SpikeSafe 200 Current Source – Fast Pulse Configuration

SS200 Fast Pulse Provides Rapid Precise Pulses

- Programmable current source

  - 0-5A, 0-100V
  - DC and pulsed operation
  - 800nS rise/fall times/pulsing
  - Soft landing, no undershoot
  - Built-in pulse generator
  - Ethernet control
  - Continuous load monitoring

- SpikeSafe[TM] load fault protection

**2U SpikeSafe 200 Fast Pulse
(1 to 8 channels)**

Overview

The SS200 Fast Pulse (SS200FP) is a programmable current source optimized for OEM and laboratory applications where sensitive optoelectronic devices must be driven and monitored. The SS200FP provides DC or precise pulsed current up to 5A. Sophisticated SpikeSafe load transient protections continuously monitor the load during DC and pulsed modes adjusting or halting drive current within a few microseconds of a load anomaly, preventing damage to sensitive devices in the load circuit. Precise pulses with less than 100nA at the off current allow accurate L-I-V testing.

Programmable Load and Cable Compensation

User selectable compensation factors enable SpikeSafe to be tuned to your specific load and cable characteristics. Full remote control using a SCPI command set is available and provided via an Ethernet interface. The SpikeSafe 200 modular architecture easily supports bench top and R&D usage scaling to support integrated burn in and test applications.

SpikeSafe Load Protection

When a load device in a series circuit fails, it can induce voltage and current transients in the entire load circuit. During DC and pulsed modes, the SpikeSafe's DSP-based load transient protection algorithms continuously monitor the drive voltage and current for anomalies. If an anomaly is spotted, current drive is terminated within a few microseconds, often before a catastrophic device failure occurs. This rapid shutdown preserves the individual device for failure analysis, and it ensures other devices in the circuit are not damaged, significantly reducing costs.

Applications

- Benchtop and R&D
- Quantum cascade laser burn-in and test
- LED and Laser diode burn-in and test
- CW and pulsed laser diode arrays
- Power semiconductor testing
- OEM applications
- Other applications requiring precise control

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Specifications

Output Configuration	
Current Sources:	Maximum 8 channels/unit
Type:	Differential (cathode not grounded)
Construction:	2U rack mountable chassis
Output Cable Type	Flat or multi circuit twisted pair, 5 foot maximum for best results

Remote Control	
Physical:	100-base T Ethernet
Protocol:	TCP/IP
Command Set:	SCPI
Drivers:	.NET
Readback Capability:	Voltage, current for each channel, fault conditions

Power Conversion	
Type:	DSP-controlled two-stage stepdown regulator
Output Power:	500W/channel maximum
Losses:	20W/channel losses typical, 2-3x higher during current start-up
Duty Cycle:	Rated for continuous operation
Cooling:	Forced air

Current Source Performance	
Output Current Range:	50mA – 5A per channel
Output Current during OFF	>100nA
Maximum Compliance Voltage:	100V, programmable in 1V steps
Setpoint Resolution:	100uA
Absolute Accuracy:	+/- 0.2% of setpoint +/- 100mA
Output Current Ripple:	0.2% p-p typical, 200kHz
Current Source Startup Time:	Fixed at 2A/sec per channel. Max 2.5S ramp to full current.

Input Power	
Internal:	300W
Bulk:	24-200 VDC (optional)
AC:	110VAC, 3A maximum

Pulse Performance	
Modes:	DC, Continuous Pulse, Single Pulse, Triggered
Timebase Accuracy:	+/-50 ppm
Pulse Width Range:	800nS – 1S
Duty Cycle:	0-100%
Pulse Width Accuracy:	+/- 0.1% +/- 300nS typical
Rise/Fall Time:	600nS – 3uS depending upon compensation settings
Edge Overshoot:	0-30% depending upon compensation settings
Edge Undershoot:	Less than –100uA/channel
Off Pulse	Less than 100nA

SpikeSafe Load Protection	
Startup Shock:	Eliminated with slow ramp-up
Over Current Shutdown:	Shutdown in 10-30uS When cathode current exceeds programmable threshold 100-160% of setpoint + 100mA/chan
dV/dt Detection:	Shutdown when dV/dt exceeds programmed threshold
Dynamic Compliance Voltage Limitation	Limits available compliance voltage to 3-8V above nominal
Negative Current Protection	Asymmetrical rise/fall characteristic to eliminate undershoot
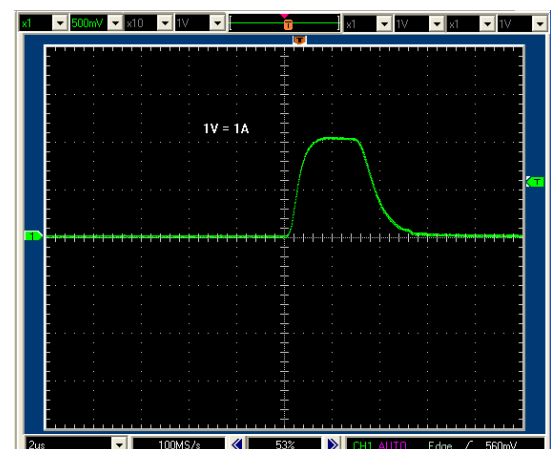
Typical 1A, 3uS Current Pulse
500mA/div, 2uS/div, Load: Quantum Cascade Laser

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