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Specification Sheet For Approval		Series No: SC20240314A01
		Date : 3/14/2024
<input type="checkbox"/> Quartz Crystal	<input checked="" type="checkbox"/> Quartz Crystal Oscillator	<input type="checkbox"/> OCXO <input type="checkbox"/> VCXO
<input type="checkbox"/> M.C.F	<input type="checkbox"/> TCXO / VCTCXO	<input type="checkbox"/> Others _____

Customer	友晶創新股份有限公司
Customer P/N	
Product Type	Differential LVDS Crystal Clock Oscillator --- HDQF3261 ( 3.2 * 2.5 * 1.0 mm )
Nominal Frequency	150.000 MHz
Mercury P/N	FH3HDQF3261-D-150.000

Customer
Approved By
Customer Engineer :
Date : _____
Customer QC :
Date : _____

Vender
Confirmed By
Mercury Engineer :
<i>Kim Hsu</i>
Date : 3/14/2024
Mercury QC :
<i>Andy Tsai</i>
Date : 3/14/2024

Specification Sheet Contents :

- ☒ Specifications Sheet
- ☒ Package Dimension
- ☒ Crystal / Oscillator Introduction
- ☒ MSL level1

- ☐ FQC Test Report
- ☐ Temperature Stability Test Report
- ☒ Test Data Of Reliability
- ☒ Lead Free Approved

Mercury Electronic Industrial Co., Ltd.

*Steve*

Authorized Signature



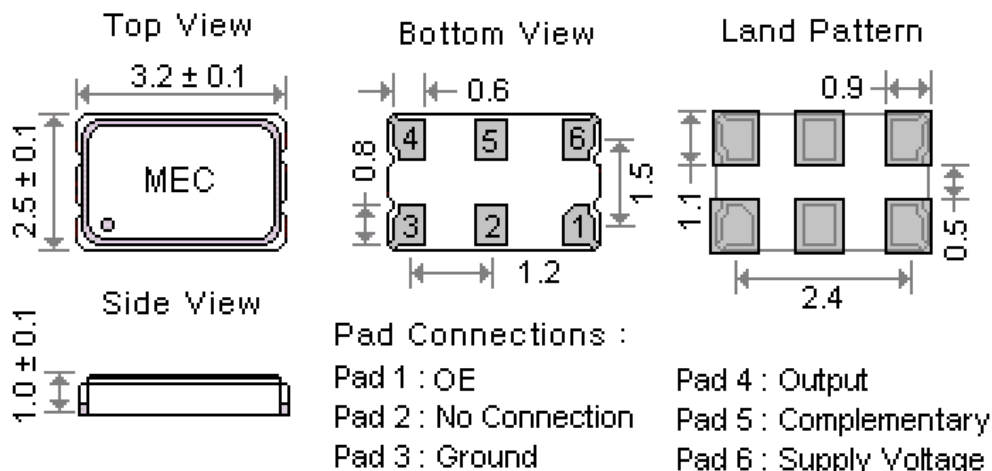
## Electrical Specification

Series No. : SC20240314A01

Date : 3/14/2024

	Parameters	SYM.	Electrical Spec.				Notes			
			Min.	Typical	Max.	Unit				
1	Mercury Part No.		-				FH3HDQF3261-D-150.000			
2	Nominal Frequency	FL	150.000000			MHz				
3	Holder Type		-				3.2 * 2.5 * 1.0 mm , 6pads , SMD Type			
4	Output Waveform		-				LVDS Differential output			
5	Input Voltage	V <sub>DD</sub>		3.3		V	D.C ± 10 %			
6	Output Voltage High " 1 "	Voh		1.4	1.6	V	RL = 100 ohms			
7	Output Voltage Low " 0 "	VoL	0.9	1.1		V				
8	Output swing	V <sub>OPP</sub>	250		450	mV				
9	Frequency Stability	△f / fo	-25		25	ppm	Over Operating Temperature			
10	Current Consumption	I <sub>DD</sub>			30	mA				
	Current with output disabled	I <sub>op</sub>		16		mA				
11	Rise Time & Fall Time	Tr , Tf		0.2	0.4	nSec.	20% ↔ 80 % of waveform			
12	Duty Cycle	tw / t	45		55	%	at 50 % waveform			
13	Start -up Time	ST			10	mSec.				
14	Output Load	RL		100		Ω	between output and complimentary output			
15	Operating Temperature	T <sub>use</sub>	-40		85	°C				
16	Storage Temperature	T <sub>stg</sub>	-55		150	°C				
17	Aging	F <sub>aging</sub>	-2		2	ppm	first year			
18	RMS phase Jitter	J <sub>rms</sub>		0.8		pS	12 KHz to 20 MHz integrated			
19	Phase Noise (dBc / Hz) [ typical ]	Offset	10 Hz	100 Hz	1k Hz	10k Hz	100k Hz	1M Hz		
	For reference only	156.250 MHz	-55	-85	-109	-116	-118	-139		
20	OE Control on Pad 1	If V <sub>DD</sub> * 70% (min.) is applied : Output. Enable								
		Oscillation enable time : 200 nsec. (max.)								
		If V <sub>DD</sub> * 30% (max.) is applied : Output Disable								
		Oscillation disable time : 50 nsec. (max.)								

