

C87, Cylindrical Aluminum Case, Overpressure Protection, 420 VAC/470 VAC

Overview

C87 is a polypropylene metallized film, with a cylindrical aluminium can-type construction filled with resin. It uses faston, plastic deck or cable terminals, and an overpressure safety device.

Applications

Typical applications include motor run S2 safety class: single-phase motors, low power electric motors and compressors.

Benefits

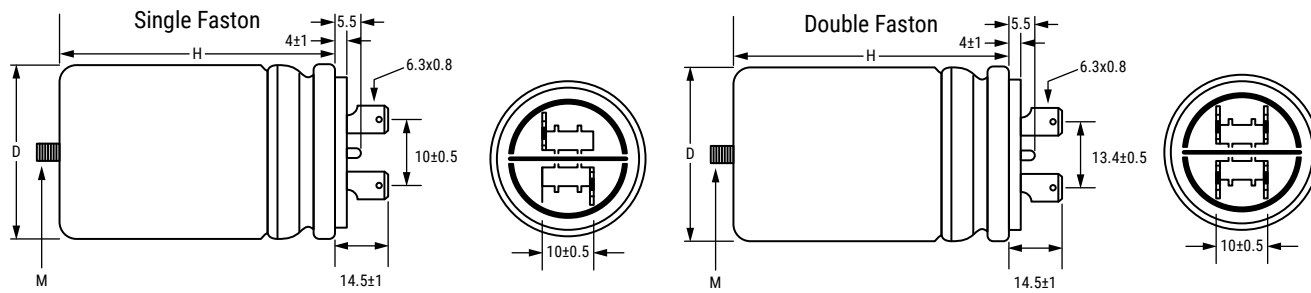
- Self-healing
- VDE, CQC and UL810 approved
- Rated frequency of 50 Hz and 60 Hz
- High capacitance density
- Safety device protection



Part Number System

| C87 | 8 | B | F | 3 | 4300 | AA | 4 | J |
|----------------------------|---|--|---|--|--|---------------|--------------------------|---|
| Series | Marking | Case & Fixing Bolt Code | Terminal Style | Capacitance Code (pF) | Packaging | Internal Use | Tolerance | |
| C87 = Motor Run Capacitors | 0 = 10,000 hours/ 420 VAC (Class B) or 3,000 hours/ 470 VAC (Class C) 8 = 30,000 hours/ 420 VAC (Class A) or 10,000 hours/ 470 VAC (Class B) | C870: C = Standard D = UL Z = Special C878: A = Standard B = UL Z = Special | F = Cylindrical aluminum can with M8 bolt G = Cylindrical aluminum can with M12 bolt E= Without fixing bolt/flat bottom | 1 = Single faston 2.8 x 0.8 (hole) 2 = Single faston 6.3 x 0.8 3 = Double faston 6.3 x 0.8 4 = Single faston 2.8 x 0.8 (slot) 5 = Single faston 2.8 x 0.5 (hole) | Digits 2 - 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added. | AA = Standard | 0, 1, 2, 4, 5 = Standard | J = 5% K = 10% R = 0 to +10% X = Special tolerance |

Dimensions – Millimeters



| D | H | Mounting Stud (M) |
|-------|-----|-------------------|
| +1/-0 | ±2 | |
| 25 | 48 | M8 x 10 |
| 25 | 60 | M8 x 10 |
| 25 | 78 | M8 x 10 |
| 30 | 48 | M8 x 10 |
| 30 | 60 | M8 x 10 |
| 30 | 78 | M8 x 10 |
| 35 | 48 | M8 x 10 |
| 35 | 60 | M8 x 10 |
| 35 | 78 | M8 x 10 |
| 35 | 98 | M8 x 10 |
| 40 | 78 | M8 x 10 |
| 40 | 98 | M8 x 10 |
| 45 | 78 | M8 x 10 |
| 45 | 98 | M8 x 10 |
| 45 | 133 | M8 x 10 |
| 50 | 133 | M12 x 12.5 |
| 55 | 133 | M12 x 12.5 |
| 60 | 98 | M12 x 12.5 |
| 60 | 133 | M12 x 12.5 |

Qualification

| | |
|---------------------|--|
| Reference Standards | IEC 252;EN 60252-1:2011/A1/2013, VDE, CQC, UL810 (construction only), approved up to 500 VAC |
| Vibration Test | IEC 68-2-6 |

