

## Choke Coils

Series : **Pin terminal**

Type : **09D, 11D, 12D, 16B, 18B, 10E, 12E, 15E, 18E**

Pin terminal inductors featuring small size and high performance

### Features

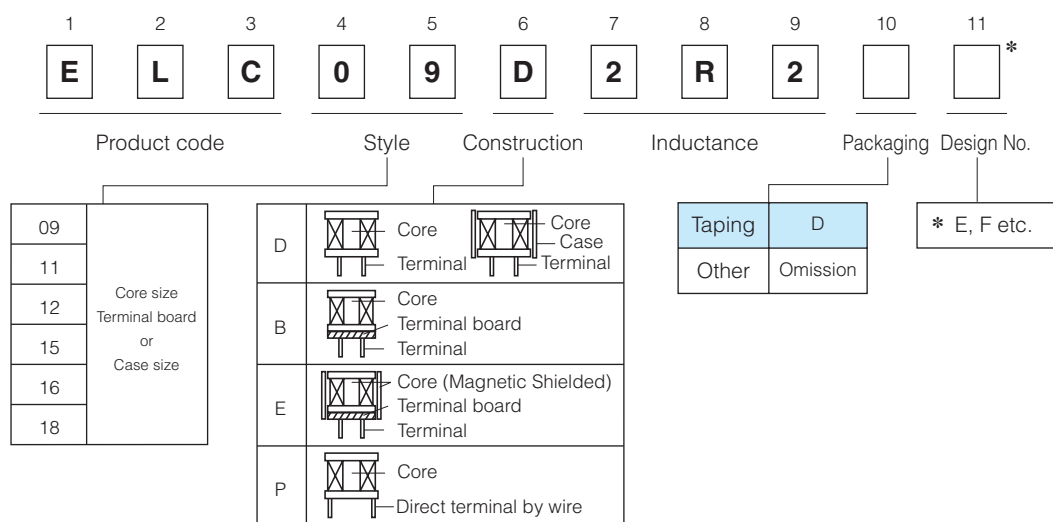
- High -  $\mu$  and High Bm cores
- Wide inductor range
- Magnetic shield type (E Type)
- RoHS compliant

### Recommended Applications

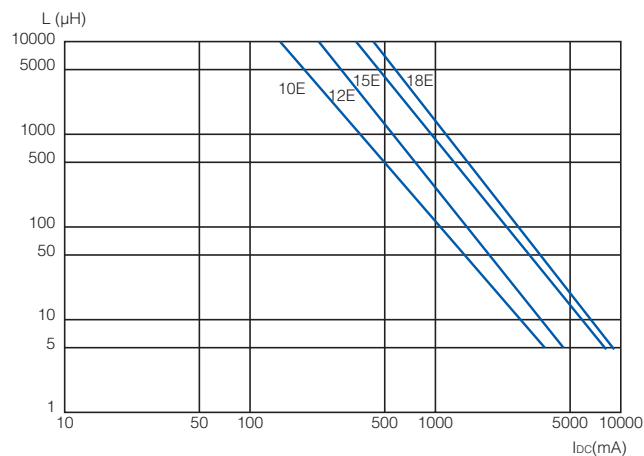
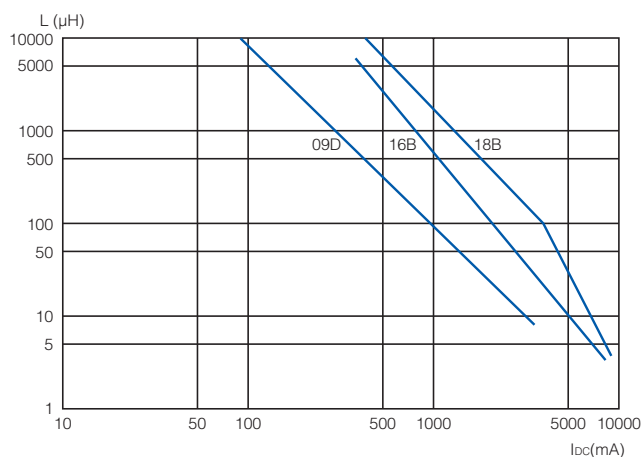
- Appliance, Office automation equipment, Amusement machine, Power circuit for electric device



