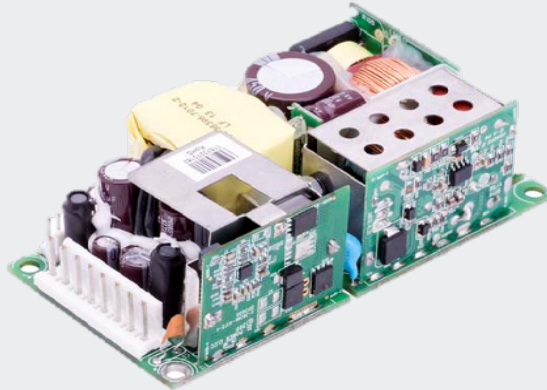


SL POWER CINT3110 SERIES

110 Watts Triple Output
Industrial Grade



Industrial

Advanced Energy's SL Power CINT3110 family is the latest offering in high density triple output open-frame AC/DC power supplies. Approved to EN/CSA/IEC/UL62368-1, the CINT3110 family is ideal for lighting, industrial printers, gaming equipment, and many other applications where power density and cost are critical. The CINT3110 operates at universal input range of 90 to 264 VAC and wide temperature range -10°C to +70°C, delivering full rated output power up to +50°C. In addition, these models feature Power Fail and DC OK signals.

AT A GLANCE

Total Power

110 Watts

Input Voltage

90 to 264 VAC

of Outputs

Triple

SPECIAL FEATURES

- 2"W x 4"L x 1.3"H Size
- For 1U Applications
- Universal Input 90 to 264 VAC
- 110 W w/air, 80 W Convection Cooled
- Power Fail/DC OK/Remote Sense
- Approved to EN/CSA/IEC/UL62368-1
- ROHS Compliant
- 3 Years Warranty

SAFETY

- EN/CSA/IEC/UL62368-1



ELECTRICAL SPECIFICATIONS

| Input | |
|--------------------------|---|
| Input Range | 90 to 264 VAC, 47 to 63 Hz, 1 \emptyset 120 to 370 VDC |
| Switching Frequency | PFC: 75 kHz typical |
| Inrush Current | 45 A max., cold start @ 264 VAC input |
| Input Current | 115 VAC: 1.5 A, 230 VAC: 0.75 A |
| Input Fuses | 2.5 A, 250 VAC fuses provided in both line & neutral For DC input, an external DC safety rated fuse must be used |
| Earth Leakage Current | <290 μ A @ 264 VAC, 60 Hz, NC <420 μ A @ 264 VAC, 60 Hz, SFC |
| Touch Current | <90 μ A @ 264 VAC, 60 Hz, NC <170 μ A @ 264 VAC, 60 Hz, SFC |
| Efficiency | 87% typical at 230 VAC |
| Isolation Voltage | Input/Ground: 1800 VAC Input/Output: 4000 VAC Output/Ground: 500 VAC |
| Output | |
| Maximum Power | 110 W continuous with 200 LFM airflow, 80 W convection cooled |
| Ripple and Noise | See chart |
| Total Regulation | See chart |
| Minimum Load | Not required |
| Dynamic Load Regulation | <3% V_o nominal, load change is 50%, di/dt is 0.2A/ μ S |
| Output Voltage | See chart |
| Adjustment Range | +/-5% from nominal on 5 V output |
| Transient Response | 500 μ S typical for return to within 0.5% of nominal, 50% load step, $\Delta i/\Delta t < 0.2$ A/ μ s. Max. voltage deviation is 3% |
| Auxiliary Signals | |
| AC Power Fail | During normal operations, stays HIGH. Signal goes LOW with at least 6mS warning before loss of DC output from AC failure |
| Remote Sense | (5V output, optional) Will compensate for 0.5V drop min. Will operate without remote sense connected. Reverse connection protected |
| DC OK | Open collector logic signal goes and stays HIGH 100 mS to 500 mS after main output reaches regulation. |
| Reliability | |
| MTBF | 245K hrs at 110 VAC input, 25 $^{\circ}$ C ambient |
| Warranty | 3 years |
| Protection | |
| Overvoltage Protection | Latch. Recycle AC input to reset. See chart for trip range. |
| Short circuit Protection | Hiccup mode, no damage will occur if the output is shorted |
| Overload Protection | Hiccup mode. 150% - 300% above rating for V2 & V3. 110 to 200% for V1. |

EMI/EMC COMPLIANCE

| | |
|--|---|
| Conducted Emissions | EN55011/22: Class B, FCC Part 15, Subpart B, Class B |
| Radiated Emissions | EN55011/22: Class A, FCC Part 15, Subpart A, Class A |
| Line Harmonic Emissions | EN61000-3-2, Class A, B, C, D |
| Voltage Fluctuations & Flicker | EN61000-3-3, Complies (dmax<6%) |
| Static Discharge Immunity | EN61000-4-2, 6kV Contact, 8kV Air, Criteria A |
| Radiated RF EM Immunity | EN61000-4-3, 3 V/m, Criteria A |
| Electrical Fast Transients / Bursts | EN61000-4-4, 2 kV/5 Khz, Criteria A |
| Surges Line to Line (DM) and Line to Ground (CM) | EN61000-4-5, 1kV DM, 2kV CM, Criteria A |
| Conducted Disturbances Induced by RF fields | EN61000-4-6, 3 Vrms, Criteria A |
| Power Frequency Magnetic Fields Immunity | EN61000-4-8, 3 A/m, Criteria A |
| Voltage Dips | EN61000-4-11: --0% Vin, 0.5 cycle --40% Vin, 5 cycle --70% Vin, 25 cycle Criteria A |

