REVISION					
REV	DESCRIPTION	DATE	DESIGNED	CHECKED	APPROVED
A0	文件建立	2022/08/03	时影	Bowen	Darren

High Current, Power Inductors

VCMA-0630-XXX-M-1A Power Choke

Description

- AEC-Q200 qualified
- Halogen Free
- 125°C maximum total temperature operation
- 7.3x6.8x3.0mm maximum surface mount package
- Magnetically shielded, low EMI
- High current carrying capacity, Low core losses
- RoHS compliant

Applications

- Automotive applications

Environmental Data

- Storage temperature range: -55°C to +125 °C
- Operating temperature range: -55°C to +125°C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020 compliant

Description		
VCMA-0630-1R0-M-1A	1.0μH	±20 %
Model	Inductance Value	Inductance Tolerance

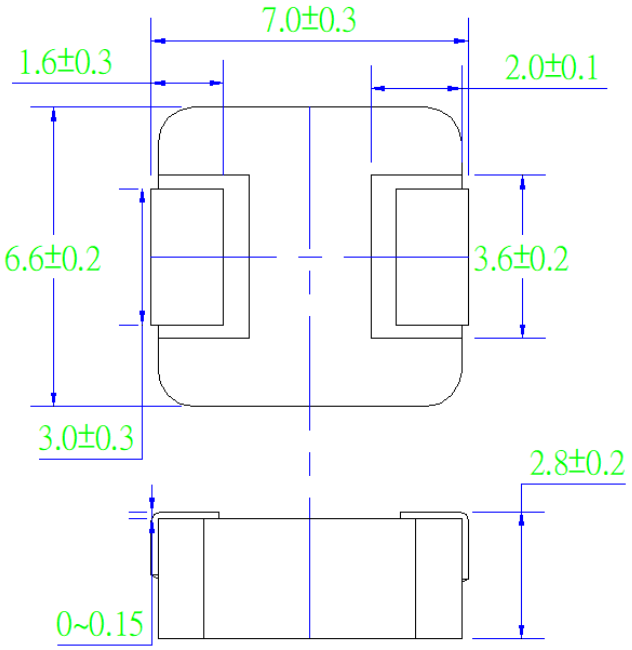
Global Part Number									
V	C	M	A	0	6	3	0	1	R	0	M	1A
Product Series				Dimensions				Inductance		Value	Tolerance	Automotive

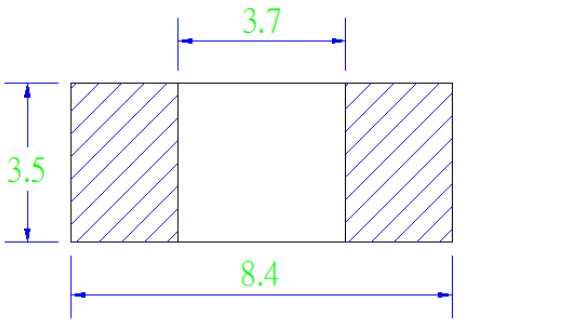
Part No.	Inductance	DC Resistance		Heating Rating Current	Saturation Current
	L0 (μH)	DCR (mΩ)		Idc (A)	Isat (A)
	±20 %, 1MHz, 1V	TYP.	MAX.	TYP.	TYP.
VCMA-0630-R22-M-1A	0.22	2.5	3.0	24.5	40.0
VCMA-0630-R24-M-1A	0.24	2.6	3.1	23.5	32.0
VCMA-0630-R33-M-1A	0.33	3.0	3.5	21.5	27.0
VCMA-0630-R36-M-1A	0.36	3.3	3.7	20.0	26.0
VCMA-0630-R47-M-1A	0.47	3.5	4.1	19.0	22.0
VCMA-0630-R56-M-1A	0.56	3.9	4.5	18.0	19.0
VCMA-0630-R68-M-1A	0.68	4.8	5.3	16.0	18.0
VCMA-0630-R82-M-1A	0.82	5.4	6.0	14.5	17.0
VCMA-0630-1R0-M-1A	1.0	6.7	7.4	13.5	15.5
VCMA-0630-1R5-M-1A	1.5	9.5	11.0	12.0	14.5
VCMA-0630-2R2-M-1A	2.2	13.5	15.0	9.5	12.5
VCMA-0630-3R3-M-1A	3.3	18.0	22.0	8.5	11.0
VCMA-0630-4R7-M-1A	4.7	28.0	33.0	6.2	7.0
VCMA-0630-5R6-M-1A	5.6	37.0	42.0	5.5	6.5
VCMA-0630-6R8-M-1A	6.8	42.5	48.0	5.0	6.0
VCMA-0630-8R2-M-1A	8.2	54.0	60.0	4.5	5.8
VCMA-0630-100-M-1A	10.0	62.0	67.0	4.1	5.5
VCMA-0630-150-M-1A	15.0	95.0	108.0	3.5	4.8
VCMA-0630-220-M-1A	22.0	175.0	200.0	2.5	3.5

