



REVISION					
REV	DESCRIPTION	DATE	DESIGNED	CHECKED	APPROVED
A0	Initial Release	2022/08/03	时影	Bowen	Darren
A1	Add 100 Spec	2023/07/20	吕秀秀	Bowen	Darren
A2	Add R10 Spec	2024/05/07	吕秀秀	王攀	Darren
A3	Add Solder Reflow Profile And Idc max Isat max	2025/11/19	Kalyn	Wangkai	Darren
A4	Add Rated Voltage 40V	2025/11/26	Kalyn	Wangkai	Darren

High Current, Power Inductors

VCMA-0420-XXX-M-1A Power Choke



Description

- AEC-Q200 qualified
- Halogen Free
- 125°C maximum total temperature operation
- 4.75x4.45x2.0mm 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

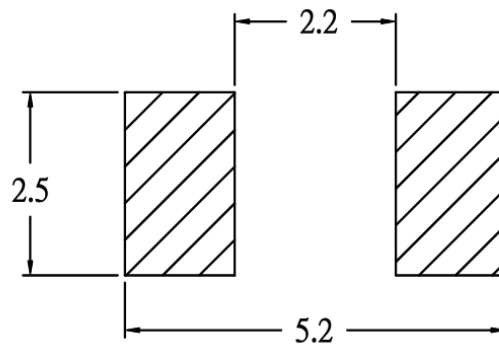
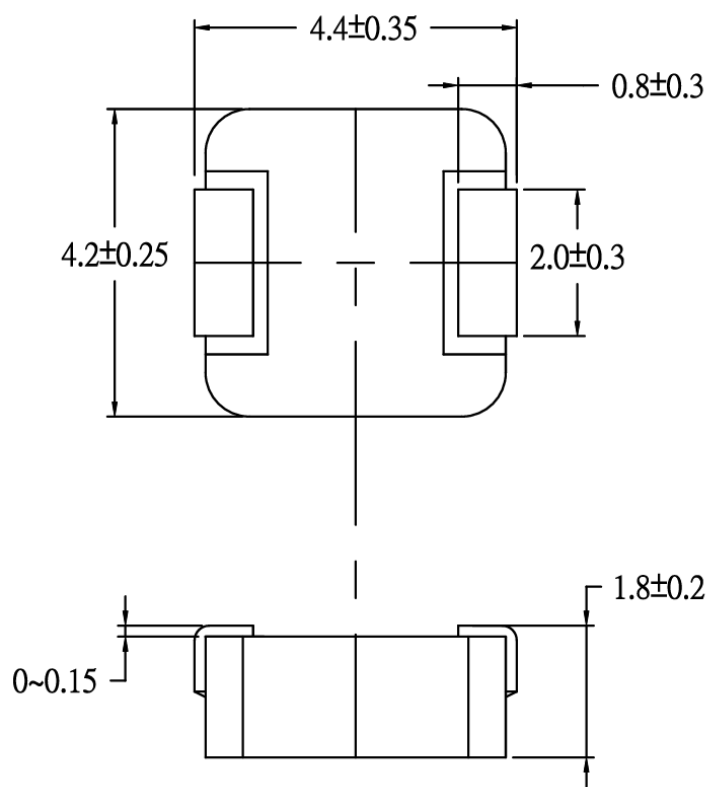
Description												
VCMA-0420-1R0-M-1A				1.0μH				±20%				
Model				Inductance Value				Inductance Tolerance				
Global Part Number												
V	C	M	A	0	4	2	0	1	R	0	M	1A
Product Series				Dimensions				Inductance Value		Tolerance		125°C

