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AXV7607
High Voltage SMU



TECHNICAL DATA SHEET

PXI
VXI
LAN
cPCI
PXIe
GPIB
USB
RS232
485
external
PCIe

Features

- Extremely low noise with linear output stage
- Output voltage from -1 500 V up to 2 500 V
- Very fast rise and fall times
- Output current in pulse mode max ±30 mA
- Output current in continuous mode maximum ±8 mA
- Integrated voltage measurement unit
- Integrated current measurement unit
- Integrated voltage monitor
- Integrated current monitor

Product Information

The AXV7607 high voltage SMU is developed for fast semiconductor and cable testing. The AXV7607 can be used as a voltage or current source.
To maximize the test throughput the AXV7607 provides a bipolar MOSFET power amplifier with a programmable slew rate of up to 1 000 V/ms.

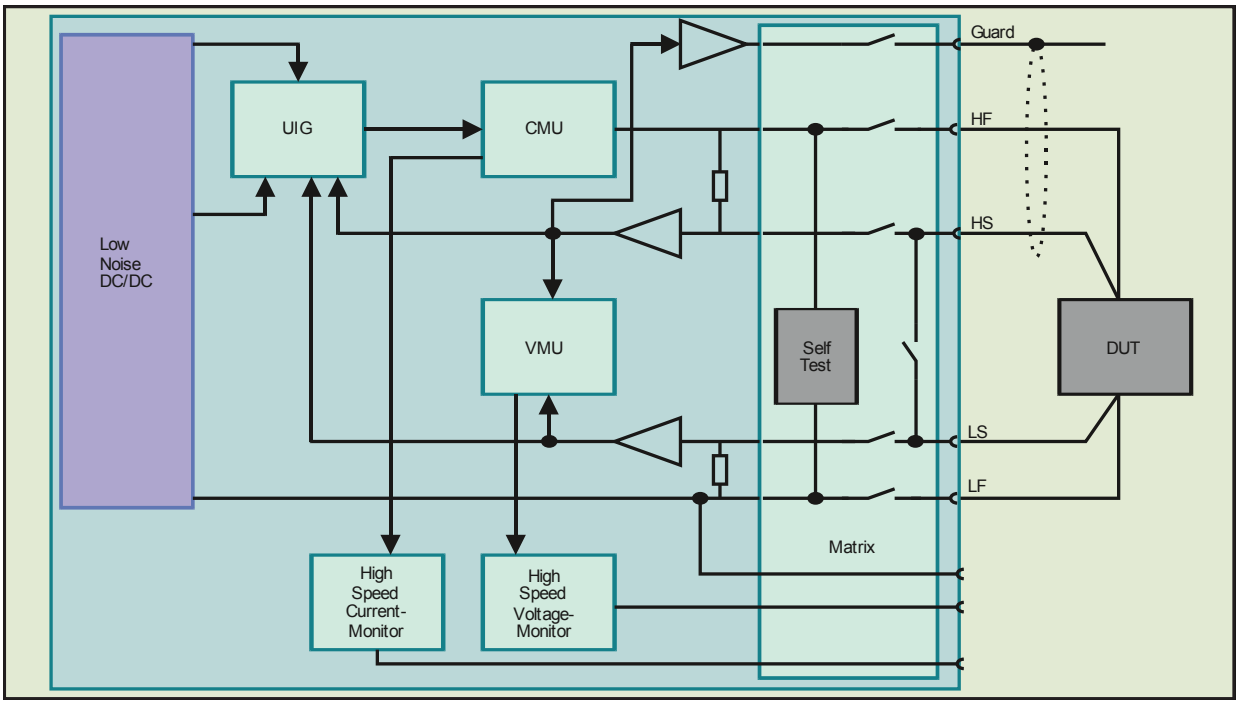
The AXV7607 provides five current ranges and is able to generate currents down to the nA range. In conjunction with the integrated Voltage Measurement Unit (VMU) all requirements of high voltage semiconductor testing can be met. The integrated guard amplifier can be used to drive the cable shielding and reduce the leakage current in the DUT cabling.

The integrated Current Measurement Unit (CMU) is extremely fast and is equipped with seven measurement ranges. This allows current measurement down to the pA range. With parallel trigger signals VMU and CMU can do synchronous measurements.

