



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

Lead-Free & RoHs Compliance!!

SPECIFICATION FOR APPROVAL

CUSTOMER : _____

CUSTOMER P/N : _____

OUR DWG No : _____

QUANTITY : _____

Pcs.

DATE : _____

ITEM : _____

NLCV453232T-SERIES-N

SPECIFICATION ACCEPTED BY:

**COMPONENT
ENGINEER**

**ELECTRICAL
ENGINEER**

**MECHANICAL
ENGINEER**

APPROVED

REJECTED

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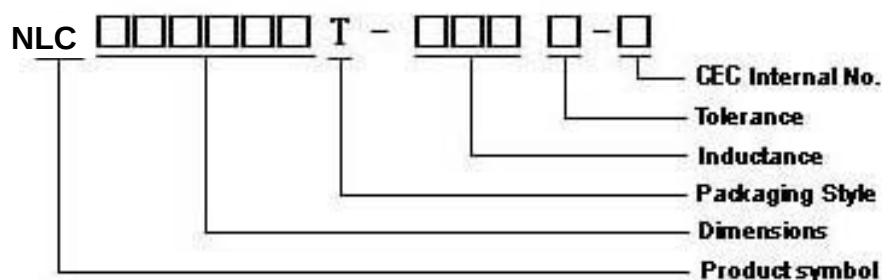


ISO9001 & ISO14001 & TS16949 **CHILISIN ELECTRONICS CORP.**

NLCV453232T Series Specification

1 Scope: This specification applies to Wire Wound Ferrite Chip Inductors

2 Part Numbering: Product Identification



3 Rating:

Operating Temperature: - 40°C ~ 105°C

Storage Temperature: - 40°C ~ 105°C

4 Marking:



EX: NLCV453232T-100K-N

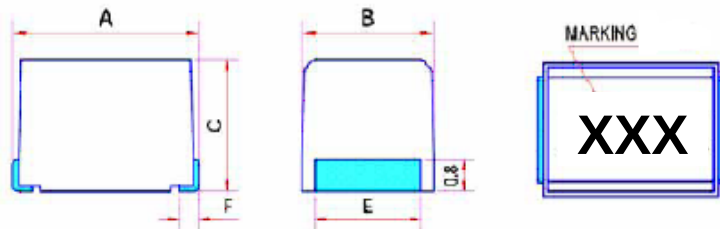
Marking : 100

5 Standard Testing Condition

	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature(15 to 35°C)	20±2°C
Humidity	Ordinary Humidity(25 to 85% RH)	60 to 70 % RH

NLCV453232T Series Specification

6 Configuration and Dimensions:



TYPE	NLCV453232	
A	4.5 ± 0.3	m / m
B	3.2 ± 0.2	m / m
C	3.2 ± 0.2	m / m
E	2.6 ± 0.1	m / m
F	0.5 REF	m / m

7 ELECTRICAL CHARACTERISTICS :

Part No.	Inductance (uH)	Test Freq. (MHZ)	Q Min.	SRF (MHZ)Min.	RDC (Ω)Max.	IDC (mA)	Tolerance (±%)
NLCV453232T-1R0□-f	1	7.96	10	200	0.11	1050	10
NLCV453232T-1R2□-f	1.2	7.96	10	160	0.12	1000	10
NLCV453232T-1R5□-f	1.5	7.96	10	130	0.15	950	10
NLCV453232T-1R8□-f	1.8	7.96	10	100	0.16	900	10
NLCV453232T-2R2□-f	2.2	7.96	10	80	0.18	850	10
NLCV453232T-2R7□-f	2.7	7.96	10	60	0.20	800	10
NLCV453232T-3R3□-f	3.3	7.96	10	45	0.22	750	10
NLCV453232T-3R9□-f	3.9	7.96	10	40	0.24	700	10
NLCV453232T-4R7□-f	4.7	7.96	10	35	0.27	650	10
NLCV453232T-5R6□-f	5.6	7.96	10	30	0.30	650	10
NLCV453232T-6R8□-f	6.8	7.96	10	28	0.35	600	10
NLCV453232T-8R2□-f	8.2	7.96	10	25	0.40	600	10
NLCV453232T-100□-f	10	2.52	10	22	0.50	550	10
NLCV453232T-120□-f	12	2.52	10	21	0.60	500	10
NLCV453232T-150□-f	15	2.52	10	20	0.70	450	10
NLCV453232T-180□-f	18	2.52	10	19	0.80	400	10
NLCV453232T-220□-f	22	2.52	10	18	0.90	370	10
NLCV453232T-270□-f	27	2.52	10	16	1.2	330	10
NLCV453232T-330□-f	33	2.52	10	14	1.4	300	10
NLCV453232T-390□-f	39	2.52	10	12	1.6	280	10
NLCV453232T-470□-f	47	2.52	10	11.5	1.9	260	10
NLCV453232T-560□-f	56	2.52	10	11.0	2.2	240	10
NLCV453232T-680□-f	68	2.52	10	10.0	2.6	220	10
NLCV453232T-820□-f	82	2.52	10	9.0	3.5	200	10
NLCV453232T-101□-f	100	0.796	20	8.0	4.0	180	10
NLCV453232T-121□-f	120	0.796	20	7.5	4.5	160	10

