



A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

CUSTOMER	_____
NOMINAL FREQUENCY	12.000000 MHz
PRODUCT TYPE	TYPE WT 3.2X2.5 TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR
SPEC. NO. (P/N)	WT31120001
CUSTOMER P/N	_____
ISSUE DATE	February 19, 2020
VERSION	A

APPROVED	PREPARED	QA
		

Diodes Incorporated

No.2, Ziqiang 5th Rd., Zhongli Industrial Park,
Zhongli Dist., Taoyuan City 32063, Taiwan (R.O.C.)
TEL: 886-3-451-8888
FAX: 886-3-461-3865
<https://www.diodes.com>

*Pb-free
*RoHS Compliant
*HF-Halogen Free
*REACH Compliant

TYPE WT 3.2X2.5 TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR

WT31120001

VER. A 19-Feb-20

VERSION HISTORY

[illegible]

TYPE WT 3.2X2.5 TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR

WT31120001

VER. A 19-Feb-20

ELECTRICAL SPECIFICATIONS

SRe Part Number : WT31120001

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	Fo	12.000000	MHz	
Operating Temperature Range	TR	-40 to +85	°C	
Storage Temperature Range		-40 to +85	°C	
Supply Voltage	V _{DD}	+3.3 ± 5%	V	
Frequency Stability vs. Temperature	FT	± 2.5	ppm	Max. reference to the mid-point between minimum and maximum frequency values over the specified Operating Temperature Range
Frequency Stability vs. Load		± 0.2	ppm	Max. ±5% load change, reference to the Nominal Frequency at 25°C
Frequency Stability vs. Voltage		± 0.2	ppm	Max. ±5% supply voltage change at typical load, reference to the Nominal Frequency at 25°C
Frequency Tolerance After Two Reflows		± 2	ppm	Max. Refer to nominal frequency
Aging		±1	ppm	Max, 1st year at 25°C
Logic Type	LT	CMOS		
Supply Current	I _{DD}	3	mA	Max.
Start Up Time		2	msec	Max.
Output Logic "0" Level	V _{OL}	20% V _{DD}	V	Max.
Output Logic "1" Level	V _{OH}	80% V _{DD}	V	Min.
Output Load		15	pF	
Duty Cycle	DC	45 / 55	%	Measured 50% V _{DD}
Rise / Fall Time	T _R /T _F	5	ns	Max. measured 10/90% of Waveform
Jitter, Phase	RMS	1	ps	Max. 12kHz ~ 5MHz Frequency Band
Jitter, Accumulated	RMS(1-σ)	6	ps	Max. 20,000 Consecutive Periods
Jitter, Peak to Peak	Pk-Pk	40	ps	Max. 100,000 Random Periods

※ This product doesn't include harmful substance that stipulated by SONY SS-00259 Level 1 and S-AT2-001 Level 1 standard. RoHS Compliant (Pb - Free).

Output Enable / Disable Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (Pin1), Output Enable	0.7V _{DD}			V	
Input Voltage (Pin1), Output Disable (low power standby)			0.3V _{DD}	V	Output is Hi-Z