Notes

1. All test data is referenced to 25 °C ambient
2. Operating temperature range - 55 °C to + 125 °C
3. Idc(A):DC current (A) that will cause an approximate ΔT of 40 °C(reference ambient temperature is 25 °C)
4. Isat(A):DC current (A) that will cause L0 to drop approximately 30 %
5. The part temperature (ambient + temp rise) should not exceed 125 °C under worst case operating conditions. Circuit design, component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.

•Dimensions-mm





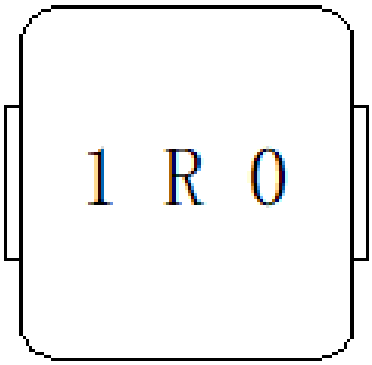
Recommend Land Pattern Dimensions

•Marking

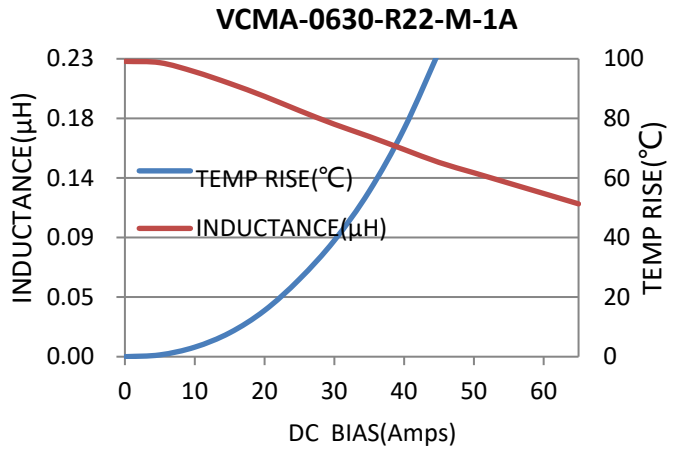
The inductor is marked with a 3-digit code