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

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

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

3. L/Q Test OSC@0.1V

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



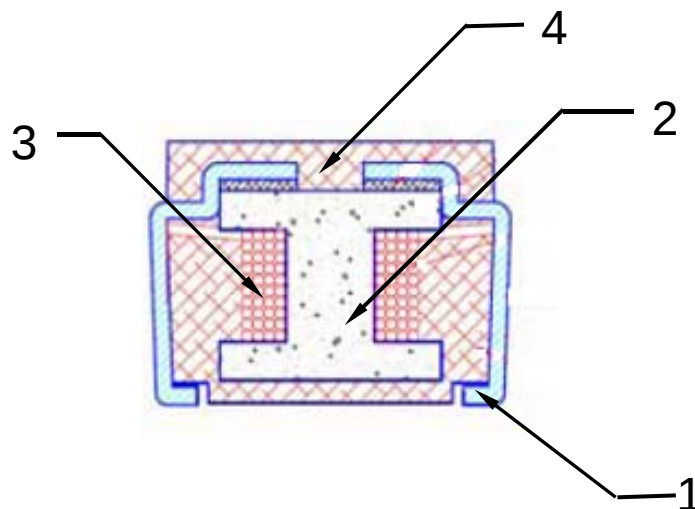
NLCV453232T Series Specification

Part No.	Inductance (uH)	Test Freq. (MHZ)	Q Min.	SRF (MHZ)Min.	RDC (Ω)Max.	IDC (mA)Max.	Tolerance (±%)
NLCV453232T-151□-↑	150	0.796	20	7.0	6.5	140	10
NLCV453232T-181□-↑	180	0.796	20	6.5	7.5	120	10
NLCV453232T-221□-↑	220	0.796	20	5.5	9.0	120	10
NLCV453232T-271□-↑	270	0.796	20	5.0	11.0	100	10
NLCV453232T-331□-↑	330	0.796	20	4.0	13.0	90	10

NLVC453232T Series Specification

8 NLCV453232T Series

8.1 Construction:

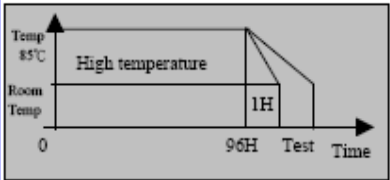
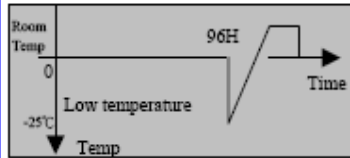
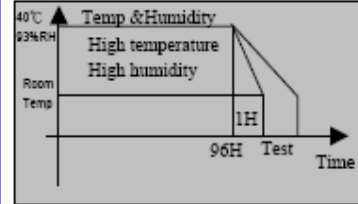
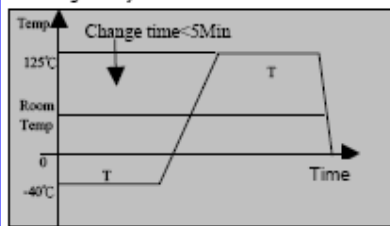