Part No.	Inductance	DC Resistance		Heating Rating Current		Saturation Current		Rated Voltage
	L0 (μH)	DCR (mΩ)		Idc (A)		Isat (A)		V
	±20%, 1MHz, 1.0V	TYP.	MAX.	TYP.	MAX.	TYP.	MAX.	MAX.
VCMA-0420-R10-M-1A	0.10	3.5	4.0	15.0	12.0	22.0	20.0	40
VCMA-0420-R22-M-1A	0.22	5.0	5.6	12.0	10.0	18.5	17.5	40
VCMA-0420-R33-M-1A	0.33	7.0	8.0	10.0	9.0	16.0	15.0	40
VCMA-0420-R47-M-1A	0.47	10.5	12.0	8.5	8.0	12.0	11.0	40
VCMA-0420-R56-M-1A	0.56	11.0	13.0	8.0	7.5	10.5	10.0	40
VCMA-0420-R68-M-1A	0.68	12.0	14.0	7.5	7.0	9.0	8.5	40
VCMA-0420-1R0-M-1A	1.0	19.5	24.0	6.5	6.0	7.5	7.0	40
VCMA-0420-1R2-M-1A	1.2	22.0	27.0	6.2	5.8	7.0	6.5	40
VCMA-0420-1R5-M-1A	1.5	25.0	30.0	4.8	4.5	6.5	6.0	40
VCMA-0420-2R2-M-1A	2.2	42.0	50.0	4.2	4.0	5.5	5.0	40
VCMA-0420-3R3-M-1A	3.3	72.0	82.0	3.3	3.0	4.5	4.0	40
VCMA-0420-4R7-M-1A	4.7	95.0	105.0	2.5	2.2	3.3	3.0	40
VCMA-0420-6R8-M-1A	6.8	168.0	185.0	2.0	1.8	2.6	2.3	40
VCMA-0420-100-M-1A	10.0	245.0	281.0	1.7	1.4	2.2	2.1	40

