

Inductors for power circuits

Wound metal

SPM-VC-D series (for automobiles)



AEC-Q200

SPM7054VC-D type



FEATURES

- Metal composite type wound inductor for power circuits using a metallic magnetic material.
- Compared to ferrite wound type inductors, low Rdc and miniaturization can be realized due to superior DC superimposition characteristics of metallic magnetic materials.
- Vibration resistance of 30 G due to vibration resistance structure
- Operating temperature range: -55 to +155°C (including self-temperature rise)
- Compliant with AEC-Q200

APPLICATION

- Automotive-related equipment (LED, ECM, ADAS, BCM etc.)

PART NUMBER CONSTRUCTION

SPM7054VC	-	101	M	-	D
Series name		Inductance (μH)	Inductance tolerance		Internal code

CHARACTERISTICS SPECIFICATION TABLE

L (μH)	Tolerance	Measuring frequency (kHz)	DC resistance				Itemp (A)typ. (ΔT=40deg.C)	Part No.
			(mΩ)typ.	Tolerance	Isat (A)typ. (ΔL=-20%)	(ΔL=-30%)		
100	±20%	100	334	±15%	2.6	3.4	1.8	SPM7054VC-101M-D

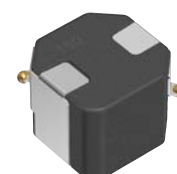
Isat: Based on the rate of change from the initial value of the inductance with DC current

Itemp: Based on self-temperature rise due to DC current (rated current)

Measurement equipment

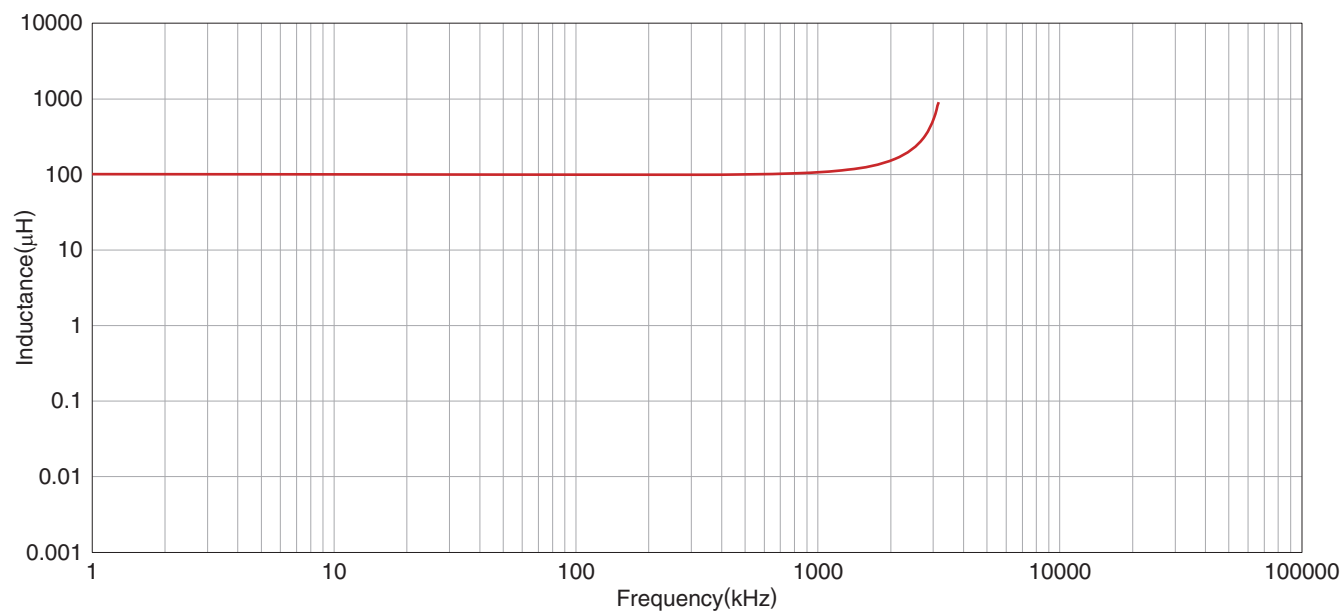
Measurement item	Product No.	Manufacturer
L	4285A	Keysight Technologies
DC resistance	3541	HIOKI

* Equivalent measurement equipment may be used.



