Common Mode SCF Coils, SCF Series, Terminal Base Type

Overview

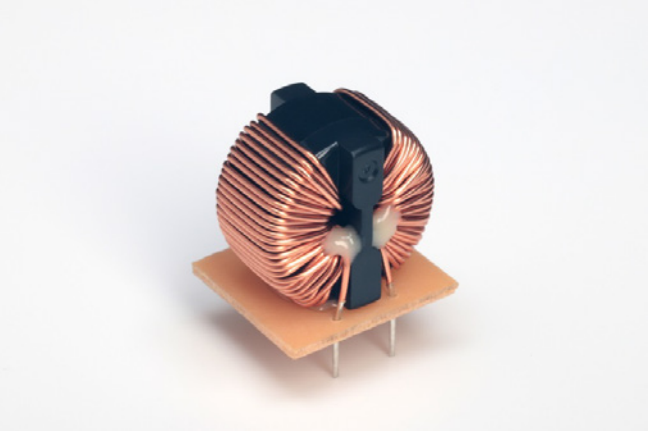
The KEMET SCF coils are common mode chokes with a wide variety of characteristics. These toroidal coils are designed with nanocrystalline metal cores and are useful in various noise countermeasure fields.

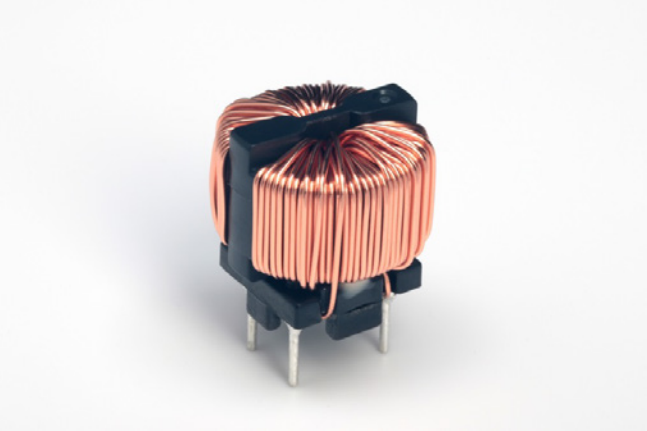
Applications

- Audio-visual equipment
- Industrial equipment
- Home appliances
- Power supplies

Benefits

- Nanocrystalline metal core
- Ultra-high inductance
- Ultra-high permeability
- Operating temperature range from −25°C to +120°C
- UL 94 V–0 flame retardant rated base and cap





Part Number System

SCF	31B-	200-	2R0	A	020	JH	
Series	Dimension Code (See Dimensions)	Rated Current (A)	Wire Diameter (mm)	Windings	Inductance (mH) Minimum	Terminal Base Type	Internal Control Code
SCF	Blank 12 19 31B 33B 47B 47C	0x = x A xxx = xx.x A Examples: 02 = 2 A 025 = 2.5 A 200 = 20.0 A	Blank R = Decimal point Examples: 0R8 = 0.8 mm 2R0 = 2.0 mm	Blank A = Single C = Triple	xxxx = xx.xx mH xxx = xx.xmH xx = x.x mH Examples: 1100 = 11.00 mH 020 = 2.0 mH 65 = 6.5 mH	J = Vertical type JH = Horizontal type	Blank V