## Package Dimension ( Unit : mm )





### Marking

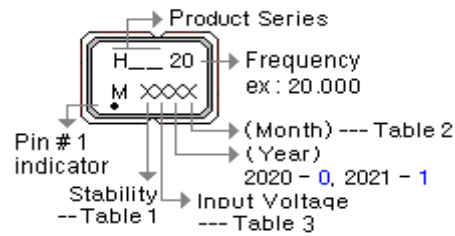


Table 1

-10°C ~ 70 °C	"A" ± 25ppm ; "B" ± 50ppm ; "C" ± 100ppm ; If non-standard please enter the desired stability after "C", for example "C10" : ± 10ppm
-40°C ~ 85 °C	"D" ± 25ppm ; "E" ± 50ppm ; "F" ± 100ppm ; If non-standard please enter the desired stability after "I", for example "I10" : ± 10ppm

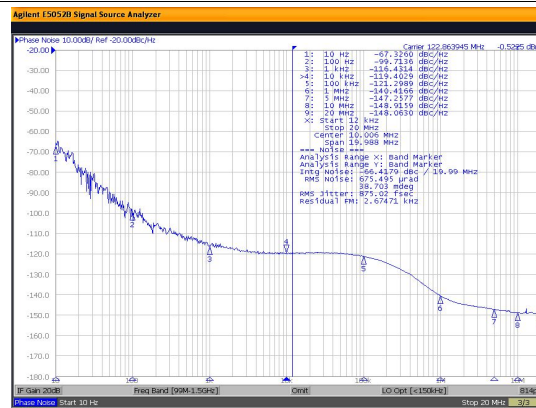
Table 2

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Code	A	B	C	D	E	F	G	H	I	J	K	L

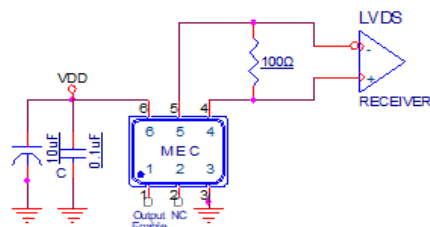
Table 3

Input Voltage	5.0 V	3.3 V	2.8 V	2.5 V	1.8 V	1.5 V	1.2 V	1.0 V
Enable / Disable	B	D	F	H	J	L	N	P

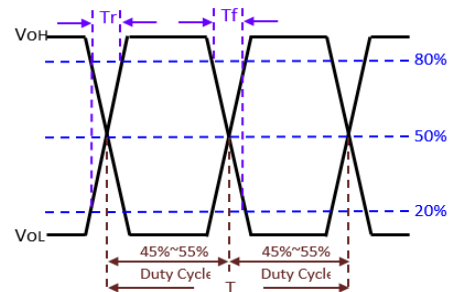
### Phase Noise / Jitter test report (For reference only)