Performance Characteristics

| Type of Service | Continuous |
|--|---|
| Operating Class | |
| C87/8 | Class B 10,000 hours at 470 VAC, Class A 30,000 hours at 420 VAC |
| C87/0 | Class B 10,000 hours at 420 VAC, Class C 3,000 hours at 470 VAC |
| Temperature Range | -25 to +85°C |
| Rated Voltage | 470 VAC |
| Rated Frequency | 50 – 60 Hz |
| Voltage Rise/Fall Time (Maximum) | 0 = 15 V/μs 8 = 20 V/μs |
| Maximum Permissible Voltage | 1.10 x rated voltage |
| Maximum Permissible Current | 1.30 x rated current |
| Dissipation Factor (DF) | 20 x 10 ⁻⁴ at +20°C, 50 Hz |
| Safety Class | S2 |
| Maximum Altitude | 2,000 m |
| Capacitance Tolerance | ±5% |
| Mounting | Any position |
| Case | Aluminium |
| Disk | Thermoplastic Polymer V0 (UL 94) Plastic deck with: - self-extinguishing features V0 (UL94) - GWT–GWFI–GWIT value in conformity with the Standard IEC60335-1 ed. 4 par. 30/EN60335-1 ed.3 par.30 |
| Filling Resin | Polyurethane |
| Dielectric | Polypropylene |
| Plates | Self-healing metal layer |
| Test Voltage Terminal to Terminal (V _{TT}) | 2 V _n for 2 seconds |
| Test Voltage Terminal to Can (V _{TC}) | 2,000 V for 2 seconds |
| Total Harmonic Distortion | Up to 10% |
| Fire Load | 40 MJ/kg |
| Air Distance Between Live Parts | ≥ 5 mm |
| Air Distance Between Live Parts and Case | ≥ 6 mm |
| Vibration Test | IEC 68–2–6 |
| Maximum Tightening Torque | 5 Nm (M8), 10 Nm (M12) |

