Engineering/Process Change Notice

ECN/PCN No.: 5258

For Manufacturer			
Product Description: **HIGH-STABILITY SMD OCXO**	**Abracon Part Number / Part Series:** **AOC97**	☐ Documentation only ☒ ECN ☐ EOL	☒ Series ☐ Part Number
Affected Revision: IR	**New Revision: A**	**Application:**	☐ Safety ☒ Non-Safety
Prior to Change: N/A			
After Change: Added alternate package construction, organized by output frequency. Length, width, height, and recommended land pattern remain the same. Added phase noise limits for 19.2 MHz and 30.72 MHz.			
Cause/Reason for Change: Improved mechanical package design for increased manufacturing capability.			

Change Plan		
Effective Date: 9/1/2026	**Additional Remarks:**	
Change Declaration:		
Issued Date: 9/1/2026	**Issued By:** *Conor Healey*	**Issued Department:** Engineering
Approval: *Thomas Culhane* Engineering Director	**Approval:** *Reuben Quintanilla* Quality Director	**Approval:** *Ying Huang* Purchasing Director

For Abracon EOL only		
Last Time Buy (if applicable): N/A	**Alternate Part Number / Part Series:** N/A	
Additional Approval:	**Additional Approval:**	**Additional Approval:**

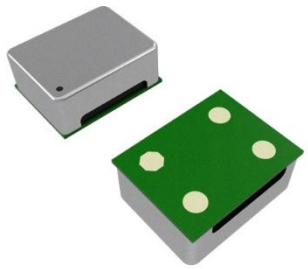
Customer Approval (If Applicable)		
Qualification Status: ☐ Approved ☐ Not accepted *Note: It is considered approved if there is no feedback from the customer 1 month after ECN/PCN is released.*		
Customer Part Number:	**Customer Project:**	
Company Name:	**Company Representative:**	**Representative Signature:**
Customer Remarks:		

ABRACON Ecliptek FOX ILSI MMD OSCILENT

AOC97 series
HIGH-STABILITY SMD OCXO

Description

The AOC97 series is an Oven Controlled Crystal Oscillator (OCXO) offered in a 9.7mm x 7.5mm x 3.9mm four-pad SMD package. Tight frequency stability of ±10ppb over an extended operating temperature range of -40°C to +95°C is achieved using an SC-Cut, High "Q" resonator-based design. This series offers a CMOS-compatible output with a 3.3Vdc +/-5% supply voltage, common for most communication infrastructure, base station, and test and measurement equipment applications. The AOC97 series offers industry standard frequencies in the range of 10MHz to 48MHz with low long-term aging and excellent phase noise.



Features

- SC-Cut, High "Q" resonator-based design
- 3.3Vdc supply voltage
- CMOS compatible output logic
- 9.7mm x 7.5mm x 3.9mm four pad SMD package
- Stability over temperature: ±10ppb over -40°C to +95°C
- Low long-term aging: ±500ppb over first year
- Industry standard frequencies available
- Excellent phase noise

Typical Applications

- Cellular infrastructure; Base stations
- Test & measurement equipment
- Switches & routers
- Time & frequency references
- Precision GPS
- Satellite Timing and Frequency
- High End Synthesizers
- Oil and Gas Exploration

Electrical Specifications [Note 1]

Parameters	Min.	Typ.	Max.	Units	Notes
Frequency Range	10		48	MHz	
Standard Available Frequencies	10,19.2,20,30.72, 38.88,48			MHz	Contact Abracon for non-standard frequencies
Supply Voltage (Vdd)	3.135	3.3	3.456	V	
Input Power (warm-up)			2.1	W	
Input Power (steady-state)			0.8	W	
Operating Temperature Range	-40		+95	°C	
Storage Temperature Range	-55		+105	°C	
Initial Frequency Tolerance [Note 2]			±1	ppm	
Frequency Stability over Operating Temperature Range [Note 3]			±10	ppb	
Temperature Slope [Note 4]			±1	ppb	
Stability vs. Supply Voltage			±5	ppb	Vdd varied from 3.135V to 3.465V
Stability vs. Load			±5	ppb	5% load change
Aging per Day			±3	ppb	after 30 days of operation
Aging per Year			±500	ppb	after 30 days of operation
Warm-up Time [Note 5]			3	minutes	
Start-up Time [Note 6]			50	ms	
Output Waveform					
High-level Output Voltage (V_{OH})	2.4			V	
Low-level Output Voltage (V_{OL})			0.4	V	
Output Signal		CMOS			
Output Load		15		pF	
Rise and Fall Time (t_r, t_f)			6	ns	10% to 90% of waveform
Duty Cycle	45		55	%	@50% of waveform

