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Jameco Part Number 642741

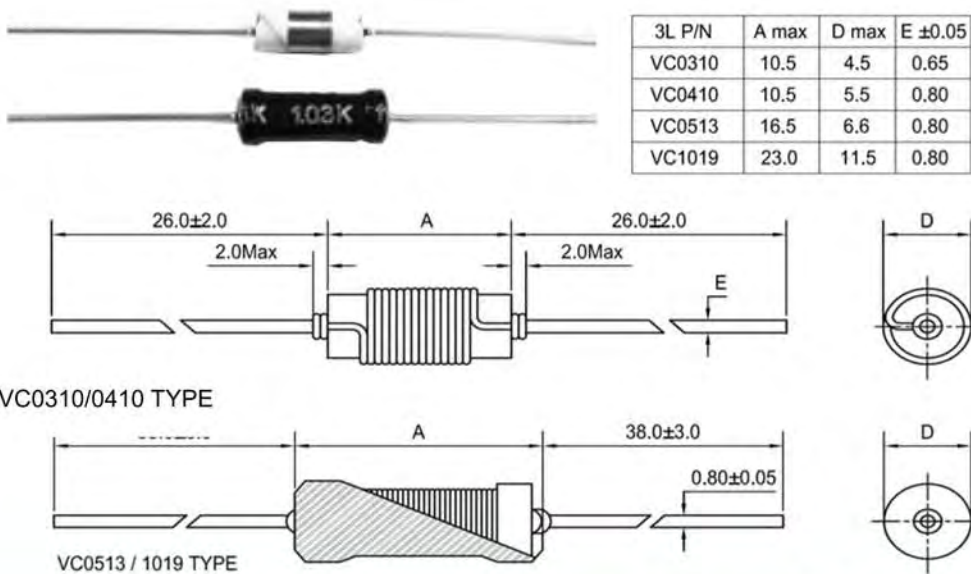
# AXIAL LEADED FIXED INDUCTORS

## VC0310/0410/0513/1019 TYPE



BS EN ISO 9001:2000 FM 39945

### Shape and size : (Dimensions are in mm)



### Features :

- Low cost power inductors.
- High current chokes.
- Wide inductance range.
- High saturation ferrite core.
- Coated with varnish or covered with PVC/UL shrink tubing. VC1019 general coated with UL tube.
- Tape and reel packaging for automatic insertion.

### Ordering information :

**VC 0410 - 1R0 K - S0 - T5**

(1) (2) (3) (4) (5) (6)

- (1) Type : **Varnish Coated.**
- (2) Style : **OD= 4 mm , L=10 mm**
- (3) Inductance : **1R0** for **1.0 uH.**
- (4) Inductance Tolerance: "**J**" : ±5% ; "**K**" : ±10% .
- (5) Sleeve : "**S0**": Black PVC sleeve, "**S6**": Blue....  
"UL": Black UL 125°C Tube; No code: No sleeve.
- (6) Taping Mode: VC0410 **T5** Type; VC0513: **T5X2**  
VC1019: **T5X3**; No code: Bulk.

### Inductance and rated current ranges :

• VC0310	1.0 uH ~ 10uH	1.57A ~ 1.2A
• VC0410	0.15uH ~ 56uH	1.85A ~ 300mA
• VC0513	3.9 uH ~ 18mH	1.28A ~ 39mA
• VC1019	3.9 uH ~ 100mH	4.0 A ~ 65mA

### Characteristics :

- Rated DC Current: The current when temperature of coil increases up to Max.  $\Delta T=40^{\circ}\text{C}$ . ( $T_a=20^{\circ}\text{C}$ ) (VC0410).
- I sat: The current when the inductance becomes 20% lower than its initial value. ( $T_a=20^{\circ}\text{C}$ )
- Suggested rated current: copper wire current density about 8.0 A/mm<sup>2</sup>.
- Operating temperature : -20 °C to 80 °C.

### Test equipment and test setup :

L & Q: HP 4285A with HP42851A (Freq. >75kHz).

L & Q: HP 4284A (Freq.<75kHz).

DCR : Milli-ohm meter.

SRF : HM 9461 L-SRF meter.

- Electrical specifications at 25°C.

### Applications :

- TVs and Audio equipment .
- Telecommunication devices .
- RF filters .