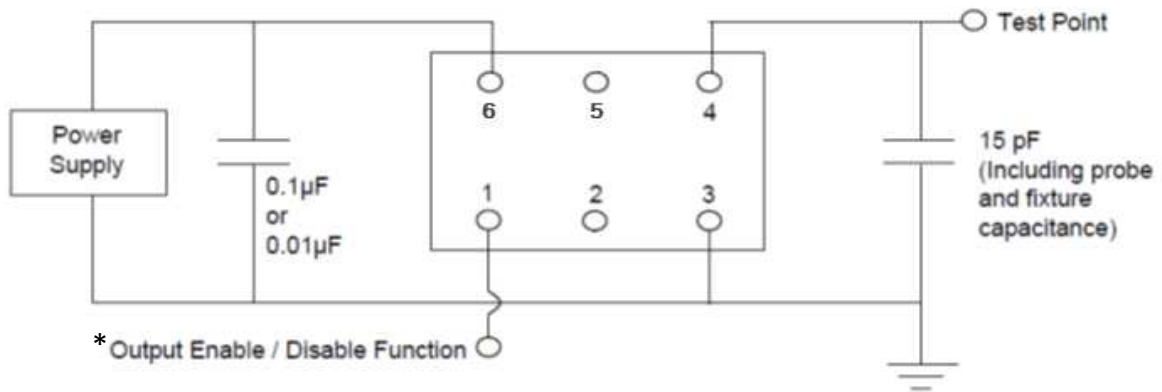


TYPE WT 3.2X2.5 TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR

WT31120001

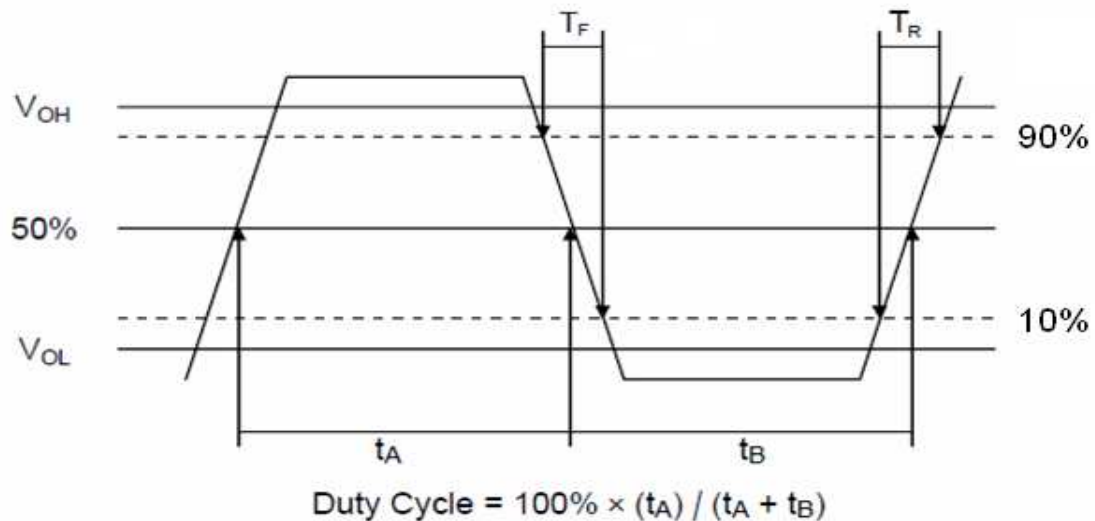
VER. A 19-Feb-20

TEST CIRCUIT



* Note: If Pin#1 not needs being controlled for Enable/Disable conditions, please let it open or connect to V_{DD} .

OUTPUT WAVEFORM



TYPE WT 3.2X2.5 TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR

WT31120001

VER. A

19-Feb-20

RELIABILITY SPECIFICATIONS

1. Initial

- 1.1 Physical Dimensions: Mil Std 883 M2016
- 1.2 Gross/Fine Leak: JESD22-A109, Mil Std 883 M1014
- 1.3 Electrical Characterization: Per Specification/Datasheet
- 1.4 Electrical Test: Per Specification/Datasheet

2. Mechanical

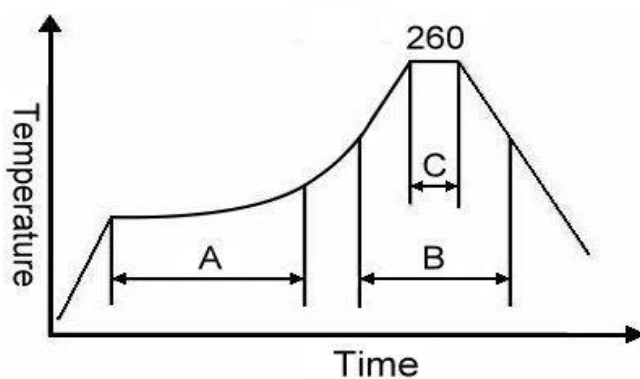
- 2.1 Mechanical Shock: JESD22-B104
- 2.2 Vibration Variable Frequency: JESD22-B103
- 2.3 Solderability: JESD22-B102-D