Electrical Specifications *continued* [Note 1]

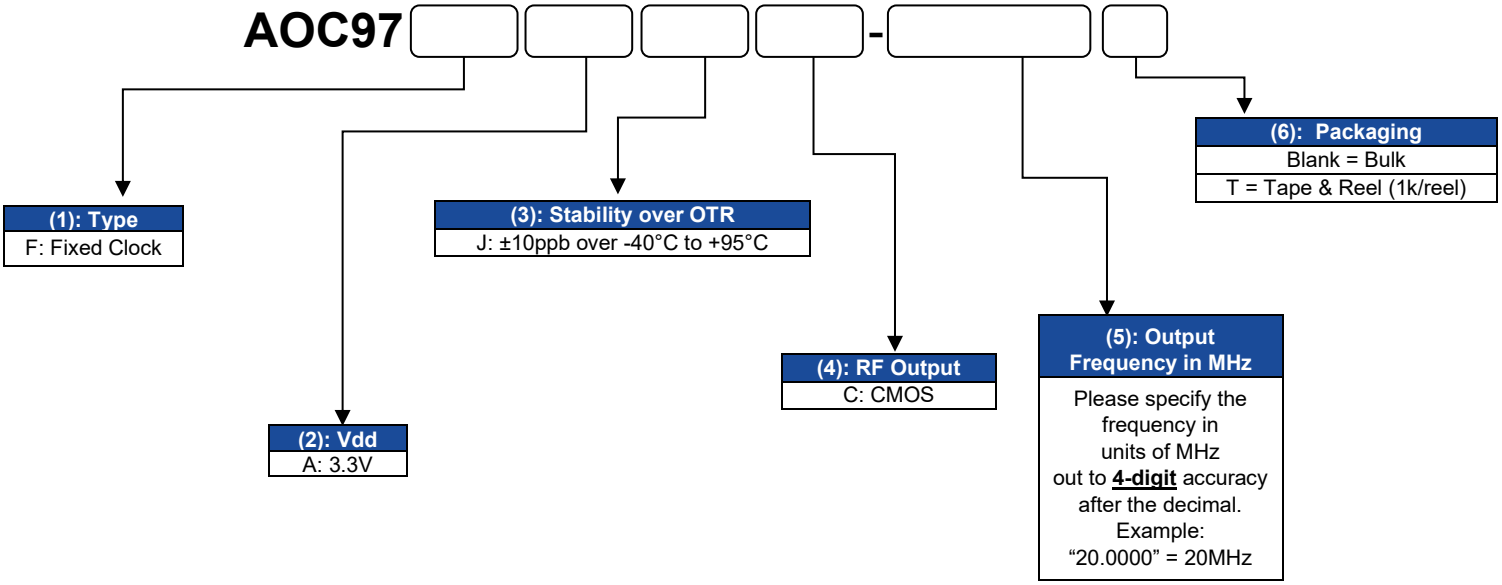
Parameters	Min.	Typ.	Max.	Units	Notes
Phase Noise (@ 10.0000MHz)		-80	-70	dBc/Hz	1Hz offset
		-115	-110		10Hz offset
		-146	-138		100Hz offset
		-157	-151		1kHz offset
		-161	-156		10kHz offset
		-164	-159		100kHz offset
		-165	-161		1MHz offset
Phase Noise (@ 19.2000MHz)		-80	-70	dBc/Hz	1Hz offset
		-115	-110		10Hz offset
		-146	-138		100Hz offset
		-160	-154		1kHz offset
		-164	-159		10kHz offset
		-164	-160		100kHz offset
		-165	-161		1MHz offset
Phase Noise (@ 20.0000MHz)		-75	-65	dBc/Hz	1Hz offset
		-113	-108		10Hz offset
		-146	-138		100Hz offset
		-160	-154		1kHz offset
		-163	-158		10kHz offset
		-163	-158		100kHz offset
		-163	-158		1MHz offset
Phase Noise (@30.7200MHz)		-73	-63	dBc/Hz	1Hz offset
		-110	-103		10Hz offset
		-140	-130		100Hz offset
		-158	-152		1kHz offset
		-165	-160		10kHz offset
		-165	-160		100kHz offset
		-165	-160		1MHz offset
Phase Noise (@ 38.8800MHz)		-67	-57	dBc/Hz	1Hz offset
		-105	-97		10Hz offset
		-135	-125		100Hz offset
		-156	-151		1kHz offset
		-165	-160		10kHz offset
		-165	-160		100kHz offset
		-165	-160		1MHz offset
Phase Noise (@ 48.0000MHz)		-60	-50	dBc/Hz	1Hz offset
		-99	-90		10Hz offset
		-130	-120		100Hz offset
		-155	-150		1kHz offset
		-165	-160		10kHz offset
		-165	-160		100kHz offset
		-165	-160		1MHz offset