Monitoring of high output voltages with external equipment is a great safety problem. Therefore the AXV7607 is equipped with a fast voltage monitor, which provides a divided output voltage for save monitoring. Precise monitoring of very low currents down to pA with external equipment is usually very difficult and special equipment is needed. To simplify this task, the AXV7607 provides a fast current monitor.

In the integrated relay matrix all high voltage signals (FORCE, SENSE, GUARD) are connected via relays to the output. Additional relays and switchable resistors provide self test capabilities.

All AXV7607 high voltage outputs (FORCE, SENSE, GUARD) and the monitor outputs are short circuit protected.



General	Specification	Comment
AC line voltage	230 V_{AC} ±10%	
AC line frequency	47 Hz ... 63 Hz	
Power consumption	<10 W	
Operating temperature	0 ... 50°C	
Operating altitude	<2 000 m	
Relative humidity	Up to 85% at 35°C	
Storage temperature range	-25 ... 70°C	
Size	19" x 3U x 555 mm	
Weight	≈15 kg	
Electrical safety	According EN61010-1	
Isolation output LF to PE	Direct connection of LF to PE	

Voltage Control Unit	Specification	Comment
Resolution	16 Bit	In all ranges
Compensation units	7	3 assembled, 4 arbitrary
DC accuracy Gain error Offset error	 ±0.05% of full scale ±0.05% of full scale	
Maximum capacitive load	20 nF	
Guard buffer	2 mA	
Slew rate	10 V/ms ...1 000 V/ms	Programmable range

Current Control Unit	Specification	Comment
Resolution	16 Bit	In all ranges
Compensation units	7	3 assembled, 4 arbitrary
Range 1 Gain error Offset error	-10 μA_{DC} ... +10 μA_{DC} ±0.2% of value ±0.2% of full scale	Programmable range
Range 2 Gain error Offset error	-100 μA_{DC} ... +100 μA_{DC} ±0.1% of value ±0.1% of full scale	Programmable range
Range 3 Gain error Offset error	-1 mA_{DC} ... +1 mA_{DC} ±0.1% of value ±0.1% of full scale	Programmable range
Range 4 Gain error Offset error	-10 mA_{DC} ... +10 mA_{DC} ±0.1% of value ±0.1% of full scale	Programmable range
Range 5 Gain error Offset error	-30 mA_{DC} ... +30 mA_{DC} ±0.1% of value ±0.1% of full scale	Programmable range (maximum pulse lenght 10 ms[1])

[1] Cooling is designed for maximum pulse/pause ratio of 1:5!

Notes: All product data are specified for an ambient temperature of 23°C ± 5°C (after 1 hour warm-up time).
Product specification and description in this document are subject to change without notice.

Voltage Measurement Unit	Specification
Resolution	16 Bit
Maximum input voltage	2 500 V
Filter frequencies	100 Hz, 1 kHz, 10 kHz, 100 kHz
DC accuracy[1]	
Range 1 V	±0.3% of full scale
Range 10 V	±0.1% of full scale
Range 100 V	±0.1% of full scale
Range 1 kV	±0.1% of full scale
Range 10 kV	±0.1% of full scale

Current Measurement Unit	Specification
Resolution	16 Bit
Overload protection	180 mA in all ranges
Filter frequencies	100 Hz, 1 kHz, 10 kHz, 100 kHz
DC accuracy[1]	
Range 100 nA	±0.5% of full scale
Range 1 µA	±0.2% of full scale
Range 10 µA	±0.1% of full scale
Range 100 µA	±0.1% of full scale
Range 1 mA	±0.1% of full scale
Range 10 mA	±0.1% of full scale
Range 100 mA	±0.1% of full scale

Voltage Monitor	Specification
Output voltage	+5 V equivalent to +Full scale in each range
Internal resistance	10 k
Accuracy	±5% of full scale

Current Monitor	Specification
Output voltage	+5 V equivalent to +Full scale in each range
Internal resistance	10 k
Accuracy	±5% of full scale

Ordering Information	Comment
AXV7607-1500	Range: -1 500 V ... +1 500 V
AXV7607-2500	Range: -500 V ... +2 500 V
Option GPIB[2]	GPIB Interface
Option USB[2]	USB 2.0 Interface
Option LAN[2]	Ethernet Interface
Option FE[2]	Front panel display
Option RMK	19" rack mounting kit

[1] Specification takes effect with 100 Hz-filter-frequency and 20 consecutive measurement with an interval of 1 ms.
[2] One of the interface options or the front panel is mandatory.

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