Magnetic Permeability of Ferrite Material

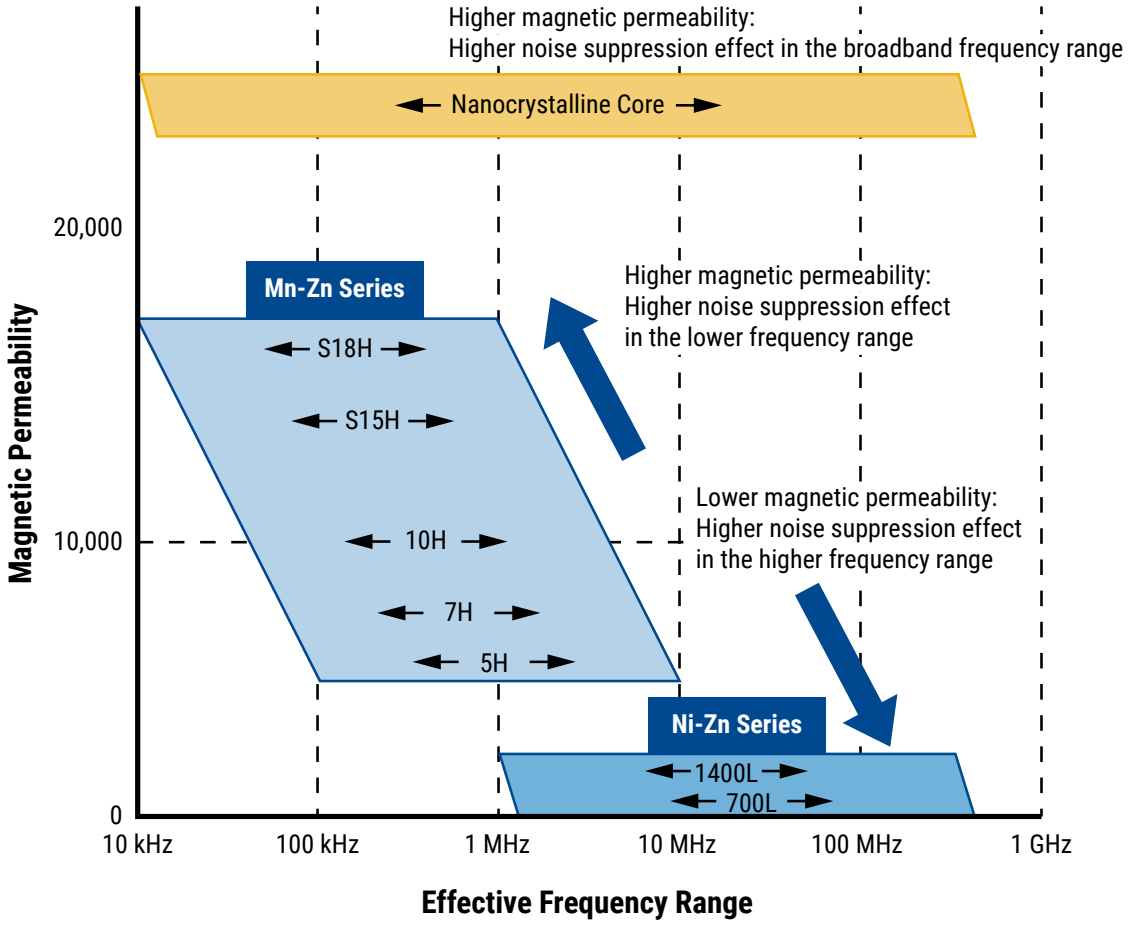
In order to achieve most efficient noise reduction, it is important to select the material according to the target frequency band. Depending on its magnetic permeability, a particular ferrite material or metal material will be effective in a certain frequency band. A schematic representation of the relationship between the magnetic permeability of each material and the corresponding effective band range is shown in Figure 1.

Ferrite materials with higher magnetic permeability are effective in the lower frequency range, while those with lower magnetic permeability are effective in the higher frequency range. Thus, Mn-Zn products are mainly used for reducing conduction noise, while Ni-Zn products are commonly used for radiation noise countermeasures. Metal materials, however, are effective throughout the broadband frequency range, in low as well as high frequencies.

The effective frequency range varies depending on core shape, size, and number of windings. This frequency dependence of the magnetic permeability as shown in the figure serves for reference purposes only. It should be tested on the actual device to determine its effectiveness.

S18H, S15H, 10H, 7H, 5H, 1400L, and 700L are KEMET's proprietary ferrite material names. Other materials are available upon request.

Figure 1 - Relationship between the magnetic permeability of each material and its effective frequency range



