

## Features

- Small size of 2" x 4" x 1.3"
- 75W convection cooled/115 Watts with 200 LFM
- Universal Input 90-264Vac
- Meets EN55015 Conducted EMI
- Meets IEC61000-3-2 Class C for less than 1 Watt to full power
- Approved to UL/CSA/IEC/EN60950-1, 2<sup>nd</sup> Edition
- Level V Efficiency Compliant
- -40°C start up
- -20°C to 70°C Operating temperature Range
- 3 Year Warranty
- Optional LED indicator for power-on



## Description

The LB115S LED Series provide a reliable power source with high power density in 2" x 4" x 1.3" package. Fully compliant to the applicable safety and Global Lighting EMC standards, these models will allow easy integration into many Lighting fixtures and other industrial applications. All 4 models are CE marked to low voltage directive and approved to standards of UL/CSA/IEC/EN60950-1 2<sup>nd</sup> edition.

## Model Selection

| Model     |       | Output Current    | Output Current                       | Ripple &               | Total      | OVP         |
|-----------|-------|-------------------|--------------------------------------|------------------------|------------|-------------|
| Number    | Volts | Convection Cooled | Forced air(200 LFM)<br>(Total Power) | Noise*                 | Regulation | Threshold   |
| LB115S12K | 12 V  | 6.25 A            | 9.00A<br>(108 Watts)                 | 0.5%RMS,<br>1.5% pk-pk | ±2%        | 14.0 ± 1.1V |
| LB115S24K | 24 V  | 3.13A             | 4.58A<br>(110 Watts)                 | 0.5%RMS,<br>1% pk-pk   | ±2%        | 28.0 ± 2.5V |
| LB115S48K | 48 V  | 1.56A             | 2.40A<br>(115 Watts)                 | 0.5%RMS,<br>1% pk-pk   | ±2%        | 55.0 ± 4.0V |
| LB115S56K | 56 V  | 1.34A             | 2.05A<br>(115 Watts)                 | 0.5%RMS,<br>1% pk-pk   | ±2%        | 63.0 ± 4.0V |

Notes:

\* At -20C, the noise and ripple is 2% of the output.

## General & Input Specifications

| PARAMETER                                   | SPECIFICATION                        | NOTES                       |
|---------------------------------------------|--------------------------------------|-----------------------------|
| <b>AC Input Voltage:</b>                    | 90-264Vac, single phase              |                             |
| <b>AC Input Frequency:</b>                  | 47-63Hz                              |                             |
| <b>AC Input Current:</b>                    | 115Vac: 2A, 230Vac: 1A               |                             |
| <b>Inrush Current:</b>                      | 65A maximum @ 25C                    |                             |
| <b>Earth Leakage Current (Input-Earth):</b> | <350 $\mu$ A@264Vac, 60 Hz input, NC |                             |
| <b>Input Fuse:</b>                          | F1:4A, 250VAC                        | Fuse provided on all models |

| Efficiency                   | Typical                                       | Measured @ 25°C                                                       |
|------------------------------|-----------------------------------------------|-----------------------------------------------------------------------|
| <b>LB115S12K</b>             | 89% @230V ac, full load                       | 86.5%@115V ac, full load                                              |
| <b>LB115S24K</b>             | 89% @230V ac, full load                       | 87%@115V ac, full load                                                |
| <b>LB115S48K</b>             | 90% @230V ac, full load                       | 88%@115V ac, full load                                                |
| <b>LB115S56K</b>             | 90% @230V ac, full load                       | 88%@115V ac, full load                                                |
| <b>Operating Temperature</b> | -20°C to 70°C                                 | -40°C start up (full load)<br>For 12V output, the maximum load is 75% |
| <b>Storage Temperature</b>   | -40°C to 85°C                                 |                                                                       |
| <b>Turn-on Time:</b>         | <2 Seconds @115Vac(<3S for 12V output)        | <5 Seconds @115Vac for -20°C ambient                                  |
| <b>Hold-up Time:</b>         | 12mS minimum from loss of ac input at 115 Vac |                                                                       |

