A Product Line of Diodes Incorporated

SPECIFICATION FOR APPROVAL

CUSTOMER	
NOMINAL FREQUENCY	100.000000 MHz
PRODUCT TYPE	TYPE LD 5.0x3.2 SEAM SEALED CRYSTAL CLOCK OSCILLATOR
SPEC. NO. (P/N)	LDA000001
CUSTOMER P/N	
ISSUE DATE	March 6, 2019
VERSION	D

APPROVED	PREPARED	QA
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*Pb-free
*RoHS Compliant
*HF-Halogen Free
*REACH Compliant

VERSION HISTORY

Version No.	Version Date	Description	Notes
A	Jul.28,2010	Initial Release	
B	Aug.10,2010	Revised TR/TF unit from ps to ns.	
C	Apr.19,2011	Add Start up time: 10ms max & Updated Suggested IR Reflow Profile	
D	Mar.6,2019	Updated logo	

TYPE LD 5.0x3.2 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

LDA000001

VER. D 6-Mar-19

ELECTRICAL SPECIFICATIONS

SRe Part Number : LDA000001

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	Fo	100.000000	MHz	
Frequency Stability	FT	± 25	ppm	**See note
Operating Temperature Range	TR	-20 to +70	°C	
Supply Voltage	V_{CC}	+3.3 ± 10.0%	V	
Logic Type	LT	LVDS		
Supply Current, Output Enabled	I_{CC}/OE	80	mA	Max.
Supply Current, Output Disabled	I_{CC}/OD	30	uA	Max.
Duty Cycle (Symmetry)	DC/SY	45 / 55	%	Measured 50% of Waveform
Rise / Fall Time	T_R/T_F	1	ns	Max. measured 10/90% of Waveform
Output Voltage "0" Level	V_{OL}	1.10 / 0.9	V	Typ. / Min.
Output Voltage "1" Level	V_{OH}	1.43 / 1.6	V	Typ. / Max.
Output Load		100Ω & 5pF LVDS		
Jitter, Phase	RMS	1	ps	Max. 12KHz ~ 20MHz Frequency Band
Jitter, Accumulated	RMS(1-σ)	4	ps	Typ. 20,000 Consecutive Periods
Jitter, Peak to Peak	Pk-Pk	40	ps	Max. 100,000 Random Periods
Start Up Time		10	ms	Max.
Storage Temperature Range		-55 to +125	°C	

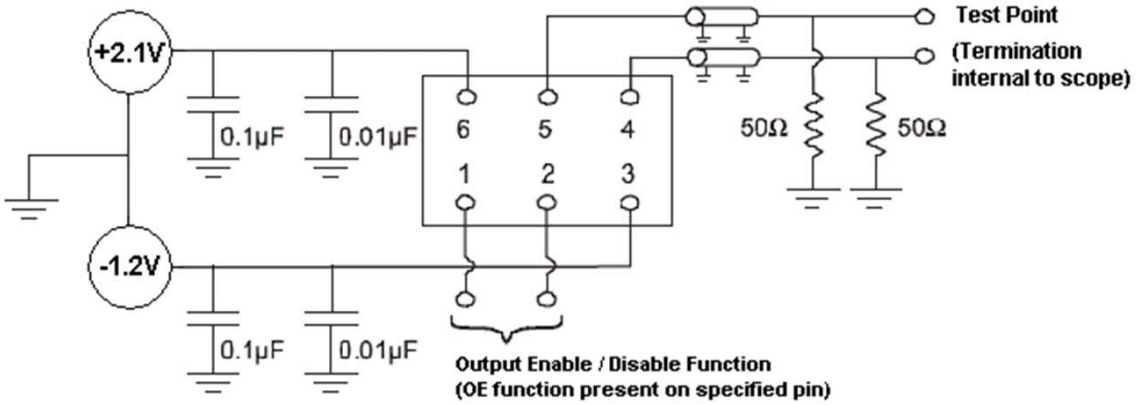
※ This product doesn't include harmful substance that stipulated by SONY SS-00259 Level 1 and S-AT2-001 Level 1 standard. RoHS Compliant (Pb - Free).

