



ISO9001 & ISO14001 & TS16949 **CHILISIN ELECTRONICS CORP.**

**Lead-Free & RoHs Compliance!!**

## SPECIFICATION FOR APPROVAL

**CUSTOMER :** \_\_\_\_\_

**CUSTOMER P/N :** \_\_\_\_\_

**OUR DWG No :** **CE1-340981**

**QUANTITY :** **X Pcs.**      **DATE :** **2013/4/26**

**ITEM :** **NLV322522T-SERIES**

<b>SPECIFICATION ACCEPTED BY:</b>	
<b>COMPONENT ENGINEER</b>	
<b>ELECTRICAL ENGINEER</b>	
<b>MECHANICAL ENGINEER</b>	
<b>APPROVED</b>	
<b>REJECTED</b>	

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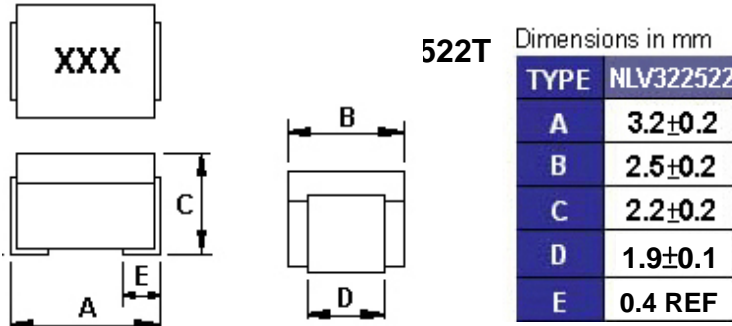
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# NLV322522T Series Specification

## 6 Configuration and Dimensions:



## 7 ELECTRICAL CHARACTERISTICS :

Part No.	Inductance (uH)	Test Freq. (MHZ)	Q Min	SRF (MHZ)Min.	RDC (Ω)Max.	Rated Current (mA)Max.	Tolerance (±%)
NLV322522T-10N□-N	0.010	100	15	2500	0.13	450	20
NLV322522T-12N□-N	0.012	100	17	2300	0.14	450	20
NLV322522T-15N□-N	0.015	100	19	2100	0.16	450	20
NLV322522T-18N□-N	0.018	100	21	1700	0.18	450	20
NLV322522T-22N□-N	0.022	100	23	1700	0.20	450	20
NLV322522T-27N□-N	0.027	100	23	1500	0.22	450	20
NLV322522T-33N□-N	0.033	100	25	1400	0.24	450	20
NLV322522T-39N□-N	0.039	100	25	1300	0.27	450	20
NLV322522T-47N□-N	0.047	100	26	1200	0.30	450	20
NLV322522T-56N□-N	0.056	100	26	1100	0.33	450	20
NLV322522T-68N□-N	0.068	100	27	1000	0.36	450	20
NLV322522T-82N□-N	0.082	100	27	900	0.40	450	20
NLV322522T-R10□-N	0.10	100	28	700	0.44	450	10,20
NLV322522T-R12□-N	0.12	25.2	30	500	0.22	450	10,20
NLV322522T-R15□-N	0.15	25.2	30	450	0.25	450	10,20
NLV322522T-R18□-N	0.18	25.2	30	400	0.28	450	10,20
NLV322522T-R22□-N	0.22	25.2	30	320	0.32	450	10,20
NLV322522T-R27□-N	0.27	25.2	30	320	0.36	450	10,20
NLV322522T-R33□-N	0.33	25.2	30	300	0.40	450	10,20
NLV322522T-R39□-N	0.39	25.2	30	180	0.45	450	10,20
NLV322522T-R47□-N	0.47	25.2	30	180	0.50	450	10,20
NLV322522T-R56□-N	0.56	25.2	30	180	0.55	450	10,20
NLV322522T-R68□-N	0.68	25.2	30	160	0.60	450	10,20
NLV322522T-R82□-N	0.82	25.2	30	140	0.65	450	10,20
NLV322522T-1R0□-N	1.0	7.96	30	120	0.70	400	10,20

**NOTE:** □-tolerance J=±5% / K=±10% / M=±20%

1. Operating temperature range -40°C ~ 105°C

2. Rated Current :Applied the current to coils, the inductance shall be less than 10% initial value.

3. L/Q Test OSC@100mV

"-N" FOR COMPLETELY LEAD FREE TYPE(INCLUDING FERRITE BODY & SOLDER)



