Accurate Kinetic Energy

APPROVAL SHEET

Customer Name	:	
Customer P/N	:	
Frequency	: 11.059200	MHz
AKER Approved P/N	: 49SN-011059-FX16X10	
AKER MPN	: 49SN-011059-FX16X10	
REVISION	: A0	
ISSUED DATE	: 2019/7/16	

APPROVED	CHECKED	PREPARED
Earnest		Kiki
APPROVED BY CUSTOMER		

AKER TECHNOLOGY CO., LTD.

ADDRESS : No.11-3, Jianguo Rd., Tanzi Dist., Taichung City 427, Taiwan

TEL：886-4-25335978 FAX ： 886-4-25336011

Web: www.aker.com.tw

RoHS compliant

Customer P/N			
AKER Approved P/N	49SN-011059-FX16X10		
APPROVED	Earnest	SHEET	1 OF 5
PREPARED	Kiku	REV.	A0

Revison	Date	Reviser	Revised contents
A0	2019/7/16	Kiku	Initial Released

*Please kindly be noted that **AKER DO NOT** guarantee parts quality which involves human security application.*

HC-49US CRYSTAL SPECIFICATION

1 . ELECTRICAL CHARACTERISTICS

(1) Standard atmospheric conditions

Unless otherwise specified , the standard range of atmospheric conditions for making measurement and tests are as follow :

Ambient temperature : 25±5°C

Relative humidity : 40%~70%

If there is any doubt about the results , measurement shall be made within the following limits :

Ambient temperature : 25±3°C

Relative humidity : 40%~70%

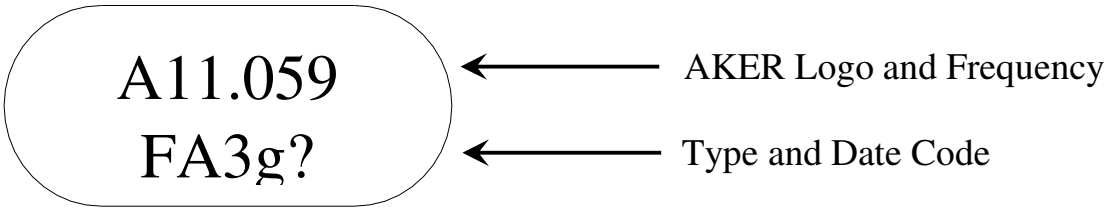
(2) Measurement Equipment : SAUNDERS 350A (Measured FL)

(3) Cutting Model : AT CUT

(4) Oscillation Model : Fundamental

Parameters	Symbol	Electrical Specification				Notes
		Min.	Typ.	Max.	Unit	
Nominal Frequency	FL		11.059200		MHz	
Load Capacitance	CL		16		pF	
Frequency Tolerance		-30	~	30	ppm	At 25°C ± 3°C
Frequency Stability		-30	~	30	ppm	Related to 25 °C
Drive Level	DL			100	uW	
Operating Temperature Range		-20	~	70	°C	
Storage Temperature Range		-55	~	125	°C	
Effective Series Resistance	RR			60	Ω	
Shunt Capacitance	C0			7	pF	
Motional Capacitance	C1		N/A		fF	
Ratio Of Capacitance	r		N/A			C0/C1
Aging Rate		-3	~	3	ppm	First Year
Insulation Resistance		500			MOhms	At DC 100V

2 . MARKING



Type and Date Code

F	A	3	g	?
Oscillation Mode Code	Load Capacitance Code	Frequency Tolerance Code	Date Code	Production Line Code

Oscillation Mode Code

Code	Oscillation Mode
F	AT Cut / Fundamental
T	AT Cut / 3rd Overtone
B	BT Cut / Fundamental

Frquency Tolerance Code

Code	Tolerance	Code	Tolerance
1	±20 ppm	6	±50 ppm
2	±25 ppm	9	±10 ppm
3	±30 ppm	0	±100 ppm
5	±15 ppm		

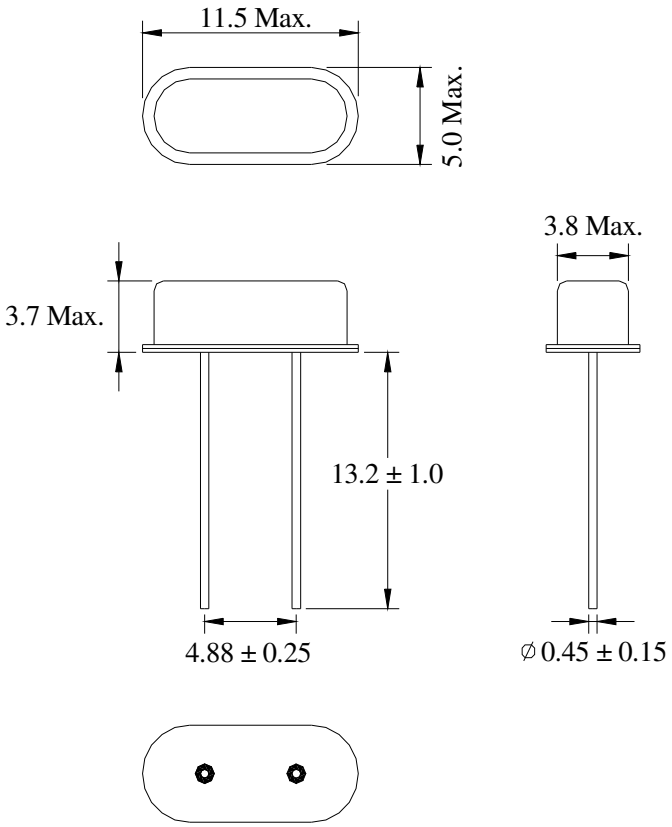
Load Capacitance Code

Code	CL	Code	CL
S	Series	P	4
A	16	Q	39
B	20	R	12.5
C	30	T	8
D	18	U	33
E	32	V	7
F	12	W	6
G	22	X	17
H	27	Y	8.5
I	10	Z	19.5
J	14	a	21.5
K	15	b	24
L	25	c	35
M	9	d	37
N	13		