****Stability includes all combinations of Operating Temperature, Load changes, rated Input (Supply) Voltage changes, Initial Calibration Tolerance (25°C), Aging (5 years at 40°C Average Effective Ambient Temperature), Shock and Vibration.**

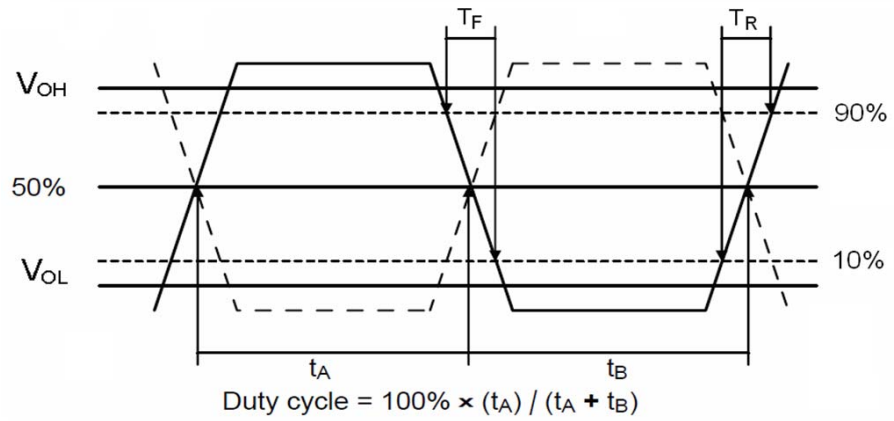
Output Enable / Disable Function

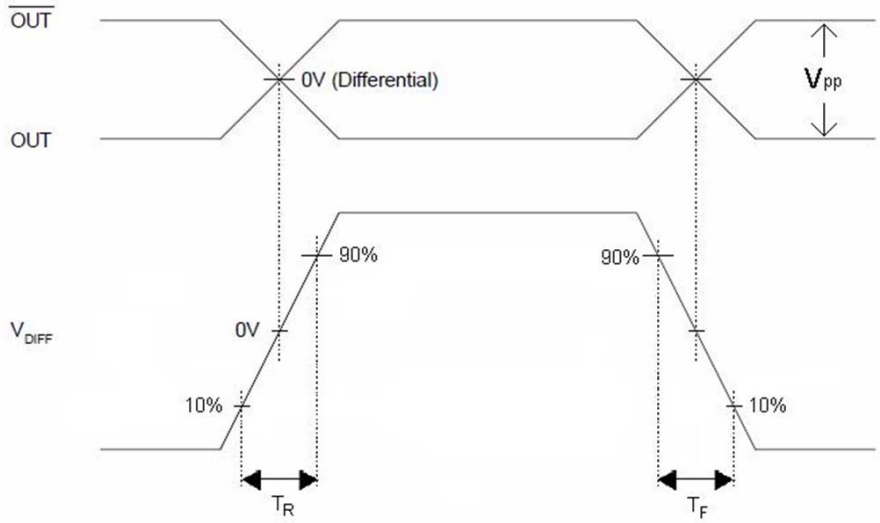
Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (Pin1), Output Enable	$0.7V_{CC}$			V	Or Open
Input Voltage (Pin1), Output Disable (low power standby)			$0.3V_{CC}$	V	Output is Hi-Z
Output Disable Delay			200	ns	
Output Enable Delay			2	ms	

TEST CIRCUIT



OUTPUT WAVEFORM





RELIABILITY SPECIFICATIONS

ENVIRONMENTAL:

a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A

b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004

c) VIBRATION: MIL-STD-883, Method 2007, Condition A

d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices (except 2 cycles max)

e) HAZARDOUS SUBSTANCE: Pb - free and RoHS/ Green Compliant.