# AXIAL LEADED FIXED INDUCTORS

## VC 0513 TYPE



BS EN ISO 9001:2000 FM 39945

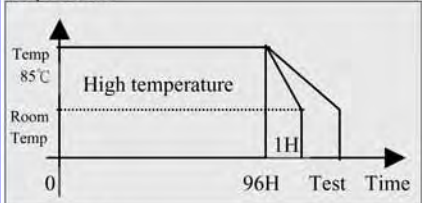
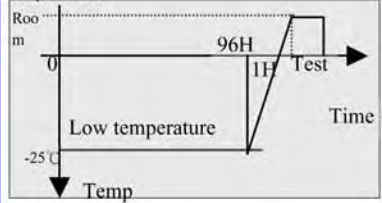
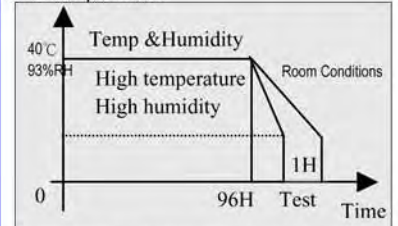
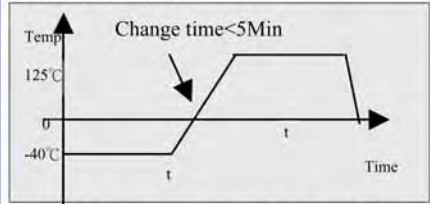
Part No.	L ( $\mu$ H) @1kHz	DCR (Ohm) Max.	I sat. (DC Amps) Ref.	Suggested Rated Current (AC Amps) Ref.
VC0513 -3R9K-□□	3.9	0.019	7.3	1.28
VC0513 -4R7K-□□	4.7	0.022	6.3	1.28
VC0513 -5R6K-□□	5.6	0.024	5.6	1.28
VC0513 -6R8K-□□	6.8	0.026	5.3	1.28
VC0513 -8R2K-□□	8.2	0.028	4.5	1.28
<b>VC0513 -100K-□□</b>	<b>10</b>	<b>0.033</b>	<b>4.1</b>	<b>1.28</b>
VC0513 -120K-□□	12	0.037	3.6	1.28
VC0513 -150K-□□	15	0.040	3.3	1.28
VC0513 -180K-□□	18	0.044	3.0	1.28
VC0513 -220K-□□	22	0.050	2.7	1.28
VC0513 -270K-□□	27	0.058	2.5	1.28
VC0513 -330K-□□	33	0.075	2.2	1.008
VC0513 -390K-□□	39	0.094	2.0	0.804
VC0513 -470K-□□	47	0.109	1.8	0.804
VC0513 -560K-□□	56	0.140	1.7	0.804
VC0513 -680K-□□	68	0.145	1.5	0.804
VC0513 -820K-□□	82	0.152	1.4	0.804
<b>VC0513 -101K-□□</b>	<b>100</b>	<b>0.208</b>	<b>1.2</b>	<b>0.632</b>
VC0513 -121K-□□	120	0.283	1.1	0.508
VC0513 -151K-□□	150	0.340	1.0	0.508
VC0513 -181K-□□	180	0.362	0.95	0.508
VC0513 -221K-□□	220	0.430	0.86	0.508
VC0513 -271K-□□	270	0.557	0.77	0.400
VC0513 -331K-□□	330	0.665	0.70	0.400
VC0513 -391K-□□	390	0.772	0.64	0.400
VC0513 -471K-□□	470	1.15	0.59	0.315
VC0513 -561K-□□	560	1.27	0.54	0.315
VC0513 -681K-□□	680	1.61	0.49	0.250
VC0513 -821K-□□	820	1.96	0.44	0.200
<b>VC0513 -102K-□□</b>	<b>1000</b>	<b>2.30</b>	<b>0.40</b>	<b>0.200</b>
VC0513 -122K-□□	1200	2.65	0.35	0.200
VC0513 -152K-□□	1500	3.45	0.33	0.158
VC0513 -182K-□□	1800	4.03	0.29	0.158
VC0513 -222K-□□	2200	4.48	0.27	0.158
VC0513 -272K-□□	2700	5.90	0.24	0.125
VC0513 -332K-□□	3300	6.56	0.22	0.125
VC0513 -392K-□□	3900	8.63	0.20	0.100
VC0513 -472K-□□	4700	10.5	0.18	0.100
VC0513 -562K-□□	5600	13.9	0.166	0.082
VC0513 -682K-□□	6800	16.3	0.151	0.082
VC0513 -822K-□□	8200	20.8	0.136	0.065
<b>VC0513 -103K-□□</b>	<b>10000</b>	<b>26.4</b>	<b>0.125</b>	<b>0.050</b>
VC0513 -123K-□□	12000	29.2	0.114	0.050
VC0513 -153K-□□	15000	42.5	0.098	0.039
VC0513 -183K-□□	18000	48.3	0.091	

# RELIABILITY TEST CONDITIONS

## EC,PK,VC,FC,TC(IRON CORE) and other similar types

REV:2.0

EC,PK,VC,FC,TC(IRON CORE) and other similar types

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%	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。

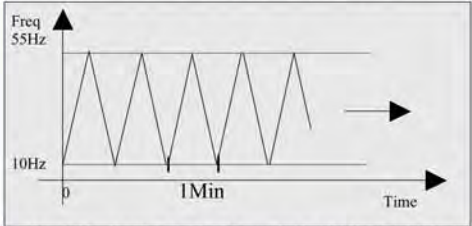
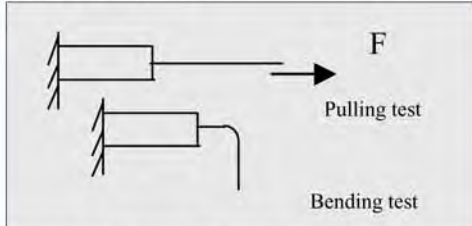
Environmental tests (環境試驗)