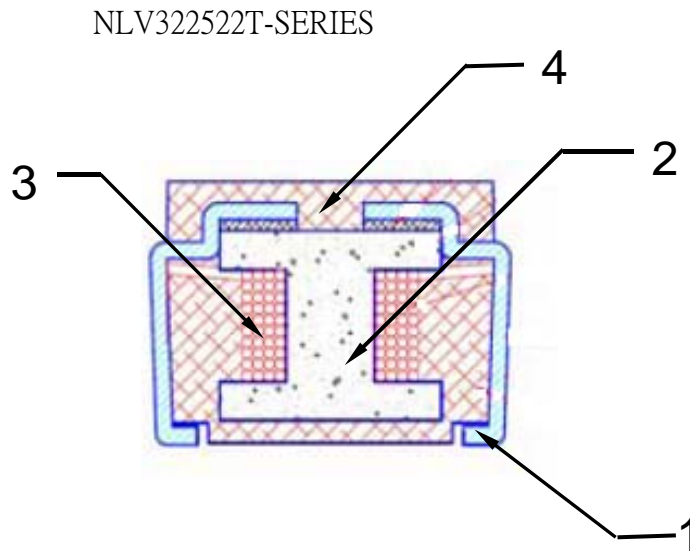
## NLV322522T Series Specification

Part No.	Inductance ( $\mu$ H)	L,Q Test Freq. (MHZ)	Q Min.	SRF (MHZ)Min.	RDC ( $\Omega$ )Max.	Rated Current (mA)	Tolerance ( $\pm$ %)
NLV322522T-1R2□-N	1.2	7.96	30	100	0.75	390	10,20
NLV322522T-1R5□-N	1.5	7.96	30	85	0.85	370	10,20
NLV322522T-1R8□-N	1.8	7.96	30	80	0.9	350	10,20
NLV322522T-2R2□-N	2.2	7.96	30	75	1.0	320	5,10,20
NLV322522T-2R7□-N	2.7	7.96	30	70	1.1	290	5,10,20
NLV322522T-3R3□-N	3.3	7.96	30	60	1.2	260	5,10,20
NLV322522T-3R9□-N	3.9	7.96	30	55	1.3	250	5,10,20
NLV322522T-4R7□-N	4.7	7.96	30	50	1.5	220	5,10,20
NLV322522T-5R6□-N	5.6	7.96	30	45	1.6	200	5,10,20
NLV322522T-6R8□-N	6.8	7.96	30	40	1.8	180	5,10,20
NLV322522T-8R2□-N	8.2	7.96	30	35	2.0	170	5,10,20
NLV322522T-100□-N	10	2.52	30	30	2.1	150	5,10,20
NLV322522T-120□-N	12	2.52	30	20	2.5	140	5,10,20
NLV322522T-150□-N	15	2.52	30	20	2.8	130	5,10,20
NLV322522T-180□-N	18	2.52	30	20	3.3	120	5,10,20
NLV322522T-220□-N	22	2.52	30	20	3.7	110	5,10,20
NLV322522T-270□-N	27	2.52	30	20	5.0	80	5,10,20
NLV322522T-330□-N	33	2.52	30	17	5.6	70	5,10,20
NLV322522T-390□-N	39	2.52	30	16	6.4	65	5,10,20
NLV322522T-470□-N	47	2.52	30	15	7	60	5,10,20
NLV322522T-560□-N	56	2.52	30	13	8	55	5,10,20
NLV322522T-680□-N	68	2.52	30	12	9	50	5,10,20
NLV322522T-820□-N	82	2.52	30	11	10	45	5,10,20
NLV322522T-101□-N	100	0.796	20	10	10	40	5,10,20
NLV322522T-121□-N	120	0.796	20	10	11	70	5,10,20
NLV322522T-151□-N	150	0.796	20	8	15	65	5,10,20
NLV322522T-181□-N	180	0.796	20	7	17	60	5,10,20
NLV322522T-221□-N	220	0.796	20	7	21	50	5,10,20