3.Environmental

- 3.1 Highly Accelerated Stress Testing: JESD22-A110/A118
- 3.2 Temp Cycle: JESD22-A104
- 3.3 Resistance to Solder Heat: J-STD-020C
- 3.4 Low Temperature Storage: JESD22-A108
- 3.5 High Temperature Storage Life / Bake: JESD22-A103
- 3.6 Temperature Bias and Operating Life: JESD22-A108
- 3.7 ESD Testing: JESD22-A114/A115/C101
- 3.8 Latch Up test: JESD78

SUGGESTED IR REFLOW PROFILE

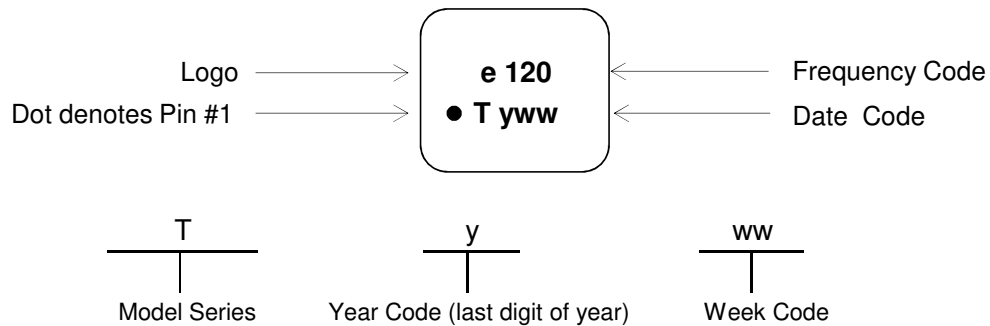
*As per IPC-JEDEC J-STD-020D



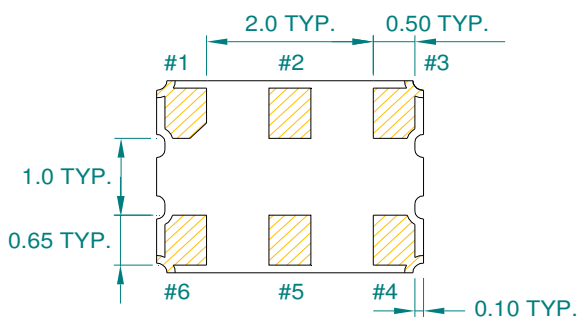
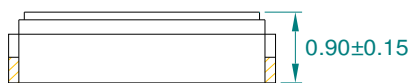
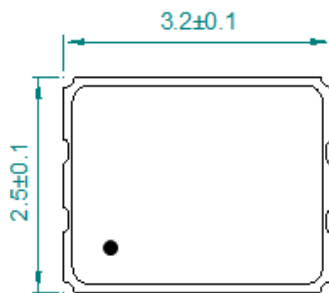
Note:

	Stage	Temperature	Time
A	Preheat	150~200°C	60~120 Sec
B	Primary Heat	217°C	60~150 Sec
C	Peak	260°C	10 Sec

MARKING

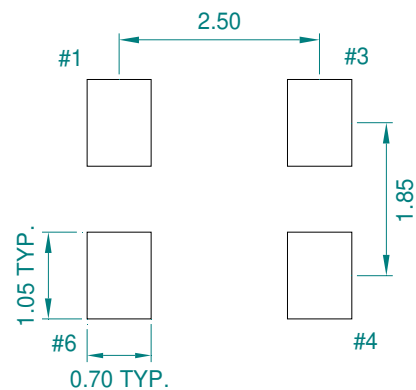


MECHANICAL DRAWINGS (Scale: None. Dimensions are in mm.)



(Bottom View)

Recommended Land Pattern*



*External high-frequency power decoupling is recommended.(see test circuit for minimum recommendation). To ensure optimal performance, do not route traces beneath the package.