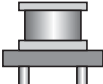
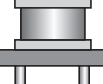
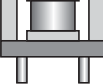
### Explanation of Part Numbers



### Available I-L Characteristics

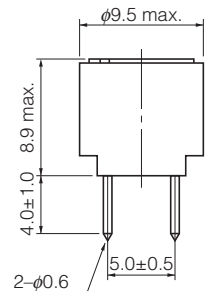
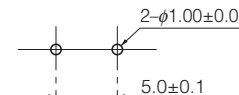
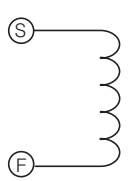


## Performance Characteristics by Series

|         | Type  | Construction                                                                        | External Dimensions<br>D×H (mm) | Inductance<br>(μH) |     |     |     |      |       | Current<br>I <sub>DC</sub> (A) |
|---------|-------|-------------------------------------------------------------------------------------|---------------------------------|--------------------|-----|-----|-----|------|-------|--------------------------------|
|         |       |                                                                                     |                                 | 0.1                | 1.0 | 10  | 100 | 1000 | 10000 |                                |
| Regular | 09D * |    | φ9.5×8.9<br>(with case)         |                    |     | 2.2 |     |      | 10000 | 0.08 to 3.5                    |
|         | 11D * |    | φ11.5×13.9<br>(with case)       |                    |     | 2.2 |     |      | 10000 | 0.16 to 5.3                    |
|         | 12D   |    | φ12.5×16.5                      |                    |     |     |     | 100  | 10000 | 0.27 to 1.9                    |
|         | 16B   |    | φ16.0×23.0                      |                    |     | 3.3 |     |      | 10000 | 0.26 to 8.5                    |
|         | 18B   |   | φ20.0×27.0                      |                    |     | 3.3 |     |      | 10000 | 0.36 to 8.5                    |
| Shield  | 10E-L |  | φ10.0×13.0                      |                    |     | 3.9 |     |      | 8200  | 0.10 to 2.9                    |
|         | 12E-L |  | φ13.0×18.5                      |                    |     | 4.7 |     |      | 10000 | 0.13 to 4.4                    |
|         | 15E-L |  | φ16.0×22.0<br>(3 pin terminal)  |                    |     | 5.6 |     |      | 10000 | 0.30 to 5.4                    |
|         | 18E-L |  | φ19.0×25.1<br>(4 pin terminal)  |                    |     | 5.6 |     |      | 10000 | 0.33 to 5.9                    |

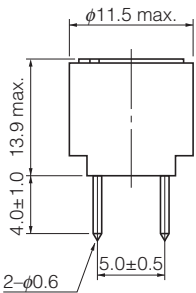
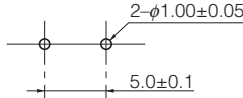
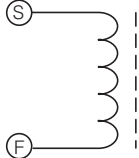
\* : Taping Available