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



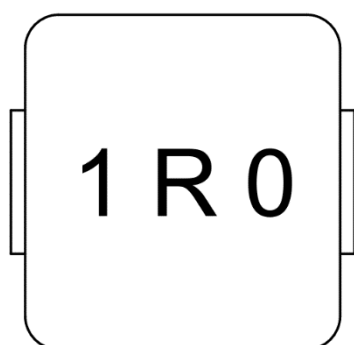
Recommend Land Pattern Dimensions

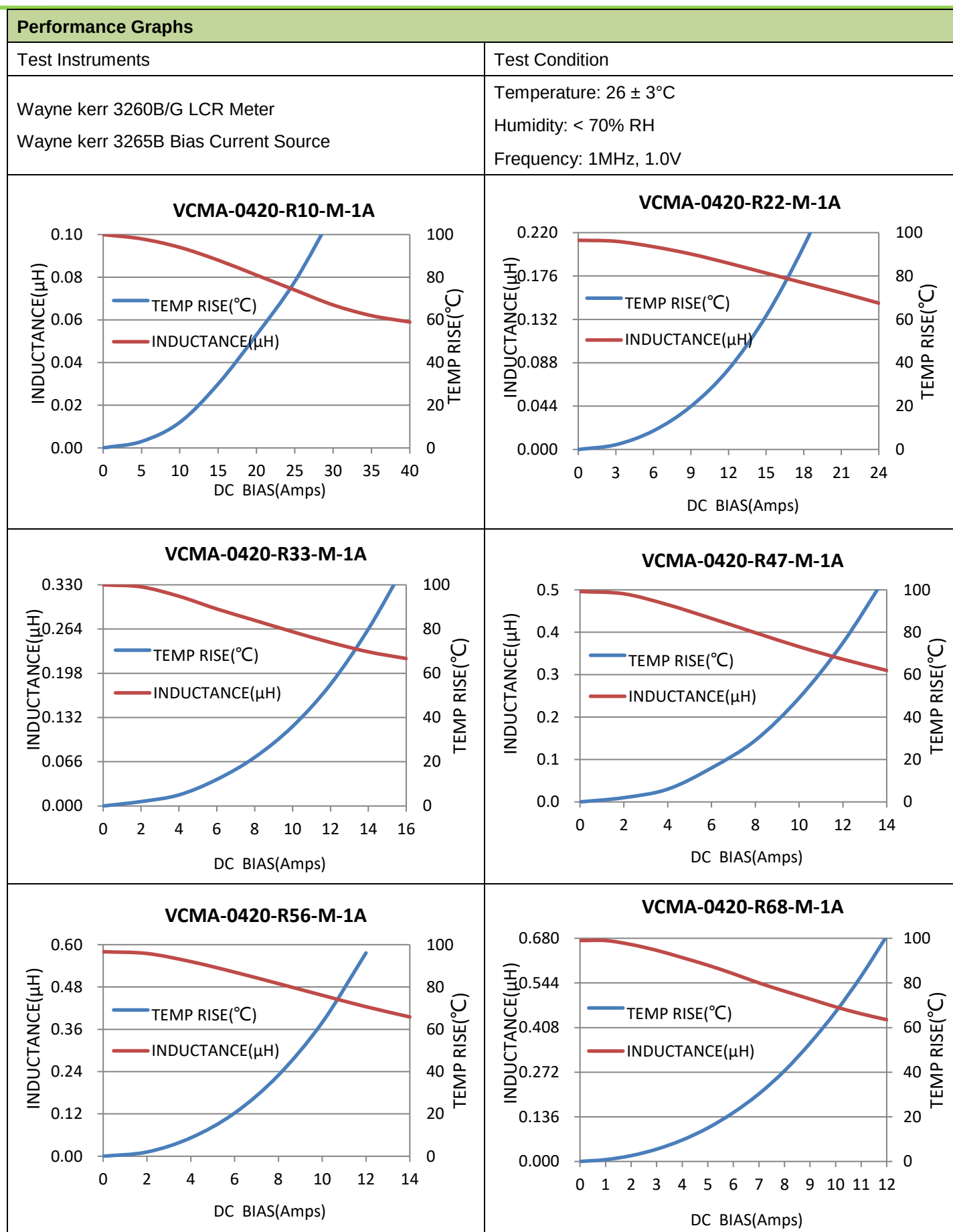
• Marking

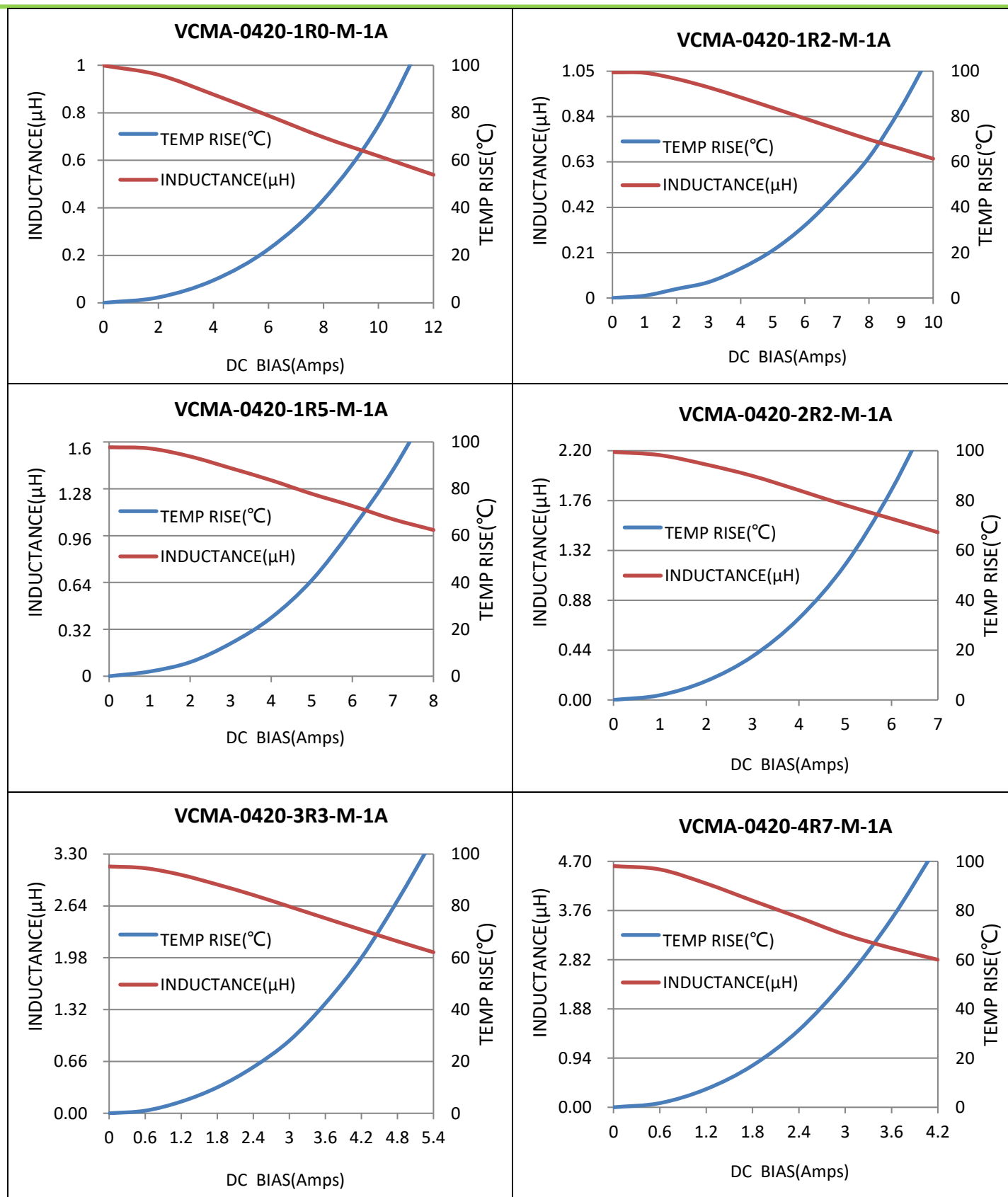
The inductor is marked with a 3-digit code