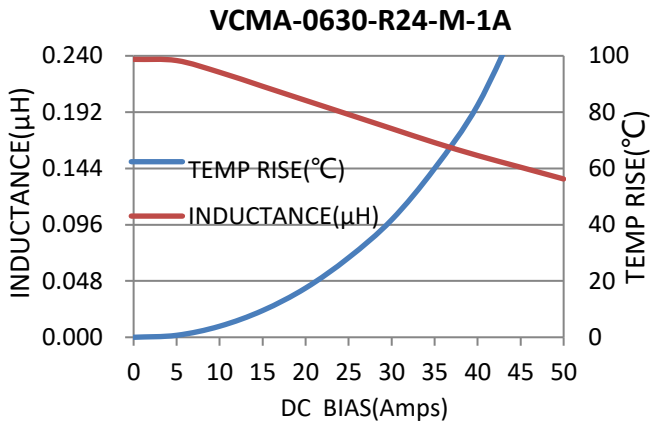
Example - -1.0→1R0

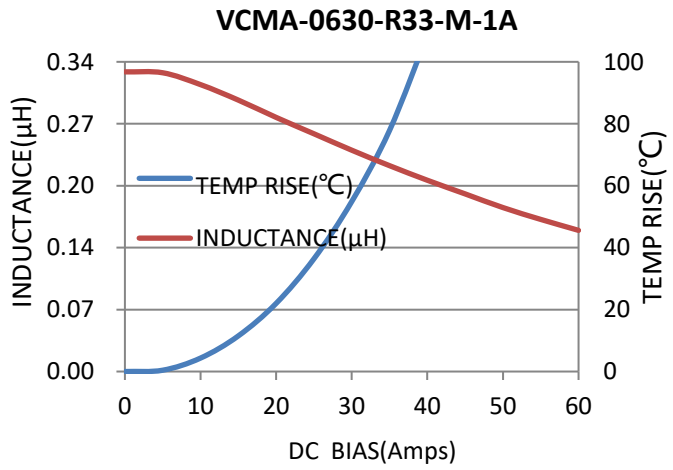
Note：Using Ink for marking

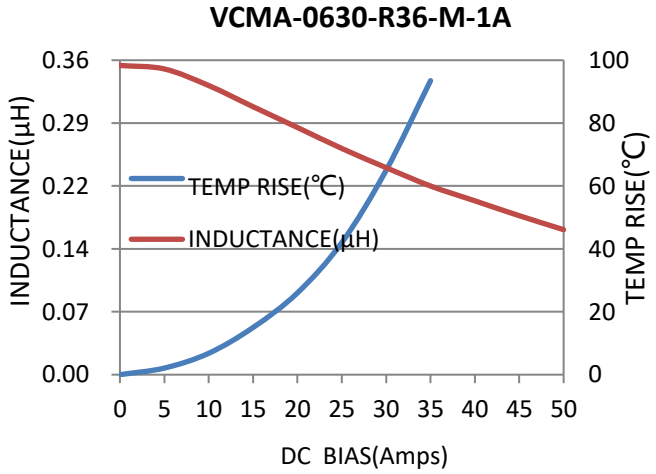


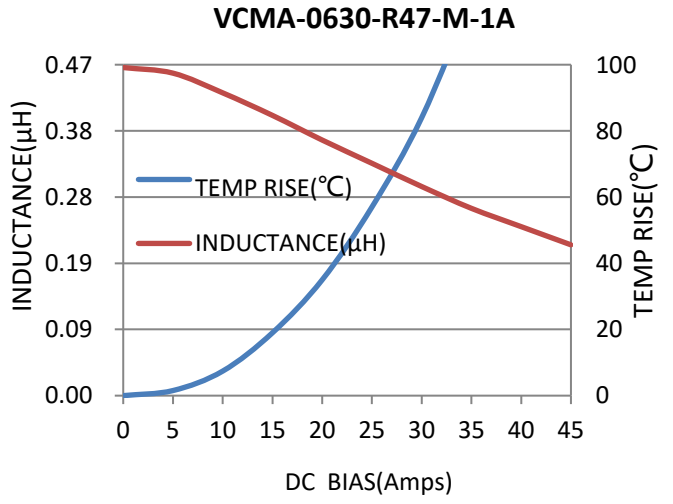
Performance Graphs	
Test Instruments	Test Condition
Wayne kerr 3260B/G LCR Meter Wayne kerr 3265B Bias Current Source	Temperature: 26 ± 3℃ Humidity: < 70% RH Frequency: 1MHz, 1.0V