ENVIRONMENTAL SPECIFICATIONS

| | |
|-----------------------|--|
| Vibration | Operating: 0.003 g/Hz, 1.5 grams overall, 3 axes, 10 min/axis Non-operating: 0.026 g ² /Hz, 5 grams overall, 3 axes, 1 hr/axis |
| Shock | Operating: Half-sine, 20 gpk, 10 ms, 3 axes, 6 shocks total Non-operating: Half-sine waveform, 40 gpk, 10 ms, 3 axes, 6 shocks total |
| Operating Temperature | -10°C to +70°C |
| Temperature Derating | Derate output power above 50°C to 50% at 70°C |
| Storage Temperature | -40°C to +85°C |
| Altitude | Operating: -500 to 10,000 ft. Non-operating: -500 to 40,000 ft |
| Relative Humidity | 5% to 95%, non-condensing |
| Weight | 200 g |

ORDERING INFORMATION

| Model Number | Output Voltage ¹ | | Output Current ² | | Ripple & Noise ³ | Total Regulation | OVP Threshold |
|------------------|-----------------------------|-------|-----------------------------|------------|-----------------------------|------------------|---------------|
| | | | w/200 LFM air | Convection | | | |
| CINT3110A0508K01 | V1 | 5 V | 14.0 A | 10.0 A | 1.0% pk-pk | +/-2% Vo nom | 7.5 V max |
| | V2 | 12 V | 6.0 A | 4.5 A | 1.0% pk-pk | +/-3% Vo nom | 115% - 135% |
| | V3 | -12 V | 1.0 A | 1.0 A | 2.0% pk-pk | +/-10% Vo nom | 115% - 135% |
| CINT3110A1708K01 | V1 | 5 V | 14.0 A | 10.0 A | 1.0% pk-pk | +/-2% Vo nom | 7.5 V max |
| | V2 | 15 V | 4.5 A | 3.5 A | 1.0% pk-pk | +/-3% Vo nom | 115% - 135% |
| | V2 | -15 V | 1.0 A | 1.0 A | 2.0% pk-pk | +/-10% Vo nom | 115% - 135% |
| CINT3110A1908K01 | V1 | 5 V | 12.0 A | 8.0 A | 1.0% pk-pk | +/-2% Vo nom | 7.5 V max |
| | V2 | 24 V | 4.0 A | 3.0 A | 1.0% pk-pk | +/-3% Vo nom | 115% - 135% |
| | V3 | -24 V | 1.0 A | 1.0 A | 2.0% pk-pk | +/-10% Vo nom | 115% - 135% |

Notes:

1. 5 V output is adjustable with +/-5% range.

2. Total convection power is 80 W.

3. Measured with noise probe directly across output terminals, and load terminated with 0.1 μF ceramic and 10 μF low ESR capacitors. Ripple & Noise of V2 at no load is 2% maximum

SAFETY

| | |
|-----|---------------------------|
| EN | EN62368-1 |
| CSA | CAN/CSA-C22.2 No. 62368-1 |
| IEC | IEC62368-1 |
| UL | UL62368-1 |

