

Inductors for power circuits
Thin-film metal magnetic material
TFM-ALC series



TFM201610ALC-TAA type



FEATURES

- By using metal magnetic material with high Saturation magnetic flux density the excellent DC bias characteristics needed for inductors for power circuits can be achieved.
- With the same product shape and terminal structure as general chip parts it has excellent mounting stability characteristics and can also be mounted to general-purpose land patterns.
- By using a closed magnetic circuit structure leakage flux is minimized.

APPLICATION

- Smart phones, tablet terminals, HDDs, SSDs, DVCs, DSCs, mobile display panels, portable game devices, compact power supply modules, other

PART NUMBER CONSTRUCTION

TFM	201610	ALC	-	R47	M	T	AA
Series name	LxWxH dimensions 2.0x1.6x1.0 mm	Characteristic type		Inductance (μH)	Inductance tolerance	Packaging style	Internal code

CHARACTERISTICS SPECIFICATION TABLE

L		L measuring frequency	DC resistance		Rated current*		Part No.	
(μH)	Tolerance	(MHz)	(mΩ)max.	(mΩ)typ.	Isat (A)max.	(A)typ.	Itemp (A)max.	(A)typ.
0.47	±20%	1.0	25	20	5.1	5.2	4.9	5.2
1.0	±20%	1.0	47	43	3.0	3.3	3.4	3.6

* Rated current: smaller value of either Isat or Itemp.

Isat: When based on the inductance change rate (30% below the initial L value)

Itemp: When based on the temperature increase (temperature increase of 40°C by self heating)

Measurement equipment

Measurement item	Product No.	Manufacturer
L	4294A	Keysight Technologies
DC resistance	AX-114N	ADEX
Rated current Isat	4284A+42841A+42842C	Keysight Technologies

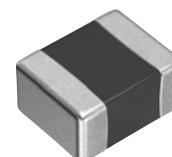
* Equivalent measurement equipment may be used.

TEMPERATURE RANGE, INDIVIDUAL WEIGHT

Operating temperature range*	Storage temperature range**	Individual weight
-40 to +125 °C	-40 to +85 °C	18 mg

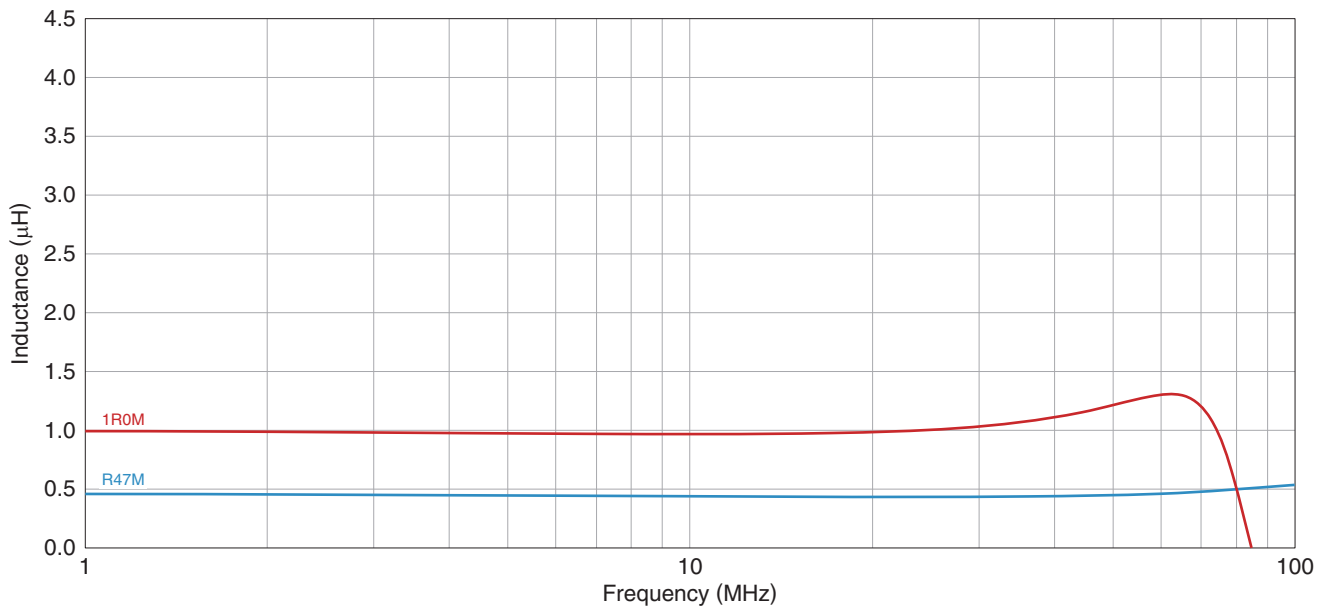
* Operating temperature range includes self-temperature rise.