Table 1 – Ratings & Part Number Reference

| Capacitance Value (µF) | VAC | Maximum Dimensions in mm | | dV/dt (V/µs) | Packaging Quantity | Termination | Part Number |
|------------------------|-----|--------------------------|-----|--------------|--------------------|---------------|-----------------|
| | | D | H | | | | |
| 1 | 470 | 25 | 48 | 20 | 162 | Single faston | C878AF24100AA5J |
| 1.5 | 470 | 30 | 48 | 20 | 115 | Single faston | C878AF24150AA4J |
| 2 | 470 | 30 | 48 | 20 | 115 | Single faston | C878AF24200AA4J |
| 2.5 | 470 | 30 | 48 | 20 | 115 | Single faston | C878AF24250AA4J |
| 3 | 470 | 30 | 48 | 20 | 115 | Single faston | C878AF24300AA4J |
| 4 | 470 | 35 | 48 | 20 | 86 | Single faston | C878AF24400AA4J |
| 5 | 470 | 35 | 48 | 20 | 86 | Single faston | C878AF24500AA4J |
| 6 | 470 | 30 | 78 | 20 | 115 | Single faston | C878AF24600AA0J |
| 6.3 | 470 | 35 | 60 | 20 | 86 | Single faston | C878AF24630AA2J |
| 7 | 470 | 30 | 78 | 20 | 115 | Single faston | C878AF24700AA0J |
| 7.5 | 470 | 30 | 78 | 20 | 115 | Single faston | C878AF24750AA0J |
| 8 | 470 | 30 | 78 | 20 | 115 | Single faston | C878AF24800AA0J |
| 10 | 470 | 35 | 78 | 20 | 86 | Single faston | C878AF25100AA0J |
| 12 | 470 | 35 | 78 | 20 | 86 | Single faston | C878AF25120AA0J |
| 16 | 470 | 40 | 78 | 20 | 62 | Single faston | C878AF25160AA0J |
| 20 | 470 | 45 | 78 | 20 | 50 | Single faston | C878AF25200AA0J |
| 25 | 470 | 45 | 98 | 20 | 50 | Single faston | C878AF25250AA0J |
| 30 | 470 | 45 | 98 | 20 | 50 | Single faston | C878AF25300AA0J |
| 40 | 470 | 45 | 133 | 20 | 50 | Single faston | C878AF25400AA0J |
| 1 | 470 | 30 | 48 | 20 | 115 | Double faston | C878AF34100AA4J |
| 1.8 | 470 | 30 | 48 | 20 | 115 | Double faston | C878AF34180AA0J |
| 2 | 470 | 30 | 48 | 20 | 115 | Double faston | C878AF34200AA4J |
| 2.5 | 470 | 30 | 48 | 20 | 115 | Double faston | C878AF34250AA4J |
| 3 | 470 | 30 | 48 | 20 | 115 | Double faston | C878AF34300AA4J |
| 3.5 | 470 | 35 | 48 | 20 | 86 | Double faston | C878AF34350AA4J |
| 4 | 470 | 35 | 48 | 20 | 86 | Double faston | C878AF34400AA4J |
| 5 | 470 | 35 | 48 | 20 | 86 | Double faston | C878AF34500AA4J |
| 6 | 470 | 30 | 78 | 20 | 115 | Double faston | C878AF34600AA0J |
| 7.5 | 470 | 30 | 78 | 20 | 115 | Double faston | C878AF34750AA0J |
| 8 | 470 | 30 | 78 | 20 | 115 | Double faston | C878AF34800AA0J |
| 10 | 470 | 35 | 78 | 20 | 86 | Double faston | C878AF35100AA0J |
| 12 | 470 | 35 | 78 | 20 | 86 | Double faston | C878AF35120AA0J |
| 12.5 | 470 | 35 | 78 | 20 | 86 | Double faston | C878AF35125AA0J |
| 14 | 470 | 40 | 78 | 20 | 62 | Double faston | C878AF35140AA0J |
| 15 | 470 | 40 | 78 | 20 | 62 | Double faston | C878AF35150AA0J |
| 16 | 470 | 40 | 78 | 20 | 62 | Double faston | C878AF35160AA0J |
| 18 | 470 | 45 | 78 | 20 | 50 | Double faston | C878AF35180AA0J |
| 20 | 470 | 45 | 78 | 20 | 50 | Double faston | C878AF35200AA0J |
| 25 | 470 | 45 | 98 | 20 | 50 | Double faston | C878AF35250AA0J |
| 30 | 470 | 45 | 98 | 20 | 50 | Double faston | C878AF35300AA0J |
| 31.5 | 470 | 45 | 98 | 20 | 50 | Double faston | C878AF35315AA0J |
| 35 | 470 | 45 | 133 | 20 | 50 | Double faston | C878AF35350AA0J |
| 40 | 470 | 45 | 133 | 20 | 50 | Double faston | C878AF35400AA0J |
| 1 | 470 | 30 | 48 | 20 | 115 | Double faston | C878BF34100AA4J |
| 1.5 | 470 | 30 | 48 | 20 | 115 | Double faston | C878BF34150AA4J |
| 2 | 470 | 30 | 48 | 20 | 115 | Double faston | C878BF34200AA0J |
| 2.5 | 470 | 30 | 48 | 20 | 115 | Double faston | C878BF34250AA4J |
| 3 | 470 | 30 | 48 | 20 | 115 | Double faston | C878BF34300AA4J |
| 3.5 | 470 | 35 | 48 | 20 | 86 | Double faston | C878BF34350AA4J |
| 4 | 470 | 35 | 48 | 20 | 86 | Double faston | C878BF34400AA0J |
| 5 | 470 | 30 | 60 | 20 | 115 | Double faston | C878BF34500AA0J |
| 6 | 470 | 30 | 78 | 20 | 115 | Double faston | C878BF34600AA0J |
| 7.5 | 470 | 30 | 78 | 20 | 115 | Double faston | C878BF34750AA0J |
| 8 | 470 | 30 | 78 | 20 | 115 | Double faston | C878BF34800AA0J |
| 10 | 470 | 35 | 78 | 20 | 86 | Double faston | C878BF35100AA0J |
| 11 | 470 | 35 | 78 | 20 | 86 | Double faston | C878BF35110AA0J |
| 12 | 470 | 35 | 78 | 20 | 86 | Double faston | C878BF35120AA0J |
| 15 | 470 | 40 | 78 | 20 | 62 | Double faston | C878BF35150AA0J |
| 16 | 470 | 40 | 78 | 20 | 62 | Double faston | C878BF35160AA0J |
| 20 | 470 | 45 | 78 | 20 | 50 | Double faston | C878BF35200AA0J |
| 23 | 470 | 45 | 78 | 20 | 50 | Double faston | C878BF35230AA0J |