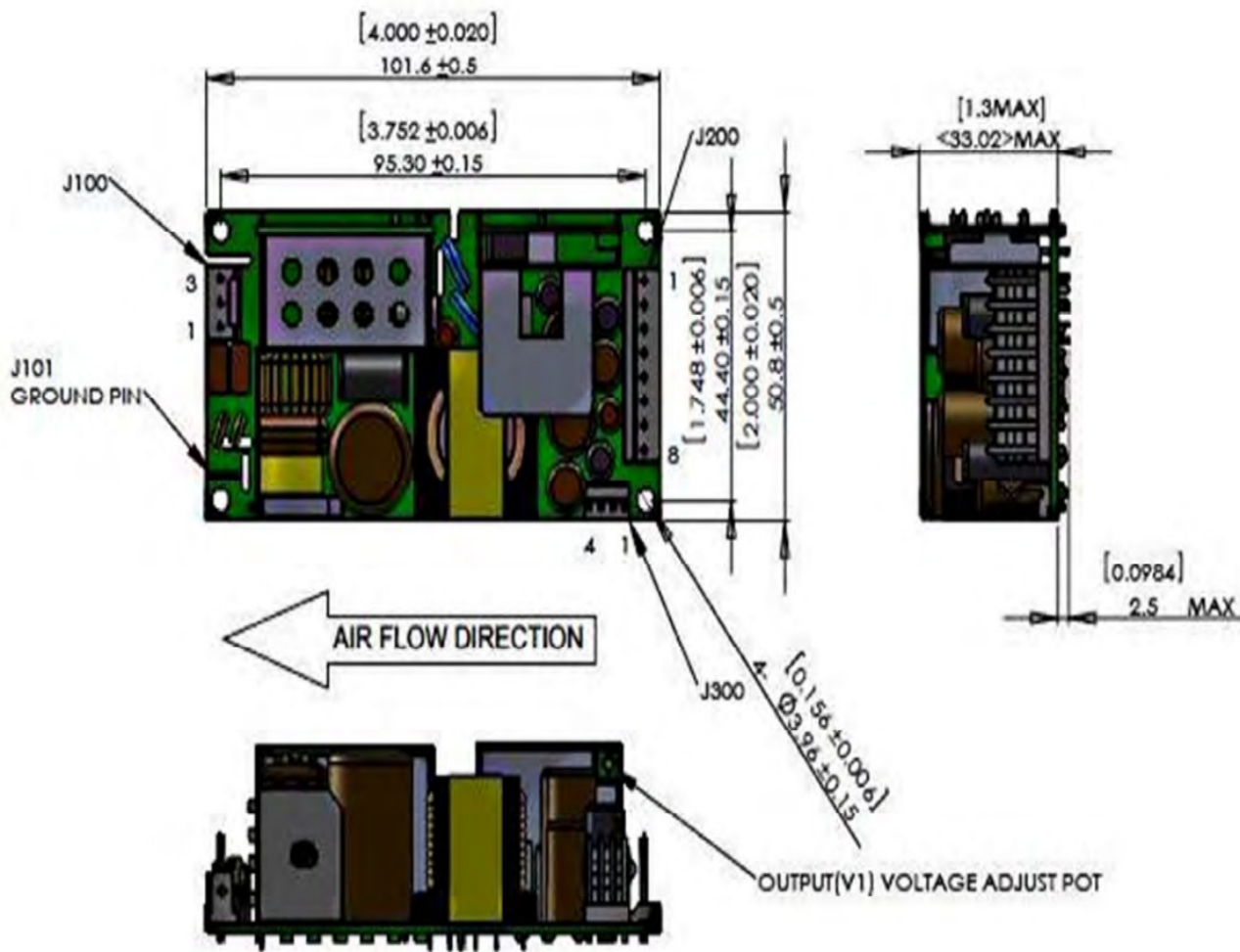
SYSTEM TIMING SPECIFICATIONS

| Parameter | Min | Typ | Max | Unit |
|---|-----|-----|------|------|
| Turn On Time - 115 VAC inversely proportional to input voltage and thermistor temperature | - | - | 2000 | ms |
| Hold Up Time - 120 VAC @ 100% load | 16 | - | - | ms |

PIN ASSIGNMENTS

| Type | Connector | Pin # | Assignment | Mating Connector |
|------------------|-----------|-------------------|----------------|---|
| INPUT | J100 | 1 | AC Neutral | Molex: 09-50-3031 Pins: 08-52-0072 AMP: #640250-3 Pins: 3-640706-1 |
| | | 2 | Empty | |
| | | 3 | AC Line | |
| GROUND | J101 | 0.187" FASTON TAB | | Molex: 01-90020001 |
| OUTPUT | J200 | 1 | +Vout1 | AMP: 640250-8 Pins: AMP #3-640706-1 |
| | | 2 | +Vout1 | |
| | | 3 | GND | |
| | | 4 | GND | |
| | | 5 | GND | |
| | | 6 | GND | |
| | | 7 | +Vout2 | |
| | | 8 | +Vout3 | |
| SIGNAL CONNECTOR | J300 | 1 | PF/DC OK | AMP: #1375820-4 Pins: AMP #1375819 |
| | | 2 | GND | |
| | | 3 | + Remote Sense | |
| | | 4 | - Remote Sense | |

MECHANICAL DRAWING



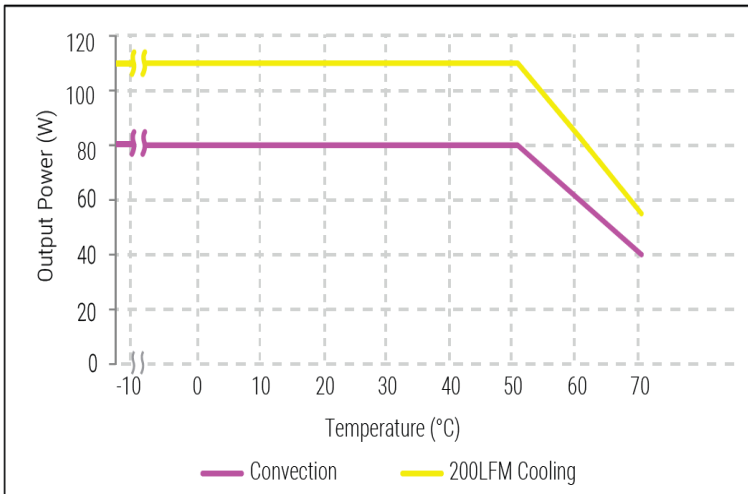
Notes:

1. All dimensions in mm (inches), tolerance is +/-0.02".
2. Mounting holes should be grounded for EMI purpose.
3. Mounting J101 is safety ground connection.
4. This power supply requires mounting on metal standoffs 0.20" (5 mm) in height.
5. Dimensions: W: 2" x L: 4" x H: 1.3".
6. Unit weight: 200 g.

CHARACTERISTIC CURVES

Output VS. Temperature

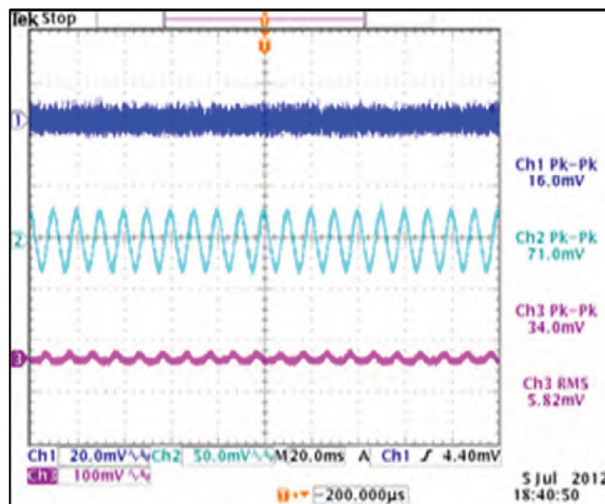
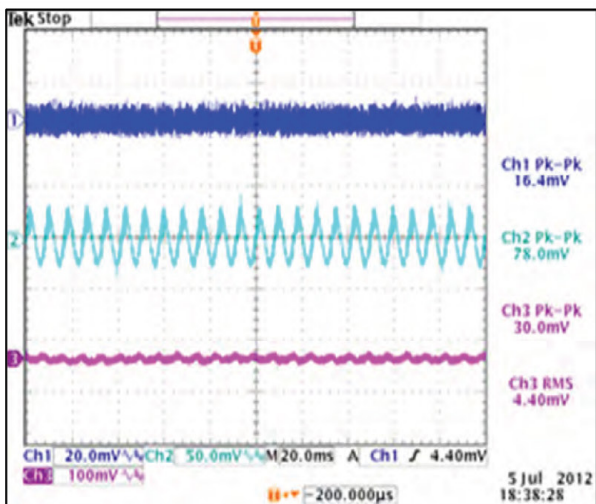
80 W convection cooled and 110 W continuous with 200 LFM airflow, derating output power to 50% at 70°C.



