

⚠ Caution

● Rating

1. About the Rated Current

Do not use products beyond the rated current as this may create excessive heat and deteriorate the insulation resistance.

2. About Excessive Surge Current

Surge current (pulse current or rush current) greater than the specified rated current applied to the product may cause a critical failure, such as an open circuit, burnout caused by excessive temperature rise. Please contact us in advance in case of applying the surge current.

Notice

● Storage and Operating Condition

<Operating Environment>

Do not use products in chemical atmosphere such as chlorine gas, acid or sulfide gas.

<Storage Requirements>

1. Storage Period

LQG series should be used within 6 months; the other products should be used within 12 months. Check solderability if this period is exceeded.

2. Storage Conditions

(1) Store products in a warehouse in compliance with the following conditions:

Temperature: -10 to +40 degrees C.

Humidity: 15 to 85% (relative humidity)

Do not subject products to rapid changes in temperature and humidity.

Do not store them in chemical atmosphere such as one containing sulfuric acid gas or alkaline gas.

This will prevent electrode oxidation, which causes poor solderability and possible corrosion of inductors.

(2) Do not store products in bulk packaging to prevent collision among inductors, which causes core chipping and wire breakage.

(3) Store products on pallets to protect from humidity, dust, etc.

(4) Avoid heat shock, vibration, direct sunlight, etc.

● Handling

This item is designed to have sufficient strength, but handle with care to avoid chipping or breaking its ceramic structure.

LQW_A/LQW_H series

- To prevent breaking the wire, avoid touching with sharp material, such as tweezers or the bristles of a cleaning brush, to the wire wound portion.
- To prevent breaking the core, avoid applying excessive mechanical shock to products mounted on the board.
- In some mounting machines, when picking up components, a support pin pushes the components up from the bottom of the base tape. In this case, please remove the support pin. The support pin may damage the components and break the wire.
- In rare cases, the laser recognition cannot recognize this component. Please contact us when you use laser recognition. (There is no problem with the permeation and reflection type.)

LQH_H series

- To prevent breaking the wire, avoid touching with sharp material, such as tweezers or the bristles of a cleaning brush, to the wire wound portion of this product.
- To prevent breaking the core, avoid applying excessive mechanical shock to products mounted on the board.

LQG,LQP series (except LQP02_02/LQP03_02)

- The pattern of the chip Inductors is covered with protective film. Take care to avoid damaging the chip Inductors when handling it with pick-up nozzles, sharp instruments, etc.

<Handling>

1. Avoid applying excessive stress to products to prevent damage.
2. Do not touch wire wound with sharp objects such as tweezers to prevent wire breakage.
3. Do not apply excessive force to products mounted on boards to prevent core breakage.

<Transportation>

Do not apply excessive vibration or mechanical shock to products.

<Resin Coating>

When coating products with resin, the relatively high resin curing stress may change inductance values. For exterior coating, select resin carefully so that electrical and mechanical performance of the product is not affected. Prior to use, please evaluate reliability with the product mounted in your application set.

(LQW,LQH series)

An open circuit issue may occur by mechanical stress caused by the resin, amount/cured shape of resin, or operating conditions, etc. Some resins containing impurities or chloride may possibly generate chlorine by hydrolysis under some operating conditions, causing corrosion of the inductor wire and leading to an open circuit.

(LQP02_02/LQP03_02)

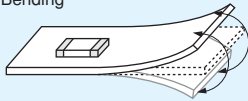
When products are coated with resin, please contact us in advance.

<Handling of a Substrate>

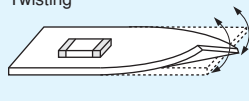
After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting the substrate when cropping the substrate, inserting and removing a connector from the substrate, or tightening a screw to the substrate.

Excessive mechanical stress may cause cracking in the Product.

Bending



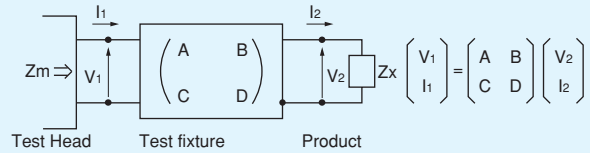
Twisting



● Measuring Method

Measuring Method of Inductance/Q

1. Residual elements and stray elements of test fixtures can be described by F-parameter as shown in the following:



2. The impedance of chip Inductors (chip coils) Z_x and measured value Z_m can be described by input/output current/voltage.

$$Z_m = \frac{V_1}{I_1}, \quad Z_x = \frac{V_2}{I_2}$$

3. Thus, the relation between Z_x and Z_m is shown in the following:

$$Z_x = \alpha \frac{Z_m - \beta}{1 - Z_m \Gamma} \quad \text{where, } \alpha = D / A = 1$$

$$\beta = B / D = Z_{sm} - (1 - Y_{om} Z_{sm}) Z_{ss}$$

$$\Gamma = C / A = Y_{om}$$

Z_{sm} : measured impedance of short chip
 Z_{ss} : residual impedance of short chip*
 Y_{om} : measured admittance when opening the fixture

*Residual impedance of short chip

Residual Impedance	Series
0nH	LQG15H/LQP03TG
0.110nH	LQP02TN/LQP02TQ
0.480nH	LQP03TN/LQP03HQ
0.556nH	LQG15HN, LQW15A, LQP15M
0.771nH	LQG18H, LQP18M, LQW18A, LQW21H, LQW2BAN

4. L_x and Q_x should be calculated with the following equation.

$$L_x = \frac{\text{Im}(Z_x)}{2\pi f}, \quad Q_x = \frac{\text{Im}(Z_x)}{\text{Re}(Z_x)}$$

L_x : Inductance of chip Inductors (chip coils)
 Q_x : Q of chip Inductors (chip coils)
 f : Measuring frequency