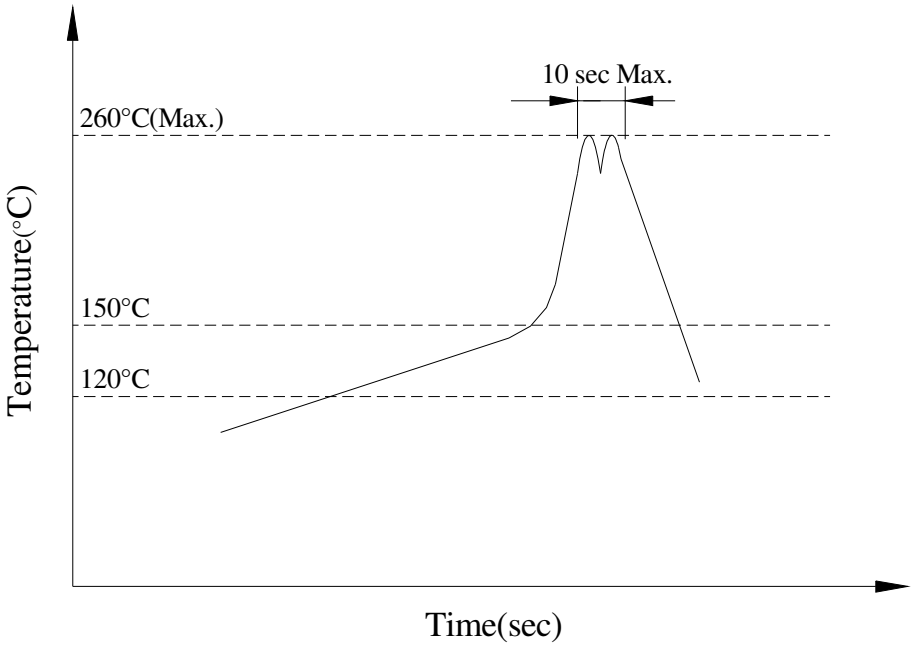
Date Code

Year / Month	2009	2010	2011	2012
	2013	2014	2015	2016
	2017	2018	2019	2020
	2021	2022	2023	2024
JAN	A	N	a	n
FEB	B	P	b	p
MAR	C	Q	c	q
APR	D	R	d	r
MAY	E	S	e	s
JUN	F	T	f	t
JUL	G	U	g	u
AUG	H	V	h	v
SEP	J	W	j	w
OCT	K	X	k	x
NOV	L	Y	l	y
DEC	M	Z	m	z

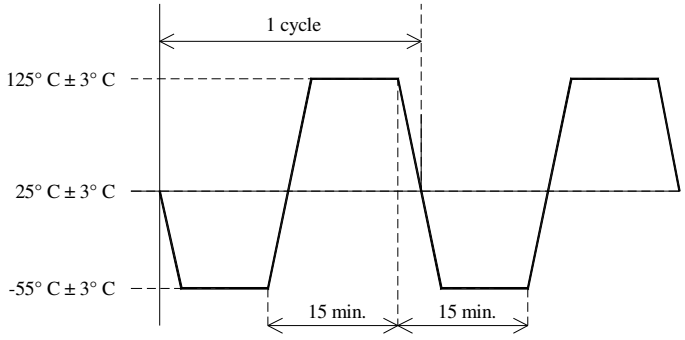
3 . DIMENSIONS : (Unit : mm)



4 . WAVE SOLDERING PROFILE



5 . RELIABILITY SPECIFICATION

No	Test Item	Test Methods	Performance
1	Drop Test	Free drop from 50 cm height onto a hard wooden board for 3 times	To satisfy the electrical characteristics
2	Mechanical Shock	1000 G, 0.5 msec, 3 times for each direction (X, Y, Z)	
3	Vibration	Frequency range : 20 ~ 2000 Hz Amplitude : 1.52 mm / 20G Sweep time : 20 minutes Test time for each direction : 2 Hours (Total 6 Hours)	
4	Gross Leak	Alcohol, Test Pressure : > -40cm-Hg	No bubbles stream
5	Fine Leak	5 kgf /cm^2 Helium bombing for 2 Hours	$\leq 10^{-8}$atm.cc./sec
6	Solderability	Temperature : 260℃ ± 5℃ Immersion time : 5 ± 1 seconds	90% min. coverage of new solder
7	Resistance To Soldering Heat	Solder pot test Test temperature : 260℃ ± 5℃ Test time : 10 ± 1 seconds	To satisfy the electrical characteristics
8	High Temperature Storage	+ 125 ℃ ± 3 ℃ for 500 ± 12 Hours	
9	Low Temperature Storage	- 55 ℃ ± 3 ℃ for 500 ± 12 Hours	
10	Temperature Cycle	Total 100 cycles of the following temperature cycle 	
11	High Temperature And Humidity	85℃ ± 5℃, RH 85% ± 5%, 500 ± 12 Hours	