MECHANICAL:

a) SHOCK: MIL-STD-883, Method 2002, Condition B

b) SOLDERABILITY: JESD22-B102-D Method 2 (Preconditioning E)

c) TERMINAL STRENGTH: MIL-STD-883, Method 2004, Test Condition D

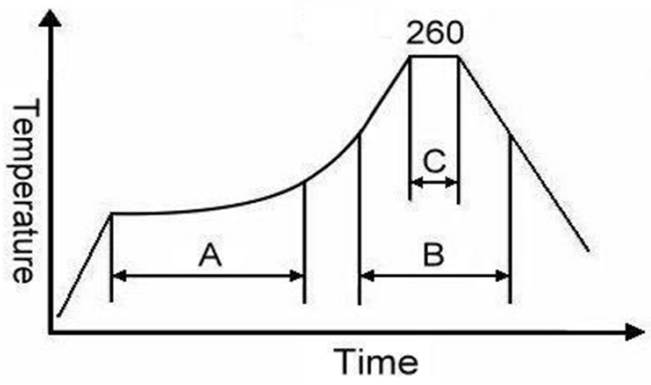
d) GROSS LEAK: MIL-STD-883, Method 1014, Condition C

e) FINE LEAK: MIL-STD-883, Method 1014, Condition A2, R1=2x10^{-8} atm cc/s

f) SOLVENT RESISTANCE: MIL-STD-202, Method 215

SUGGESTED IR REFLOW PROFILE

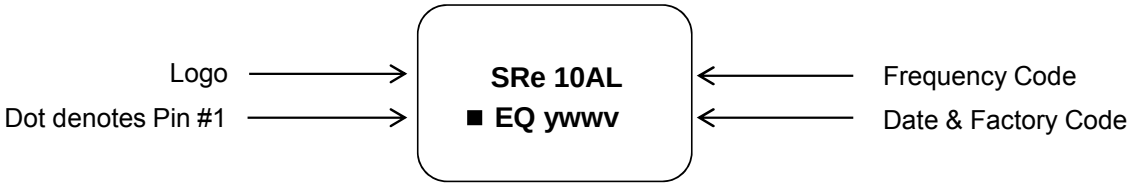
*As per IPC-JEDEC J-STD-020D



Note:

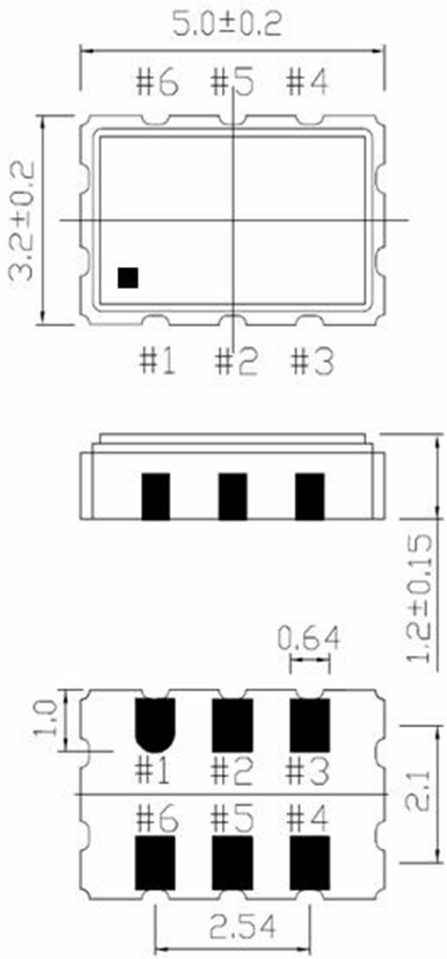
	Stage	Temperature	Time
A	Preheat	150~200°C	60~120 Sec
B	Primary Heat	217°C	60~150 Sec
C	Peak	260°C	10 Sec

MARKING

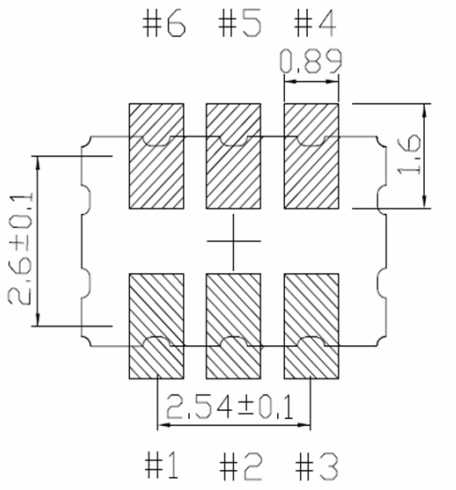


E	Q	y	ww	v
PIN #1 Connection	Model Series	Year Code (last digit of year)	Week Code	Factory Code

