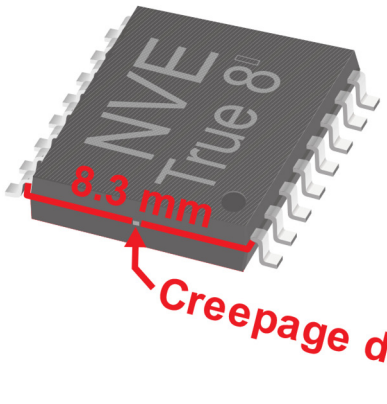
Up to 16 mm Creepage with NVE Isolators

World's Safest, Most Reliable Isolators

NVE's isolators are known for their unique ceramic/polymer composite isolation barrier, the toughest, most reliable isolation barrier in the world. Offering up to 6000 V_{RMS} isolation voltage and 1200 V_{RMS} working voltage under IEC 60747-17 (VDE 0884-17):2021-10 and a virtually unlimited 44000 year barrier life, NVE isolators truly are in a class of their own.

Creepage Rules and NVE's True 8^{TM} mm Creepage

Creepage is defined as the shortest, *surface-constrained* distance between electrical conductors on opposite sides of the isolation barrier. Creepage is mandatory for safety applications to prevent unintentional arcing across an isolation barrier. Arcing occurs when the electrical field across the isolation barrier becomes too large and ionizes molecules and creates a conduction path, which could be fatal. The strength of the electrical field is calculated as E = V/D where E is the electric field strength, V is the isolation voltage, and D is the creepage distance. Clearly, the creepage distance D needs to be increased when large isolation voltages are required.



The creepage distance is minimum distance across non-metal surface elements from one side of the isolation barrier to the other.

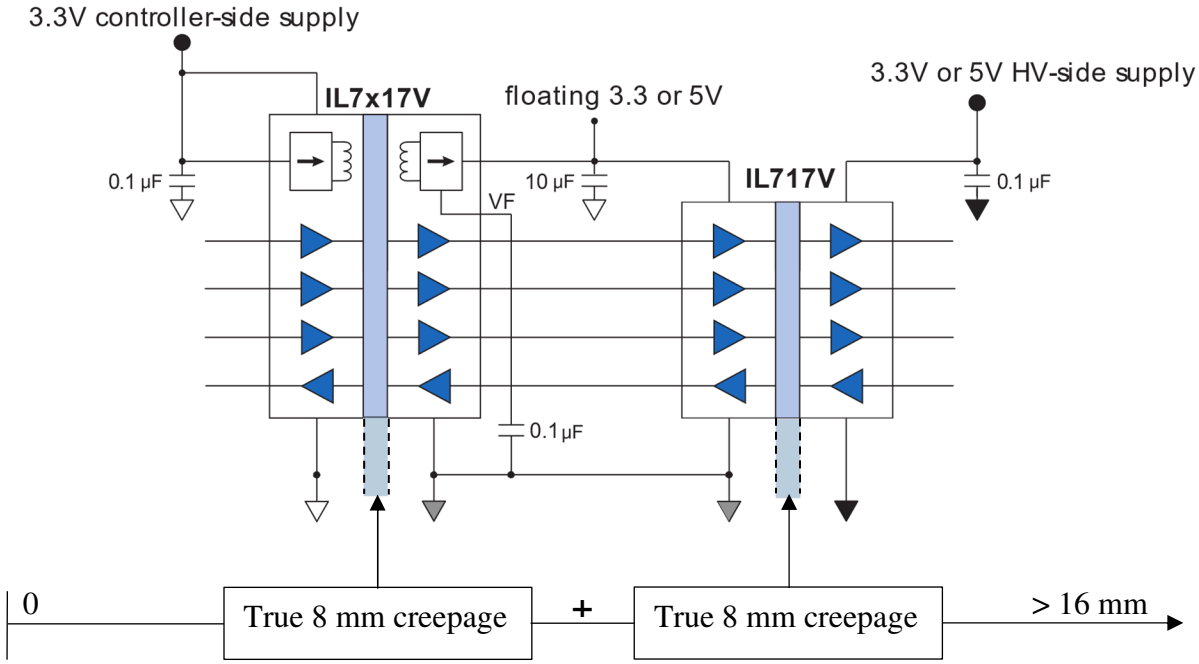
Unlike competing digital isolators, NVE isolators have True 8^{TM} SOIC widebody packages, the *world's only JEDEC-standard SOIC16 widebody packages with 8mm creepage**, which is required for medical safety and other equipment under IEC60601.

Increasing Voltages, Increasing Creepage Requirements

The proliferation of increasingly higher voltages in e-mobility and certain medical safety applications is creating more demanding creepage requirements. Fortunately, NVE's new IL7000-Series Isolators with Integrated DC-to-DC Converters allow a simple solution for these demanding systems. Two True 8^{TM} mm creepage packages in series provide *true 16 mm creepage*, allowing you to use the world's toughest, most reliable isolation barrier even as working voltages continue increasing.

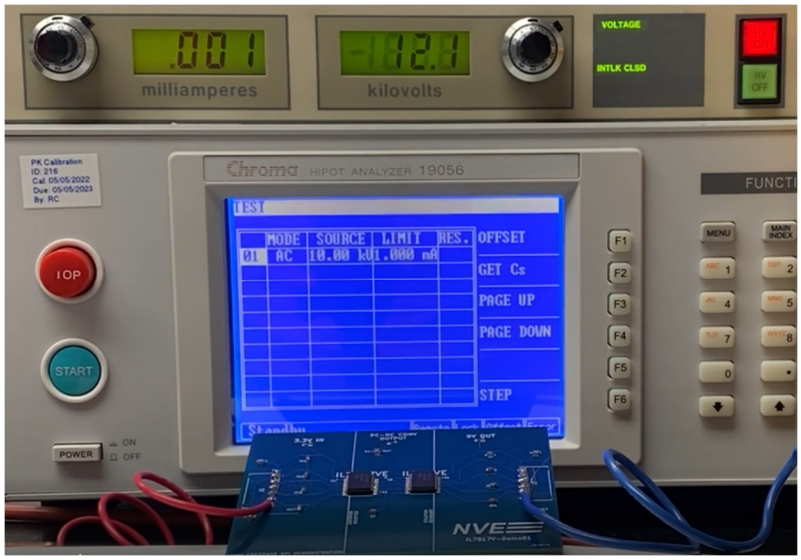
*See this application bulletin for more information: nve.com/Downloads/ab23.pdf

The example circuit below demonstrates 16 mm creepage SPI isolation using NVE's IL7x17VE and IL717VE in series. The IL7x17VE's integrated DC-to-DC converter provides a floating supply to power the controller side of the IL717VE, offering an elegant solution for 16 mm creepage.



Demonstrating 12 kV Isolation with 16 mm Creepage

Check out our YouTube channel for a live demonstration of 16 mm creepage and the high isolation voltages achievable with NVE's GMR Digital Isolators:



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Datasheets

- nve.com/Downloads/il71x.pdf
- nve.com/Downloads/il76xx.pdf

Videos and Application Bulletins

- youtube.com/c/NveCorporation
- nve.com/appNotes

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