## Examples Type 09D

|                                                                                                                                                                                                                                                                                                                                                                                                                          | Part No.    | Inductance<br>( $\mu$ H) | Tolerance<br>(%) | Test Freq.<br>(kHz) | $R_{DC}$ -( $\Omega$ )<br>[at 20 °C]<br>(Tol.±20 %) | $I_{DC}$ .*<br>[at 20 °C]<br>(A)max. |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|------------------|---------------------|-----------------------------------------------------|--------------------------------------|
| <div>[Dimensions in mm]<br/>(not to scale)</div> <div></div> <div></div> <div>Recommended PWB<br/>piercing plan</div> <div></div> <div>Connection Schematic</div> | ELC09D2R2□F | 2.2                      | ±20              | 10                  | 0.012                                               | 3.50                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D2R7□F | 2.7                      |                  |                     | 0.013                                               | 3.30                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D3R3□F | 3.3                      |                  |                     | 0.015                                               | 3.20                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D3R9□F | 3.9                      |                  |                     | 0.016                                               | 3.10                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D4R7□F | 4.7                      |                  |                     | 0.018                                               | 3.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D5R6□F | 5.6                      |                  |                     | 0.019                                               | 2.90                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D6R8□F | 6.8                      |                  |                     | 0.021                                               | 2.80                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D8R2□F | 8.2                      |                  |                     | 0.024                                               | 2.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D100□F | 10.0                     |                  |                     | 0.027                                               | 2.50                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D120□F | 12.0                     |                  |                     | 0.031                                               | 2.30                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D150□F | 15.0                     |                  |                     | 0.035                                               | 2.10                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D180□F | 18.0                     |                  |                     | 0.038                                               | 2.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D220□F | 22.0                     | ±10              |                     | 0.051                                               | 1.80                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D270□F | 27.0                     |                  |                     | 0.058                                               | 1.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D330□F | 33.0                     |                  |                     | 0.081                                               | 1.40                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D390□F | 39.0                     |                  |                     | 0.087                                               | 1.30                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D470□F | 47.0                     |                  |                     | 0.110                                               | 1.20                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D560□F | 56.0                     |                  |                     | 0.130                                               | 1.10                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D680□F | 68.0                     |                  |                     | 0.140                                               | 1.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D820□F | 82.0                     |                  |                     | 0.160                                               | 0.90                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D101□F | 100.0                    |                  |                     | 0.200                                               | 0.82                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D121□F | 120.0                    |                  |                     | 0.250                                               | 0.77                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D151□F | 150.0                    |                  |                     | 0.320                                               | 0.74                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D181□F | 180.0                    |                  |                     | 0.360                                               | 0.61                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D221□F | 220.0                    |                  |                     | 0.410                                               | 0.58                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D271□F | 270.0                    |                  |                     | 0.500                                               | 0.52                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D331□F | 330.0                    |                  |                     | 0.650                                               | 0.49                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D391□F | 390.0                    |                  |                     | 0.860                                               | 0.46                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D471□F | 470.0                    |                  |                     | 0.980                                               | 0.39                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D561□F | 560.0                    |                  |                     | 1.100                                               | 0.36                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D681□F | 680.0                    |                  |                     | 1.400                                               | 0.34                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D821□F | 820.0                    |                  |                     | 1.600                                               | 0.30                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D102□F | 1000.0                   |                  |                     | 2.100                                               | 0.28                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D122□F | 1200.0                   |                  |                     | 2.400                                               | 0.23                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D152□F | 1500.0                   |                  |                     | 2.800                                               | 0.21                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D182□F | 1800.0                   |                  |                     | 3.800                                               | 0.19                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D222□F | 2200.0                   |                  |                     | 4.400                                               | 0.17                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D272□F | 2700.0                   |                  |                     | 6.100                                               | 0.16                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D332□F | 3300.0                   |                  |                     | 7.000                                               | 0.14                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D392□F | 3900.0                   |                  |                     | 8.000                                               | 0.13                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D472□F | 4700.0                   |                  |                     | 11.200                                              | 0.12                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D562□F | 5600.0                   |                  |                     | 12.600                                              | 0.11                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D682□F | 6800.0                   |                  |                     | 14.400                                              | 0.10                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D822□F | 8200.0                   |                  |                     | 16.600                                              | 0.09                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC09D103□F | 10000.0                  |                  |                     | 18.800                                              | 0.08                                 |

\* Allowable DC Current: Smaller current value either when the inductance is  $-10$  % or when the case temperature has risen  $45$  °C.