# NLV322522T Series Specification

## 8 NLV322522T Series

### 8.1 Construction:

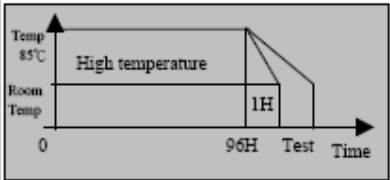
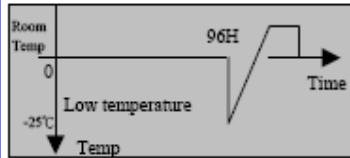
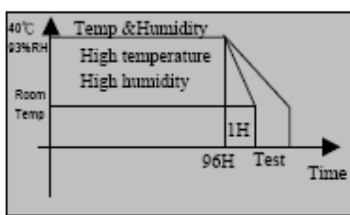
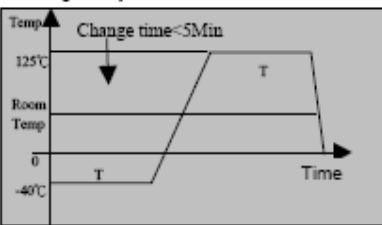


### 8.2 Material List:

ITEM	PART	DESCRIPTION	SUPPLIES
1	TERMINAL	TERMINAL COPPER	CHILISIN
2	CORE	FERRITE	CHILISIN
3	WIRE	COPPER WIRE	
4	EPOXY		

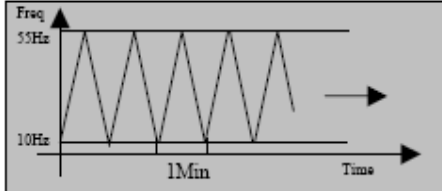
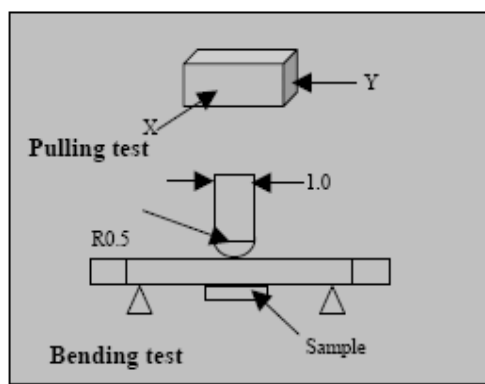
# NLV322522T Series Specification

## 9 Reliability Of Ferrite Wire Wound Chip Inductor/FERRITE SERIES

Item (項目)	Required Characteristics (要求)	Test Method / Condition (測試方法)
High temperature Storage test  Reference documents: MIL-STD-202G Method 108A  高溫儲存試驗	1.No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 10\%$  1.無明顯的外觀缺陷 2.感值變化不超過10% 3.品質因數變化不超過30% 4.直流電阻變化不超過10%	Temperature: $85 \pm 2^\circ\text{C}$ Time : $96 \pm 2$ hours Tested not less than 1 hour, nor more than 2 hours at room temperature.    溫度: $85 \pm 2^\circ\text{C}$ 時間: $96 \pm 2$ 小時 樣品在室溫下放置1小時,不超2小時必須測試.
Low temperature Storage test  Reference documents: IEC 68-2-1A 6.1 6.2  低溫儲存試驗	1.No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 10\%$  1.無明顯的外觀缺陷 2.感值變化不超過10% 3.品質因數變化不超過30% 4.直流電阻變化不超過10%	Temperature: $-25 \pm 2^\circ\text{C}$ Time : $96 \pm 2$ hours Tested not less than 1 hour, nor more than 2 hours at room temperature.    溫度: $-25 \pm 2^\circ\text{C}$ 時間: $96 \pm 2$ 小時 樣品在室溫下放置1小時,不超2小時必須測試.
Humidity test  Reference documents: MIL-STD-202G Method 103B  濕度測試	1.No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 10\%$  1.無明顯的外觀缺陷 2.感值變化不超過10% 3.品質因數變化不超過30% 4.直流電阻變化不超過10%	1. Dry oven at a temperature of $40^\circ \pm 5^\circ\text{C}$ for 24 hours. 2. Measurements At the end of this period 3. Exposure: Temperature: $40 \pm 2^\circ\text{C}$ , Humidity: $93 \pm 3\% \text{RH}$ Time : $96 \pm 2$ hours 4. Tested while the specimens are still in the chamber 5. Tested not less than 1 hour, nor more than 2 hours at room temperature.    1. 樣品必須先在 $40^\circ \pm 5^\circ$ 條件下乾燥24小時 2. 乾燥後測試 3. 暴露: 溫度: $40 \pm 2^\circ\text{C}$ , 溼度: $93 \pm 3\% \text{RH}$ 時間: $96 \pm 2$ hours 4. 暴露結束後,在試驗箱中進行測試. 5. 樣品在室溫下放置1小時,不超2小時必須測試.
Thermal shock test  Reference documents: MIL-STD-202G Method 107G  熱衝擊測試	1.No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 10\%$  For T: weight $\leq 28\text{g}$ : 15Min; $28\text{g} \leq \text{weight} \leq 136\text{g}$ : 30Min  1.無明顯的外觀缺陷 2.感值變化小於10% 3.品質因數變化小於30% 4.直流電阻變化小於10%	First $-40^\circ\text{C}$ for T time, last $125^\circ\text{C}$ T time as 1 cycle. Go through 20 cycles.    從 $-40^\circ\text{C}$ 作用 T 分鐘,然後溫度衝擊到 $125^\circ\text{C}$ 作用 T 分鐘, 作為一個循環,共作用 20 次.