Note 1: All measurements guaranteed at +25°C, Vdd = 3.3V, CL =15pf unless otherwise specified.
Note 2: Measured at +25°C, Vdd=3.3V within 30 days, at time of shipment.
Note 3: Varied from -40 to +95°C, @ fref =(fmax +fmin)/2, Vdd=3.3V, CL=15pf, less than 2°C per minute
Note 4: Temperature slope ±1°C/min with any temperature window over -40 to +95°C
Note 5: Time until RF output is within ± 0.1 ppm referenced to last frequency reading 1 hour after startup T_A=25°C.
Note 6: Time until RF output waveform is within output logic levels, duty cycle and rise/fall time specifications.

Environmental and Mechanical

Parameters	Description
MSL	3
REACH/RoHS II	Compliant
ESD	Sensitive

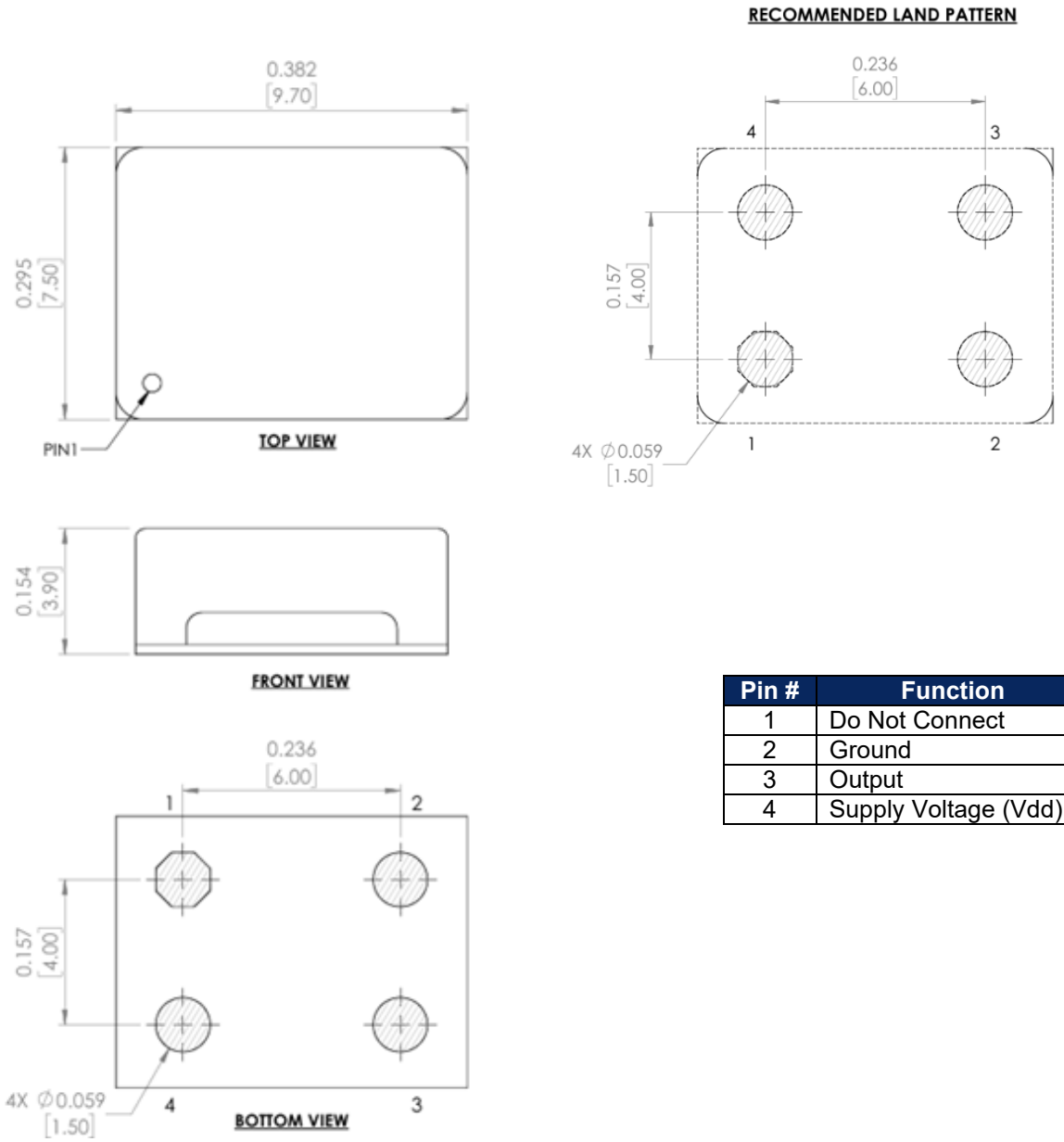
Part Identification



Part Number Example:

AOC97FAJC-20.0000T

Mechanical Dimensions (10 MHz, 19.2 MHz, 30.72 MHz, 38.88 MHz)