Dimensions – Millimeters

Figure 1

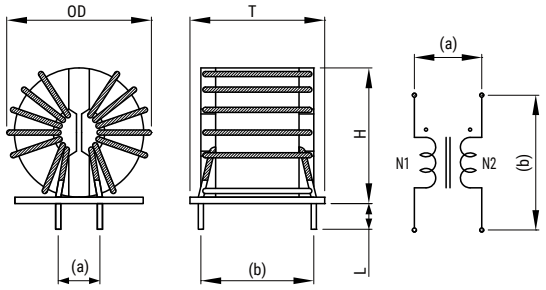


Figure 2

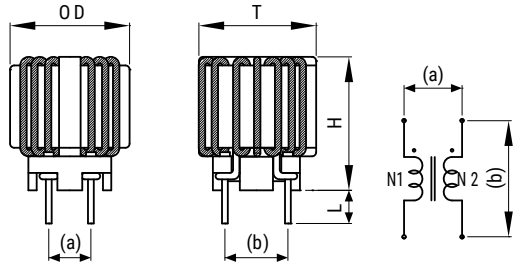


Figure 3

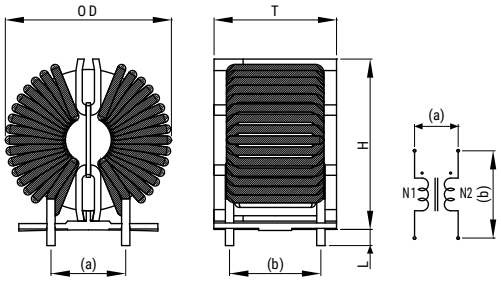
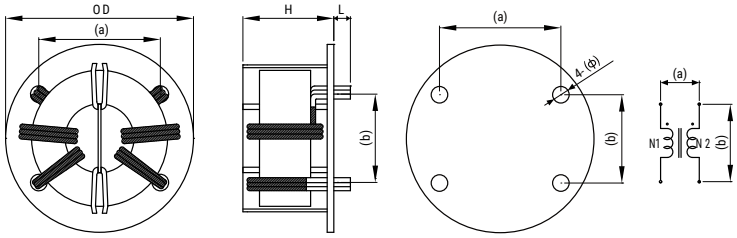


Figure 4



Part Name	Dimensions (mm)				Pin Pitch[1] (Reference)							Figure
	OD (Maximum)	T (Maximum)	H (Maximum)	L	a	b	c	d	φ	e	R	
SCF-02-130JV	15.0	14.0	15.0	4.5±1.0	5.00	10.00	-	-	-	-	-	Fig. 1
SCF-02-350JH	16.0	15.0	15.5	3.0±0.5	5.08	7.62	-	-	-	-	-	Fig. 2
SCF12-025-1100J	16.0	12.0	16.0	3.1±0.5	6.00	10.00	-	-	-	-	-	Fig. 1
SCF-03-65JV	15.0	14.0	15.0	3.5±1.0	5.00	10.00	-	-	-	-	-	Fig. 1
SCF19-040-0R8A1100J	28.5	23.0	28.5	3.5±1.0	18.00	16.00	-	-	-	-	-	Fig. 3
SCF47B-600-2R2C0005JH	70.0	-	36.5	6.0±3.0	44.00	32.00	-	-	6.0	-	-	Fig. 4
SCF31B-200-2R0A020JH	48.0	42.0	35.0	4.0±1.0	17.00	30.00	-	-	-	-	-	Fig. 5
SCF33B-400-1R6C009JH	50.0	50.0	35.0	5.0±2.0	25.00	30.00	-	-	4.2	-	-	Fig. 6
SCF47B-400-1R8C040J	63.0	39.0	61.0	4.5±1.5	25.00	28.00	-	-	-	-	-	Fig. 7
SCF47C-400-1R8C040JH	70.0	-	38.0	5.0±2.0	44.00	32.00	45°	2.3	-	7.0	1.15	Fig. 8

[1] *Pin pitch listed above for reference only. Values not guaranteed.*

Dimensions – Millimeters cont.

