FLUKE®

Fluke i50s
Current Probe

Technical Data

The i50s current probe has been designed for use with oscilloscopes for accurate, non-intrusive measurement of ac, dc and complex waveform currents. Using advanced Hall effect technology the i50s can accuratley measure current over a frequency range of dc to 50 MHz.

With exceptional immunity to high common mode voltages (dv/dt= 5 kV/µS) the i50s is ideal for use by electronic design engineers in development and diagnosis of switch mode power supplies, UPS systems, and motor control systems.

Electrical specifications

Nominal current (In): 3A and 30A dc or ac rms
Measuring range (duration <10 sec): I max ± 50 A pk
Output sensitivity:
Low range:1 V/A (1 MΩ)
High range:100 mV/A (1 MΩ)
Overall accuracy (dc to 100 Hz at 25 °C):
± 0.5 % at In typical
± 1.5 % at I max
Gain variation (max): ± 0.04 % of rdg/°C
Step response: See Figure 1
Frequency response: See Figure 2

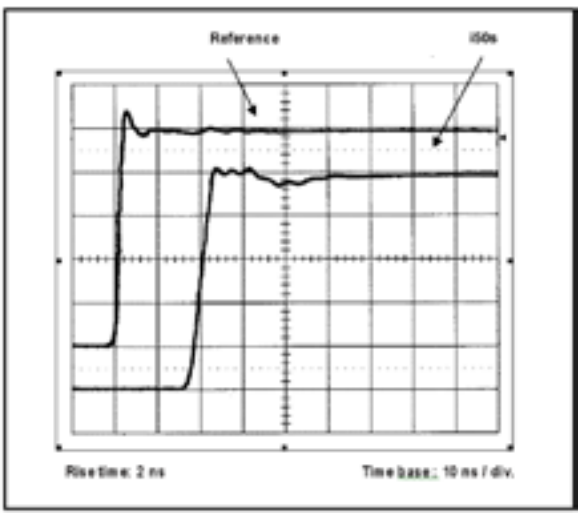

Figure 1. Step response.

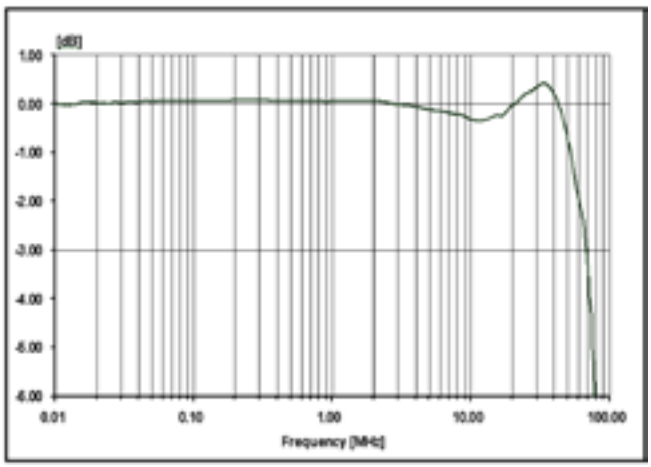

Figure 2. Frequency response.

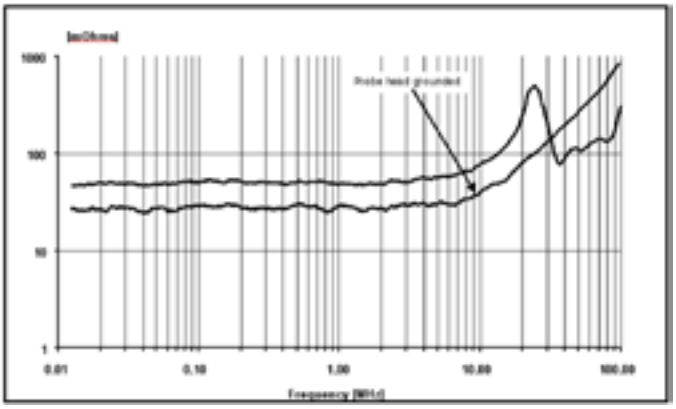

Figure 3. Insertion impedance.

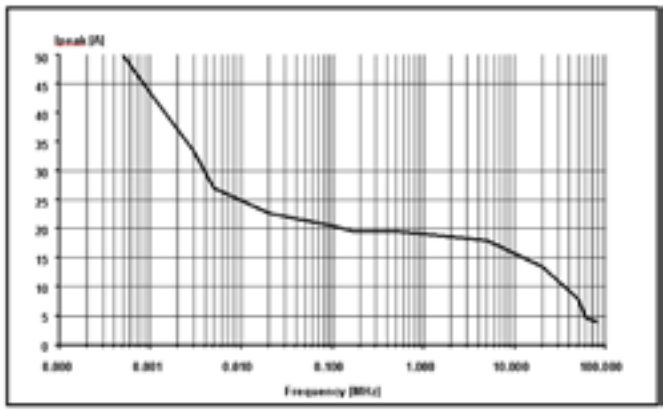

Figure 4. Frequency derating.

Insertion impedance (ZI): See Figure 3
< 0.1 Ω up to 10 MHz
< 0.4 Ω 10 MHz to 50 MHz
External magnetic field rejection rate: 60 dB (ac and dc)
Rejection rate of fast dV/dt at 5 kV/µs: < 15 m At (during dV/dt)
Output noise level (RMS) (measured with a filter at 25 MHz): 1 mAt
Output noise level (pk to pk) (measured with a filter at 25 MHz): 9 mAt

Dynamic specifications

Bandwidth: DC to 50 MHz(-3 dB)
Frequency derating (see Figure 4):10 A at 10 MHz
Rise time (10 % to 90 %): tr < 7ns
Delay time: td < 25 ns
Overshoot: < 5 % of reading

General specifications

Aperture dimensions: 5 mm x 5 mm (0.2 in x 0.2 in)
Max primary conductor temp: 60 °C (140 °F)
Dielectric withstand: 1350 V rms/50 Hz/1 min
Working voltage:
300 V rms or dc (CAT I)
150 V rms or dc (CAT II)
Operating temperature: 0 °C to + 40 °C (32 °F to 104 °F)
Storage temperature: -10 °C to + 60 °C (14 °F to 140 °F)
Maximum altitude: 2000 m (6600 ft)
Maximum relative humidity: 80 %, 31 °C (87 °F)
Environment: indoor use only
External power supply: ± 12 V ± 0.5 V
Current consumption at nominal: 30 A 550 mA
Current consumption during demagnetization: 1.3 A (for 6 sec)
Output cable length: 2 m (6.6 ft)
Dimensions (LxWxH): 191.1 mm x 28.9 mm x 40.5 mm (7.53 in x 1.14 in x 1.59 in)
Weight: 400 g (0.88 lb)

Safety standards
EN 61010-1: 2001
EN 61010-2-032: 2002
EN 61010-031: 2002
300 V rms, Category I, Pollution Degree 1

Use of the probe on uninsulated conductors is limited to 300 V ac rms or dc and frequencies below 1 kHz.

EMC standards
EN 61326: 1998 +A1, A2 and A3
Optional Bench Power supply PSi50s

Univeral Bench Power Supply

Operating voltage: 115 V/230 V ac 44 Hz to 66 Hz with manual selector
Dual outputs: Supply two i50s current probes ± 12 V dc, 550 mA nominal per channel