SPM7054VC-D type

L FREQUENCY CHARACTERISTICS

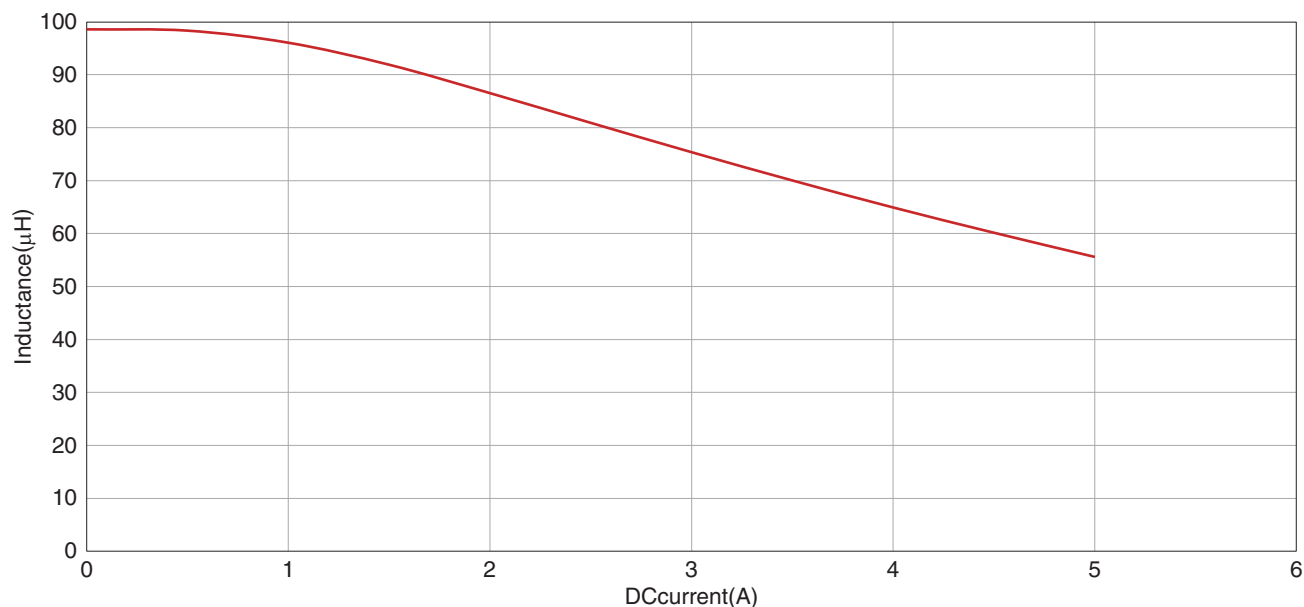


Measurement equipment

Product No.	Manufacturer
4294A	Keysight Technologies

* Equivalent measurement equipment may be used.

L VS. DC BIAS CHARACTERISTICS



Measurement equipment

Product No.	Manufacturer
4284A+42841A	Keysight Technologie

* Equivalent measurement equipment may be used.

■ SHAPE & DIMENSIONS



Dimensions in mm

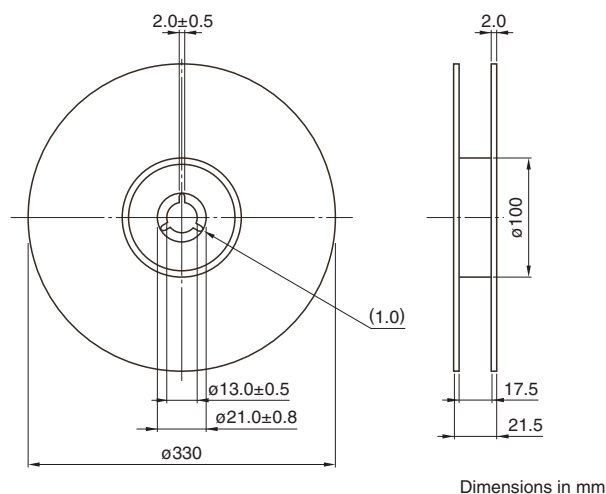
The graph illustrates the temperature profile over time for a welding process. The y-axis represents Temperature and the x-axis represents Time. The process is divided into three main stages:

- Preheating:** The temperature starts at 150°C and rises to 180°C. This stage is shaded light blue and has a duration of 60 to 120 seconds.
- Soldering:** The temperature rises from 180°C to a peak of 245°C and then cools back to 230°C. This stage is shaded light blue and has a duration of 10 to 30 seconds. The peak temperature is labeled as 245°C.
- Natural cooling:** The temperature continues to decrease from 230°C. This stage is also shaded light blue.

Key temperature points and durations are indicated on the graph:

- Start temperature: 150°C
- Temperature after preheating: 180°C
- Temperature at the end of soldering: 230°C
- Peak temperature: 245°C
- Duration of preheating: 60 to 120s
- Duration of soldering: 10 to 30s

□ REEL DIMENSIONS



Technical drawing of a sprocket with dimensions in mm. The drawing shows a side view and a cross-section. Dimensions include: 0.4, $1.5^{+0.1}_{-0}$, 2.0 ± 0.1 , 4.0 ± 0.1 , 1.75 ± 0.1 , 7.5 ± 0.1 , 16.0 ± 0.3 , 12.0 ± 0.1 , A, B, K, and Sprocket hole. The text "Dimensions in mm" is at the bottom right.

☐ PACKAGE QUANTITY

■ TEMPERATURE RANGE, INDIVIDUAL WEIGHT

* Operating temperature range includes self-temperature rise.
** The storage temperature range is for after the assembly.

REMINDERS FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using this products.

REMINDERS

- The storage period is within 12 months. Be sure to follow the storage conditions (temperature: 5 to 40°C, humidity: 10 to 75% RH or less).
If the storage period elapses, the soldering of the terminal electrodes may deteriorate.
- Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, etc.).
- Soldering corrections after mounting should be within the range of the conditions determined in the specifications.
If overheated, a short circuit, performance deterioration, or lifespan shortening may occur.
- Do not use products that have received any excessive mechanical shock such as by being dropped.
- When embedding a printed circuit board where a chip is mounted to a set, be sure that residual stress is not given to the chip due to the overall distortion of the printed circuit board and partial distortion such as at screw tightening portions.
- Self heating (temperature increase) occurs when the power is turned ON, so the tolerance should be sufficient for the set thermal design.
- Do not expose the products to magnets or magnetic fields.
- The performance of the product may deteriorate if coating materials are used, thus please assess the situation beforehand by taking this factor into consideration.
- Do not use for a purpose outside of the contents regulated in the delivery specifications.
- The products described in this catalog are intended to be installed in automobiles or automotive electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) and to be used in automobiles (including the case where the said automotive product is mounted in a vehicle) or standard applications as general electronic equipment in automotive applications or standard applications as general electronic equipment in automotive applications in accordance with the scope and conditions described in this specification, while the said automotive or general electronic equipment including the said product is intended to be used in the usual operation and usage methods, respectively. Other than automotive or automotive products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality requires a more stringent level of safety or reliability, or whose failure, malfunction or defect could cause serious damage to society, person or property.
Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet.
If you intend to use the products in the applications listed below or if you have special requirements exceeding the range or conditions set forth in this specification, please contact us.

- (1) Aerospace/aviation equipment
- (2) Transportation equipment (electric trains, ships, etc.)
- (3) Medical equipment
- (4) Power-generation control equipment
- (5) Atomic energy-related equipment
- (6) Seabed equipment
- (7) Transportation control equipment

- (8) Public information-processing equipment
- (9) Military equipment
- (10) Electric heating apparatus, burning equipment
- (11) Disaster prevention/crime prevention equipment
- (12) Safety equipment
- (13) Other applications that are not considered general-purpose applications

When designing your equipment even for general-purpose applications, you are kindly requested to take into consideration securing protection circuit/device or providing backup circuits in your equipment.