CHARACTERISTIC CURVES

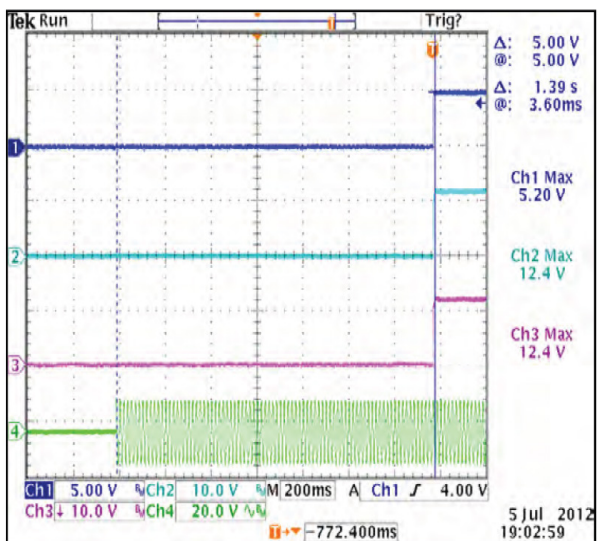
Ripple & Noise

To verify that the output ripple and noise does not exceed the level specified in the product specification. Measured using a scope probe socket with 0.1 uF ceramic and a 10 uF electrolytic capacitor connected in parallel across it, 20 MHz BW.



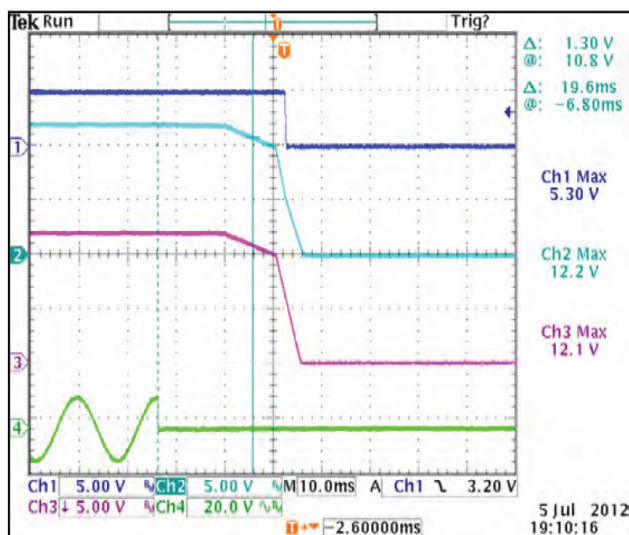
Startup Time

Start up time is <2 seconds



Holdup Time

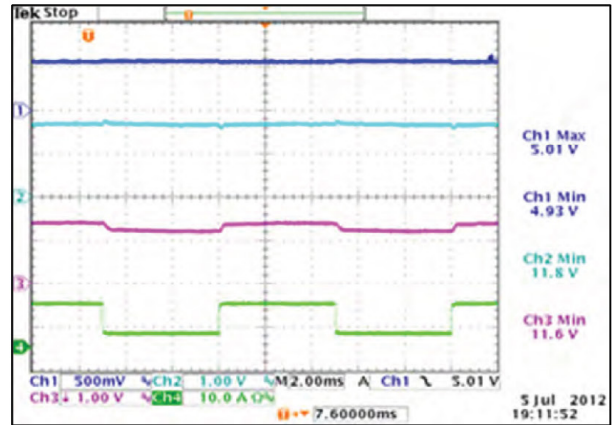
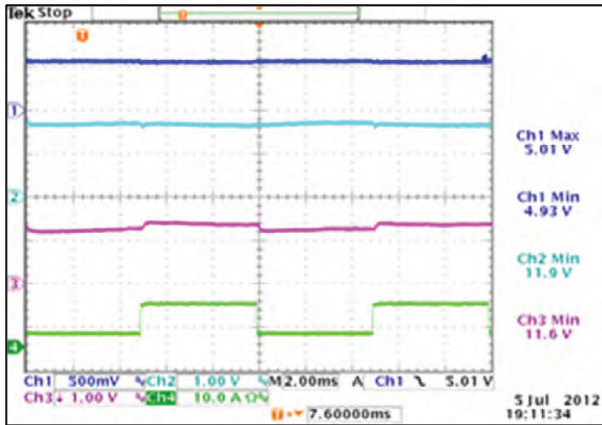
Holdup time is 16 ms minimum