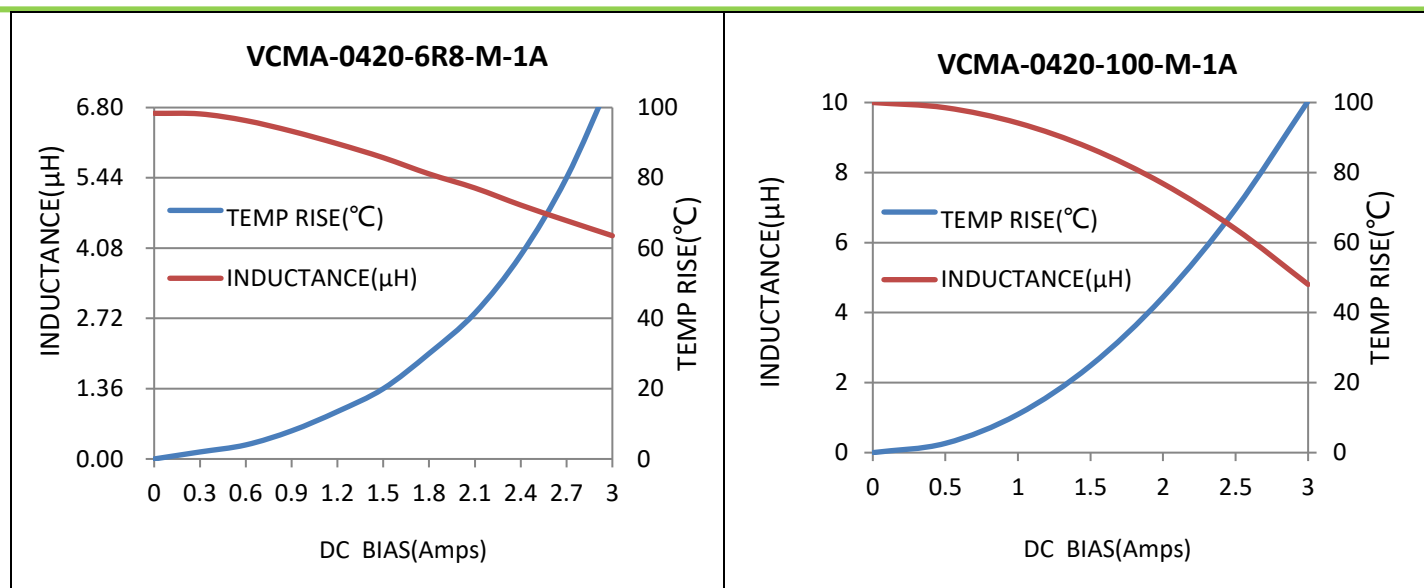
Example - -1.0→1R0

Note: Using Ink for marking

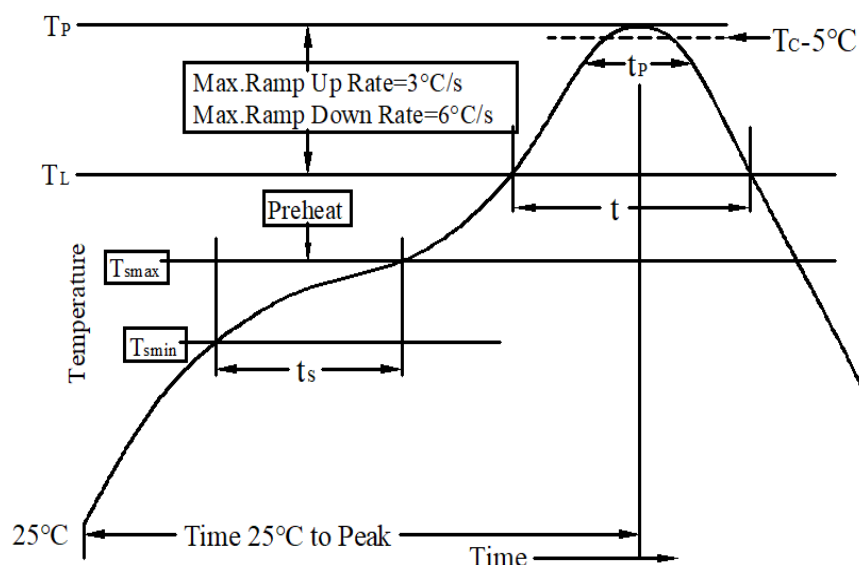








• Solder Reflow Profile


Table 1-Standard SnPb Solder(T_c)

Package Thickness	Volume mm^3	Volume mm^3
	<350	<350
<2.5mm	235°C	220°C
$\geq 2.5\text{mm}$	220°C	220°C

Table 2-Lead(Pb) Free Solder(T_c)

Package Thickness	Volume mm^3	Volume mm^3	Volume mm^3
	<350	350-2000	>2000
<1.6mm	260°C	260°C	260°C
1.6-2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