### DC Output Specifications

| PARAMETER                          | SPECIFICATION                                                                                                                                               | NOTES                                                                                                                                                                  |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Output Power:</b>               | Max of 75 Watts for Convection cooled                                                                                                                       | Maximum 108 Watts for 12V output<br>-20 to 50°C ambient                                                                                                                |
|                                    | Max of 115 Watts for fan cooled<br>(48 & 56V Models)                                                                                                        |                                                                                                                                                                        |
| <b>Cooling:</b>                    | Convection                                                                                                                                                  |                                                                                                                                                                        |
|                                    | Forced Air of 200 LFM                                                                                                                                       |                                                                                                                                                                        |
| <b>Total Regulation:</b>           | ±2% for all models                                                                                                                                          | Total regulation is the maximum deviation from nominal voltage for all loading conditions                                                                              |
| <b>Overload Protection:</b>        | 120% - 180% of rated output current value, Hiccup Mode                                                                                                      | For 12V output, it is 110 to 180%                                                                                                                                      |
| <b>Short Circuit Protection:</b>   | Short across the output terminals will not cause damage to the unit. Hiccup Mode                                                                            |                                                                                                                                                                        |
| <b>Overvoltage Protection:</b>     | OVP firing reduces output voltage to <50% of nominal in <50mS. See chart for trip range                                                                     |                                                                                                                                                                        |
| <b>Overtemperature Protection:</b> | Automatic Power Shutdown                                                                                                                                    | Thermistor temperature is 130°C                                                                                                                                        |
| <b>Minimum Load:</b>               | No minimum load is required                                                                                                                                 |                                                                                                                                                                        |
| <b>Ripple and Noise:</b>           | 0.5% RMS, 1% pk-pk for all models.                                                                                                                          | 20 MHz Bandwidth, differential mode.<br>Measured with noise probe directly across output terminals, and load terminated with 0.1µF ceramic and 10µF low ESR capacitors |
| <b>Transient Response:</b>         | 500µs typ. response time for return to within 0.5% of final value for a 50% load change, $\Delta i/\Delta t < 0.2A/\mu s$ . Max. voltage deviation is 3.5%. | Measured @ 25°C                                                                                                                                                        |
| <b>Overshoot:</b>                  | 5% overshoot at turn-on, 5% overshoot at turn-off, under all conditions.                                                                                    | 6% for 12V output                                                                                                                                                      |

### Safety Standard Compliance

| Agency          | CONDITIONS                                     |
|-----------------|------------------------------------------------|
| UL              | EN/CSA/UL/IEC 60950-1, 2 <sup>nd</sup> Edition |
| CSA             | CSA 60950-1, 2 <sup>nd</sup>                   |
| Demko           | EN 60950-1, 2nd                                |
| CB Report       | IEC 60950-1, 2nd                               |
| Isolation Type: | Double/Reinforced between Input and Output     |

### Isolation Specifications

| PARAMETER                       | CONDITIONS       | Rating            | NOTES |
|---------------------------------|------------------|-------------------|-------|
| Insulation Safety Rating:       | Input to Ground  | Basic Insulation  |       |
|                                 | Input to Output  | Double/Reinforced |       |
| Electric Strength Test Voltage: | Input to Ground  | 1900Vac           |       |
|                                 | Input to Output  | 3000Vac           |       |
|                                 | Output to Ground | 500Vac            |       |

### Environmental Specifications

| PARAMETER              | SPECIFICATION                                                                                       | NOTES                     |
|------------------------|-----------------------------------------------------------------------------------------------------|---------------------------|
| Operating Temperature: | -20 °C to +70 °C                                                                                    | -40 °C Startup guaranteed |
| Temperature Derating:  | 60% derating at 70 °C                                                                               |                           |
| Cooling:               | Convection/ Airflow                                                                                 | 75 Watts convection       |
| Storage Temperature:   | -40 °C to +85 °C                                                                                    |                           |
| Altitude:              | Operating: -500 to 3,000 meter<br>Non-operating: -500 to 40,000 ft.                                 |                           |
| Relative Humidity:     | 5% to 95%, non-condensing                                                                           |                           |
| Shock:                 | Non-Operating: Half-sine, 40 gpk, 10mS, 3 axes, 6 shocks total                                      |                           |
| Vibration:             | Random vibration per MIL-STD-810E, Method 514.4, Cat. 1, Figure 514.4-1, 1 hr in each of three axes |                           |

### Reliability Specifications

| PARAMETER  | SPECIFICATION                        | NOTES                                                                       |
|------------|--------------------------------------|-----------------------------------------------------------------------------|
| MTBF:      | 574K hours, 25 °C ambient, full load | Calculation is done based on Telcordia. Reports for each model is available |
| Warranty:  | 3 Years                              | Limited                                                                     |
| HALT Data: | Per SL Power Halt procedure          | Report is available                                                         |