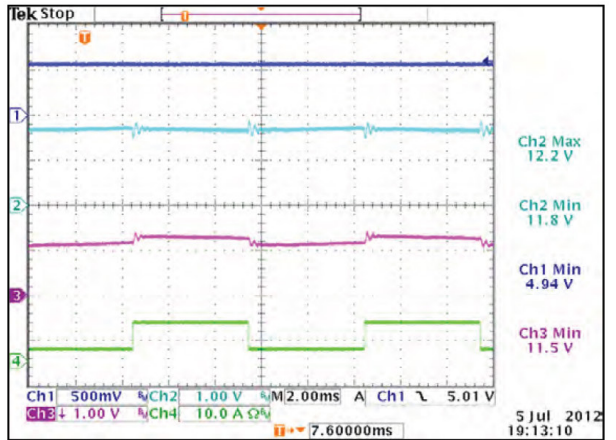
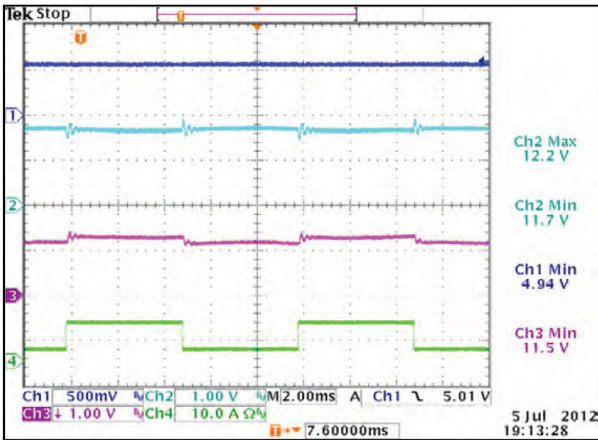
CHARACTERISTIC CURVES

Output Transient Response V1

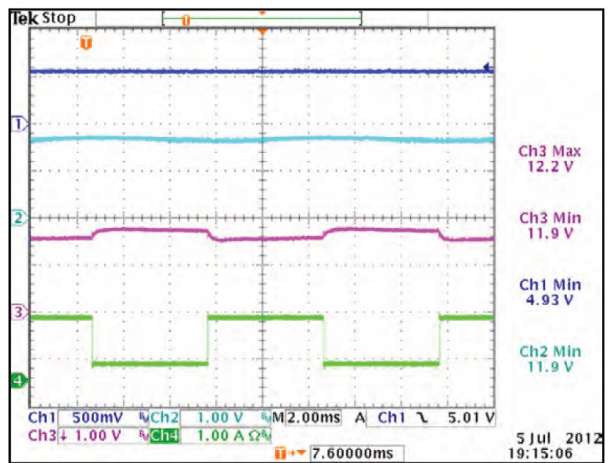
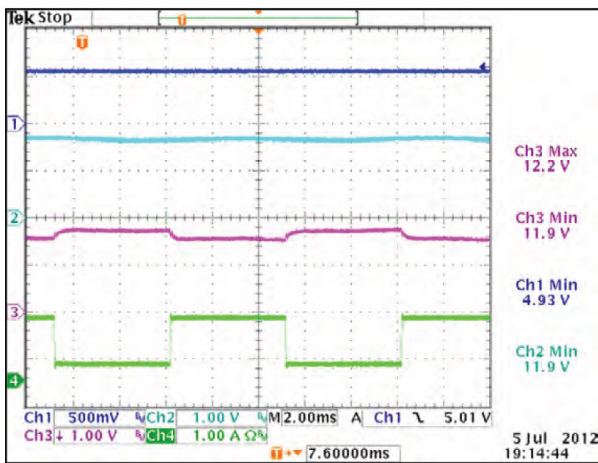
50% load step within the regulation limits of minimum and maximum load, $di/dt < 0.2 \text{ A}/\mu\text{Sec}$. Recovery time not specified as there is no laps in regulation with a 50% Load Step. Maximum voltage deviation is 3%.



Output Transient Response V2



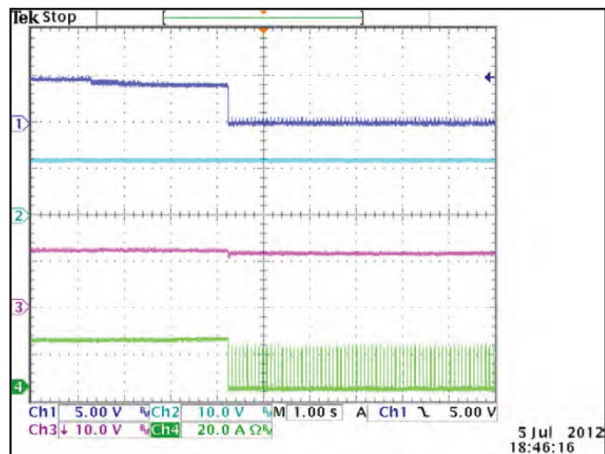
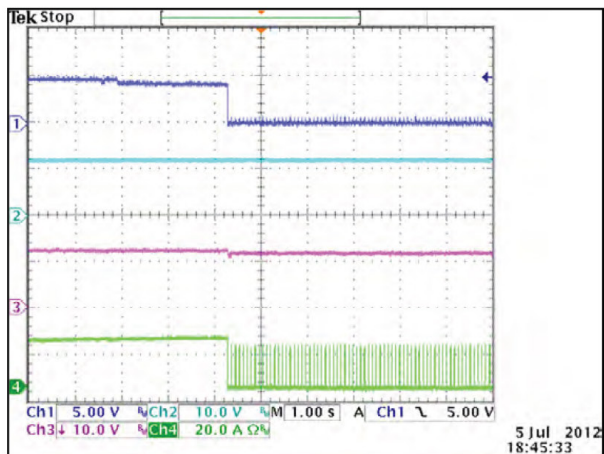
Output Transient Response V3