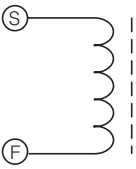
## Examples Type 11D

|                                                                                                                                                                                                                                                                                                                                                                                                                          | Part No.    | Inductance<br>( $\mu$ H) | Tolerance<br>(%) | Test Freq.<br>(kHz) | R <sub>DC</sub> ·( $\Omega$ )<br>[at 20 °C]<br>(Tol.±20 %) | I <sub>DC</sub> ·*<br>[at 20 °C]<br>(A)max. |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|------------------|---------------------|------------------------------------------------------------|---------------------------------------------|
| <div>[Dimensions in mm]<br/>(not to scale)</div> <div></div> <div></div> <div>Recommended PWB<br/>piercing plan</div> <div></div> <div>Connection Schematic</div> | ELC11D2R2□F | 2.2                      | ±20              | 10                  | 0.013                                                      | 5.30                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D2R7□F | 2.7                      |                  |                     | 0.014                                                      | 5.10                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D3R3□F | 3.3                      |                  |                     | 0.015                                                      | 4.90                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D3R9□F | 3.9                      |                  |                     | 0.016                                                      | 4.80                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D4R7□F | 4.7                      |                  |                     | 0.018                                                      | 4.70                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D5R6□F | 5.6                      |                  |                     | 0.020                                                      | 4.60                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D6R8□F | 6.8                      |                  |                     | 0.022                                                      | 4.40                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D8R2□F | 8.2                      |                  |                     | 0.024                                                      | 3.90                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D100□F | 10.0                     |                  |                     | 0.029                                                      | 3.50                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D120□F | 12.0                     |                  |                     | 0.030                                                      | 3.40                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D150□F | 15.0                     |                  |                     | 0.033                                                      | 3.30                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D180□F | 18.0                     |                  |                     | 0.037                                                      | 3.10                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D220□F | 22.0                     | ±10              |                     | 0.040                                                      | 2.80                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D270□F | 27.0                     |                  |                     | 0.048                                                      | 2.70                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D330□F | 33.0                     |                  |                     | 0.051                                                      | 2.60                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D390□F | 39.0                     |                  |                     | 0.057                                                      | 2.50                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D470□F | 47.0                     |                  |                     | 0.063                                                      | 2.30                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D560□F | 56.0                     |                  |                     | 0.071                                                      | 2.10                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D680□F | 68.0                     |                  |                     | 0.082                                                      | 2.00                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D820□F | 82.0                     |                  |                     | 0.090                                                      | 1.90                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D101□F | 100.0                    |                  |                     | 0.120                                                      | 1.80                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D121□F | 120.0                    |                  |                     | 0.160                                                      | 1.60                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D151□F | 150.0                    |                  |                     | 0.180                                                      | 1.40                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D181□F | 180.0                    |                  |                     | 0.200                                                      | 1.30                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D221□F | 220.0                    |                  |                     | 0.230                                                      | 1.20                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D271□F | 270.0                    |                  |                     | 0.320                                                      | 1.10                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D331□F | 330.0                    |                  |                     | 0.350                                                      | 1.00                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D391□F | 390.0                    |                  |                     | 0.400                                                      | 0.95                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D471□F | 470.0                    |                  |                     | 0.490                                                      | 0.82                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D561□F | 560.0                    |                  |                     | 0.620                                                      | 0.73                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D681□F | 680.0                    |                  |                     | 0.780                                                      | 0.64                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D821□F | 820.0                    |                  |                     | 0.870                                                      | 0.62                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D102□F | 1000.0                   |                  |                     | 1.100                                                      | 0.57                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D122□F | 1200.0                   |                  |                     | 1.200                                                      | 0.52                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D152□F | 1500.0                   |                  |                     | 1.700                                                      | 0.43                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D182□F | 1800.0                   |                  |                     | 2.000                                                      | 0.40                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D222□F | 2200.0                   |                  |                     | 2.300                                                      | 0.38                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D272□F | 2700.0                   |                  |                     | 2.800                                                      | 0.34                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D332□F | 3300.0                   |                  |                     | 3.600                                                      | 0.31                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D392□F | 3900.0                   |                  |                     | 4.500                                                      | 0.29                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D472□F | 4700.0                   |                  |                     | 5.200                                                      | 0.26                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D562□F | 5600.0                   |                  |                     | 6.900                                                      | 0.23                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D682□F | 6800.0                   |                  |                     | 7.800                                                      | 0.21                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D822□F | 8200.0                   |                  |                     | 10.600                                                     | 0.18                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                          | ELC11D103□F | 10000.0                  |                  |                     | 11.800                                                     | 0.16                                        |

\* Allowable DC Current: Smaller current value either when the inductance is  $-10$  % or when the case temperature has risen  $45$  °C.

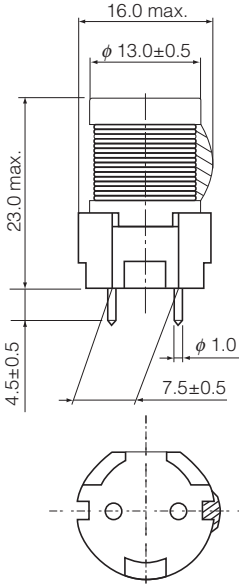
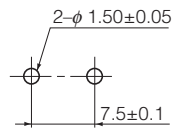
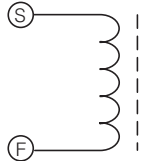
Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.  
Should a safety concern arise regarding this product, please be sure to contact us immediately.