8.2 Material List:

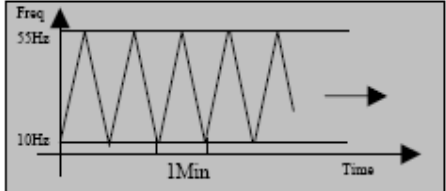
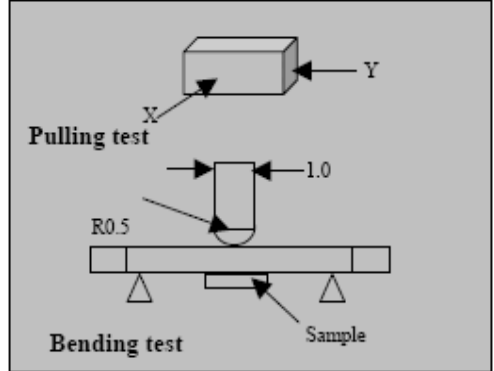
ITEM	PART	DESCRIPTION	SUPPLIES
1	TERMINAL	TERMINAL COPPER	CHILISIN
2	CORE	FERRITE	CHILISIN
3	WIRE	COPPER WIRE	
4	EPOXY		

NLCV453232T Series Specification

9 Reliability Of Ferrite Wire Wound Chip Inductor/FERRITE SERIES

Environmental tests (環境試驗)	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 ± 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 ± 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 ± 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 ± 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 ± 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 ± 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; 28g $\leq$ 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°C for T time, last 125°C T time as 1 cycle. Go through 20 cycles.  從 -40°C 作用T分鐘,然後溫度衝擊到 125°C 作用T分鐘,作為一個循環,共作用20次。

NLCV453232T Series Specification

Physical characteristic tests (物理特性試驗)	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 ² (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 $A \leq 8mm^2$ force $\geq 5N$ time: 30sec $8mm^2 < A \leq 20mm^2$ force $\geq 10N$ time: 10sec $20mm^2 < A$ force $\geq 20N$ 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 $A \leq 8mm^2$ 推力 ≥ 5 牛頓 時間: 30秒 $8mm^2 < A \leq 20mm^2$ 推力 ≥ 10 牛頓 時間: 10秒 $20mm^2 < A$ 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壞	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.



NLCV453232T 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.