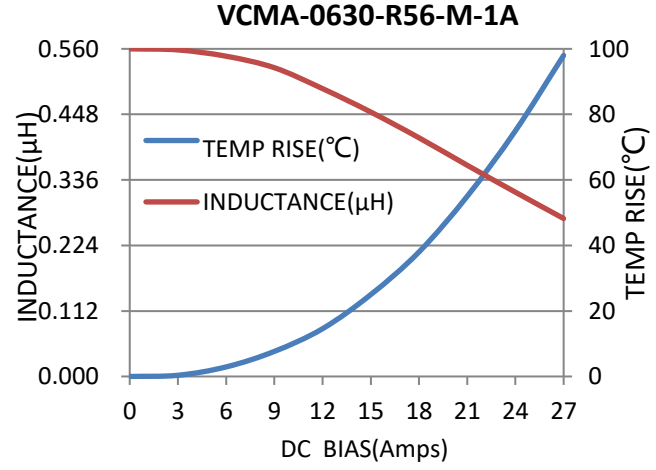




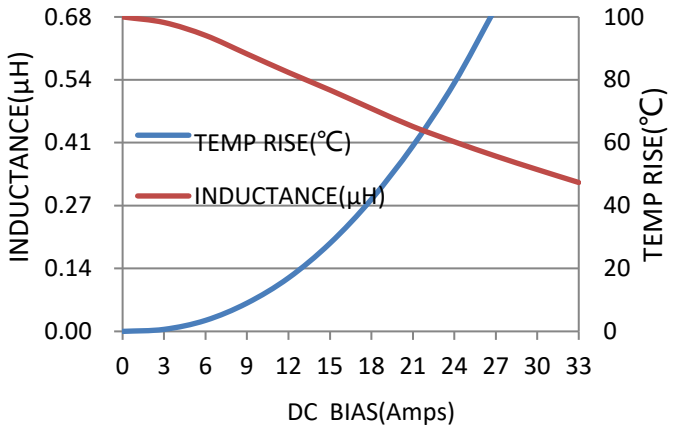








VCMA-0630-R68-M-1A



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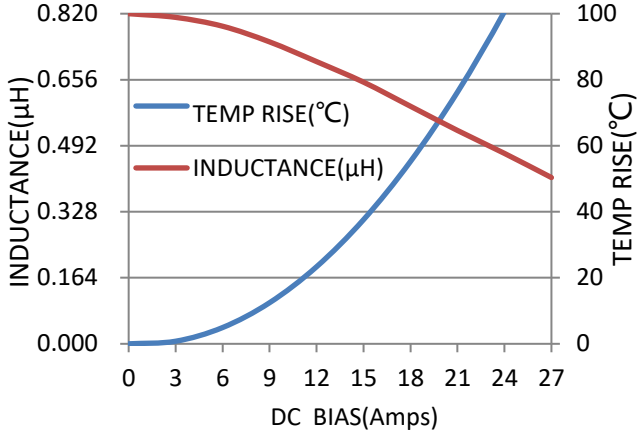
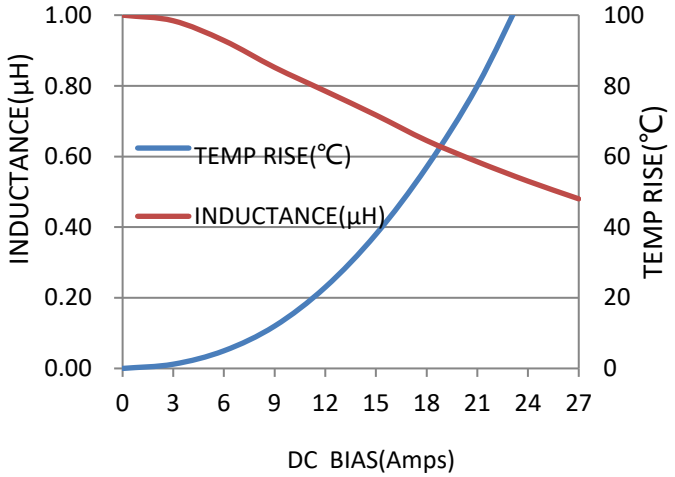


VCMA-0630-1R0-M-1A



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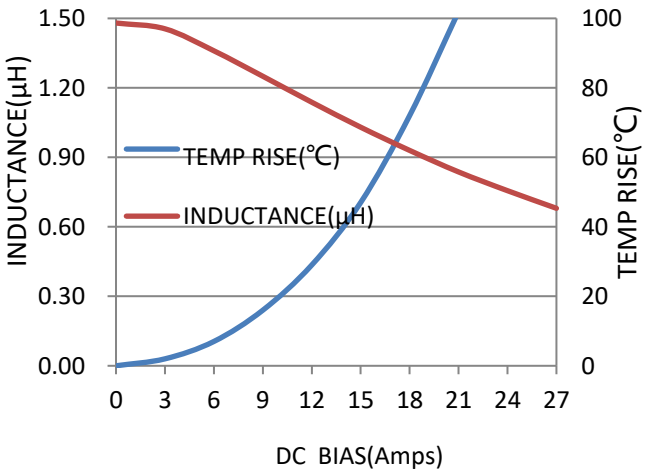

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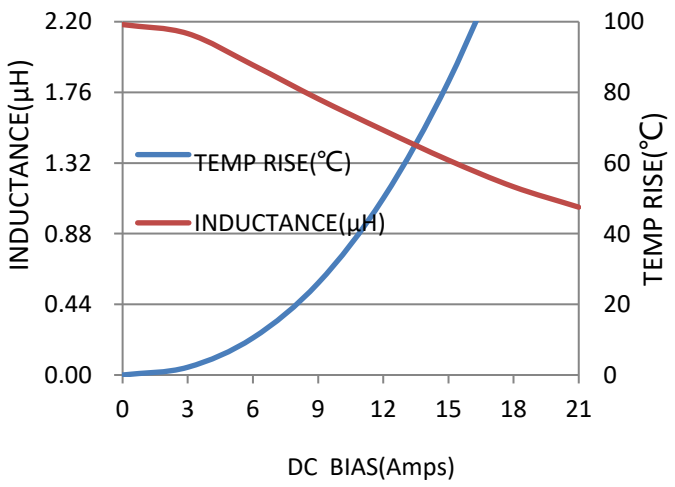

