

## 702921/702922 Differential Probes

Silicon carbide (SiC), gallium nitride (GaN) and other next-generation power devices are attracting attention as progress continues toward a decarbonized society. Yokogawa has developed the 702921 (rated input 1000 V) and 702922 (rated input 2000 V) High-Voltage Differential Probes to enable waveform measurements of next-generation power devices with higher speeds and voltages.

### MAIN FEATURES

#### ■ Wider Measurable Frequency Bandwidth

The frequency bandwidth has been widened from 150 MHz in the previous model (701978) to 400 MHz in order to accommodate the power devices with higher switching speeds. The voltage rise time of the probe with 400 MHz frequency bandwidth is approximately 1 ns, which enables observation of the switching waveforms of SiC and GaN power devices.

#### ■ Superior CMRR Characteristics

In high-side measurements of switching devices, accurate measurement of waveforms is difficult due to noise superposition caused by common-mode noise, making it important to select probes with a superior common-mode rejection ratio (CMRR). By adopting a patented differential amplifier configuration, the 702921 and 702922 achieve superior CMRR performance even in the high-frequency range above 1 MHz. To evaluate the CMRR performance, Figure 1 below shows the output waveform when identical high-speed pulse signals with a 5-V amplitude are input to each of the differential (+/-) inputs. The smaller the output, the better the CMRR. Compared with other manufacturers' differential probes of the same bandwidth and class, the output signal is smaller, confirming the superior CMRR characteristics.



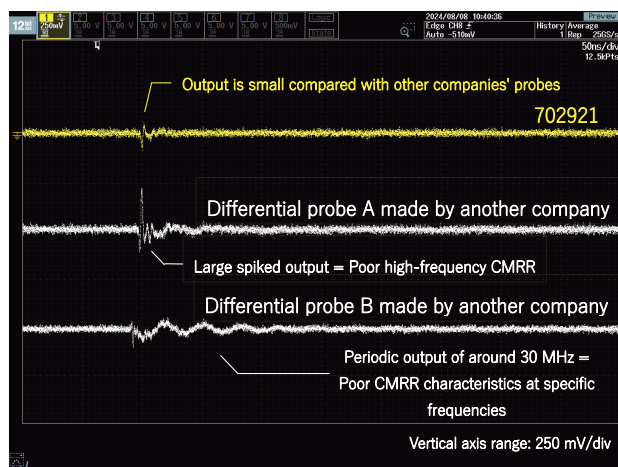
702921

#### ■ Convenient Dedicated Interface

The 702921 and 702922 are differential probes designed especially for Yokogawa's DLM series oscilloscopes and are equipped with a proprietary interface. Simply connecting the probe to a DLM oscilloscope automatically sets the oscilloscope's attenuation ratio and input impedance, eliminating the need for burdensome manual setting of the oscilloscope and preventing configuration errors.

### MAIN SPECIFICATIONS

	702921 1000 V rated model	702922 2000 V rated model
Frequency bandwidth (-3 dB)	DC to 400 MHz	
Attenuation ratio	50:1/500:1	100:1/1000:1
CMRR (typical)	DC	80 dB
	100 kHz	70 dB
	1 MHz	70 dB
	2 MHz	60 dB
	10 MHz	50 dB
	50 MHz	40 dB
	100 MHz	30 dB
	400 MHz	20 dB
Maximum differential input voltage	±100 V/±1000 V	±200 V/±2000 V
Maximum input voltage	±1000 V	±2000 V
Maximum non-destructive voltage	±1500 V	±3000 V
Measurement category	1000 V CAT II, 600 V CAT III, 300 V CAT IV	
DC gain accuracy	±0.7%	



**Figure 1** Output waveforms when a common-mode pulse is input

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