## Examples Type 12D

|                                                                                                                                                                                                                                                                                                                                                                   | Part No.   | Inductance<br>( $\mu$ H) | Tolerance<br>(%) | Test Freq.<br>(kHz) | $R_{DC}$ ( $\Omega$ )<br>[at 20 °C]<br>(Tol. $\pm 20$ %) | $I_{DC}^*$<br>[at 20 °C]<br>(A) max. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|------------------|---------------------|----------------------------------------------------------|--------------------------------------|
| <p>[Dimensions in mm]<br/>(not to scale)</p>  <p>Recommended PWB<br/>piercing plan</p> <p>2-<math>\phi 1.20 \pm 0.05</math></p> <p>7.5 <math>\pm</math> 0.1</p> <p>Connection Schematic</p>  | ELC12D101E | 100                      | $\pm 10$         | 10                  | 0.150                                                    | 1.90                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D121E | 120                      |                  |                     | 0.170                                                    | 1.78                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D151E | 150                      |                  |                     | 0.190                                                    | 1.67                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D181E | 180                      |                  |                     | 0.210                                                    | 1.58                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D221E | 220                      |                  |                     | 0.230                                                    | 1.55                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D271E | 270                      |                  |                     | 0.270                                                    | 1.44                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D331E | 330                      |                  |                     | 0.300                                                    | 1.34                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D391E | 390                      |                  |                     | 0.330                                                    | 1.32                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D471E | 470                      |                  |                     | 0.380                                                    | 1.25                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D561E | 560                      |                  |                     | 0.420                                                    | 1.15                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D681E | 680                      |                  |                     | 0.460                                                    | 0.98                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D821E | 820                      |                  |                     | 0.650                                                    | 0.94                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D102E | 1000                     |                  |                     | 0.720                                                    | 0.87                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D122E | 1200                     |                  |                     | 0.830                                                    | 0.86                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D152E | 1500                     |                  |                     | 1.270                                                    | 0.64                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D182E | 1800                     |                  |                     | 1.330                                                    | 0.63                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D222E | 2200                     |                  |                     | 1.500                                                    | 0.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D272E | 2700                     |                  |                     | 1.890                                                    | 0.54                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D332E | 3300                     |                  |                     | 2.370                                                    | 0.48                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D392E | 3900                     |                  |                     | 2.830                                                    | 0.45                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D472E | 4700                     |                  |                     | 3.190                                                    | 0.41                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D562E | 5600                     |                  |                     | 4.080                                                    | 0.34                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D682E | 6800                     |                  |                     | 5.740                                                    | 0.29                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D822E | 8200                     |                  |                     | 6.340                                                    | 0.28                                 |
|                                                                                                                                                                                                                                                                                                                                                                   | ELC12D103E | 10000                    |                  |                     | 7.200                                                    | 0.27                                 |

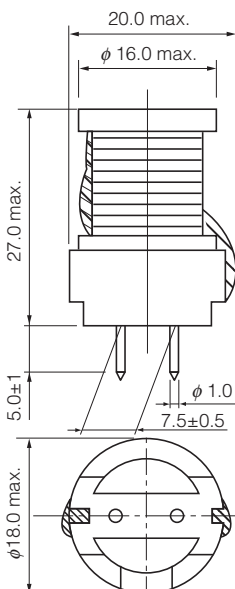
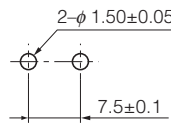
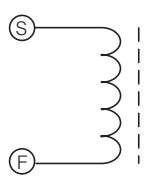
\* Allowable DC Current: Smaller current value either when the inductance is  $-10$  % or when the case temperature has risen  $45$  °C.