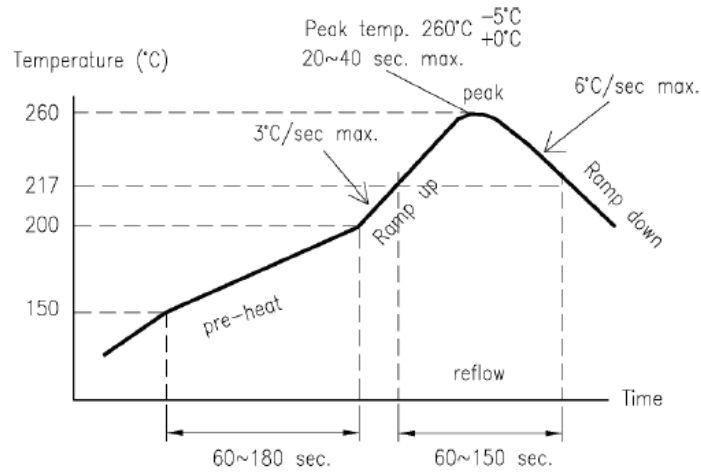
### LVDS Square Wave Test Circuit



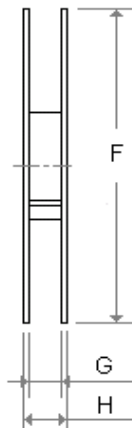
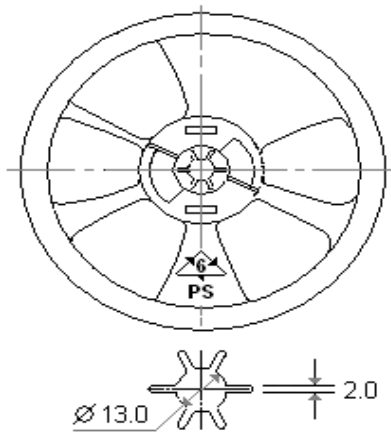
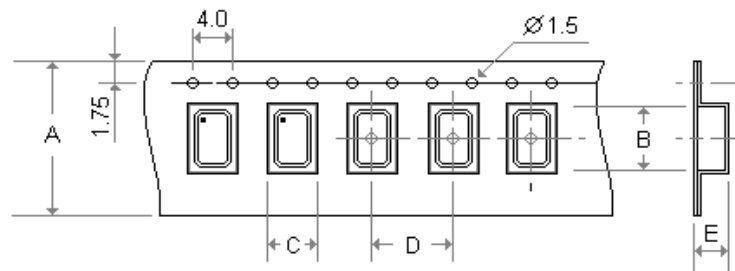
### LVDS Square Wave Output Waveform



### Recommended Temperature Profile For Reflow Process :



### Emboss Taping & Reel Specification :



Dimensions : ( Unit : mm )  $\pm 0.3\text{mm}$

A	B	C	D	E
8.0	3.4	2.7	4.0	1.4

F	G	H
180.0	9.0	12.0

Remark : 1. Standard reel quantity is 3000 pcs per reel.

2. 10 sprocket hold pitch cumulative tolerance is  $\pm 0.1\text{ mm}$ .

3. E measured from a place on the inside bottom of the pocket to the top surface of the carrier.



## Environmental Specification

### 1. Temperature Test

#### \*Temperature Cycling Test

Conditions:	Steps of cycle	(1)Extreme Cold Temp: $-55^{\circ}\text{C}$ ( $+0/-10^{\circ}\text{C}$ ) / $15\pm 3\text{min}$
		(2)Extreme Hot Temp: $+125^{\circ}\text{C}$ ( $+15/-0^{\circ}\text{C}$ ) / $15\pm 3\text{min}$
	Number of	10 cycles min
Results:	Frequency and wave form of tested products must remain within specifications.	

#### \*Thermal Shock Test

Conditions:	Temperature $-55(+0/-10)^{\circ}\text{C}$ to $125(+10/-0)^{\circ}\text{C}$	Duration of cycle 15 times(min)
	ExTotal Transfer Time < 10 seconds	
	Total Dwell time > 2minutes	
	Specified Temp reached in < 5 minutes	
Results:	Frequency and wave form of tested products must remain within specifications.	

#### \*Low Temperature Test

Conditions:	Temperature $-50^{\circ}\text{C} \pm 5^{\circ}\text{C}$	Duration of test 168hours(min)
Results:	Frequency and wave form of tested products must remain within specifications.	

### 2. Accelerated Life Test(Aging Biased)

Conditions:	Temperature $+85^{\circ}\text{C} \pm 5^{\circ}\text{C}$	Duration of test 168hours $\pm 6\text{hours}$
Results:	DC Power supply	
	Frequency and wave form of tested products must remain within specifications.	

### 3. Salt Spray Test

Conditions	Temperature $35^{\circ}\text{C}$	Duration of test 24 hours
	NaCl 5%	
Results:	There Should be no rust on surface of products	

### 4. Humidity Test

Conditions:	Temperature: $85^{\circ}\text{C} \pm 5^{\circ}\text{C}$	Relative humidity: $85\% \pm 5\%$	Duration of test: 168 hours(min)
Results:	Frequency and wave form of tested products must remain within specifications.		



Mechanical Specification Sheet		
1.Vibration Test		
Conditions:	Freq. range: 20~2000Hz Peak to Peak	
	amplitude:1.52mm Peak acceleration:20G(98m/s2)	
	3direction(X,Y,Z),each 20min, 4cycles	
Results:	Frequency and wave form of tested products must remain within specifications.	
2.Drop Test		
Conditions:	Method of drop	Free drop
	Dropping floor	Hard wood board
	Height	75 cm +1/-0cm
	Number of drops	3 times
Results:	Frequency and wave form of tested products must remain within specifications.	

Notice :

- 1 Mercury requires the copy of this specification returned with approved.
- 2 Any change to these specification have to be agreed by both parties and new revision of the specification will be issued .