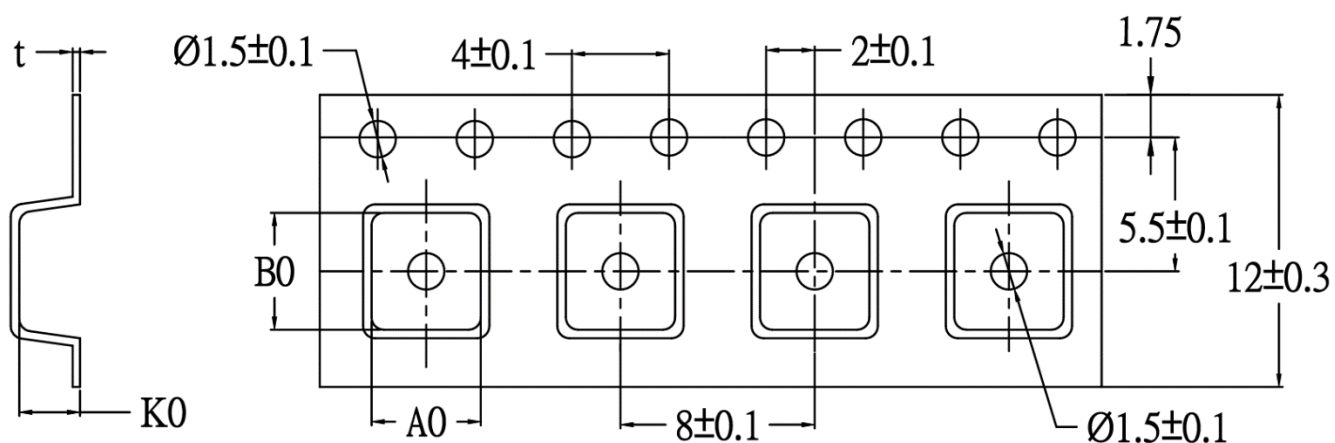
Reference JDEC J-STD-020

Profile Feature	Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak		
• Temperature min. ($T_{s\min}$)	100°C	150°C
• Temperature max. ($T_{s\max}$)	150°C	200°C
• Time ($T_{s\min}$ to $T_{s\max}$) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate $T_{s\max}$ to T_p	3°C/Second Max.	3°C/Second Max.
Liquidous temperature (T_L)	183°C	217°C
Time at liquidous (t_L)	60-150 Seconds	60-150 Seconds
Peak package body temperature (T_p)*	Table 1	Table 2
Time (t_p)** within 5°C of the specified classification temperature (T_c)	20 Seconds**	30 Seconds**
Average ramp-down rate (T_p to $T_{s\max}$)	6°C/Second Max.	6°C/Second Max.
Time 25°C to Peak Temperature	6 Minutes Max.	8 Minutes Max.

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

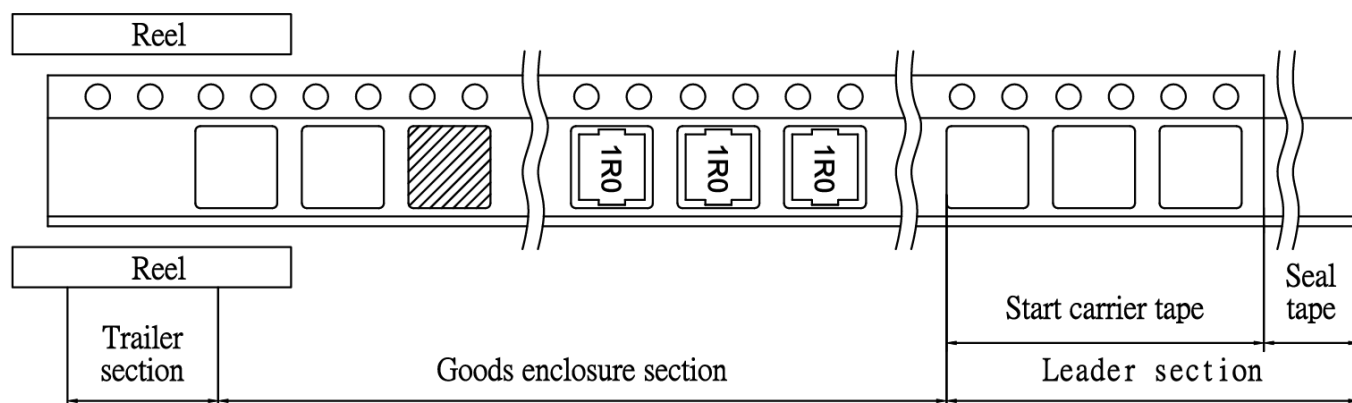
** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

