

# P2124A High Speed Line Modulator

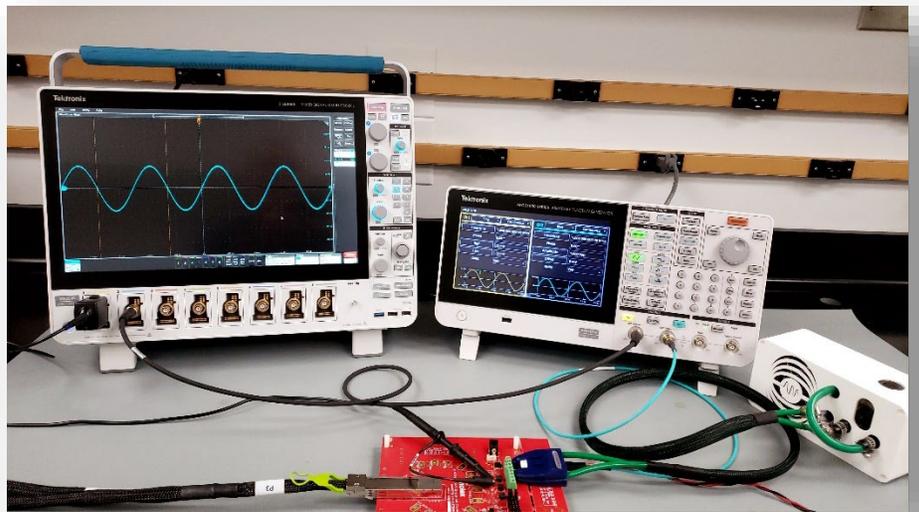
Water-Cooled GaN Noise Immunity Probe Data Sheet

## PSRR/PSMR/PSNR Probe

Power Supply Rejection Ratio (PSRR)

Power Supply Modulation Ratio (PSMR)

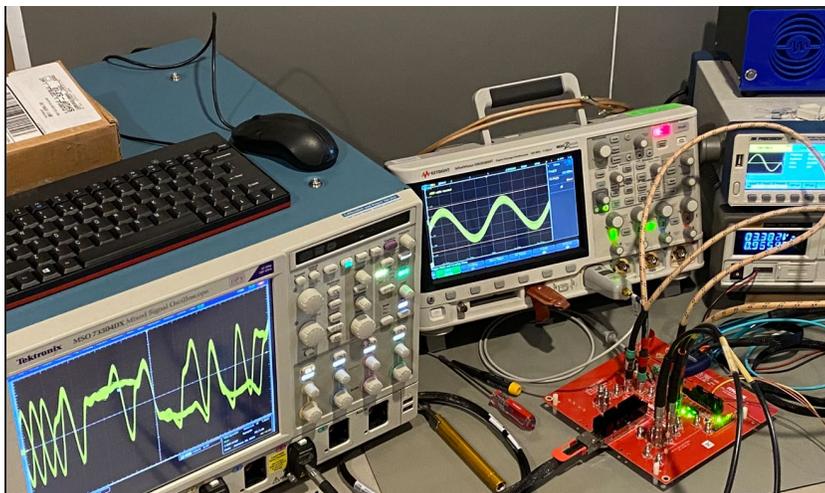
Peak Signal-Noise Ratio (PSNR)



## P2124A Noise Immunity Probe

The P2124A is a GaN-based probe used for PSNR and other noise immunity tests. It combines a power rail voltage with a modulation signal to a DUT being tested for noise immunity (PSNR) with input stimulus and power. The modulation signal can be any 50 Ohm analog signal within the bandwidth limits of the probe. Two solder tabbed terminals are used at the probe tip to connect the modulator to the DUT board. A SMPM connector at the back end is used to connect the analog modulation source (reference noise, sinusoidal 40 Hz to 30 MHz noise). A 4-pin connector at the back end of the probe connects the external power supply and provides tip voltage sense signals for remote sensing. The probe includes the water-cooling system and supports the connection of two probes simultaneously.

