PXIe Modular 10V Single Channel Pulse Current SMU

S3026P

Datasheet V1.2

Single Channel, Pulse Current Source Measure Unit

Maximal 1.5A Current Output

Pulse Range: 3~500us

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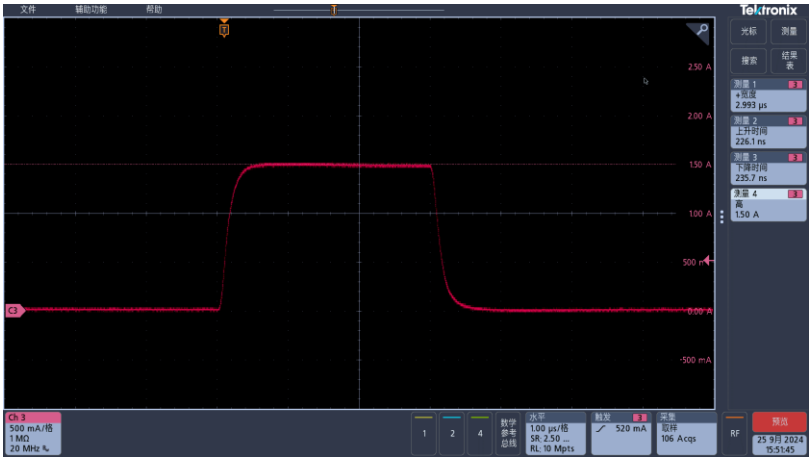
1 Product Description

S3026P by Semight Instruments is a standard, single-channel, pulse current source measure unit, perfectly testing the VCSEL laser, LEDs, semiconductor and many other devices. It supports high-precision pulse current output, and the synchronized measurement of pulse current and voltage drop for DUT.

2 Features and Highlights

Very narrow pulse width，highly adaptable to various load

- High precision and accuracy of current sourcing by closed-loop control method
- Minimal pulse width up to 3 us, which benefits testing high speed device and eliminating the test result variation caused by temperature changing



典型波形

- Stronger adaptability in various load (resistor, diode, etc.), no overshooting or distorting when test with different type of load
- Withstand up to 2m of output cable, applicable to flexible cabling layout for multiple applications
- Real-time reading of pulse current and voltage drop of DUT, accurate monitoring of test conditions and real-time readback of test results
- High-speed measurement, up to 100MSa/s ADC, user-configurable sample rate
- Synchronization measurement with multi-channel, multi-model
- Suitable for PXIe chassis, smaller size, extendable for multiple channels

3 Specifications

Operation Conditions:

Temperature: 23℃±5℃; Relative Humidity: <70% no condensation

Pulse Current Source (exclusive with Voltage Source)

Parameter	Specifications		
Current Accuracy	Range	Programming Resolution	Accuracy ± (%RD+mA)
	±150mA	20uA	0.1%+0.2mA
	±750mA	20uA	0.1%+0.3mA
	±1.5A	40uA	0.1%+0.8mA
Current Noise	Range	Noise Typical Value (Resistance Load, RMS) 10k-20MHz	

Parameter	Specifications	
	±150mA	1mA
	±750mA	1mA
	±1.5A	1mA
Maximum Load Drop Voltage	10V	
Pulse Width Resolution	80ns	
Maximum Pulse Width Ton-max	500us	
Minimal Pulse Width Ton-min	3us	
Pulse Minimum Turn-off Time Toff-min	100us	
Pulse Width Accuracy	100ns[1]	
Pulse Width Jitter	80ns (typical value)	
Pulse Period Jitter	500ns (typical value)	
Rising Time (10%-90%)	< 400ns[2][3][4]	
Pulse Overshoot	< 0.5%[2][3][4]	
Current Regulation Rate	Linear	0.05% of Range
	Load	±100uA
Duty Cycle[5]	D≤50% when meet: D < 3-|Ibias|/[(Vsp-Vload) * (|Iset|-|Ibias|)]	