Tape Packaging Dimensions-mm



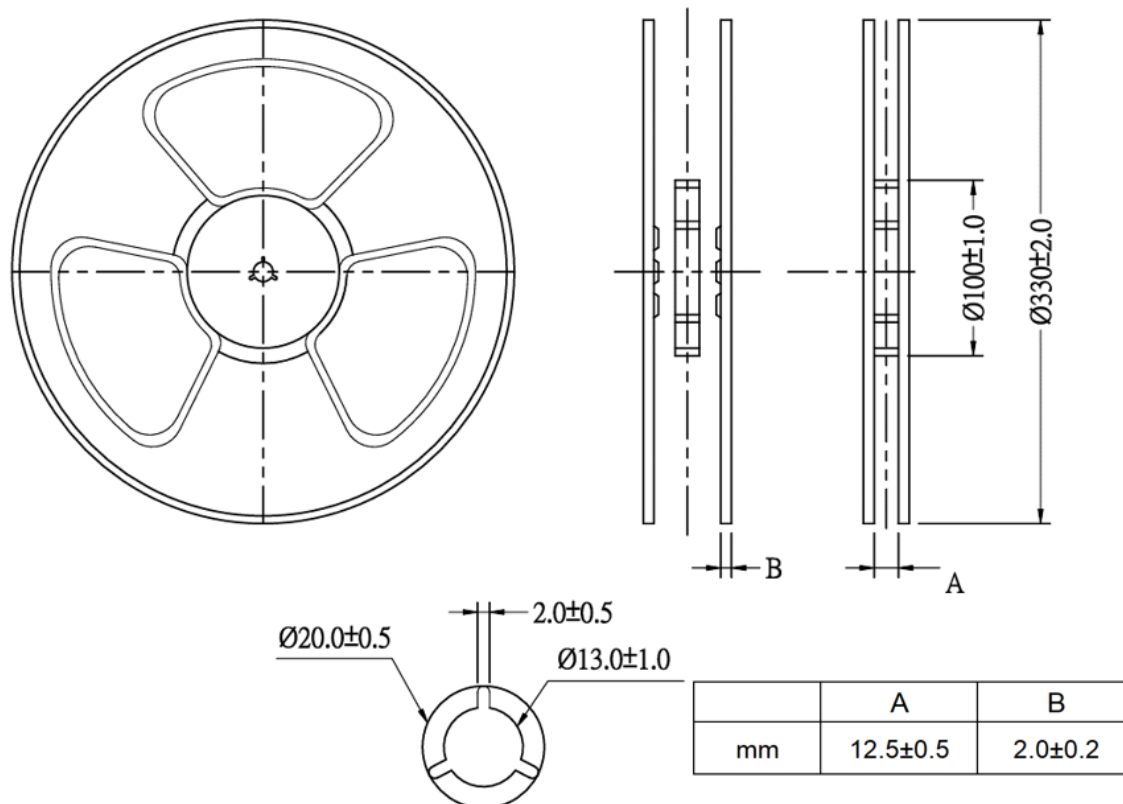
A0	B0	K0	t
4.5±0.1	4.8±0.1	2.5±0.15	0.35±0.05

Taping dimension and tape direction, Leader, Trailer, section dimension



Leader section	Min.400mm
Carrier tape start size	Min.100mm
Trailer section size	Min.160mm

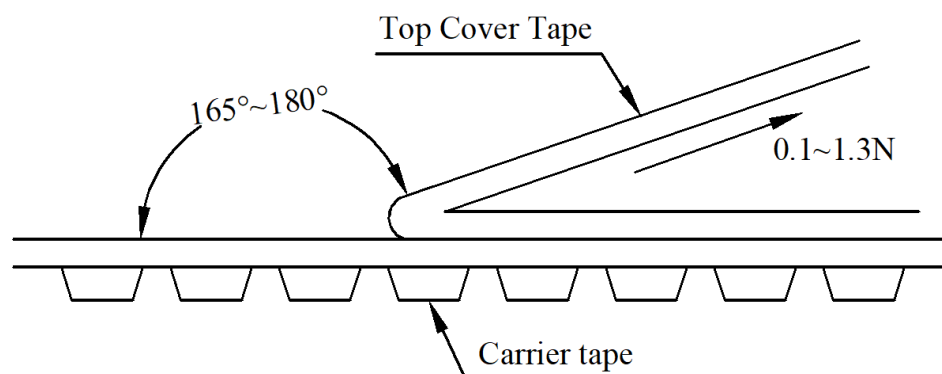
Reel Dimensions-mm



• 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

3000pieces/reel