## Examples Type 16B

|                                                                                                                                                                                                                                                                                                                                                                                                                           | Part No.   | Inductance<br>( $\mu$ H) | Tolerance<br>(%) | Test Freq.<br>(kHz) | $R_{DC}(\Omega)$<br>[at 20 °C]<br>(Tol. $\pm 30\%$ **<br>(Tol. $\pm 20\%$ ) | $I_{DC}^*$<br>[at 20 °C]<br>(A) max. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|------------------|---------------------|-----------------------------------------------------------------------------|--------------------------------------|
| <div>[Dimensions in mm]<br/>(not to scale)</div> <div></div> <div>Recommended PWB<br/>piercing plan</div> <div></div> <div>Connection Schematic</div> <div></div> | ELC16B3R3L | 3.3                      | $\pm 25$         | 10                  | 0.012**                                                                     | 8.50                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B3R9L | 3.9                      |                  |                     | 0.013**                                                                     | 8.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B4R7L | 4.7                      |                  |                     | 0.015**                                                                     | 7.80                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B5R6L | 5.6                      | $\pm 20$         |                     | 0.016**                                                                     | 7.40                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B6R8L | 6.8                      |                  |                     | 0.018                                                                       | 6.70                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B8R2L | 8.2                      |                  |                     | 0.019                                                                       | 6.10                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B100L | 10.0                     |                  |                     | 0.022                                                                       | 5.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B120L | 12.0                     |                  |                     | 0.023                                                                       | 5.50                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B150L | 15.0                     |                  |                     | 0.026                                                                       | 5.40                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B180L | 18.0                     |                  |                     | 0.028                                                                       | 5.10                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B220L | 22.0                     |                  |                     | 0.031                                                                       | 4.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B270L | 27.0                     |                  |                     | 0.034                                                                       | 4.30                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B330L | 33.0                     | $\pm 10$         |                     | 0.039                                                                       | 4.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B390L | 39.0                     |                  |                     | 0.042                                                                       | 3.90                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B470L | 47.0                     |                  |                     | 0.045                                                                       | 3.80                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B560L | 56.0                     |                  |                     | 0.051                                                                       | 3.40                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B680L | 68.0                     |                  |                     | 0.057                                                                       | 3.20                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B820L | 82.0                     |                  |                     | 0.064                                                                       | 3.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B101L | 100.0                    |                  |                     | 0.072                                                                       | 2.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B121L | 120.0                    |                  |                     | 0.080                                                                       | 2.50                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B151L | 150.0                    |                  |                     | 0.103                                                                       | 2.20                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B181L | 180.0                    |                  |                     | 0.115                                                                       | 2.10                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B221L | 220.0                    |                  |                     | 0.130                                                                       | 1.90                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B271L | 270.0                    |                  |                     | 0.170                                                                       | 1.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B331L | 330.0                    |                  |                     | 0.200                                                                       | 1.50                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B391L | 390.0                    |                  |                     | 0.250                                                                       | 1.30                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B471L | 470.0                    |                  |                     | 0.280                                                                       | 1.20                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B561L | 560.0                    |                  |                     | 0.380                                                                       | 1.10                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B681L | 680.0                    |                  |                     | 0.430                                                                       | 1.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B821L | 820.0                    |                  |                     | 0.580                                                                       | 0.88                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B102L | 1000.0                   |                  |                     | 0.660                                                                       | 0.85                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B122L | 1200.0                   |                  |                     | 0.740                                                                       | 0.82                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B152L | 1500.0                   |                  |                     | 0.870                                                                       | 0.74                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B182L | 1800.0                   |                  |                     | 1.220                                                                       | 0.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B222L | 2200.0                   |                  |                     | 1.380                                                                       | 0.57                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B272L | 2700.0                   |                  |                     | 1.570                                                                       | 0.54                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B332L | 3300.0                   |                  |                     | 2.000                                                                       | 0.47                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B392L | 3900.0                   |                  |                     | 2.400                                                                       | 0.42                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B472L | 4700.0                   |                  |                     | 3.300                                                                       | 0.36                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B562L | 5600.0                   |                  |                     | 3.700                                                                       | 0.34                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B682L | 6800.0                   |                  |                     | 4.200                                                                       | 0.32                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B822L | 8200.0                   |                  |                     | 5.600                                                                       | 0.28                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC16B103L | 10000.0                  |                  |                     | 6.400                                                                       | 0.26                                 |