# RELIABILITY TEST CONDITIONS

## EC,PK,VC,FC,TC(IRON CORE) and other similar types

REV:2.0

### EC,PK,VC,FC,TC(IRON CORE) and other similar types

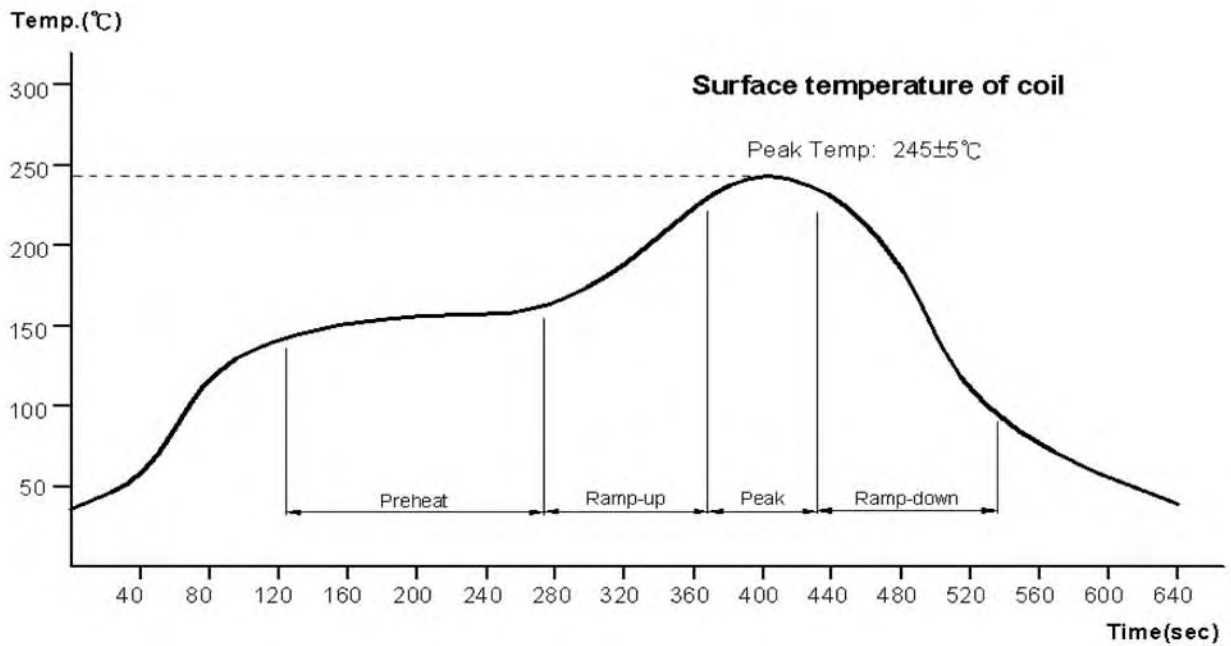
	Item (項目)	Required Characteristics (要求)	Test Method / Condition (測試方法)
Physical characteristic tests (物理特性試驗)	Solderability test Reference documents: MIL-STD-202G Method 208H IPC J-STD-002B  可焊性測試	Terminals area must have 95% min. solder coverage  端子必須有95%以上著錫	1. Dip pads in flux then dip in solder pot at 245±5°C for 5 seconds. 2. Solder: Sn(96)/Ag(4) 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)/Ag(4) 3. 助焊劑: 松香助焊劑
	Heat endurance of flow soldering Reference documents: MIL-STD-202G Method 210F  波峰焊耐熱試驗	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%	1. Dip pads in flux then dip in solder pot at 260±5°C for 10 seconds. 2. Solder: Sn(96)/Ag(4) 3. Flux: rosin flux  1. 端子浸入助焊劑, 然後浸入260±5°C 錫爐中10秒 2. 焊料: Sn(96)/Ag(4) 3. 助焊劑: 松香助焊劑
	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: IEC 68-2-32:1990  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 Reference documents: MIL-STD-202G Method 211A Test A & C  端子強度試驗	1. Terminal should not come out 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 10\%$  For: Wire-leaded components - Test A & C For: Others leaded components - Test A  1. 端子不會松脫 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%	A. Pull Force: 0.45kg; the force shall be applied gradually to the terminal and then maintained for 10 seconds. C. Wire-lead bend: 0.23kg, The rate of bending shall be approximately 3 seconds per bend in each direction. The load shall be suspended at a point within 1/4 inch from the free end of the terminal.   A. 拉力: 0.45公斤力, 拉力逐漸到最大值維持10秒。 C. 線腳彎曲: 0.23公斤力, 每個方向彎曲3次, 負載應該加在離端子末端1/4英寸處
	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。

# RELIABILITY TEST CONDITIONS

REV:2.0

Electrical Characteristic tests (電特性試験)	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

## Curve of Heat endurance of Reflow soldering test



A test is made under the conditions mentioned above. And it is left 1 hours in the normal temperature and humidity. After that, no mechanical and electrical defeat should be found out.

The reflow condition is according to the machine used by our company.