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



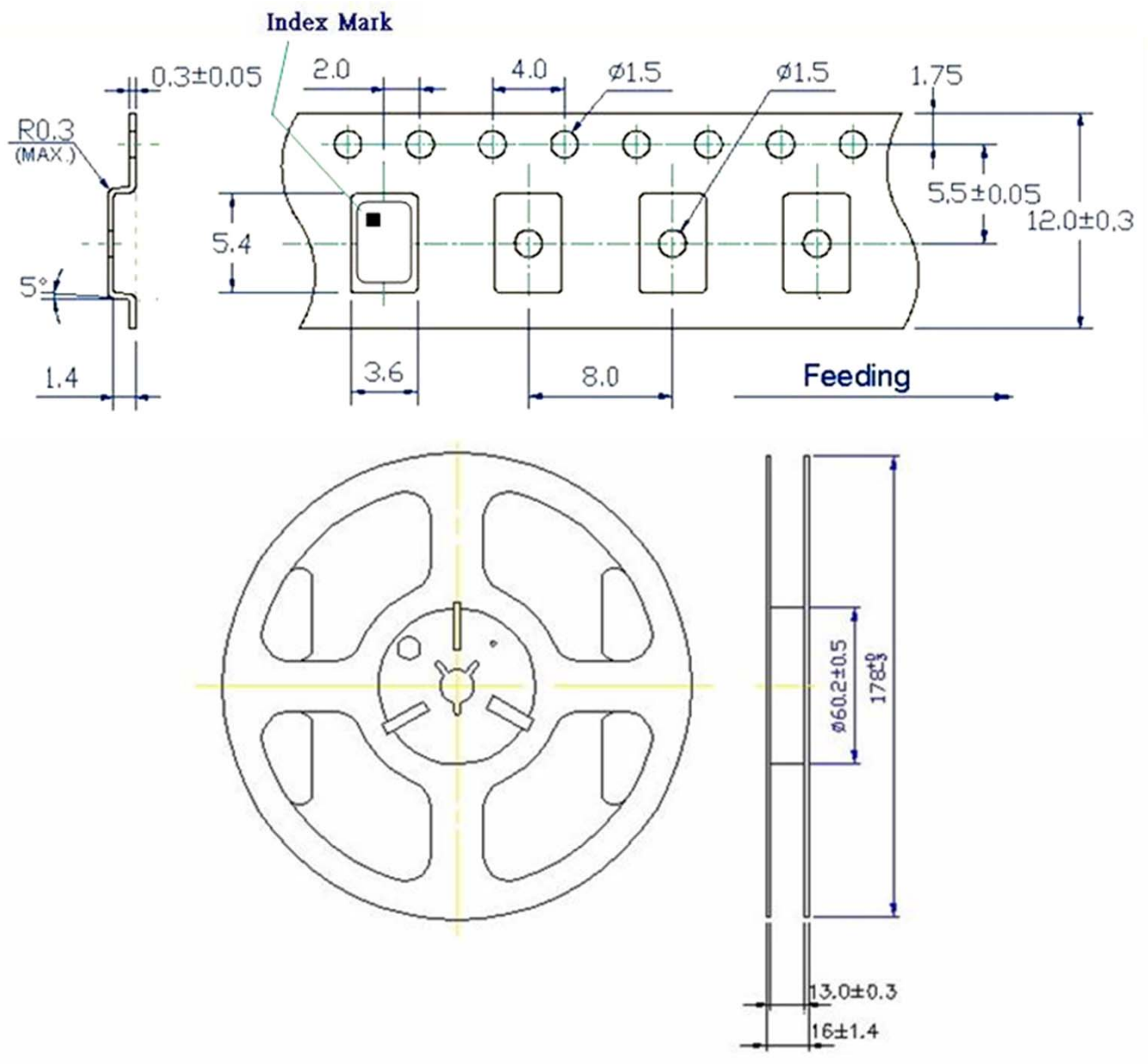
Recommended Land Pattern*



*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	V_{EE}
4	OUTPUT
5	OUTPUT N
6	V_{CC}

TAPE & REEL



1. 230mm minimum leafer 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.

PACKING