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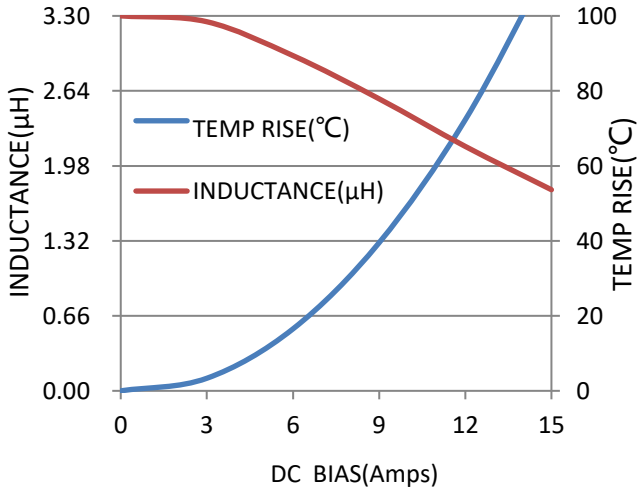

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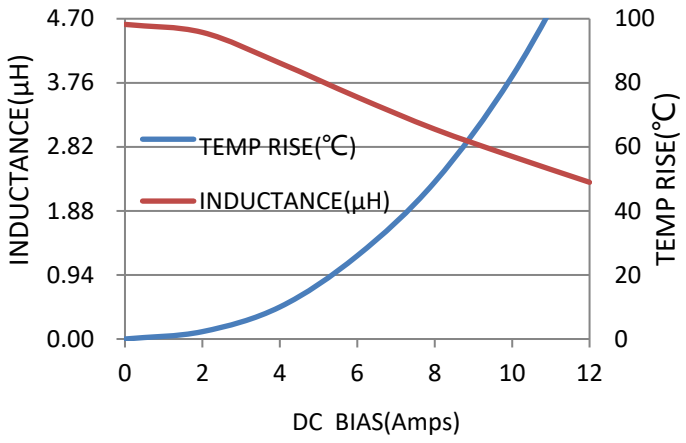

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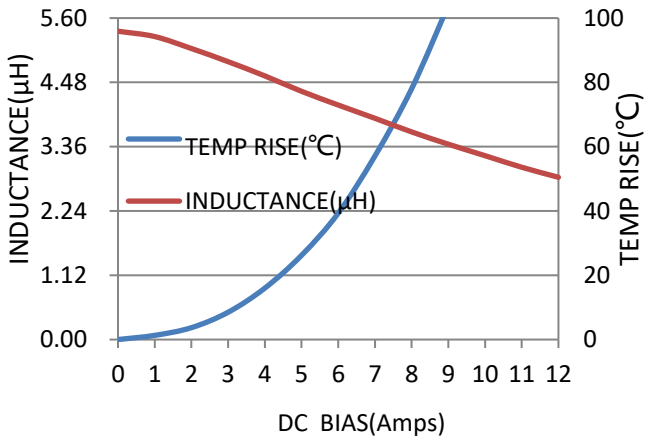