Figure 5

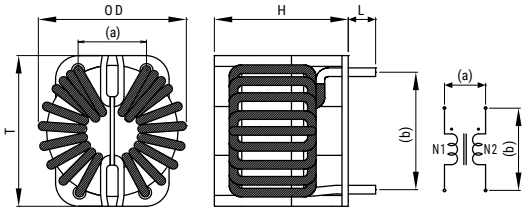


Figure 6

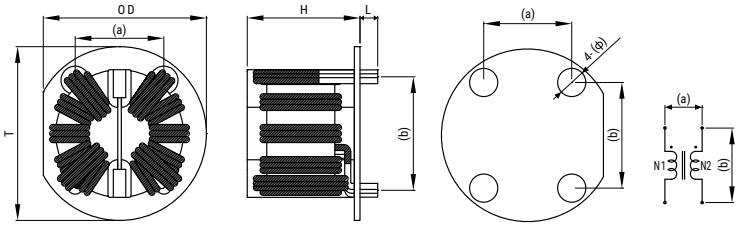


Figure 7

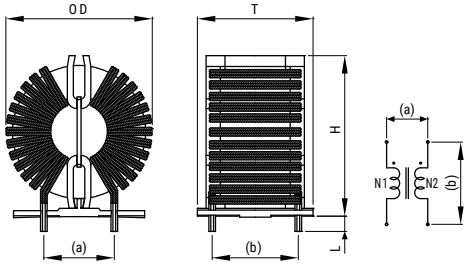
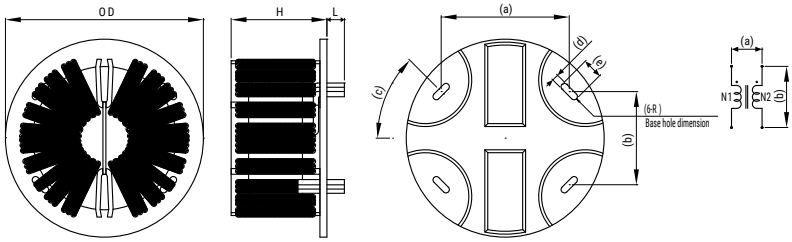


Figure 8



Part Name	Dimensions (mm)				Pin Pitch[1] (Reference)							Figure
	OD (Maximum)	T (Maximum)	H (Maximum)	L	a	b	c	d	φ	e	R	
SCF-02-130JV	15.0	14.0	15.0	4.5±1.0	5.00	10.00	-	-	-	-	-	Fig. 1
SCF-02-350JH	16.0	15.0	15.5	3.0±0.5	5.08	7.62	-	-	-	-	-	Fig. 2
SCF12-025-1100J	16.0	12.0	16.0	3.1±0.5	6.00	10.00	-	-	-	-	-	Fig. 1
SCF-03-65JV	15.0	14.0	15.0	3.5±1.0	5.00	10.00	-	-	-	-	-	Fig. 1
SCF19-040-0R8A1100J	28.5	23.0	28.5	3.5±1.0	18.00	16.00	-	-	-	-	-	Fig. 3
SCF47B-600-2R2C0005JH	70.0	-	36.5	6.0±3.0	44.00	32.00	-	-	6.0	-	-	Fig. 4
SCF31B-200-2R0A020JH	48.0	42.0	35.0	4.0±1.0	17.00	30.00	-	-	-	-	-	Fig. 5
SCF33B-400-1R6C009JH	50.0	50.0	35.0	5.0±2.0	25.00	30.00	-	-	4.2	-	-	Fig. 6
SCF47B-400-1R8C040J	63.0	39.0	61.0	4.5±1.5	25.00	28.00	-	-	-	-	-	Fig. 7
SCF47C-400-1R8C040JH	70.0	-	38.0	5.0±2.0	44.00	32.00	45°	2.3	-	7.0	1.15	Fig. 8

[1] Pin pitch listed above for reference only. Values not guaranteed.

Environmental Compliance

All KEMET AC line filters are RoHS Compliant.

Performance Characteristics

Item	Performance Characteristics
Rated Voltage	250 VAC/VDC and 500VAC/VDC
Withstanding Voltage	2,400 VAC (2 seconds, between lines)
Insulation Resistance	> 100 MΩ at 500 VDC (between lines)
Rated Current Range	2 – 60 A
Rated Inductance Range	0.05 – 35 mH minimum
Inductance Measurement Condition	10 kHz, 50 kHz, and 100 kHz
Thermal Class	E (120°C)
Operating Temperature Range	–25°C to +120°C (include self temperature rise)

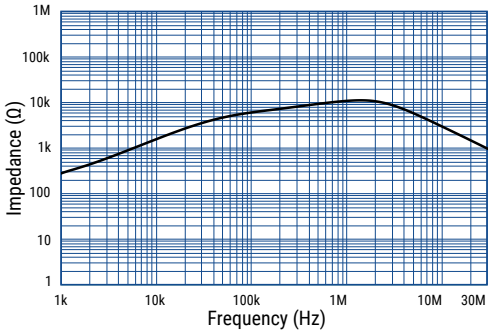
Table 1 – Ratings & Part Number Reference