Environmental tests (環境試驗)

# NLV322522T Series Specification

Item (項目)	Required Characteristics (要求)	Test Method / Condition (測試方法)
Solderability test Reference documents: MIL-STD-202G Method 208H IPC J-STD-002B  可焊性測試	Terminals area must have 95% min. solder coverage  端子必須有95%以上著錫	1. Dip pads in flux then dip in solder pot at 245±5°C for 5 seconds. 2. Solder: Sn(96.5)/Ag(3.5) 3. Flux: rosin flux  1. 端子浸入助焊劑, 然後浸入245±5°C 錫爐中5秒 2. 焊料 :Sn(96.5)/Ag(3.5) 3. 助焊劑: 松香助焊劑
Heat endurance of Reflow soldering Reference documents: IPC J-STD-020B  過再流焊測試	1. No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 10\%$  1. 無明顯的外觀缺陷 2. 感值變化不超過10% 3. 品質因數變化不超過30% 4. 直流電阻變化不超過10%	1. Refer to the next page reflow curve Go through 3 times 2. The peak temperature : 260±5°C  1. 參照下頁回流焊曲線過三次 2. 峰值溫度為: 260±5°C
Vibration test Reference documents: MIL-STD-202G Method 201A  振動測試	1. No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 10\%$  1. 無明顯的外觀缺陷 2. 感值變化不超過10% 3. 品質因數變化不超過30% 4. 直流電阻變化不超過10%	Apply frequency 10~55Hz. 0.75mm amplitude in each of perpendicular direction for 2 hours. (total 6 hours)  用10~55Hz 振動頻率0.75mm振幅沿X,Y,Z方向各振動2小時.(共6小時)
Drop test Reference documents: MIL-STD-202G Method 203C  落下試驗	1. No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 10\%$  1. 無明顯的外觀缺陷 2. 感值變化不超過10% 3. 品質因數變化不超過30% 4. 直流電阻變化不超過10%	Packaged & Drop down from 1m with 981m/s <sup>2</sup> (100G) attitude in 1 angle 1 ridges & 2 surfaces orientations.  將產品包裝後從1米高度自然落下至試驗板上 1角1稜2面
Terminal strength push test Reference documents: JIS C 5321 :1997  端子強度試驗	Pulling test: Define: A: sectional area of terminal A ≤ 8mm <sup>2</sup> force ≥ 5N time: 30sec 8mm <sup>2</sup> < A ≤ 20mm <sup>2</sup> force ≥ 10N time: 10sec 20mm <sup>2</sup> < A force ≥ 20N time: 10sec  Bending test: Soldering the products on PCB, after the pulling test and bending test ,terminal should not pull off 推力測試: 定義: A: 焊接端子截面積 A ≤ 8mm <sup>2</sup> 推力 ≥ 5牛頓 時間: 30秒 8mm <sup>2</sup> < A ≤ 20mm <sup>2</sup> 推力 ≥ 10牛頓 時間: 10秒 20mm <sup>2</sup> < A 推力 ≥ 20牛頓 時間: 10秒 彎折測試: 將產品焊於PCB上,分別經過推力測試和彎折	Bend the testing PCB at middle point, the deflection shall be 2mm  將PCB對中彎折,到達撓度2mm.
Resistance to solvent test Reference documents: IEC 68-2-45:1993 耐溶劑性試驗	No case deformation or change in appearance, or obliteration of marking  無外觀破壞及標記破損	To dip parts into IPA solvent for 5±0.5Min, then drying them at room temp for 5Min, at last, to brushing making 10 times.  在IPA溶劑中浸泡 5±0.5分鐘,室溫下乾燥5分鐘,然後擦拭10次.