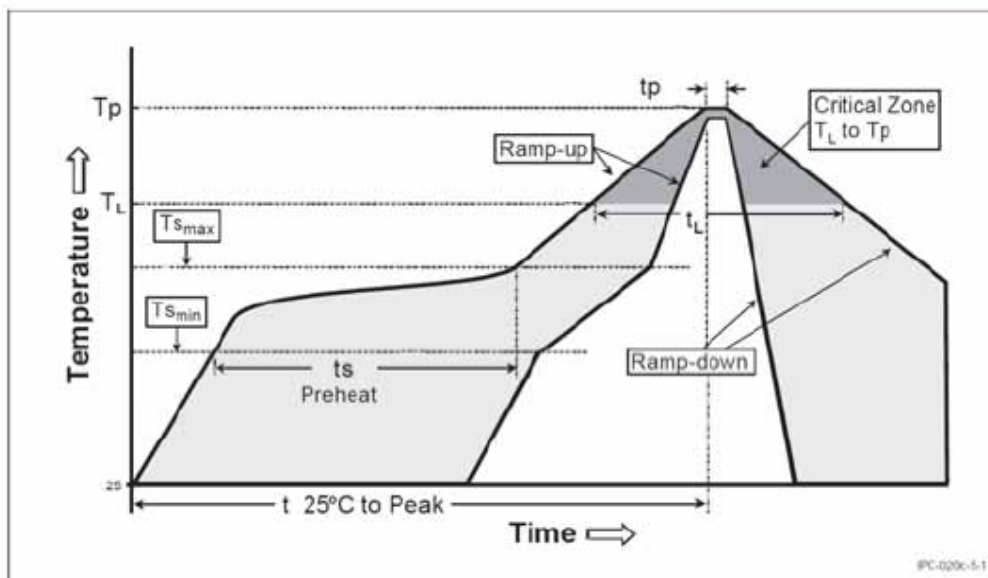
NLCV453232T Series Specification

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 ($T_{s_{max}}$ to T_p)	3 °C/second max.	3° C/second max.
Preheat – Temperature Min ($T_{s_{min}}$) – Temperature Max ($T_{s_{max}}$) – Time ($t_{s_{min}}$ to $t_{s_{max}}$)	100 °C 150 °C 60-120 seconds	150 °C 200 °C 60-180 seconds
Time maintained above: – Temperature (T_L) – Time (t_L)	183 °C 60-150 seconds	217 °C 60-150 seconds
Peak/Classification Temperature (T_p)	See Table 4.1	260±0.5°C
Time within 5 °C of actual Peak Temperature (t_p)	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.





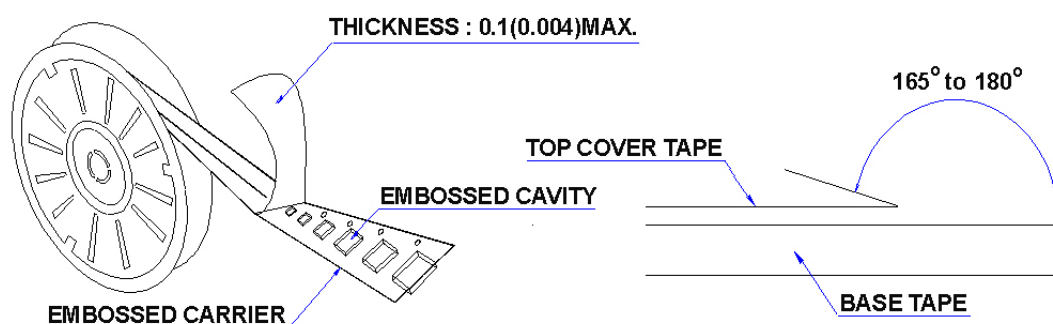
ISO9001 & ISO14001 & TS16949 **CHILISIN ELECTRONICS CORP.**

NLCV453232T Series Specification

10 PACKAGING

10.1 Packaging -Cover tape

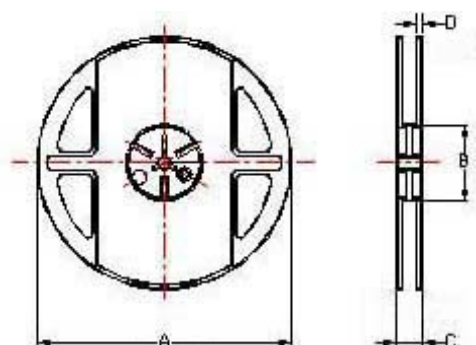
The force for tearing off cover tape is 10 to 130 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	BULK	PCS/REEL
NLV453232	✓	500

10.3 Reel Dimensions

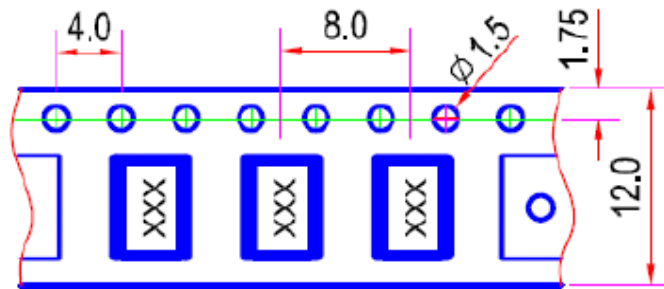


TYPE	A	B	C	D
NLV453232	178	60	16	1.4

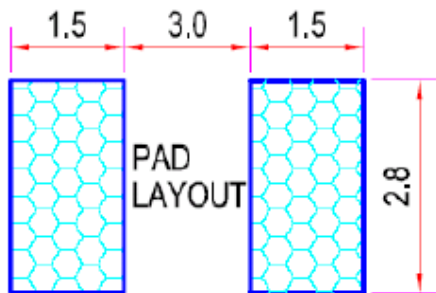
NLCV453232T Series Specification

10 PACKAGING

10.4 Tape Dimensions in mm



11 Recommended Pattern



12 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)