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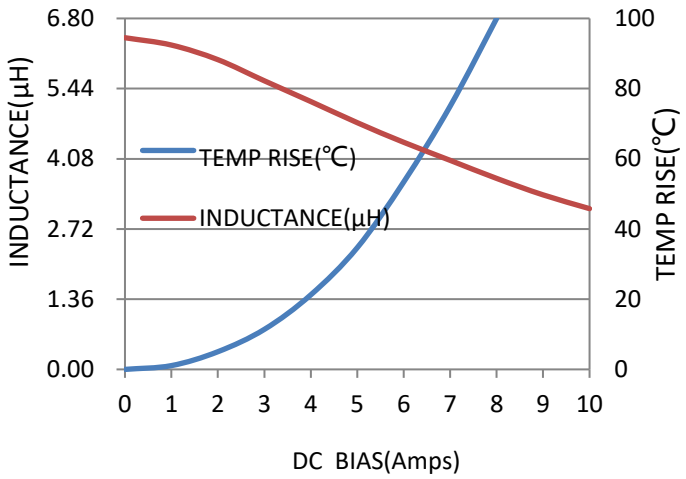
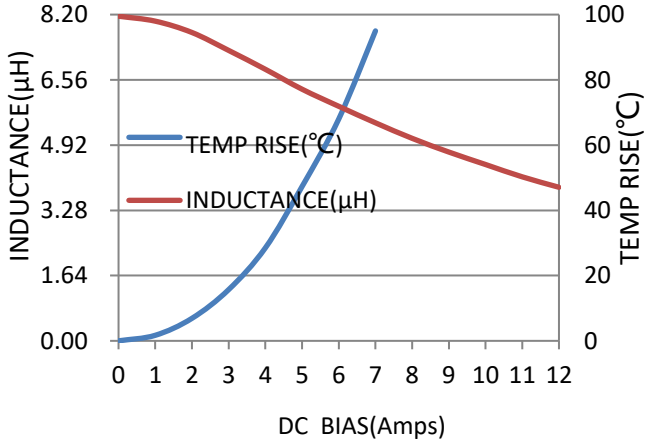
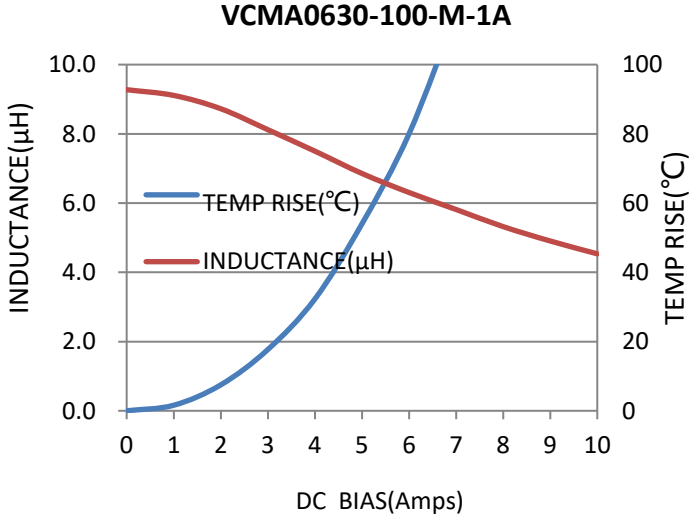


