART
4	ADD 225 °C Min/60 Sec Max	'06.06.13	DRAWING NO.	FLOW-004
1	NEW ISSUANCE	'99.12.10	SCALE	UNIT
NO.	MODIFY CONTENTS	DATE	APPROVE	DESIGNER
			<i>Cat</i>	<i>Olive</i>