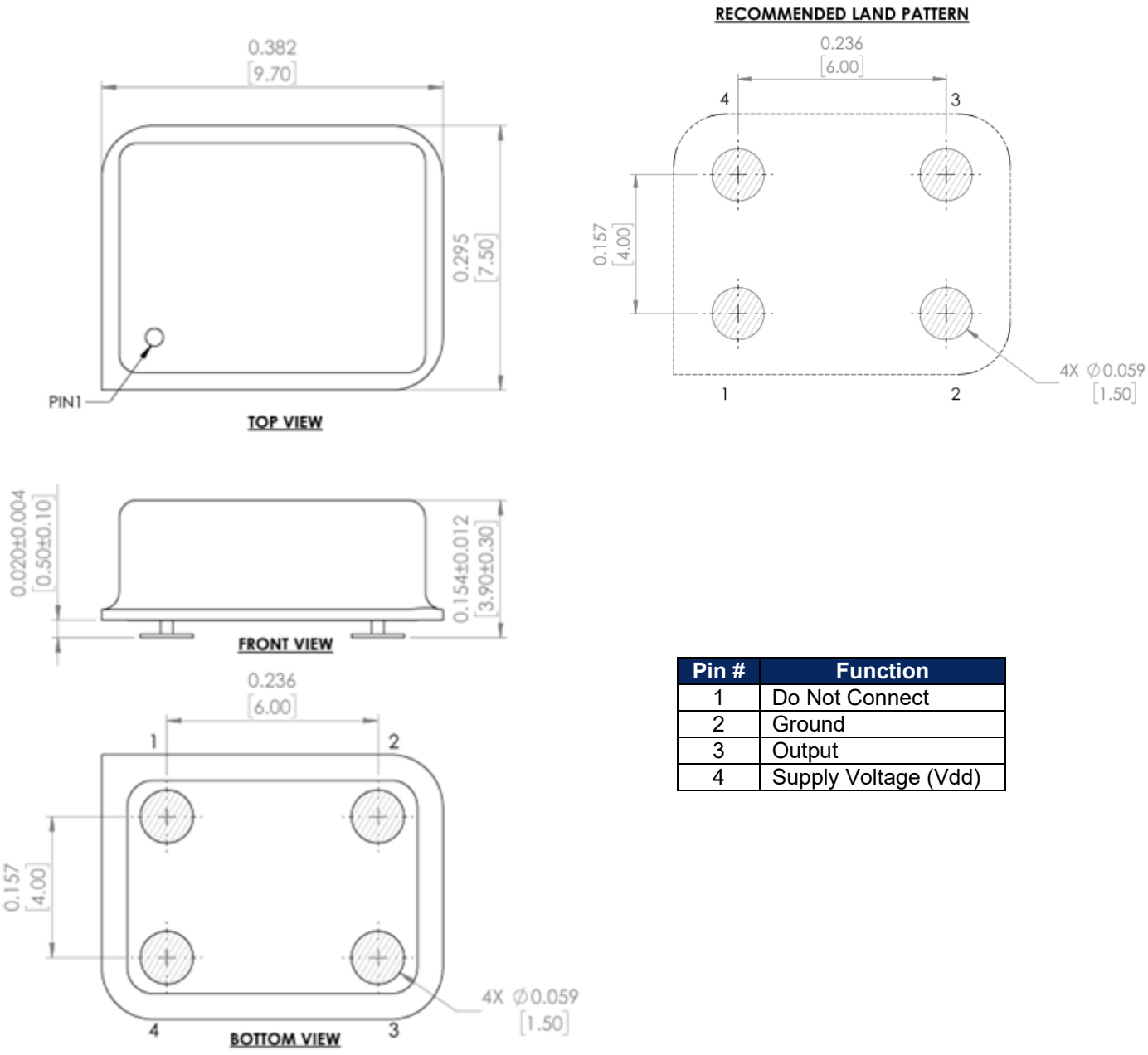


Pin #	Function
1	Do Not Connect
2	Ground
3	Output
4	Supply Voltage (Vdd)

Dimensions: inches [mm]

Tolerance ±0.3mm without mark

Mechanical Dimensions (20 MHz, 48 MHz)



Pin #	Function
1	Do Not Connect
2	Ground
3	Output
4	Supply Voltage (Vdd)

Dimensions: inches [mm]

Tolerance ±0.3mm without mark

Reflow Profile [JEDEC J-STD-020]