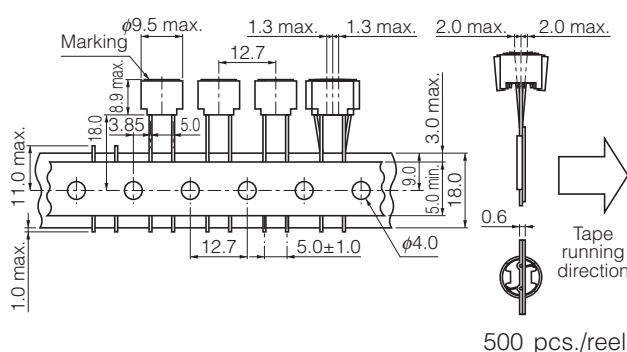
\* Allowable DC Current: Smaller current value either when the inductance is  $-10\%$  or when the case temperature has risen  $45\text{ }^{\circ}\text{C}$ .

## Examples Type 18B

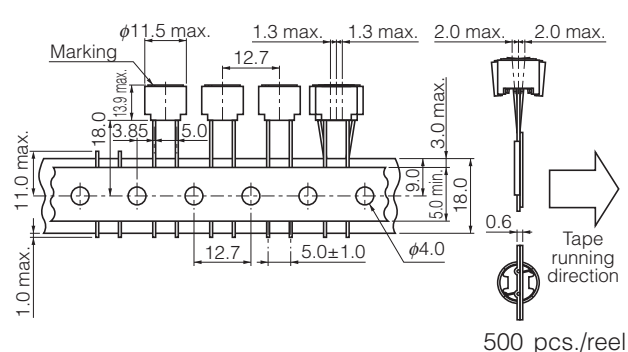
|                                                                                                                                                                                                                                                                                                                                                                                                                           | Part No.   | Inductance<br>( $\mu$ H) | Tolerance<br>(%) | Test Freq.<br>(kHz) | $R_{DC}$ :( $\Omega$ )<br>[at 20 °C]<br>(Tol. $\pm 20$ %) | $I_{DC}$ .*<br>[at 20 °C]<br>(A)max. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|------------------|---------------------|-----------------------------------------------------------|--------------------------------------|
| <div>[Dimensions in mm]<br/>(not to scale)</div> <div></div> <div>Recommended PWB<br/>piercing plan</div> <div></div> <div>Connection Schematic</div> <div></div> | ELC18B3R3L | 3.3                      | $\pm 20$         | 10                  | 0.010                                                     | 8.50                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B3R9L | 3.9                      |                  |                     | 0.011                                                     | 8.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B4R7L | 4.7                      |                  |                     | 0.012                                                     | 7.80                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B5R6L | 5.6                      |                  |                     | 0.013                                                     | 7.40                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B6R8L | 6.8                      |                  |                     | 0.015                                                     | 6.80                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B8R2L | 8.2                      |                  |                     | 0.016                                                     | 6.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B100L | 10.0                     |                  |                     | 0.017                                                     | 6.50                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B120L | 12.0                     |                  |                     | 0.018                                                     | 6.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B150L | 15.0                     |                  |                     | 0.021                                                     | 5.90                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B180L | 18.0                     |                  |                     | 0.022                                                     | 5.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B220L | 22.0                     | $\pm 10$         |                     | 0.025                                                     | 5.40                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B270L | 27.0                     |                  |                     | 0.028                                                     | 4.80                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B330L | 33.0                     |                  |                     | 0.030                                                     | 4.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B390L | 39.0                     |                  |                     | 0.033                                                     | 4.40                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B470L | 47.0                     |                  |                     | 0.037                                                     | 4.30                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B560L | 56.0                     |                  |                     | 0.040                                                     | 4.20                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B680L | 68.0                     |                  |                     | 0.046                                                     | 4.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B820L | 82.0                     |                  |                     | 0.051                                                     | 3.70                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B101L | 100.0                    |                  |                     | 0.057                                                     | 3.20                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B121L | 120.0                    |                  |                     | 0.065                                                     | 3.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B151L | 150.0                    |                  |                     | 0.072                                                     | 2.70                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B181L | 180.0                    |                  |                     | 0.082                                                     | 2.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B221L | 220.0                    |                  |                     | 0.090                                                     | 2.40                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B271L | 270.0                    |                  |                     | 0.110                                                     | 2.20                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B331L | 330.0                    |                  |                     | 0.130                                                     | 1.90                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B391L | 390.0                    |                  |                     | 0.150                                                     | 1.80                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B471L | 470.0                    |                  |                     | 0.210                                                     | 1.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B561L | 560.0                    |                  |                     | 0.230                                                     | 1.50                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B681L | 680.0                    |                  |                     | 0.260                                                     | 1.40                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B821L | 820.0                    |                  |                     | 0.340                                                     | 1.30                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B102L | 1000.0                   |                  |                     | 0.390                                                     | 1.10                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B122L | 1200.0                   |                  |                     | 0.440                                                     | 1.00                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B152L | 1500.0                   |                  |                     | 0.580                                                     | 0.85                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B182L | 1800.0                   |                  |                     | 0.650                                                     | 0.84                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B222L | 2200.0                   |                  |                     | 0.880                                                     | 0.75                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B272L | 2700.0                   |                  |                     | 1.200                                                     | 0.68                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B332L | 3300.0                   |                  |                     | 1.400                                                     | 0.60                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B392L | 3900.0                   |                  |                     | 1.500                                                     | 0.57                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B472L | 4700.0                   |                  |                     | 1.700                                                     | 0.55                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B562L | 5600.0                   |                  |                     | 2.200                                                     | 0.46                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B682L | 6800.0                   |                  |                     | 2.800                                                     | 0.45                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B822L | 8200.0                   |                  |                     | 3.100                                                     | 0.41                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                           | ELC18B103L | 10000.0                  |                  |                     | 3.900                                                     | 0.36                                 |

