

## **CASE STUDY:** A High Speed, High Voltage Optically Isolated Solid State CCFL Driver

A global electronics company based in Western Europe approached us with a technical challenge.

They had introduced a novel concept in some of their large flat screen TVs that made use of CCFLs placed on the perimeter of the screen that sought to reduce eye-strain by projecting the colors appearing on the perimeter of the screen onto surfaces behind and around the screen.

Their internal engineering staff had contemplated alternative approaches to this technical challenge, including using SSRs to drive this circuitry. As their own attempts in their labs had yet to yield results after several months of effort, they contacted SSO to see what we might be able to do.

In their design, a microprocessor was used to apply PWM (Pulse Width Modulation) to the 60-70kHz high voltage power sources of 3 CCFLs (1-Red, 1-Green, 1-Blue) to render nearly any color at the screen perimeter. A high performance Solid State Relay with high input-to-output isolation was needed to isolate the control circuit from the load.

## **TECHNICAL REQUIREMENTS:**

Load Voltage:	1800V
High Speed:	Ton/Toff of 50us MAX
High Frequency:	capable of handling 60kHz input signal
Low Feed-Thru Capacitance:	to assure no high-frequency leak-through what would keep CCFL partially on when switch was turned off.

To assist our work, we were provided samples of the CCFL Lamp Unit, the existing CCFL driver and associated software to drive it.



Image 1: CCFL Light with diffuser

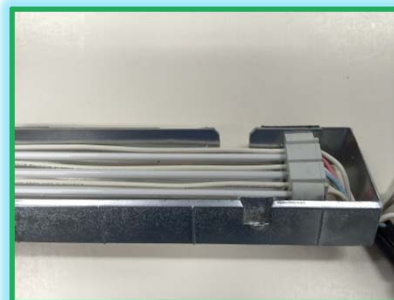


Image 2: Close-Up . CCFL Light & connectors  
Note 3 distinct CCFLs (R-G-B)

## SSO SOLUTION:

After several technical discussions, SSO built prototype samples in a package with dimensions of 1.42"x1.5"x.39" (36mm x 38mm x 10mm) (L/W/H). Ultimately, the plan was to offer this same device in a substantially more compact, standard 16 DIP outline package (0.75"x0.25"x0.13")

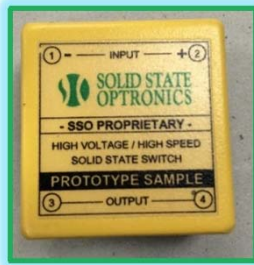


Image 3: Prototype Sample  
SSO CCFL Driver –  
TOP View



Image 4: Prototype Sample  
SSO CCFL Driver –  
SIDE View



Image 5: Prototype Sample  
SSO CCFL Driver –  
TOP Edge View

## OUTCOME:

Samples were hand-delivered by SSO staff to Customer's facility 6 weeks after final specifications were communicated.

Having met their technical requirements, our Customer remarked that SSO was able to do in 6 weeks what they were unable to do in 6 months.

While we were honored by the complement, the outcome should not have come as a surprise. Optically-isolated switching is what we do.

In an increasing technically complex and diverse world, collaborative efforts combining specialists in various disciplines is a more frequent occurrence.

## WANT TO LEARN MORE?

Do you have an application of 1000V, 1200V, 1800V or more? Does your product require fast switching of high frequency loads?

If you'd like to talk to an Engineer and learn more details on this case study, or have other questions and want to know if SSO can help, just let us know.

With over 30 years of technical expertise, we likely have a solution for you.