

What the DIN VDE V 0884-11:2017-01 Standard Means for Your Isolated Designs

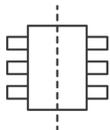


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As of January 2020, Deutsches Institut für Normung (DIN) V Verband der Elektrotechnik, Elektronik und Informationstechnik (VDE) V 0884-10:2006-12 is no longer an active certification standard for evaluating the intrinsic insulation characteristics and high-voltage capabilities of magnetic and capacitive galvanic isolation products. This marks the end of a three-year transition period for integrated circuit (IC) manufacturers that began in 2017 when VDE released the DIN VDE V 0884-11:2017-01 updated standard. IC manufacturers must now upgrade to the new certification requirements or remove VDE certification from their corresponding data sheets.

Since this standard is the only component-level certification for basic and reinforced digital isolators (including integrated isolators such as isolated interfaces, isolated gate drivers, isolated amplifiers, etc.), it helps original equipment manufacturers and end-equipment manufacturers feel confident that a digital isolator will meet their systems' high-voltage requirements and end-equipment level certifications.

Find the right TI digital isolator for your design



Our digital isolators are designed to meet industry standards for automotive and industrial designs. Learn more about our [certifications for digital isolators](#).

What's new in DIN VDE V 0884-11?

There are several critical changes in the certification process and requirements from DIN V VDE V 0884-10 to DIN VDE V 0884-11. These changes, as shown in [Table 1](#), list the component standards for both basic and reinforced certification.

Table 1. DIN V VDE updates (basic and reinforced)

Criteria / parameter	DIN V VDE V 0884-10	DIN VDE V 0884-11
Max surge isolation voltage (V_{IOSM})	<ul style="list-style-type: none"> Reinforced test voltage = $1.6 \times V_{IOSM}$ Basic test voltage = $1.3 \times V_{IOSM}$ Reinforced minimum = 10 kV 50 surge strikes (unipolar) 	<ul style="list-style-type: none"> Reinforced test voltage = $1.6 \times V_{IOSM}$ Basic test voltage = $1.3 \times V_{IOSM}$ Reinforced minimum = 10 kV 50 surge strikes (bipolar, 25 each polarity)
Max working/repetitive isolation voltage determination (V_{IOWM} , V_{IORM})	Insulation lifetime data is not required	Based on TDDDB insulation lifetime data analysis
Partial discharge test voltage ($V_{PD(M)}$)	<ul style="list-style-type: none"> Reinforced = $1.875 \times V_{IORM}$ Basic = $1.5 \times V_{IORM}$ 	<ul style="list-style-type: none"> Reinforced = $1.875 \times V_{IORM}$ Basic = $1.5 \times V_{IORM}$
Minimum rated lifetime	Not defined	<ul style="list-style-type: none"> Reinforced = 20 years x 1.875 (safety margin) Basic = 20 years x 1.3 (safety margin)
Failure rate over lifetime	Not defined	<ul style="list-style-type: none"> Reinforced = < 1 ppm Basic = < 1,000 ppm

Table 1. DIN V VDE updates (basic and reinforced) (continued)

Criteria / parameter	DIN V VDE V 0884-10	DIN VDE V 0884-11
Standard / certification expiration	January 2020	No set expiration date

What hasn't changed in DIN VDE V 0884-11?

While the partial discharge testing criteria do not change in DIN VDE V 0884-11, it is useful to understand the relevance of partial discharge testing on isolation components. Both TI and VDE still test for partial discharge in silicon-dioxide-based digital isolators, even though silicon dioxide does not have partial discharge. Optocouplers use partial discharge testing as a means to screen out bad production units built with an unwanted void in the dielectric. It is critical to rule out units with any defects, but it is important to note that you cannot depend on this testing as a minimum guaranteed lifetime test. The time-dependent dielectric breakdown (TDDB) testing done on digital isolators – but not on optocouplers – is an accurate lifetime testing process. Read the white paper, [“Enabling high voltage signal isolation quality and reliability”](#) to learn more about TDDB testing.

Why IC certifications matter

Certifications allow equipment manufacturers to confidently use isolation devices in their products worldwide, meet end application design requirements, and know whether an isolator will work reliably throughout its lifetime. Updates and revisions to certification requirements, like those from DIN VDE, ensure that high-voltage safety requirements remain relevant and as stringent as necessary. Since it is not a guarantee that a component manufacturer has met the requirements of DIN VDE V 0884-11, it is crucial to review board components for both future and existing designs to ensure that they still meet the certification requirements.

Additional resources

- Explore high-voltage reinforced isolation parameters, applications and test methodologies in the white paper, [“High-voltage reinforced isolation: definitions and test methodologies.”](#)
- Learn more about isolation with TI’s [“Isolation Glossary”](#) and the training video, [“Isolation Basics: An Introduction to Standards and Terminology.”](#)

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