

Keithley Instruments

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High Voltage Bias Tee Kits Instrument Specifications

PRODUCT DESCRIPTION

The Keithley Instruments Model CVU-200-KIT and CVU-3K-KIT high voltage bias tee kits provide high voltage AC + DC measurement capability for Keithley's Parametric Curve Tracer (PCT), SourceMeter instruments and the PCT-CVU multi-frequency C-V meter. When used with the ACS Basic software, they provide a complete 2- or 3-terminal capacitance-voltage (C-V) measurement capability for power semiconductor devices such as MOSFETs, IGBTs, diodes, and other devices. These kits are specifically designed for the Model 8010 High Power Device Test Fixture, but will also work with a variety of other test fixtures. However, they will only work with the 4200-SCS or PCT-CVU C-V meters. In addition to providing AC + DC capability, they enable I-V and C-V measurements without changing cables or connections. If connecting to a probe station, the Model 8020 High Power Interface Panel may be a better solution.

CONDITIONS

This document contains typical performance characteristics and supplemental information for the Models CVU-3K-KIT and CVU-200-KIT. These specifications are for the bias tee kits only and do not include external cables. Characteristics, supplemental characteristics, and typical values are non-warranted, apply at 23 °C ± 5 °C, < 60 % relative humidity, and are provided solely as useful information.

MODEL CVU-200-KIT AND CVU-3K-KIT TYPICAL PERFORMANCE CHARACTERISTICS

Characteristic		Typical accuracy using a bias tee per device terminal	
Maximum DCV		3030 V	202 V
Maximum DCI	C-V mode	100 µA	100 µA
	I-V mode	122 mA	1.0 A
	C-V Hi I mode	122 mA	1.0 A
Maximum pulsed current	C-V mode	100 µA	100 µA
	I-V mode	122 mA	1 A
	C-V Hi I mode	122 mA	1 A
Minimum pulse width¹	C-V mode	400 ms	1 ms
	I-V mode	100 ms	1 ms
	C-V Hi I mode	100 ms	1 ms
Leakage current²	C-V mode	N/A	N/A
	I-V mode	5 pA + 10 fA/V	5 pA + 10 fA/V
	C-V Hi I mode	N/A	N/A

¹ Minimum pulse widths are with no load. See instrument specifications for additional limits.

² Performance with a 10 V step and 3 s of settling time.

Characteristic		Typical accuracy using a bias tee per device terminal		
Offset voltage (non-Kelvin)	C-V mode	< 5 V/100 μA		
	I-V mode	< 2 V/A		
	C-V Hi I mode	< 2 V/A		
C-V bandwidth		10 kHz to 2 MHz		
Typical C-V 2-terminal accuracy	20 pF < C < 100 nF @ 100 kHz	3 % + 2 pF		
	10 pF < C < 10 nF @ 1 MHz	3 % + 0.5 pF		
Typical C-V 3-terminal accuracy ³				
	C _{GD} = 100 pF C _{DS} = 1 nF C _{GS} = 10 nF @ 20 kHz	C _{GD}	42 % + 2 pF	
		C _{DS}	12 % + 2 pF	
		C _{GS}	5 % + 2 pF	
	C _{GD} = 100 pF C _{DS} = 1 nF C _{GS} = 10 nF @ 100 kHz	C _{GD}	7 % + 2 pF	
		C _{DS}	12 % + 2 pF	
		C _{GS}	5 % + 2 pF	
	C _{GD} = 100 pF C _{DS} = 1 nF C _{GS} = 10 nF @ 1 MHz	C _{GD}	13 % + 2 pF	
		C _{DS}	6 % + 2 pF	
		C _{GS}	5 % + 2 pF	
	C _{GD} = 100 pF C _{DS} = 430 pF C _{GS} = 1 nF @ 20 kHz	C _{GD}	5 % + 2 pF	
		C _{DS}	5 % + 2 pF	
		C _{GS}	5 % + 2 pF	
C _{GD} = 100 pF C _{DS} = 430 pF C _{GS} = 1 nF @ 100 kHz	C _{GD}	5 % + 2 pF		
	C _{DS}	5 % + 2 pF		
	C _{GS}	5 % + 2 pF		
C _{GD} = 100 pF C _{DS} = 430 pF C _{GS} = 1 nF @ 1 MHz	C _{GD}	5 % + 2 pF		
	C _{DS}	14 % + 2 pF		
	C _{GS}	5 % + 2 pF		