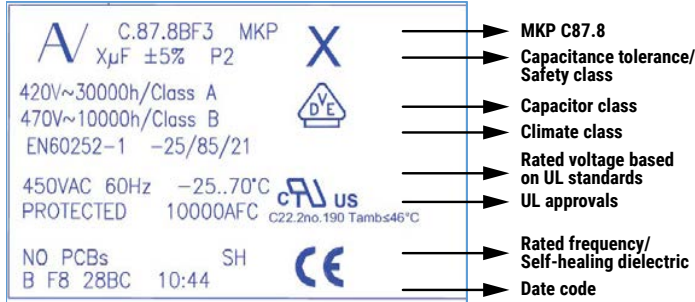
Table 1 – Ratings & Part Number Reference cont'd

| Capacitance Value (µF) | VAC | Maximum Dimensions in mm | | dV/dt (V/µs) | Packaging Quantity | Termination | Part Number |
|------------------------|-----|--------------------------|--------|--------------|--------------------|---------------|-----------------|
| | | D | H | | | | |
| 25 | 470 | 45 | 98 | 20 | 50 | Double faston | C878BF35250AA0J |
| 29 | 470 | 45 | 98 | 20 | 50 | Double faston | C878BF35290AA0J |
| 30 | 470 | 45 | 98 | 20 | 50 | Double faston | C878BF35300AA0J |
| 35 | 470 | 45 | 133 | 20 | 50 | Double faston | C878BF35350AA0J |
| 40 | 470 | 45 | 133 | 20 | 50 | Double faston | C878BF35400AA0J |
| 46 | 470 | 50 | 133 | 20 | 40 | Double faston | C878BF35460AA0J |
| 55 | 470 | 50 | 133 | 20 | 40 | Double faston | C878BF35550AA0J |
| 60 | 470 | 50 | 133 | 20 | 40 | Double faston | C878BF35600AA0J |
| 3 | 470 | 30 | 48 | 15 | 115 | Single faston | C870CF24300AA4J |
| 4 | 470 | 30 | 48 | 15 | 115 | Single faston | C870CF24400AA4J |
| 5 | 470 | 35 | 48 | 15 | 86 | Single faston | C870CF24500AA4J |
| 6 | 470 | 30 | 60 | 15 | 115 | Single faston | C870CF24600AA1J |
| 8 | 470 | 30 | 78 | 15 | 115 | Single faston | C870CF24800AA0J |
| 10 | 470 | 30 | 78 | 15 | 115 | Single faston | C870CF25100AA0J |
| 12 | 470 | 35 | 78 | 15 | 86 | Single faston | C870CF25120AA0J |
| 12.5 | 470 | 35 | 78 | 15 | 86 | Single faston | C870CF25125AA0J |
| 14 | 470 | 35 | 78 | 15 | 86 | Single faston | C870CF25140AA0J |
| 16 | 470 | 35 | 78 | 15 | 86 | Single faston | C870CF25160AA0J |
| 18 | 470 | 40 | 78 | 15 | 62 | Single faston | C870CF25180AA0J |
| 20 | 470 | 40 | 78 | 15 | 62 | Single faston | C870CF25200AA0J |
| 25 | 470 | 40 | 98 | 15 | 62 | Single faston | C870CF25250AA1J |
| 30 | 470 | 40 | 98 | 15 | 62 | Single faston | C870CF25300AA1J |
| 40 | 470 | 45 | 98 | 15 | 50 | Single faston | C870CF25400AA0J |
| 5 | 470 | 35 | 48 | 15 | 86 | Double faston | C870CF34500AA4J |
| 8 | 470 | 30 | 78 | 15 | 115 | Double faston | C870CF34800AA0J |
| 9 | 470 | 30 | 78 | 15 | 115 | Double faston | C870CF34900AA0J |
| 10 | 470 | 30 | 78 | 15 | 115 | Double faston | C870CF35100AA0J |
| 14 | 470 | 35 | 78 | 15 | 86 | Double faston | C870CF35140AA0J |
| 15 | 470 | 35 | 78 | 15 | 86 | Double faston | C870CF35150AA0J |
| 16 | 470 | 35 | 78 | 15 | 86 | Double faston | C870CF35160AA0J |
| 18 | 470 | 40 | 78 | 15 | 62 | Double faston | C870CF35180AA0J |
| 20 | 470 | 40 | 78 | 15 | 62 | Double faston | C870CF35200AA0J |
| 22 | 470 | 40 | 78 | 15 | 62 | Double faston | C870CF35220AA0J |
| 25 | 470 | 45 | 78 | 15 | 50 | Double faston | C870CF35250AA0J |
| 30 | 470 | 40 | 98 | 15 | 62 | Double faston | C870CF35300AA1J |
| 35 | 470 | 45 | 98 | 15 | 50 | Double faston | C870CF35350AA0J |
| 40 | 470 | 45 | 98 | 15 | 50 | Double faston | C870CF35400AA0J |
| 45 | 470 | 45 | 133 | 15 | 50 | Double faston | C870CF35450AA0J |
| 50 | 470 | 50 | 133 | 15 | 40 | Double faston | C870CG35500AA1J |
| 60 | 470 | 60 | 98 | 15 | 28 | Double faston | C870CG35600AA5J |
| 70 | 470 | 55 | 133 | 15 | 32 | Double faston | C870CG35700AA1J |
| 75 | 470 | 60 | 133 | 15 | 28 | Double faston | C870CG35750AA0J |
| 80 | 470 | 50 | 133 | 15 | 40 | Double faston | C870CG35800AA2J |
| 100 | 470 | 55 | 133 | 15 | 32 | Double faston | C870CG36100AA0J |
| 110 | 470 | 60 | 133 | 15 | 28 | Double faston | C870CG36110AA0J |
| Capacitance Value (µF) | VAC | B (mm) | H (mm) | dV/dt (V/µs) | | Termination | Part Number |