** The storage temperature range is for after the assembly.



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L FREQUENCY CHARACTERISTICS

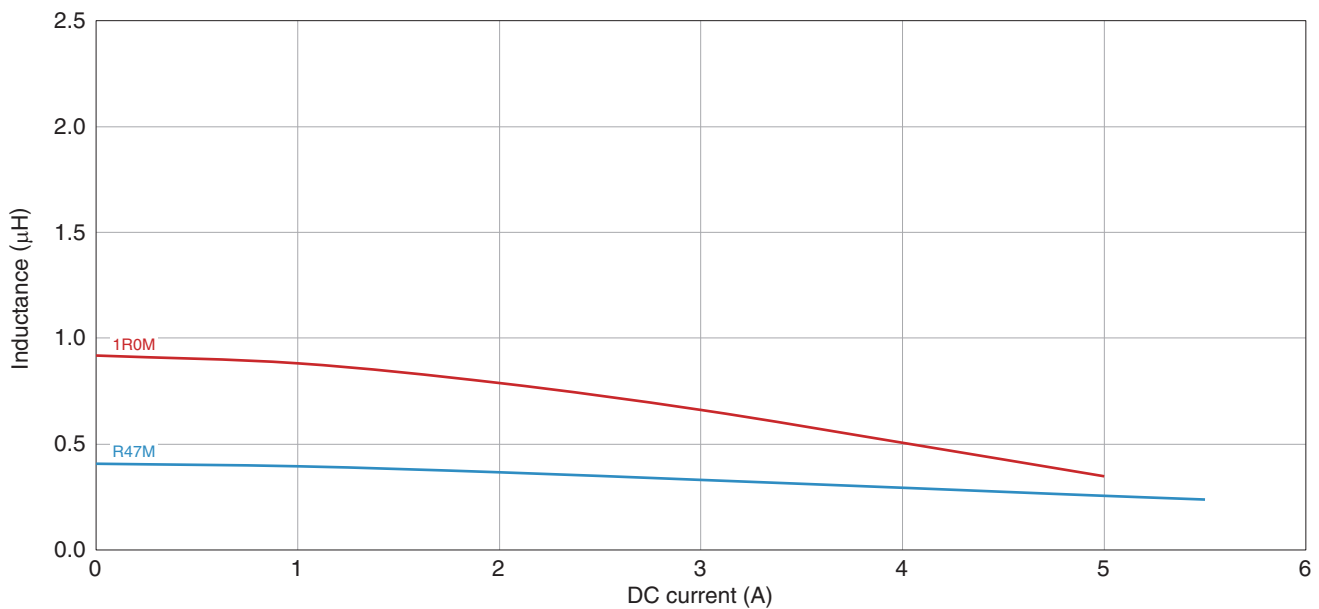


Measurement equipment

Product No.	Manufacturer
4294A	Keysight Technologies

* Equivalent measurement equipment may be used.

INDUCTANCE VS. DC BIAS CHARACTERISTICS



Measurement equipment

Product No.	Manufacturer
4285A+42841A+42842C	Keysight Technologies

* Equivalent measurement equipment may be used.

■ SHAPE & DIMENSIONS



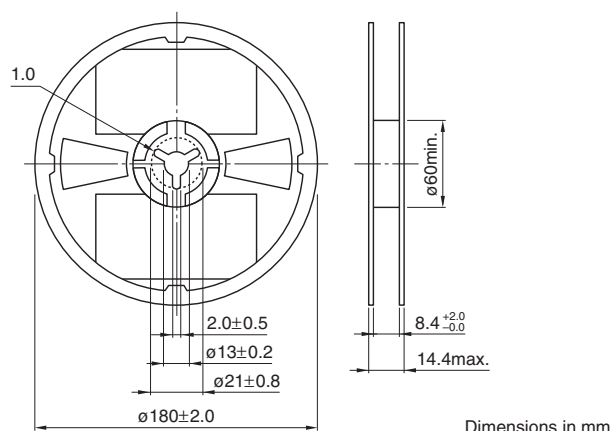
A diagram of a rectangular plate with a total width of 2.40 and a height of 1.60. The width is divided into three equal segments of 0.60 each, with vertical dashed lines at the boundaries. The height is labeled as 1.60 on the right side.

Dimensions in mm

The graph illustrates the temperature profile of a soldering process. The y-axis represents Temperature, and the x-axis represents Time. The profile is divided into three main phases:

- Preheating:** The temperature starts at 150°C and rises to 180°C. This phase takes 60 to 120 seconds.
- Soldering:** The temperature rises from 180°C to a Peak of 250 to 260°C and then falls back to 230°C. This phase takes 30 to 50 seconds, with a maximum dwell time of 10 seconds at the peak.
- Natural cooling:** The temperature continues to fall from 230°C.

□ REEL DIMENSIONS

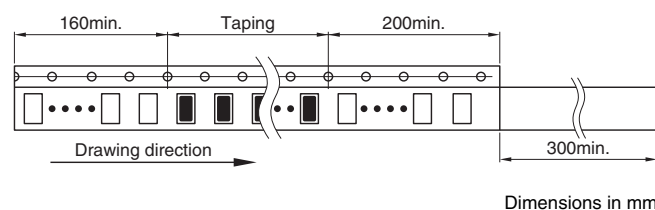


Dimensions in mm

Technical drawing of a shaft with a keyway and a splined section. The shaft has a diameter of 16 mm. The keyway has a width of 4.0 ± 0.1 mm and a depth of $1.5^{+0.1}_{-0}$ mm. The splined section has a length of 8.0 ± 0.3 mm. The shaft is supported by bearings with a width of 1.75 ± 0.1 mm. The shaft is also shown in a cross-section view labeled K.

Dimensions in mm

Type	A	B	K
TFM201610ALC	1.8	2.2	1.1



Dimensions in mm

Package quantity	3000 pcs/reel
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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 6 months. Be sure to follow the storage conditions (temperature: 5 to 40°C, humidity: 20 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.).
- Before soldering, be sure to preheat components.
The preheating temperature should be set so that the temperature difference between the solder temperature and chip temperature does not exceed 150°C.
- 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.
- 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.
- Carefully lay out the coil for the circuit board design of the non-magnetic shield type.
A malfunction may occur due to magnetic interference.
- Use a wrist band to discharge static electricity in your body through the grounding wire.
- Do not expose the products to magnets or magnetic fields.
- Do not use for a purpose outside of the contents regulated in the delivery specifications.
- The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.
The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.
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 the each catalog, please contact us.

- (1) Aerospace/aviation equipment
- (2) Transportation equipment (cars, 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.