Common mode filters
Ultra high-speed differential signal line (HDMI, DVI, DisplayPort, USB3.0, etc.)
TCM-S series

RoHS | REACH SVHC-Free | Halogen Free | Lead Free

TCM0403S type

Product Portal | Search | Simulation Model | Selection Guide | Tech Library | Tech Note

FEATURES

- This product is a thin-film common mode filter with a wide frequency range that can be used for high-speed differential signal interfaces such as USB3.0 and DisplayPort.
- Has EMC suppression by achieving wide frequency range (6GHz and higher) differential mode transmission while ensuring common mode impedance with virtually no affect on the high-speed differential transmission line signal.
- Lineup includes 0403 (L0.45×W0.30×T0.23mm), the industry's smallest thin-film common mode filter.
- Operating temperature range: –25 to +85°C

APPLICATION

- Noise countermeasure for ultra-high-speed differential interfaces (HDMI, DVI, DisplayPort, USB3.0, etc.) for mobile devices and general consumer products such as smart phones, tablets, digital cameras, and portable music players.
- Application guides: Smart phones/tablets

PART NUMBER CONSTRUCTION

TCM	0403	S	-	350	-	2P	-	T	210
Series name	L×W×T dimensions 0.45×0.3×0.23 mm	Product internal code		Impedance (Ω) at 100MHz		Number of lines		Packaging style	Internal code

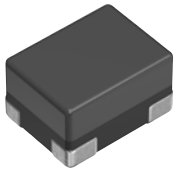
CHARACTERISTICS SPECIFICATION TABLE

Common mode impedance [at 100MHz] (Ω)	Tolerance	DC resistance [1 line] (Ω)max.	Cutoff frequency (GHz)typ.	Rated current (A)max.	Rated voltage (V)max.	Insulation resistance (MΩ)min.	Part No.
35	±12Ω	3.0±30%	7.0	0.05	5	10	TCM0403S-350-2P-T210

Measurement equipment

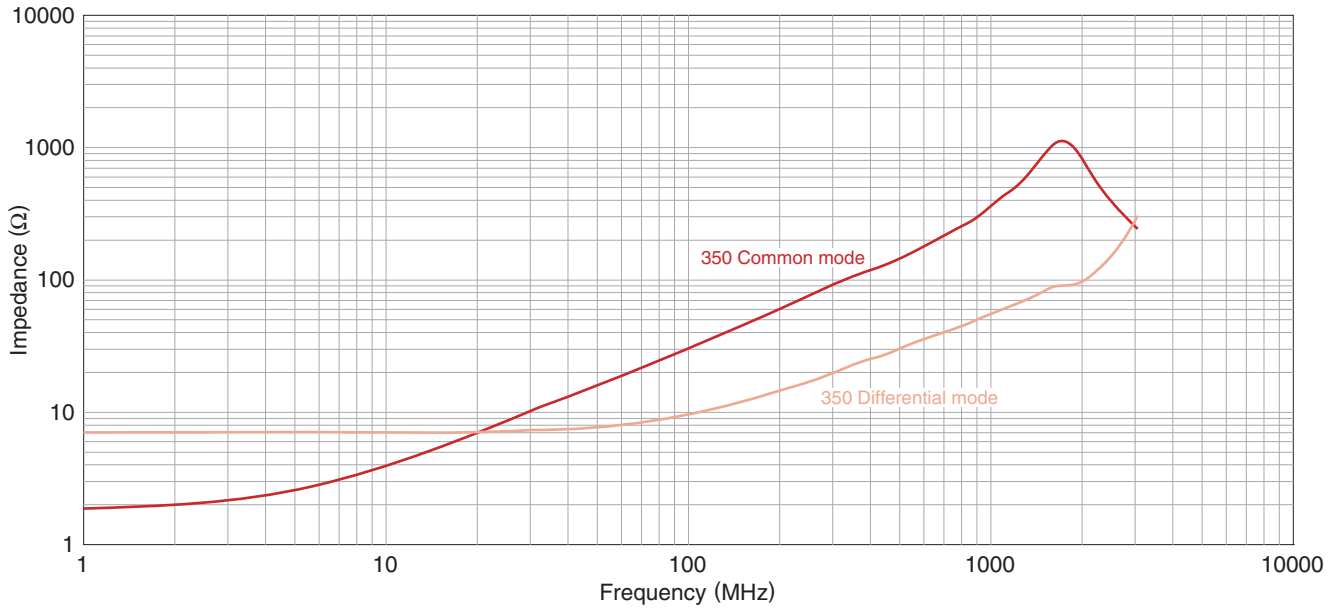
Measurement item	Product No.	Manufacturer
Common mode impedance	4291A	Keysight Technologies
DC resistance	4338A	Keysight Technologies
Insulation resistance	4339A	Keysight Technologies

＊ Equivalent measurement equipment may be used.