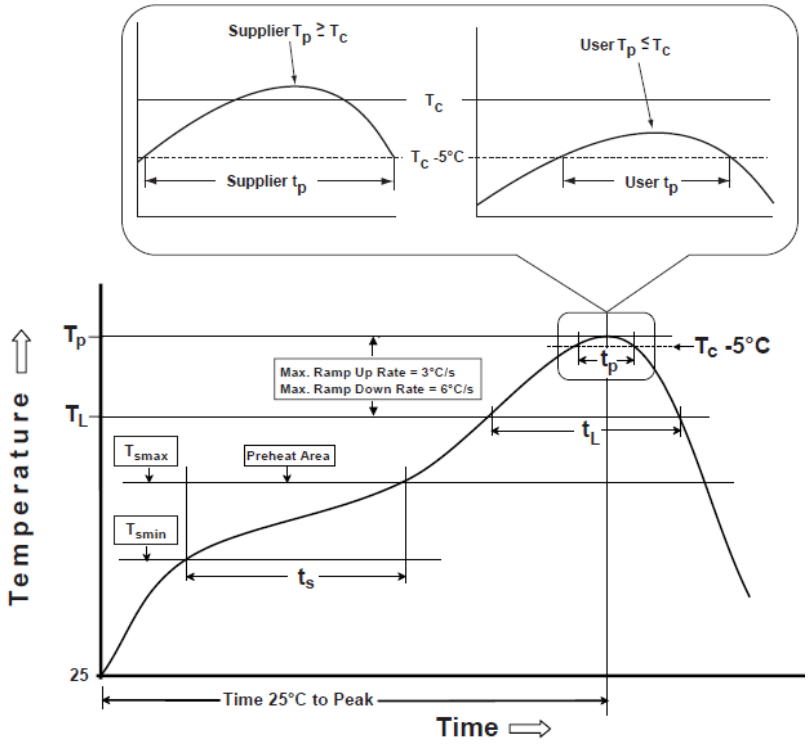


Table 1

SnPb Eutectic Process Classification Temperatures (T_c)		
Package Thickness	**Volume mm³ <350**	**Volume mm³ ≥350**
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2

Pb-Free Process Classification Temperatures (T_c)			
Package Thickness	**Volume mm³ <350**	**Volume mm³ 350-2000**	**Volume mm³ >2000**
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