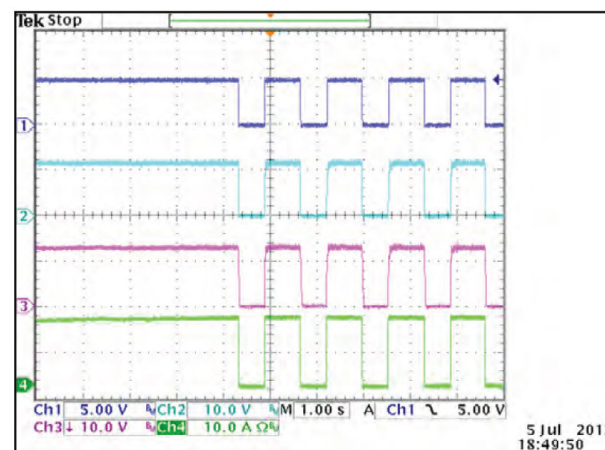
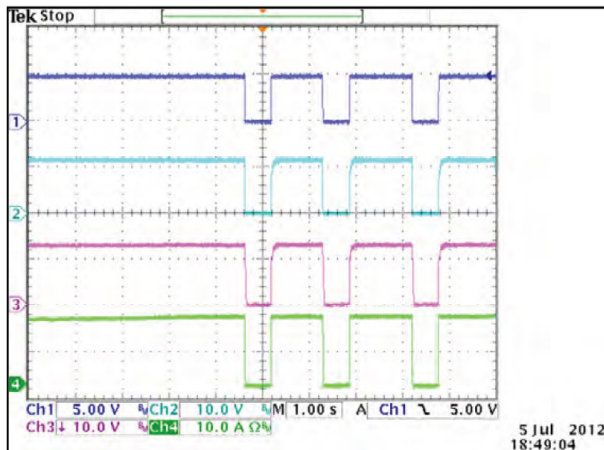
CHARACTERISTIC CURVES

Overload Protection V1

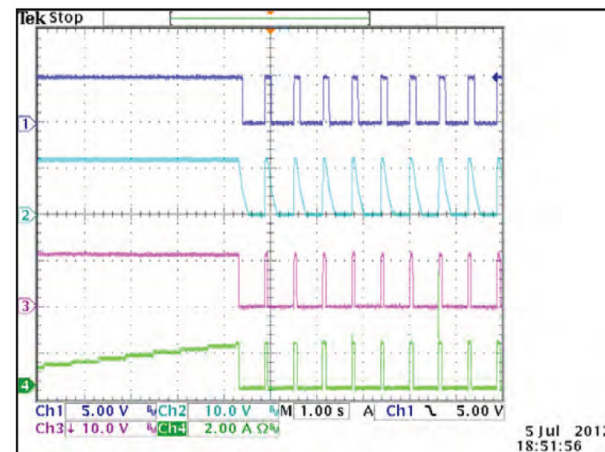
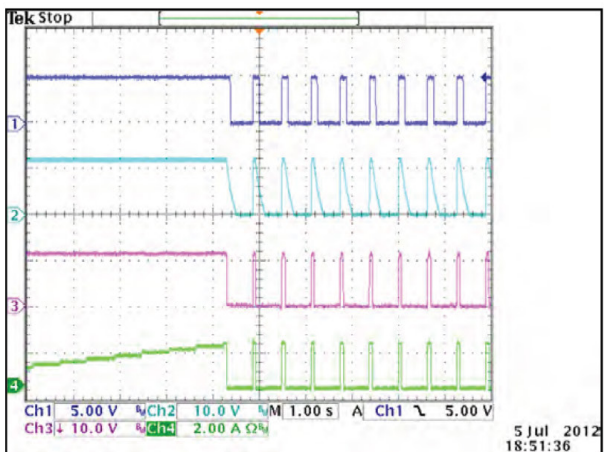
Supply shall protect itself against overload conditions. The power supply shall recover from overload conditions without operator intervention.



Overload Protection V2



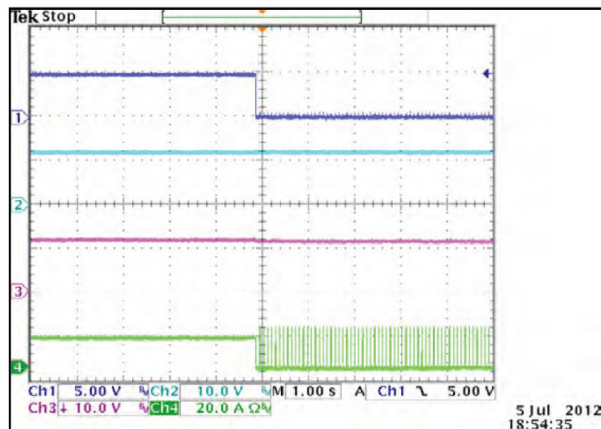
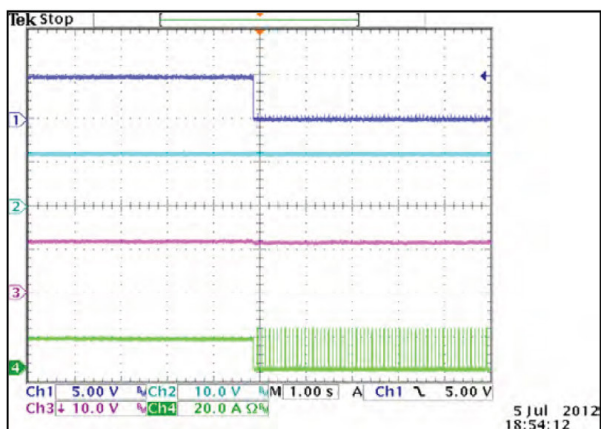
Overload Protection V3