³ When applying voltage through the 2650-RBT-3K, additional error above 1 nF of (1 ppm/nFV x VDC x CDUT(nF)). Measured at 100 kHz.

SPECIFICATIONS

	Instrument connections	Device connections
Model 2650-RBT-3K	Input connectors: <ul style="list-style-type: none"> ▪ DC in: Keithley HV triaxial ▪ AC in: Kelvin SMA Recommended instruments: <ul style="list-style-type: none"> ▪ Model 2657A ▪ Model 4200-SCS ▪ Model PCT-CVU 	AC + DC out: Keithley HV triaxial
Model 2650-RBT-200	Input connectors: <ul style="list-style-type: none"> ▪ DC in: Standard 3-lug triaxial ▪ AC in: Kelvin SMA Recommended instruments: <ul style="list-style-type: none"> ▪ Model 4200-SCS ▪ Model 2635A/B ▪ Model 2636A/B ▪ Model 2611A/B ▪ Model 2612A/B ▪ Model PCT-CVU 	AC + DC out: Keithley HV triaxial

GENERAL

Warranty	1 year
EMC	Conforms to European Union EMC Directive
Safety	NRTL listed to UL61010-1:2008 and CSA C22.2 No. 61010-1 Conforms to European Union Low Voltage Directive
Environment	For indoor use only Altitude: Maximum 2000 m (6562 ft) above sea level Operating: 0 °C to 50 °C, 60 % relative humidity up to 35 °C Storage: -25 °C to 65 °C
Dimensions	2650-RBT-3K: Length – 131.00 mm (5.16 in.), width – 83.50 mm (3.28 in.) , height– 28.80 mm (1.13 in.) 2650-RBT-200: Length – 112.10 mm (4.41 in.), width – 81.50 mm (3.21 in.) , height– 28.80 mm (1.13 in.)
Weight	2650-RBT-3K: 0.23 kg (0.5 lb) 2650-RBT-200: 0.23 kg (0.5 lb)

INCLUDED ACCESSORIES**CVU-3K-KIT**

Model Number	Quantity	Description
8020-DP	1	High Voltage Discharge Probe
131936100	6	SMA (M) to SMB (M) Adapter
131936200	4	SMA (F) to SMB (F) Adapter
2600-RBT-200	2	200 V Bias Tee
2650-RBT-3K	1	3 kV Bias Tee
386782100	1	Mounting Bracket, Remote Bias Tee
7078-TRX-1	2	3 Slot Triaxial Cable, 1 ft
CA-406B	1	50 Ω M-M SMA Cable, 33 cm
CA-568-120A	2	Green-Yellow Ground Cable, 120 in.
CS-1391	2	SMA Tee Adapter, F-M-F
HV-CA-554-.5	1	HV Triaxial Cable, 0.5 M, Male to Male

CVU-200-KIT

Model Number	Quantity	Description
131936100	6	SMA (M) to SMB (M) Adapter
131936200	4	SMA (F) to SMB (F) Adapter
2600-RBT-200	3	200 V Bias Tee
386782100	1	Mounting Bracket, Remote Bias Tee
7078-TRX-1	3	3 Slot Triaxial Cable, 1 ft
CA-406B	1	50 Ω M-M SMA Cable, 33 cm
CA-568-120A	2	Green-Yellow Ground Cable, 120 in.
CS-1391	2	SMA Tee Adapter, F-M-F