The P2124A supports the SFP+, QSFP-DD-Hardware-Rev6.x requirement for QSFP Double Density 8X, and QSFP.OSFP 4X pluggable transceivers and similar power supply output noise and tolerance testing specifications including AEC cable and optical module sinusoidal power supply noise tolerance (from 40 Hz - 10 MHz (p-p)). The probe can be used by manufacturers or end-users to verify OEM compliance with the requirements. A remote sense module is provided to support optimum voltage compliance for the DUT.



The P2124A enables power supply noise tolerance testing. Here noise is being combined with the power supply input voltage using the P2124A and then onto the DUT board using the near zero interconnect impedance probe head in a QSFP noise immunity test.

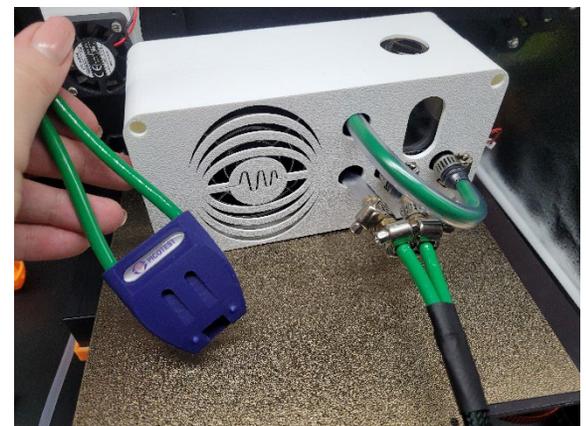
### FEATURES:

- Meets or exceeds the SFP+, QSFP-DD/QSFP-DD800/QSFP112 Hardware Specification 6.3, and OSFP Octal Small Form Factor Pluggable Module Rev. 5
- 30-40MHz \*
- 200mOhm typical source impedance
- Low-profile, small footprint probe head minimizes interconnect, essential for high bandwidth
- GaN enabled for low impedance high speed modulation
- Water cooling allows the probe to get close to the DUT, essential for high bandwidth modulation
- Sense lines in the connector support optional remote sense board