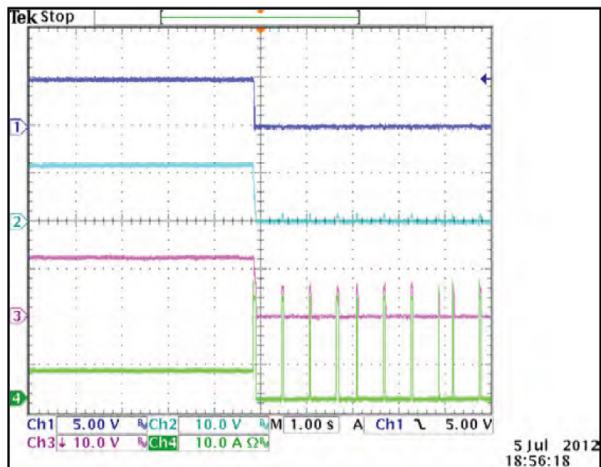
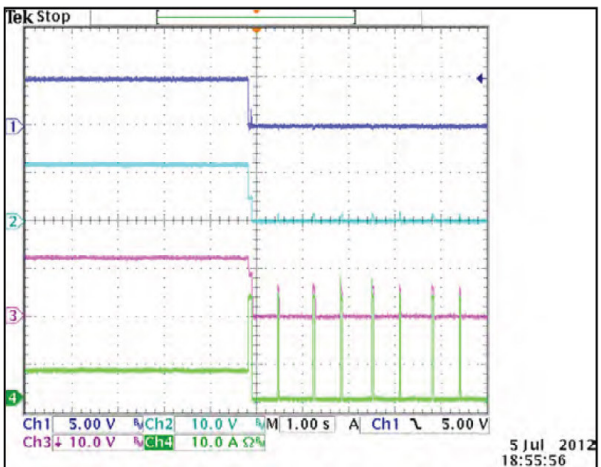
CHARACTERISTIC CURVES

Output Short Circuit Protection V1

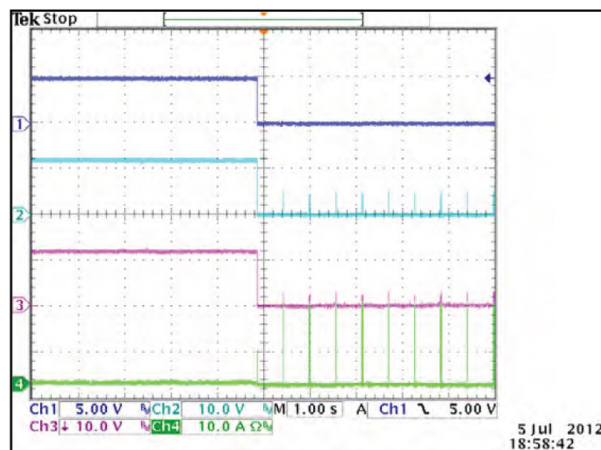
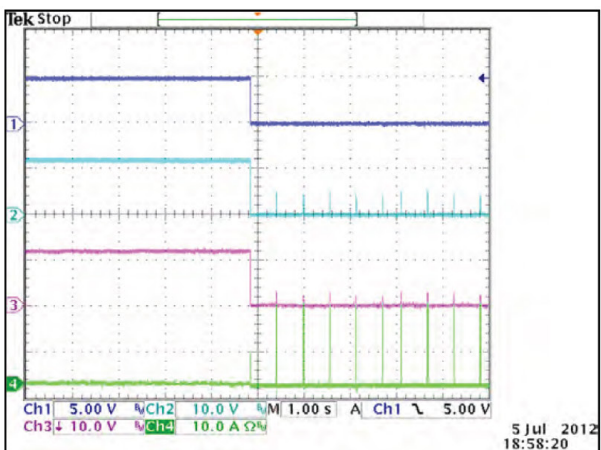
Supply shall protect itself against Short Circuit conditions. The Power Supply shall recover from short circuit conditions without operator intervention.



Overload Protection V2



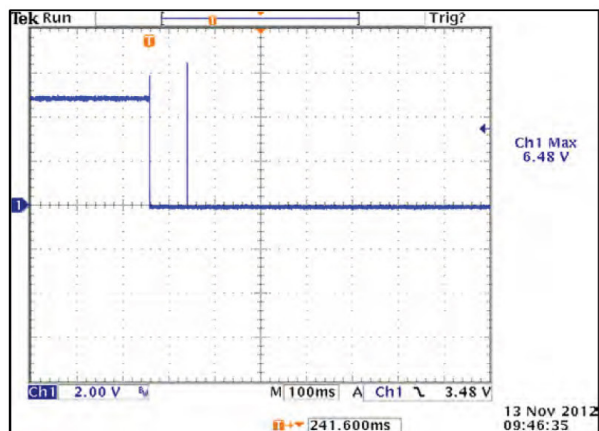
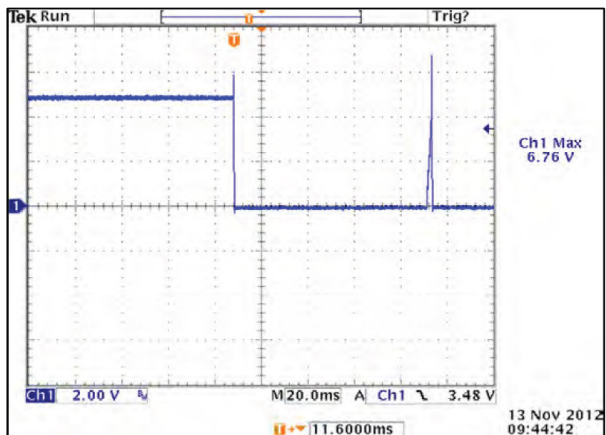
Overload Protection V3