Physical characteristic tests (物理特性試驗)

# NLV322522T Series Specification

Electrical Characteristic tests (電特性試驗)	Item (項目)	Required Characteristics (要求)	Test Method / Condition (測試方法)
	Electronic characteristic test of major products 主要產品電特性測試	Refer to catalogue of specific products 參照具體產品目錄頁	Refer to catalogue of specific products 參照具體產品目錄頁書
	Overload test Reference documents: JIS C5311-6.13 過負荷試驗	1. During the test no smoke, no peculiar, smell, no fire 2. The characteristic is normal after test 1. 試驗過程中無冒煙, 異味, 著火等, 2. 試驗後產品特性正常.	Apply twice as rated current for 5 minutes. 通兩倍額定電流 5 分鐘
	voltage resistance test Reference documents: MIL-STD-202G Mthod 301 絕緣耐壓測試	1. During the test no breakdown 2. The characteristic is normal after test 1. 試驗過程中無擊穿 2. 試驗後產品特性正常	1. For parts with two coils 2. DC1000V, Current: 1mA, Time: 1Min. 1. 只針對二繞組以上之產品 2. 電壓DC1000V, 電流1mA, 時間1分鐘.



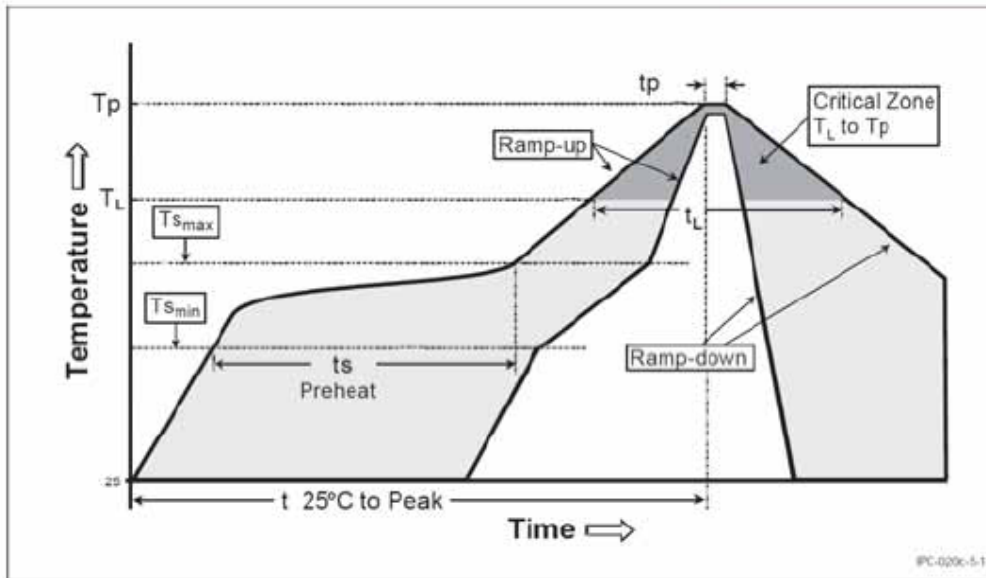
# NLV322522T Series Specification

## Curve of Heat endurance of Reflow soldering test

**Table 5-2 Classification Reflow Profiles**

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-Up Rate (T <sub>Smax</sub> to T <sub>p</sub> )	3 °C/second max.	3° C/second max.
<b>Preheat</b>		
- Temperature Min (T <sub>Smin</sub> )	100 °C	150 °C
- Temperature Max (T <sub>Smax</sub> )	150 °C	200 °C
- Time (t <sub>Smin</sub> to t <sub>Smax</sub> )	60-120 seconds	60-180 seconds
Time maintained above:		
- Temperature (T <sub>L</sub> )	183 °C	217 °C
- Time (t <sub>L</sub> )	60-150 seconds	60-150 seconds
Peak/Classification Temperature (T <sub>p</sub> )	See Table 4.1	<b>260+0-5°C</b>
Time within 5 °C of actual Peak Temperature (t <sub>p</sub> )	10-30 seconds	20-40 seconds
Ramp-Down Rate	6 °C/second max.	6 °C/second max.
Time 25 °C to Peak Temperature	6 minutes max.	8 minutes max.

Note 1: All temperatures refer to topside of the package, measured on the package body surface.



