

# iDRC Wide Range Programmable DC Power Supply

UnitedSiC FET solutions increase output power, range and density of DSP-WR power supply series

## OVERVIEW

UnitedSiC direct replacement FET upgrade resulted in better space utilization, reduced power usage and easily implemented high-speed control systems for automated test and measurement systems.

## SOLUTIONS

[UJ3C120040K3S](#)

## BENEFITS

- Drop-in capabilities
- Ease-of-use due to gate drive compatibility
- Improved efficiency and power output
- Enhanced thermal performance

► **To learn more, go to:**  
<http://bit.ly/SiCFETs>



Chyng Hong Electronic Co., LTD. (iDRC) was established in 1986 with a focus on developing the optimum test and measurement instruments for power electronics. Their test solutions are used worldwide with more than 123 patents in the US, EU, Japan, China and Taiwan.

For the past 20 years, air-cooled units with MOSFETS have been the mainstream products in the commercial market for high power output programmable DC power supplies. The challenge for modern product designers is how to attract the attention of decision makers with breakthrough features and performance.

The flagship DSP-Wx family (figure 1) at iDRC is fully compatible with programmable AC Power Distribution Units (PDU), with the DSP1950-27WR offering a maximum output voltage of 1950V. This allows iDRC to easily build 1950V-2700A-1.8 MW wide-range programmable DC power systems from up to 100 parallel power supplies for applications that require higher test voltages, including solar and EV components.

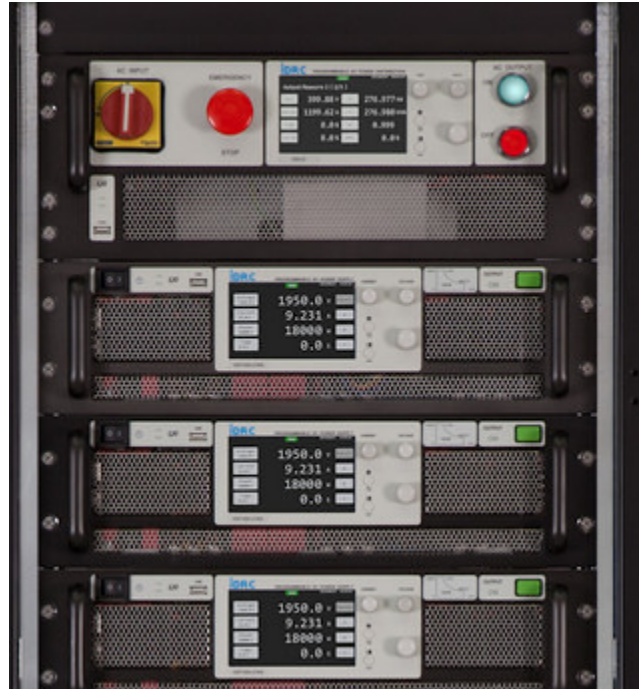


Figure 1: IDRC - DSP-WR Series

## SOLUTION

iDRC employed UnitedSiC FET unique cascode configuration to deliver three core product values in their power supply series:

1. New HMI to simplify the operation of the product
2. Increase output power in the same volume in order to increase power density
3. Improve the product's environmental temperature adaptability to make it more reliable and durable

iDRC designers adopted the UnitedSiC UJ3C120040K3S SiC FET to replace traditional Si FET in order to significantly improve system performance without changing the gate drive voltage.

In the cascode configuration of UnitedSiC SiC FETS, normally-on SiC JFETs are co-packaged with Si MOSFET to create a normally-off circuit with standard gate driving characteristics. As a result, a FET upgrade with UnitedSiC direct replacement devices allows for performance improvements, lower conductive and switching losses, enhanced thermal performance and integrated ESD protection.

## BENEFITS

With UnitedSiC FET devices, the DSP-Wx power supply series has increased output power by 120%, creating an unprecedented 3U-18kW output range with continuous full-load output at 50°C. With the increased power density, wide output range, and LXI-compliant control interface, iDRC customers can increase space utilization, reduce power usage, and easily implement high-speed control systems when setting up automated test and measurement systems.

Using UnitedSiC SiC FETs, iDRC achieved 15% increase in power output on current industry standards, as well as ensuring all new products operate at 25% higher ambient temperatures. These higher performance levels enable iDRC to successfully compete with a unique, high value power supply series in an extremely competitive market space.



Mark Lin

President & Chief of R&D

**“Thanks to the UJ3C120040K3S, we do not need to look for new gate driver components and can design special heat dissipation mechanisms – achieving better characteristics and helping customers reach expected goals.”**