Pin	Function
1	EN*
2	NC
3	GND
4	OUTPUT
5	NC
6	V _{DD}

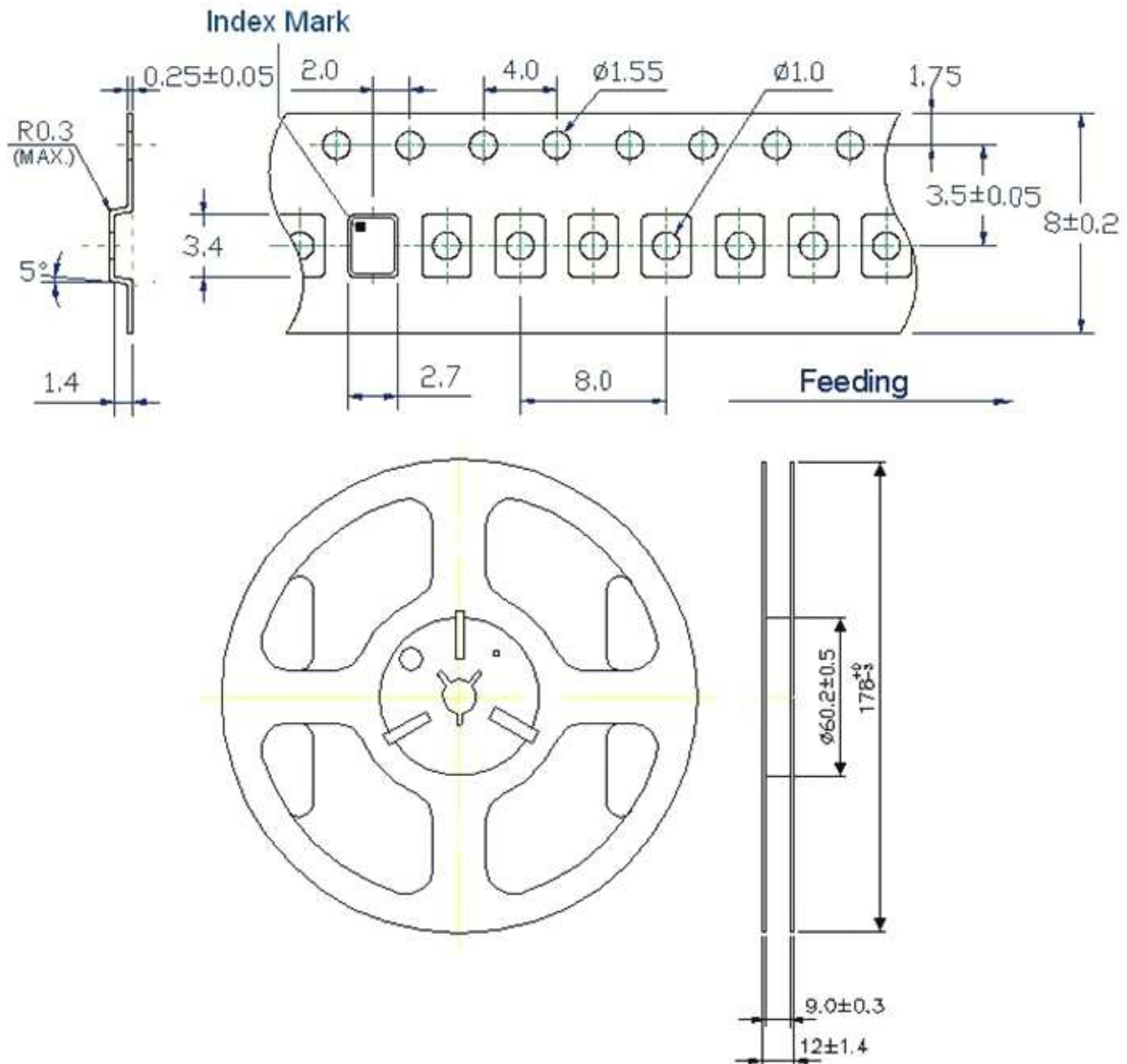
* Note: If Pin#1 not needs being controlled for Enable/Disable conditions, please let it open or connect to V_{DD}.

TYPE WT 3.2X2.5 TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR

WT31120001

VER. A 19-Feb-20

TAPE&REEL



1. 230mm minimum leader which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

TYPE WT 3.2X2.5 TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR

WT31120001

VER. A

19-Feb-20

PACKING