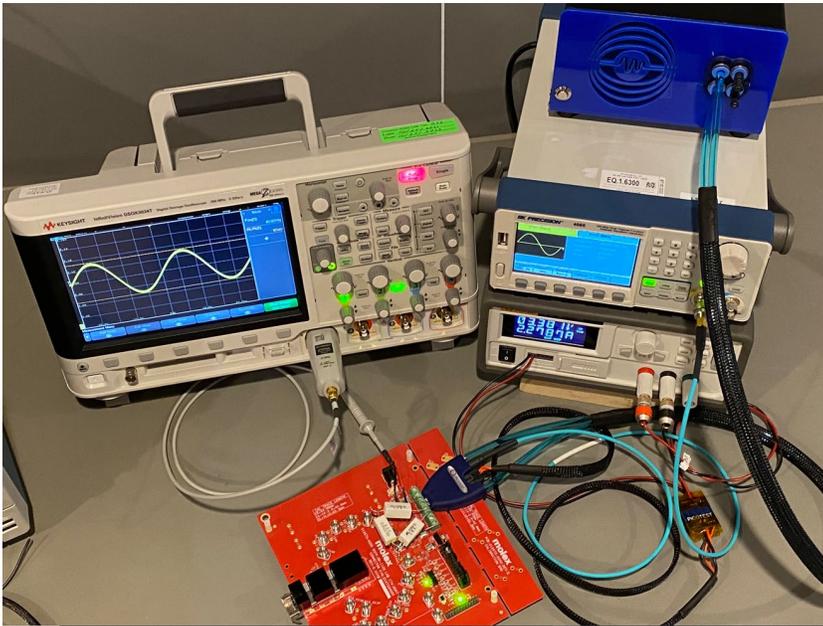
\* Load dependent

### APPLICATIONS:

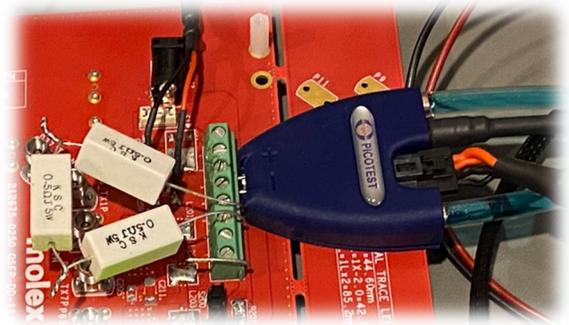
- View impacts on phase noise and jitter due to power supply noise
- Power supply noise immunity testing per various specifications
- SFP+, QSFP-DD and OSFP Power Supply Noise Tolerance Testing
- Power supply rejection ratio (PSRR), power supply modulation ratio (PSMR), and power supply signal to noise ratio (PSNR) measurement
- General PSRR/PSMR high power high bandwidth testing



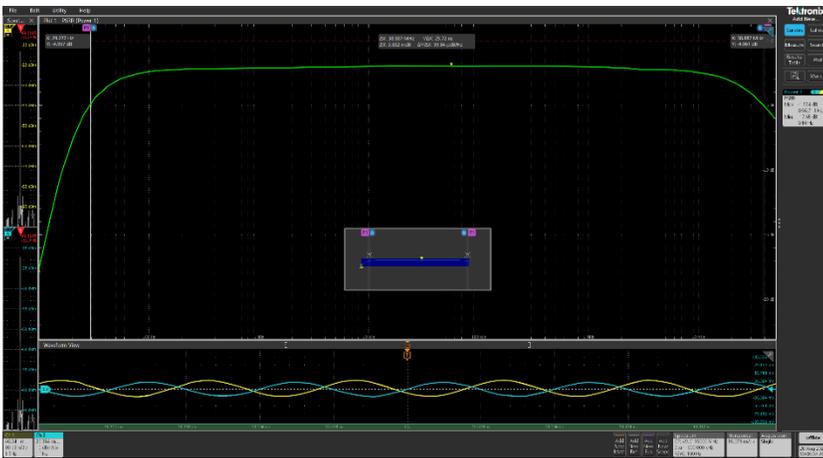
Water cooling technology allows for high power delivery in the custom probe head.



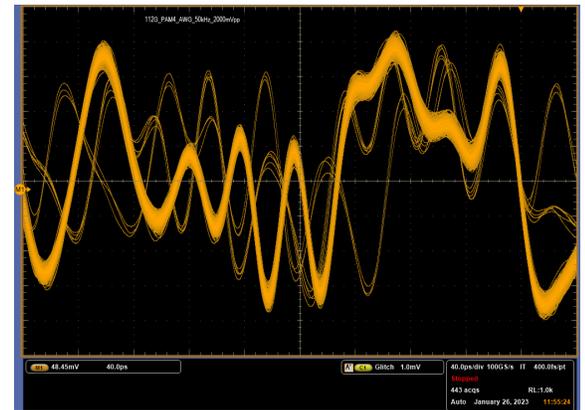
The P2124A allows noise immunity-based measurements on QSFP, SFP, or other MSA-specified modules.



New requirements demand bandwidth, which means very short connections. This has led to the high-density water-cooled packaging of the modulator – the Picotest P2124A.



Probe modulation bandwidth (30Hz-39MHz 1 Ohm load).



112G PAM4: Noise applied (50kHz), exceeding test level required.

### SPECIFICATIONS

P2124A Probe	
Characteristic	Rating
Maximum DC Input Voltage	Probe 50V, Transceiver Application 7.5 V
Peak Current	10A
Maximum Continuous Current	6A
Maximum Voltage Drop at 6A	3.5V
Modulation Input Impedance	50 ohms
3dB Frequency Response (typical) (0.6ohm resistive load)	30Hz – 40MHz
Modulation Frequency Range	10Hz - 250MHz
Output Impedance at 6 Amps (typical)	200m Ohms
Temperature Range	35°C
Maximum Altitude	6000 Ft



Caution: To avoid equipment damage and/or severe injuries death or death do not use this probe close to voltages higher than 50 VAC or 75 VDC.

For more information on Picotest products, applications, or services, please contact Picotest:  
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