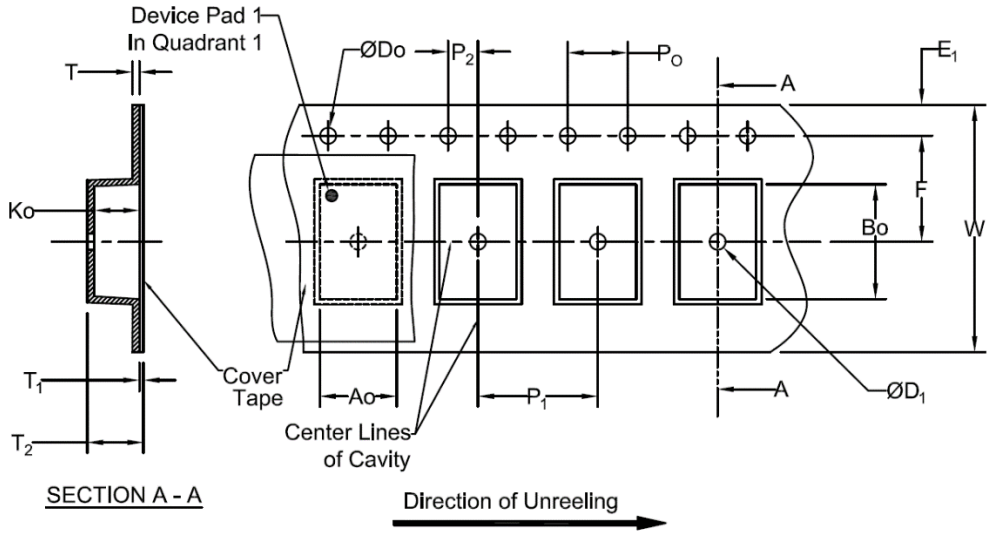
Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T_{smin})	100°C	150°C
Temperature maximum (T_{smax})	150°C	200°C
Time (T_{smin} to T_{smax}) (t_s)	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate (T_{smax} to T_P)	3°C/sec. max	3°C/sec. max
Liquidous temperature (T_L)	183°C	217°C
Time at liquidous (t_L)	60 - 150 sec.	60 - 150 sec.
Peak package body temperature (T_P)*	**see Table 1**	**see Table 2**
Time (t_p)** within 5°C of the specified classification temperature (T_C)	20 sec.	30 sec.
Ramp-down rate (T_p to T_{smax})	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

*Tolerance for peak profile temperature (T_P) is defined as a supplier minimum and a user maximum.

**Tolerance for time at peak profile temperature (t_p) is defined as supplier minimum and a user maximum.

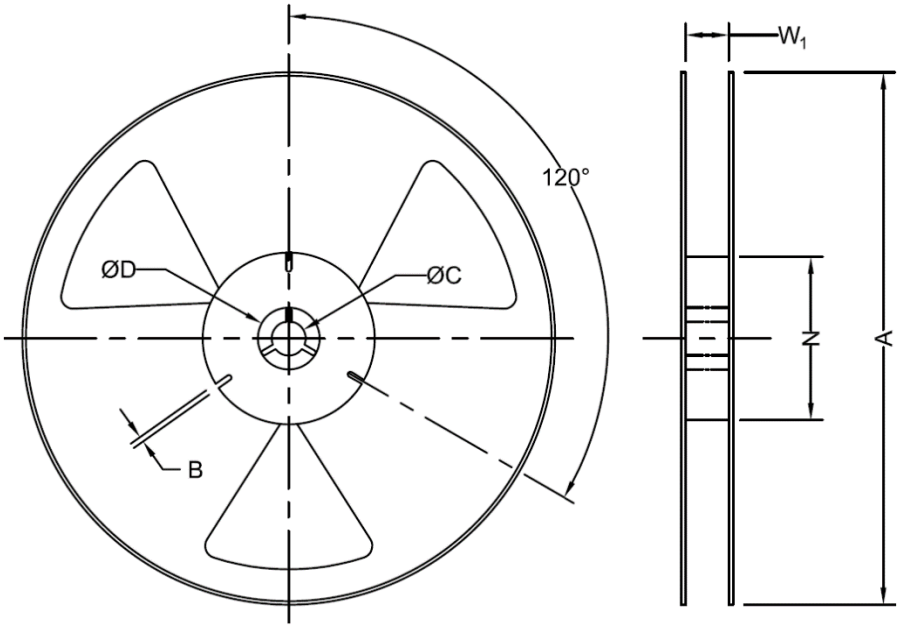
Packaging

T = 1000 pcs/reel



Tape Specifications (mm)							
Width	Ao	Bo	Do	D_1 (Min)	E_1	F	Ko
16mm	*	*	1.5+0.1/-0.0	1.50	1.75±0.1	7.125	*
Width	P_1	P_2	P_0	T (Max)	T_1 (Max)	T_2 (Max)	W (Max)
16mm	12.0±0.1	2.0±0.1	4.0±0.1	0.3	0.1	8.0	16.0

*Note: Compliant to EIA-481



Reel Specifications (mm)							
Width	Qty/Reel	A	B	C	D	N	*W_1
16mm	1000	330±1.0	2.5±0.3	13.0±0.2	22±0.6	99.5±0.5	16.8+1.0/-0.2

*Note: Measured at Hub