TCM0403S type

IMPEDANCE VS. FREQUENCY CHARACTERISTICS

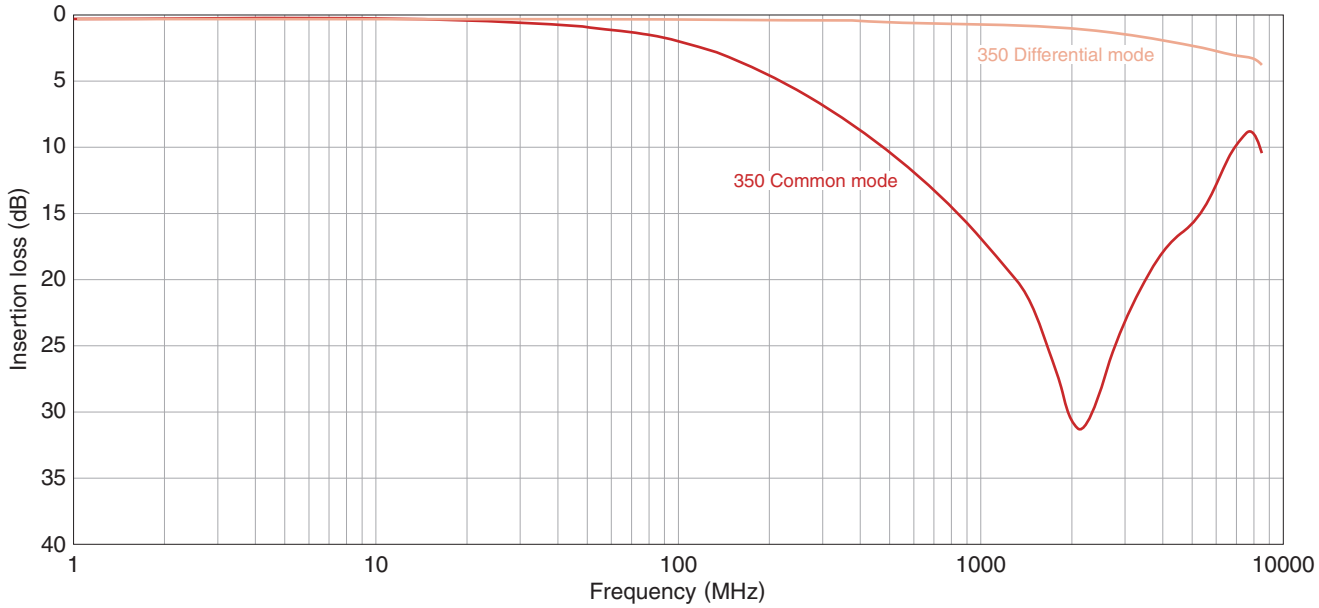


Measurement equipment

Product No.	Manufacturer
4991A	Keysight Technologies

* Equivalent measurement equipment may be used.

INSERTION LOSS VS. FREQUENCY CHARACTERISTICS



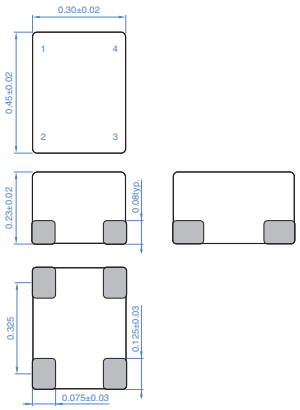
Measurement equipment

Product No.	Manufacturer
E5071B	Keysight Technologies

* Equivalent measurement equipment may be used.