Parameter	Specifications
Maximum Number of Pulses Per Scan	64k

[1] bias current > 1mA;

[2] test with short of output line;

[3] total inductance of output line and DUT less than < 200nH (100k);

[4] pulse width measured from 10% of rising edge to 90% of falling edge;

[5] Iset: programming current; D: duty cycle; Vsp: source protection voltage; Vload: load voltage;

Pulse Measurement

Parameter	Specifications			
Pulse Voltage Measure	Range	Display Resolution	Accuracy ± (%RD+mV)	Sampling Rate [6]
	6V	1mV	0.1%+22mV	100MSa/s
	10V	1.5mV	0.1%+24mV	
Pulse Current Measure	Range	Display Resolution	Accuracy ± (%RD+mA)	Sampling Rate
	150mA	40uA	0.1%+1mA	100Msa/s
	750mA	100uA	0.1%+3mA	
	1.5A	200uA	0.1%+7mA	
Remote Sense Limit (Voltage Measure)	Maximum voltage between HI and SENSE HI = ±10V; Maximum voltage between LO and SENSE LO = ±10V;			

[6] maximal sampling rate for user setting;

DC Voltage Source (exclusive with Pulse Current Source)

Parameter	Specifications				
Voltage Source (DC)	Range	Programming Resolution	Accuracy ± (%RD+mV)	Ripple (RMS) 10k-20MHz	Maximum Output Current
	±10V	1mV	0.1%+1.5mV	< 5.5mV	10mA
Current Measure (DC)	Range	Programming Resolution	Accuracy ± (%RD+nA)	Sampling Rate	NPLC Setting
	100uA	30nA	0.1%+0.5uA	100MSa/s	10 NPLC
	100nA	30pA	0.1%+0.5nA		
Voltage Measure (DC)	Range	Programming Resolution	Accuracy ± (%RD+mV)	Sampling Rate	
	±10V	1.5mV	0.1%+15mV	100MSa/s	
Remote Sense Limit (DC Voltage Measure)	Maximum voltage between HI and SENSE HI = ±1V; Maximum voltage between LO and SENSE LO = ±1V;				

Bias Current Source

Parameter	Specifications			
Current Accuracy	Range	Maximum Current	Programming Resolution	Accuracy ± (%RD+mA)
	±0.15A	50mA	20uA	0.1%+0.2mA
	±0.75A		20uA	0.1%+0.2mA
	±1.5A		40uA	0.1%+0.2mA
Current Noise			Noise Typical Value (Resistive Load, RMS) 10k-20MHz	

	< 1mA

Trigger Signal

Function	Level	Delay (Type[7][8][9])	Trigger Mode
Trig_IN/OUT	5V	400ns	Rising Edge

[7]Test with short of output line;

[8]Output Current > 100mA;

[9]Bias Current > 1mA;

Environment

Parameter	Specifications
Environment	Indoor
Operation Conditions	0℃ ~ +50℃, ＜70% RH (no condensation)
Storage Temperature	-30℃ ~ 70℃
Altitude	Operation: 0m ~ 2000m Storage: 0m ~ 4600m
Preheating	1 hour
Pollution Level	2
Size (mm)	210*130*41
Net Weight	0.55kg

* size and weight might vary with different options

* Warning: external source is not allowed, when output is disabled

4 Procurement

List of Accessories

Factory standard configuration: installation disk (U-Disk) with controller software on PC, driver, data sheet, user manual

Accessories	Product Code	Description
FORCE Cable	FC010013	Customized cable for FORCE output, triaxial, 2 meters, sold separately
SENSE Cable	FC010014	Customized cable for SENSE output, triaxial, 2 meters, sold separately

5 Warranty

No	Item	Description	Warranty Time
1	Machine	Free repair (except for ESD or human damage)	12 months
2	Calibration Interval	Factory calibrated or calibrated at the nearest Semight service center	12 months
3	Accessories	Consumables and accessories are not covered under warranty	

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*Product specifications and descriptions herein may be updated without notice.