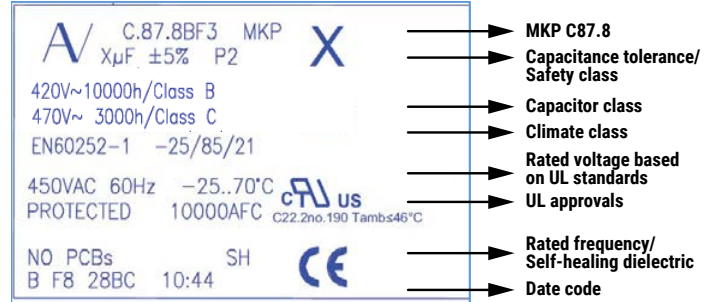
Marking

C87.8

From 1 μ F up to 45 μ F

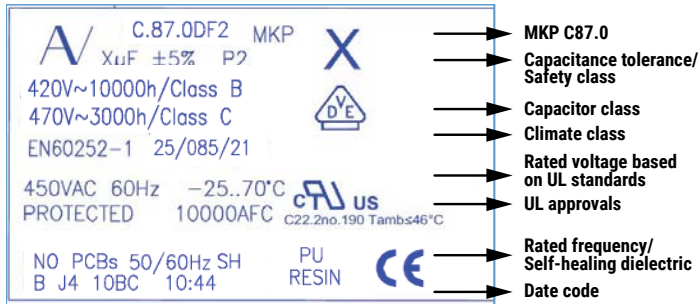


Over 45 μ F

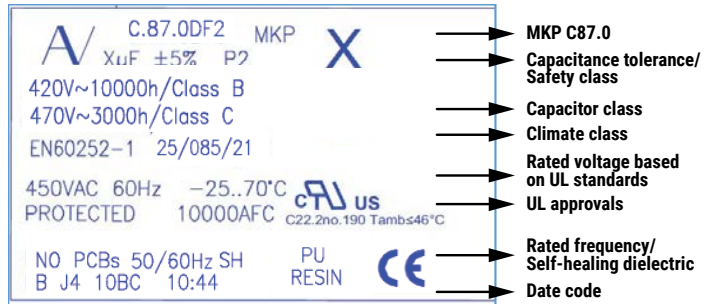


C87.0

From 1 μ F up to 80 μ F



Over 80 μ F



Marking (cont.d)