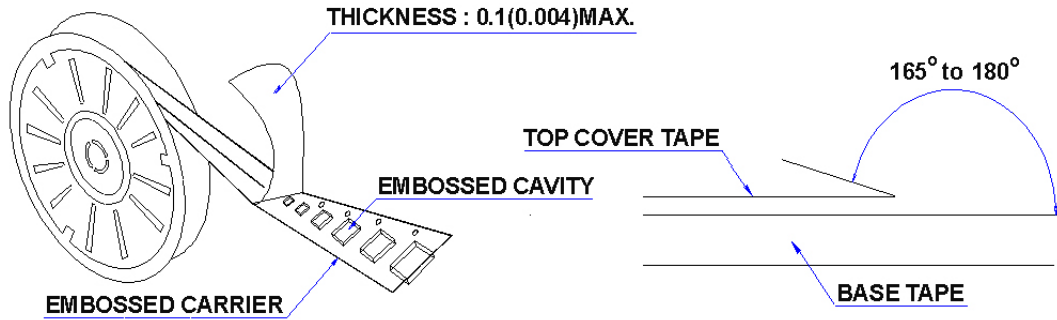
# NLV322522T Series Specification

## 11 PACKAGING

### 11.1 Packaging -Cover tape

The force for tearing off cover tape is 10 to 100 grams in the arrow direction.

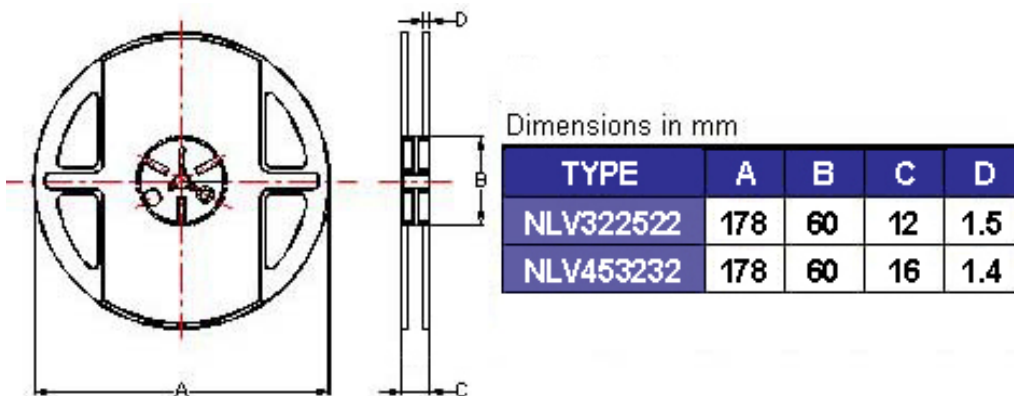
NLV322522T-SERIES



### 11.2 Packaging Quantity

TYPE	BULK	PCS/REEL
NLV322522	✓	2000
NLV453232	✓	500

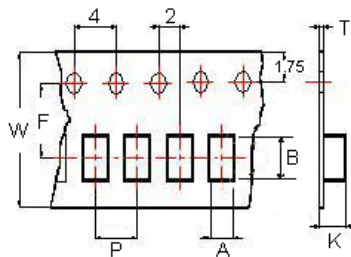
### 11.3 Reel Dimensions



# NLV322522T Series Specification

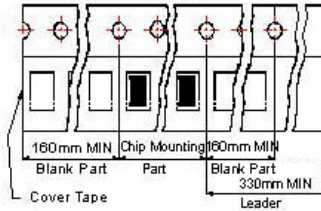
## 11 PACKAGING

### 11.4 Tape Dimensions in mm



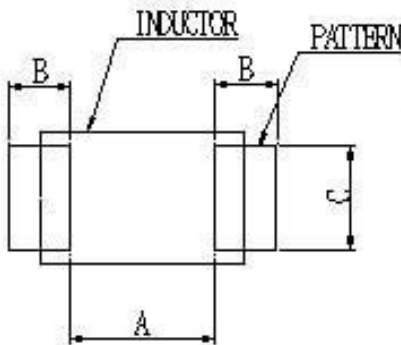
#### Tape Material

Carrier tape : polystyrene  
Cover tape : polyethylene



TYPE	A	B	T	W	P	F	K
NLV322522	2.96	3.60	0.23	8	4	3.5	2.40
NLV453232	3.30	5.00	0.30	12	8	5.5	3.50

## 12 Recommended Pattern



#### Dimensions in mm

TYPE	A/(mm)	B/(mm)	C/(mm)
NLV322522	2.0	1.0	2.0

## 13 Note:

1. Please make sure that your product is has been evaluated and confirmed against your specifications when our product is mounted to your product.
2. Do not knock nor drop.
3. All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose, under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.
4. Please keep the distance between transformer/coil and other components (refer to the standard IEC 950)