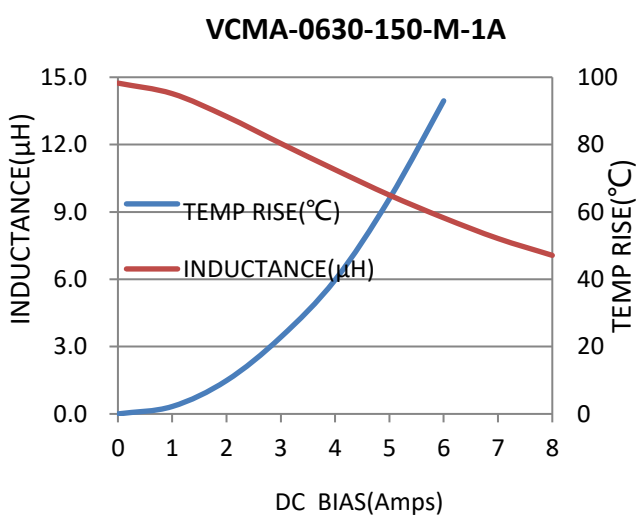
VCMA-0630-8R2-M-1A

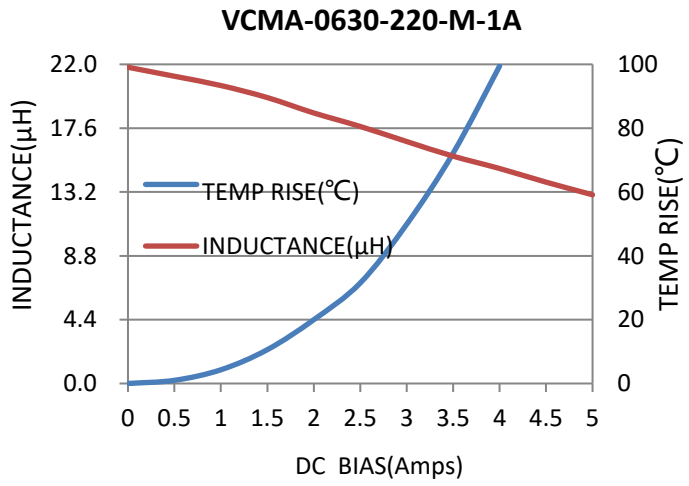


VCMA0630-100-M-1A



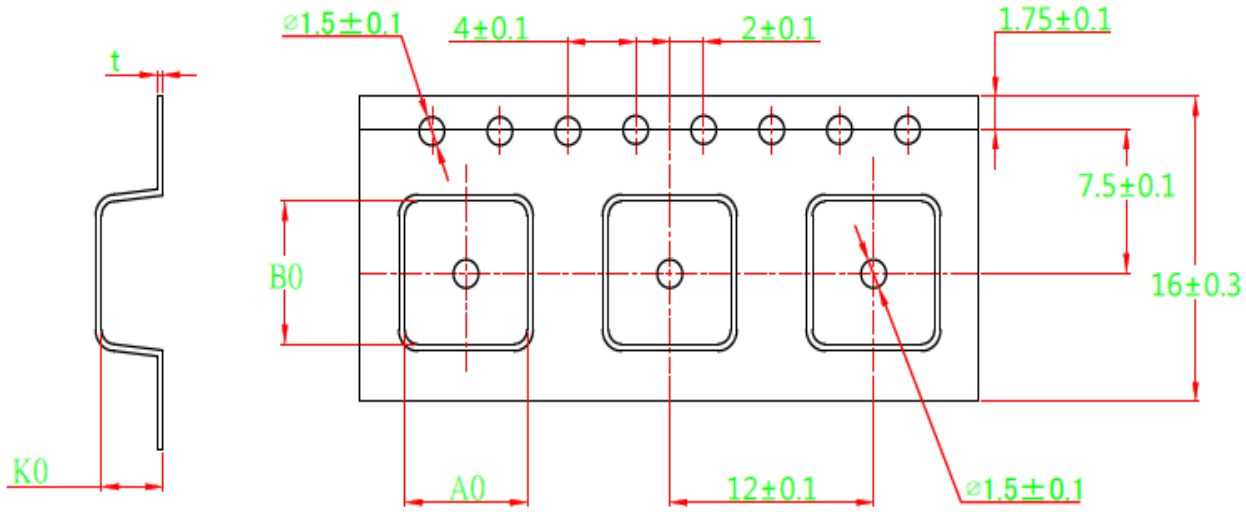
VCMA-0630-150-M-1A




VCMA-0630-220-M-1A
INDUCTANCE(μH)
TEMP RISE(℃)
22.0
17.6
13.2
8.8
4.4
0.0
100
80
60
40
20
0
TEMP RISE(℃)
INDUCTANCE(μH)
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5
DC BIAS(Amps)