| Manufacturing Date Code (IEC-60062) | | | |
|-------------------------------------|------|-----------|------|
| Y = Year, Z = Month | | | |
| Year | Code | Month | Code |
| 2010 | A | January | 1 |
| 2011 | B | February | 2 |
| 2012 | C | March | 3 |
| 2013 | D | April | 4 |
| 2014 | E | May | 5 |
| 2015 | F | June | 6 |
| 2016 | H | July | 7 |
| 2017 | J | August | 8 |
| 2018 | K | September | 9 |
| 2019 | L | October | 0 |
| 2020 | M | November | N |
| 2021 | N | December | D |
| 2022 | P | | |
| 2023 | R | | |
| 2024 | S | | |
| 2025 | T | | |
| 2026 | U | | |
| 2027 | V | | |
| 2028 | W | | |
| 2029 | X | | |
| 2030 | A | | |

Environmental Compliance

As a leading global supplier of electronic components and an environmentally conscious company, KEMET continually aspires to improve the environmental effects of our manufacturing processes and our finished electronic components.

In Europe (RoHS Directive) and in some other geographical areas such as China (China RoHS), legislation has been enacted to prevent or otherwise limit the use of certain hazardous materials including lead (Pb), in electronic equipment. KEMET monitors legislation globally to ensure compliance and endeavors to adjust our manufacturing processes and/or electronic components as may be required by applicable law.

For military, medical, automotive, and some commercial applications, the use of lead (Pb) in the termination is necessary and/or required by design. KEMET is committed to communicating RoHS compliance to our customers. Information related to RoHS compliance will be provided in datasheets and using specific identifiers on the packaging labels.

All KEMET power film capacitors are RoHS compliant.

Materials & Environment

The selection of raw materials used by KEMET for the production of its electronic components is the result of extensive experience and with specific attention toward environmental protection. KEMET selects its suppliers according to ISO 9001 standards and performs statistical analysis on the raw materials purchased before acceptance for use in the manufacture of our electronic components. All materials are, to the best of KEMET's knowledge, non-toxic and free from cadmium, mercury, chrome and compounds, polychlorine triphenyl (PCB), bromide and chlorinedioxins bromurate clorurate, CFC and HCFC, and asbestos.

Insulation Resistance

As the capacitor temperature increases, the insulation resistance decreases. This is due to the increased electron activity. Low insulation resistance can also be the result of moisture trapped in the windings, caused by a prolonged exposure to excessive humidity.

Dissipation Factor

Dissipation factor is a complex function involved with the inefficiency of the capacitor. The $\text{tg}\delta$ may change up and down with increased temperature. For more information, please refer to Performance Characteristics.

Sealing

Hermetically Sealed Capacitors

As the temperature increases, the pressure inside the capacitor increases. If the internal pressure is high enough, it can cause a breach in the capacitor, which can result in leakage, impregnation, filling fluid or moisture susceptibility.

Resin Encased/Wrap & Fill Capacitors

The resin seals on resin-encased and wrap-and-fill capacitors will withstand short-term exposure to high humidity environments without degradation. Resins and plastic tapes will form a pseudo-impervious barrier to humidity and chemicals. These case materials are somewhat porous and through osmosis can cause contaminants to enter the capacitor. The second area of contaminated absorption is the lead-wire/resin interface. Since resins cannot bond 100% to tinned wires, there can be a path formed up to the lead wire into the capacitor section. Aqueous cleaning of circuit boards can aggravate this condition.

Barometric Pressure

The altitude at which hermetically sealed capacitors are operated, controls the voltage rating of the capacitor. As the barometric pressure decreases, the susceptibility to terminal arc-over increases. Non-hermetic capacitors can be affected by internal stresses due to pressure changes. This can be in the form of capacitance changes, or dielectric arc-over, as well as low insulation resistance. Heat transfer can also be affected by altitude operation. Heat, generated in an operation, cannot be dissipated properly and can result in high RI2 losses and eventual failure.

Radiation

Radiation capabilities of capacitors must be taken into consideration. Electrical degradation in the form of dielectric embitterment can take place causing shorts or opens.

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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 indicated or that other measures may not be required.

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[C878AF24250AA4J](#) [C878AF24150AA1J](#) [C870CF35450AA0J](#) [C878BF24800AA0J](#) [C878BF35350SA0J](#)