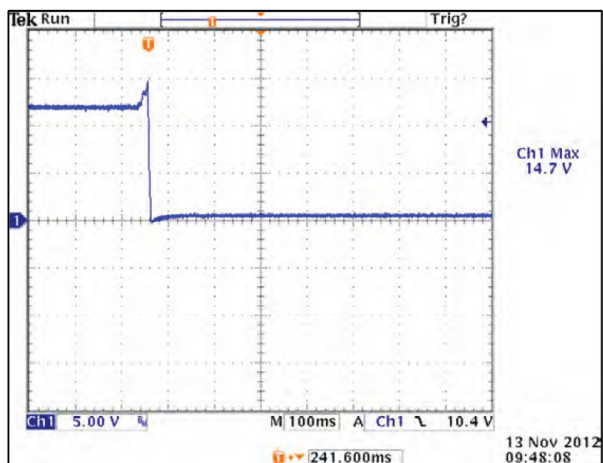
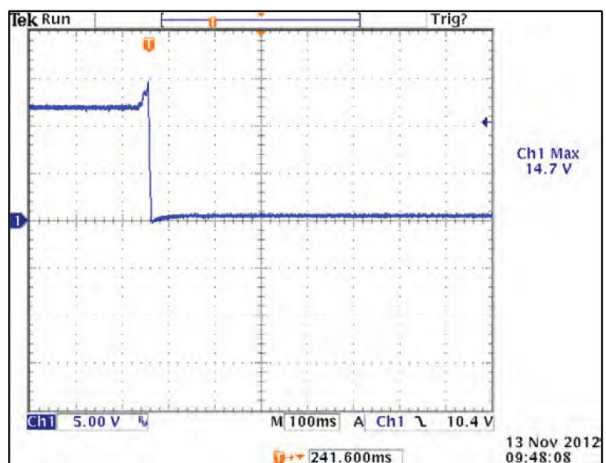
CHARACTERISTIC CURVES

Output Overvoltage Protection V1

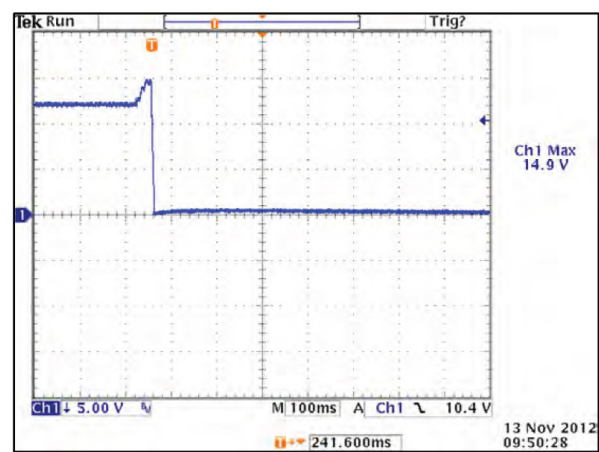
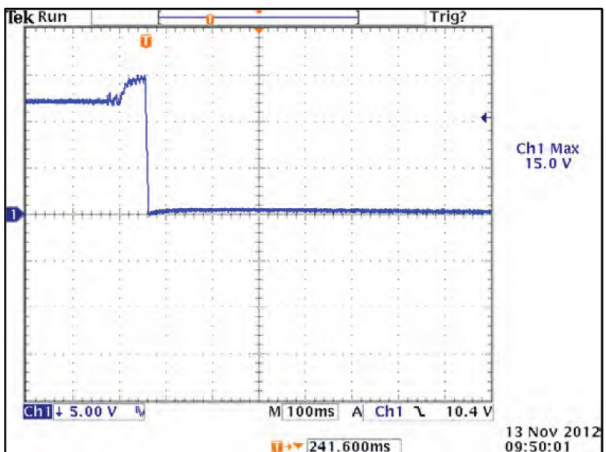
Supply shall protect itself against over voltage conditions. The Power Supply shall latch and require AC input recycle to reset.



Output Short Circuit Protection V2



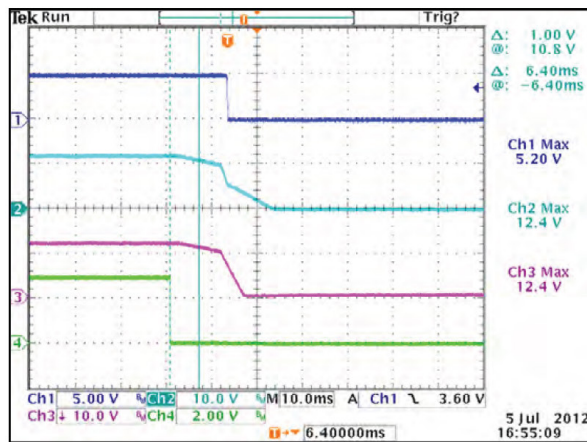
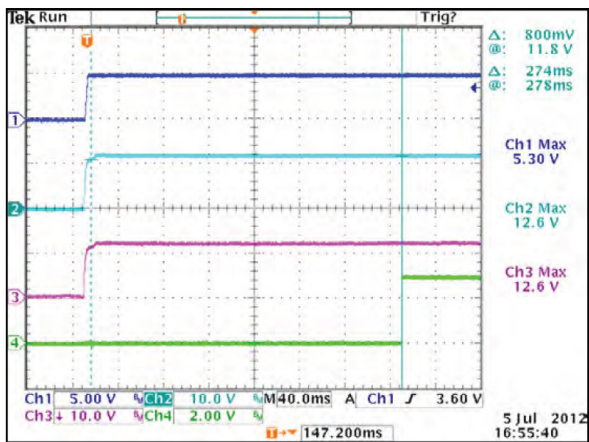
Output Short Circuit Protection V3



CHARACTERISTIC CURVES

Power Fail Signal Timing

Active Low TTL logic signal goes high 100mS–500mS after main output; it goes low at least 6mS before loss of regulation.





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ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

PRECISION | POWER | PERFORMANCE | TRUST

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