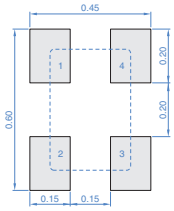
TCM0403S type

SHAPE & DIMENSIONS



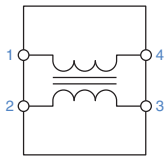
Dimensions in mm

RECOMMENDED LAND PATTERN



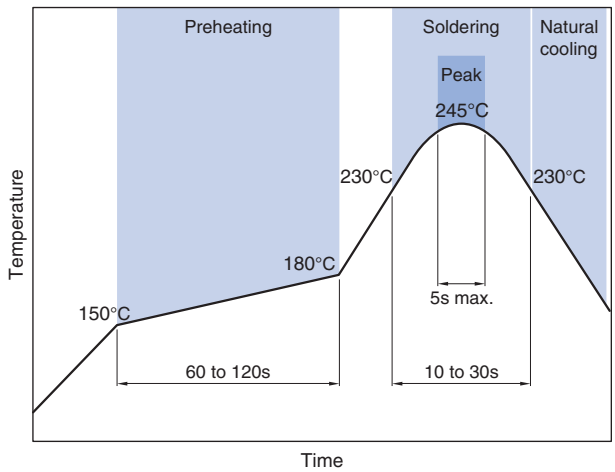
Dimensions in mm

CIRCUIT DIAGRAM



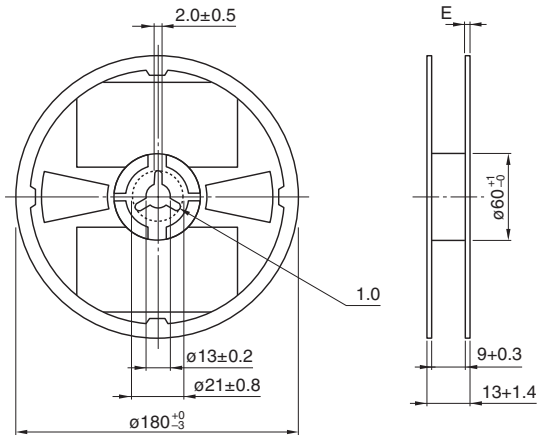
• No polarity

RECOMMENDED REFLOW PROFILE



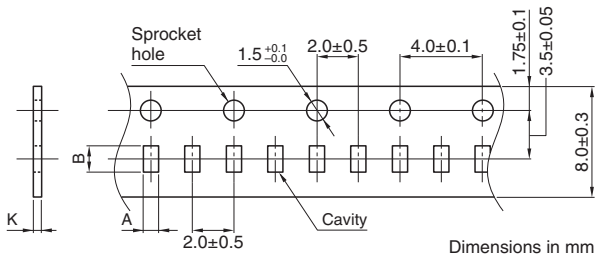
PACKAGING STYLE

REEL DIMENSIONS



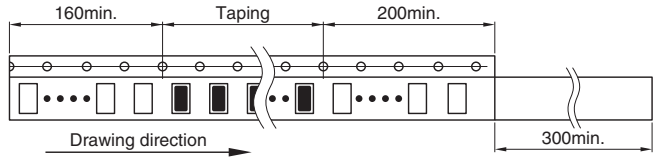
Dimensions in mm

TAPE DIMENSIONS



Dimensions in mm

Type	A	B	K
TCM0403S	0.40	0.55	0.27



Dimensions in mm

PACKAGE QUANTITY

Package quantity	10,000 pcs/reel

TEMPERATURE RANGE, INDIVIDUAL WEIGHT

Operating temperature range	Storage temperature range*	Individual weight
–25 to +85 °C	–25 to +85 °C	0.2 mg

* The storage temperature range is for after the assembly.

⚠ Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use.
Please note that the contents may change without any prior notice due to reasons such as upgrading.

REMINDERS FOR USING THESE PRODUCTS

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

SAFETY REMINDERS

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

⚠ REMINDERS

- The storage period is less than 6 months. Be sure to follow the storage conditions (temperature: 5 to 40°C, humidity: 20 to 70% RH or less).
  If the storage period elapses, the soldering of the terminal electrodes may deteriorate.
- Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, etc.).
- Before soldering, be sure to preheat components.
  The preheating temperature should be set so that the temperature difference between the solder temperature and chip temperature does not exceed 150°C.
- Soldering corrections after mounting should be within the range of the conditions determined in the specifications.
  If overheated, a short circuit, performance deterioration, or lifespan shortening may occur.
- When embedding a printed circuit board where a chip is mounted to a set, be sure that residual stress is not given to the chip due to the overall distortion of the printed circuit board and partial distortion such as at screw tightening portions.
- Self heating (temperature increase) occurs when the power is turned ON, so the tolerance should be sufficient for the set thermal design.
- Carefully lay out the coil for the circuit board design of the non-magnetic shield type.
  A malfunction may occur due to magnetic interference.
- Use a wrist band to discharge static electricity in your body through the grounding wire.
- Do not expose the products to magnets or magnetic fields.
- Do not use for a purpose outside of the contents regulated in the delivery specifications.
- The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.
  The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.
  If you intend to use the products in the applications listed below or if you have special requirements exceeding the range or conditions set forth in the each catalog, please contact us.

(1) Aerospace/aviation equipment
(2) Transportation equipment (cars, electric trains, ships, etc.)
(3) Medical equipment
(4) Power-generation control equipment
(5) Atomic energy-related equipment
(6) Seabed equipment
(7) Transportation control equipment
(8) Public information-processing equipment
(9) Military equipment
(10) Electric heating apparatus, burning equipment
(11) Disaster prevention/crime prevention equipment
(12) Safety equipment
(13) Other applications that are not considered general-purpose applications

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

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TDK:

B59886C0120A070 B65884E0012D001 CGA2B1C0G2A681J050BC CGA4J2X8R1H104M125AA MLG1005S0N8BTD25 CGA2B1X7R1C683M050BC FA24C0G1H333JNU00 FHV-5AN MLF1608D68NMTA00 FG26X7R2J103KNT00 MLG1005S68NJTD25 B82559A7682A024 B88069X5600S102 MLG1005S7N5JTD25 B82559A3292A025 C3216X7R2A224K115AE C3225C0G2A683J230AA MMZ1608S102ATA00 SPM3012T-R47M-LR B82422A1562J100 MLG1005S2N4BTD25 B82477D4333M900 B82496C3220G000 B84111A0000A030 MMZ1005S601ETD25 B32024A3105M000 B32654A6335K000 B32683A1223J000 CGA2B3X7R1H473K050BD FHV-153AN