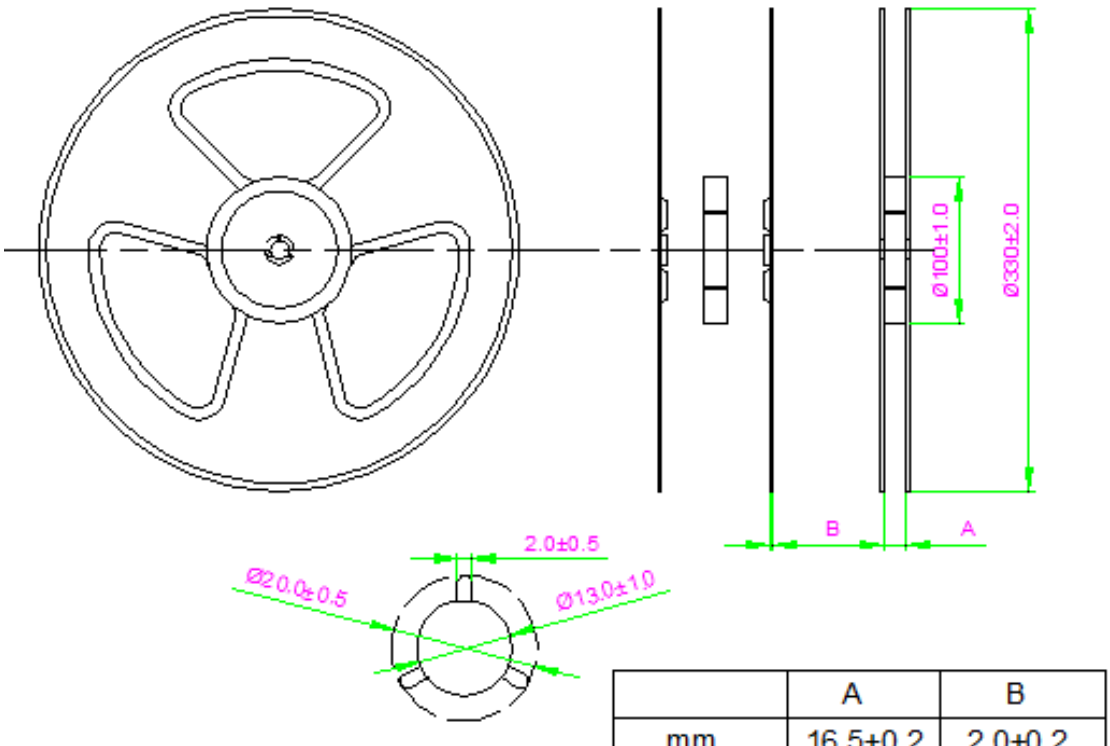
Mechanical Reliability			
No.	Item	Specification and Requirement	Test Method
1	Solderability	The surface of terminal immersed shall be minimum of 95% covered with a new coating of solder	Retention time: 245 ± 5 ℃ for 5+0/-0.5seconds;
2	Resistance to Soldering Heat	Change from an initial value Inductance:within ± 10%	Retention time: within 30 seconds 255 ± 5 ℃ , Three Times;
3	Terminal Strength	No electrode detachment	No electrode detachment should be found when the device is pushed is two directions of X and Y with the force of 17.7N for 60 seconds after soldering between copper plate and the electrodes;
4	Vibration	Inductance change: Within ± 10% Without mechanical damage such as break	1. Vibration frequency: (10 Hz to 2000 Hz to 10Hz) in 20 minutes as a period; 2. Vibration time: Period cycled for four hours in each of 3 mutual perpendicular directions. 3. Amplitude: 1.5 mm max.
5	Mechanical Shock	Inductance change: Within ± 10% Without mechanical damage such as break	1. Peak value: 100 G, Duration of pulse: 6ms 2. 3 times in each positive and negative direction of 3 mutual perpendicular directions;
6	Substrate Bending	Inductance change: Within ± 10% Without distinct damage in appearance	1.Bending speed is 0.5mm/sec, 2.While the bending width reaches 2mm, keep it for 60 sec
Endurance Reliability			
No.	Item	Specification and Requirement	Test Method
7	Thermal Shock	Inductance change: Within ± 10% Without distinct damage in appearance	Repeat 1000 cycles as follow: (-55 ± 2 ℃; 30 ± 3 min)→(+125℃± 2 ℃ , 30 ± 3 min)
8	Operational Life	Inductance change: Within ± 10% Without distinct damage in appearance	Rated current（Idc） Environment condition: 85℃ Duration: 1000 + 4 / -0 hours
9	High Temperature Storage	Inductance change: Within ± 10% Without distinct damage in appearance	Store temperature: +125℃± 2 ℃, 1000 + 4 / -0 hours;
10	High Temperature &Humidity	Inductance change: Within ± 10% Without distinct damage in appearance	85℃85%RH ,1000+4/-0 hours;

Tape Packaging Dimensions



A0	B0	K0	t
7.2±0.10	7.5±0.10	3.6±0.15	0.35±0.05

Reel Dimensions

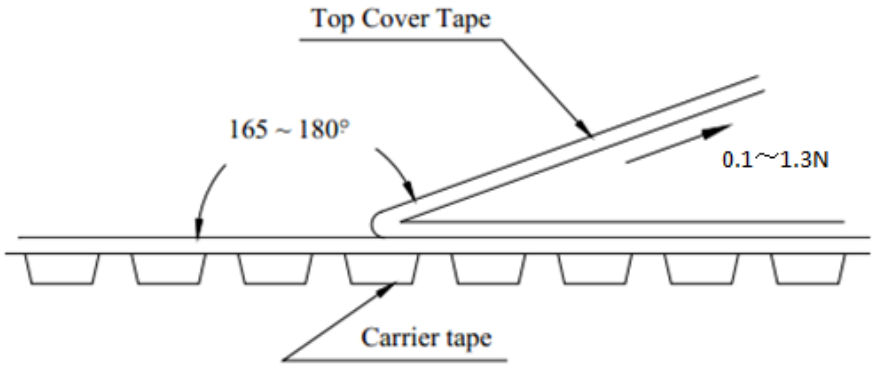


	A	B
mm	16.5±0.2	2.0±0.2

• Peel force of top cover tape

The peel speed shall be about 300mm/minute

The peel force of top cover tape shall be between 0.1 to 1.3 N



• Numbers of taping

1500pieces/reel