Part Number	Rated Voltage AC/DC (V)	Rated Current (A)	Inductance (mH) Minimum	DC Resistance/ Line (mΩ) Maximum	Temperature Rise (K) Maximum	Wire Diameter (mm)	Weight (g) Approximate
SCF-02-130JV	250	2.0	13.00 [1]	115.00	50	0.45	5.0
SCF-02-350JH	250	2.0	35.00 [1]	220.00	45	0.40	5.4
SCF12-025-1100J	250	2.5	11.90 [1]	82.60	70	0.45	5.0
SCF-03-65JV	250	3.0	6.50 [1]	70.00	55	0.50	4.0
SCF19-040-0R8A1100J	250	4.0	11.00 [2]	70.00	60	0.80	27.6
SCF47B-600-2R2C0005JH	250	60.0	0.05 [3]	0.31	35	2.2 x 3 Parallel	135.0
SCF31B-200-2R0A020JH	500	20.0	2.00 [3]	5.20	55	2.00	91.1
SCF33B-400-1R6C009JH	500	40.0	0.90 [3]	1.70	65	1.60	105.1
SCF47B-400-1R8C040J	500	40.0	4.00 [1]	2.10	75	1.8 x 3 Parallel	190.0
SCF47C-400-1R8C040JH	500	40.0	4.00 [1]	2.10	55	1.8 x 3 Parallel	192.7

[1] Inductance Measurement Condition: 10 kHz
[2] Inductance Measurement Condition: 50 kHz
[3] Inductance Measurement Condition: 100 kHz

Frequency Characteristics

SCF-02-130JV



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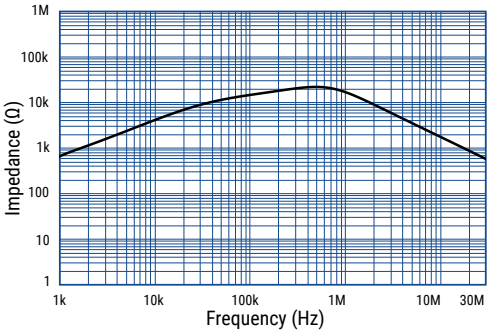

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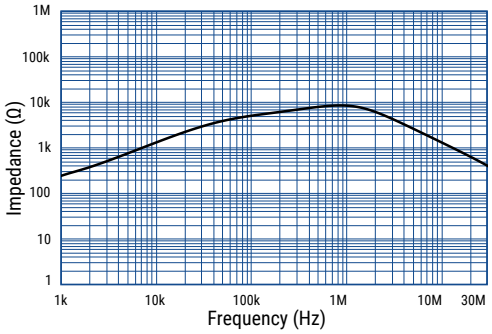
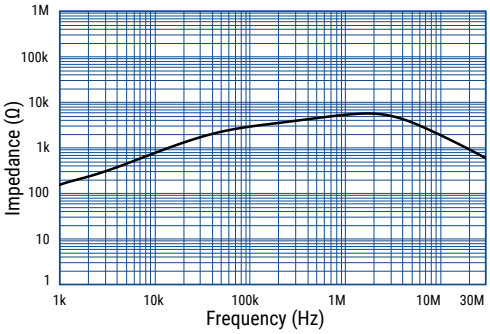
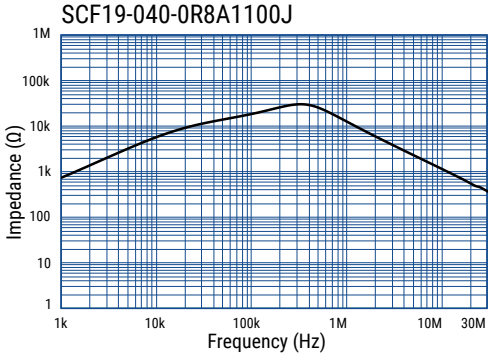