\* Allowable DC Current: Smaller current value either when the inductance is  $-10$  % or when the case temperature has risen  $45$  °C.

**Tape Dimensions in mm for Type 09D (not to scale)**



**Tape Dimensions in mm for Type 11D (not to scale)**



## ⚠ Safety Precautions

- When using our products, no matter what sort of equipment they might be used for, be sure to make a written agreement on the specifications with us in advance. The design and specifications in this catalog are subject to change without prior notice.
- Do not use the products beyond the specifications described in this catalog.
- This catalog explains the quality and performance of the products as individual components. Before use, check and evaluate their operations when installed in your products.
- Install the following systems for a failsafe design to ensure safety if these products are to be used in equipment where a defect in these products may cause the loss of human life or other significant damage, such as damage to vehicles (automobile, train, vessel), traffic lights, medical equipment, aerospace equipment, electric heating appliances, combustion/gas equipment, rotating equipment, and disaster/crime prevention equipment.
- \* Systems equipped with a protection circuit and a protection device
- \* Systems equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault

## ⚠ Precautions for use

### 1. Rated current

The rated current is defined as the smaller value of either the current value when the inductance drops 10 % down from its initial point, or when the average temperature of coil interior rises 45 °C up on power source. Do not operate these coils beyond the specified rated current.

### 2. Mounting

- ① Cores may be damaged when excessive force or shock is applied.  
Do not use products which may have been dropped.
- ② Be careful not to make contact with other parts and consider possible interaction between coils due to magnetic interference.
- ③ Be careful of being too close to heat-radiating parts (high temperature).
- ④ Do not bend the pin-terminals during assembly.  
The pin-terminals must connect correctly.  
Do not apply them a shock to avoid causing an open or short circuit condition.
- ⑤ The float on PWB must not be after mounting.

### 3. Soldering

- ① Use flux which will not effect copper wire. (Be sure to use proper amounts of chloride, pH and other solvents)
- ② When using a soldering iron, wait at least 3 minutes before attempting to re-solder.

### 4. Storage

- ① Avoid high temperatures, high moisture, gases and magnetic fields.
- ② For long term storage of more than 1 year, use the products only after inspecting their outer structure. (Look for possible rusting of the core and oxidation of the lead wire, which would affect its solderability.)

## <Package markings>

Package markings include the product number, quantity, and country of origin. In principle, the country of origin should be indicated in English.

# Mouser Electronics

Authorized Distributor

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