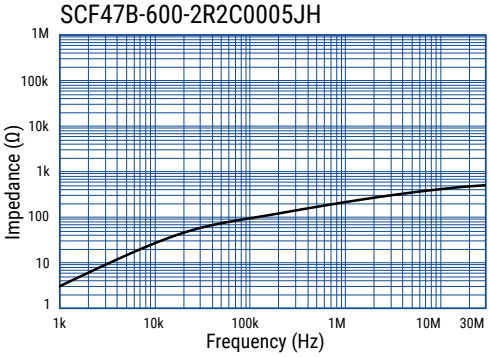
SCF-03-65JV



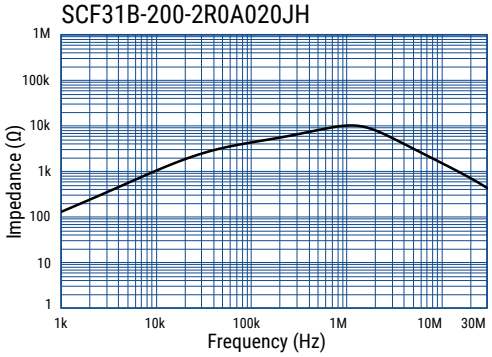
SCF19-040-0R8A1100J



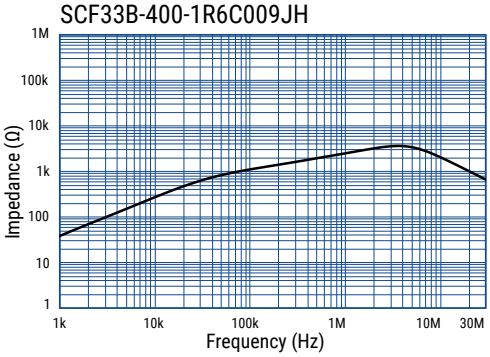
SCF47B-600-2R2C0005JH



SCF31B-200-2R0A020JH

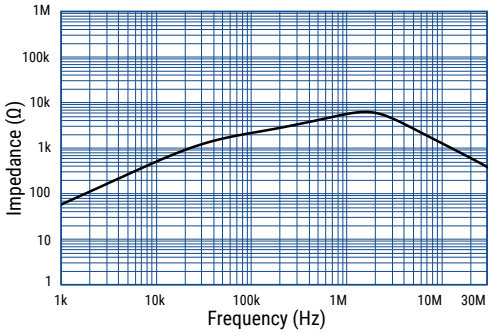


SCF33B-400-1R6C009JH

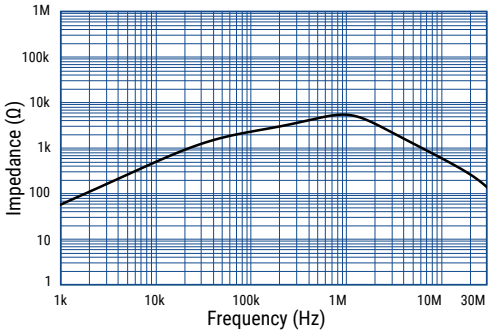


Frequency Characteristics cont.

SCF47C-400-1R8C040JH



SCF47B-400-1R8C040J



Packaging

Type	Packaging Type	Pieces Per Box
SCF-02-130JV	Tray	360
SCF-02-350JH		600
SCF12-025-1100J		1,080
SCF-03-65JV		360
SCF19-040-0R8A1100J		240
SCF47B-600-2R2C0005JH		36
SCF31B-200-2R0A020JH		80
SCF33B-400-1R6C009JH		36
SCF47B-400-1R8C040J		
SCF47C-400-1R8C040JH		

Handling Precautions

Precautions for product storage

AC Line Filters should be stored in normal working environments. While the chokes themselves are quite robust in other environments, solderability will be degraded by exposure to high temperatures, high humidity, corrosive atmospheres, and long term storage.

KEMET recommends that maximum storage temperature not exceed 40°C and maximum storage humidity not exceed 70% relative humidity. Atmospheres should be free of chlorine and sulfur bearing compounds. Temperature fluctuations should be minimized to avoid condensation on the parts. Avoid storage near strong magnetic fields, as this might magnetize the product.

For optimized solderability, AC line filters stock should be used promptly and preferably within 6 months of receipt.

Product temperature rise values

The values listed for temperature rise are the result of self-heating in wires when the rated current (commercial frequency) is applied.

When using the product, check and evaluate the value of the core temperature rise under actual operating conditions.

KEMET Electronics Corporation Sales Offices

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Disclaimer

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Although KEMET designs and manufactures its products to the most stringent quality and safety standards, given the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage.

Although all product–related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicted or that other measures may not be required.

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