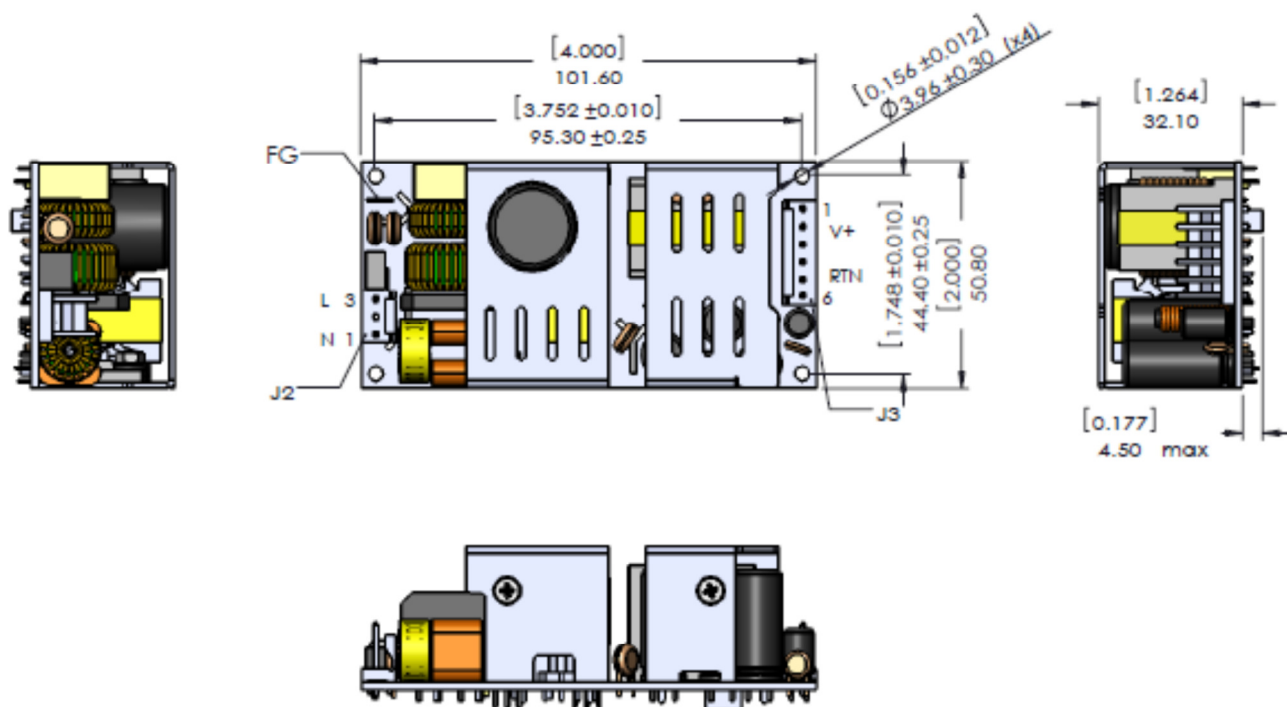
### EMI/EMC Compliance

| PARAMETER                                  | SPECIFICATION                                                                                                                                                 | NOTES                                                                                                                                                                                                                                       |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Conducted Emissions:</b>                | EN55011/22 Class B; FCC Part 15                                                                                                                               | Also meets EN55015 Class B                                                                                                                                                                                                                  |
| <b>Radiated Emissions:</b>                 | EN55011/22 Class A; FCC Part 15                                                                                                                               |                                                                                                                                                                                                                                             |
| <b>Harmonic Current Emissions</b>          | EN61000-3-2, Class A,B,C & D                                                                                                                                  | Meets class C from 5 to 115 Watts.<br>This is based on limits set @ 115 Watt                                                                                                                                                                |
| <b>Voltage Fluctuations &amp; Flicker</b>  | EN61000-3-3                                                                                                                                                   |                                                                                                                                                                                                                                             |
| <b>Static Discharge Immunity:</b>          | EN61000-4-2, Level 4: 6kV contact, 8kV air, Criteria A                                                                                                        | Performance criteria are defined as following:<br><br>A – Normal performance during and after the test<br>B – Temporary degradation, self-recoverable<br>C – Temporary degradation, operator intervention required to recover the operation |
| <b>RF Field Susceptibility</b>             | EN61000-4-3, Level 3 (3V/m), Criteria A                                                                                                                       |                                                                                                                                                                                                                                             |
| <b>Fast Transients/Bursts</b>              | EN61000-4-4, Level 3 (PS: 2kV-40A, other lines 1kV-20A), Criteria A                                                                                           |                                                                                                                                                                                                                                             |
| <b>Surge susceptibility</b>                | EN61000-4-5, Installation Class 3 (1kV diff. mode, 2kV common mode), Criteria A                                                                               |                                                                                                                                                                                                                                             |
| <b>Conducted RF susceptibility</b>         | EN61000-4-6, Level 3 (3Vrms), Criteria A                                                                                                                      |                                                                                                                                                                                                                                             |
| <b>Power Frequency Magnetic Field Test</b> | EN61000-4-8, Level 3 (3A/m), Criteria A                                                                                                                       |                                                                                                                                                                                                                                             |
| <b>Voltage Sags &amp; Surges</b>           | EN61000-4-11,<br>95% dip/0.5 cycle (Criteria A),<br>60%/5cycles (Criteria B ), 30%/25 cycles (Criteria A).<br>loading is 70% of 100 watts with 100 Vac input. |                                                                                                                                                                                                                                             |

#### Notes:

1. Specifications subject to change without notice.
2. Specifications are for convection rating at factory settings with 115Vac input and 25°C ambient unless otherwise stated.

## Mechanical Drawing



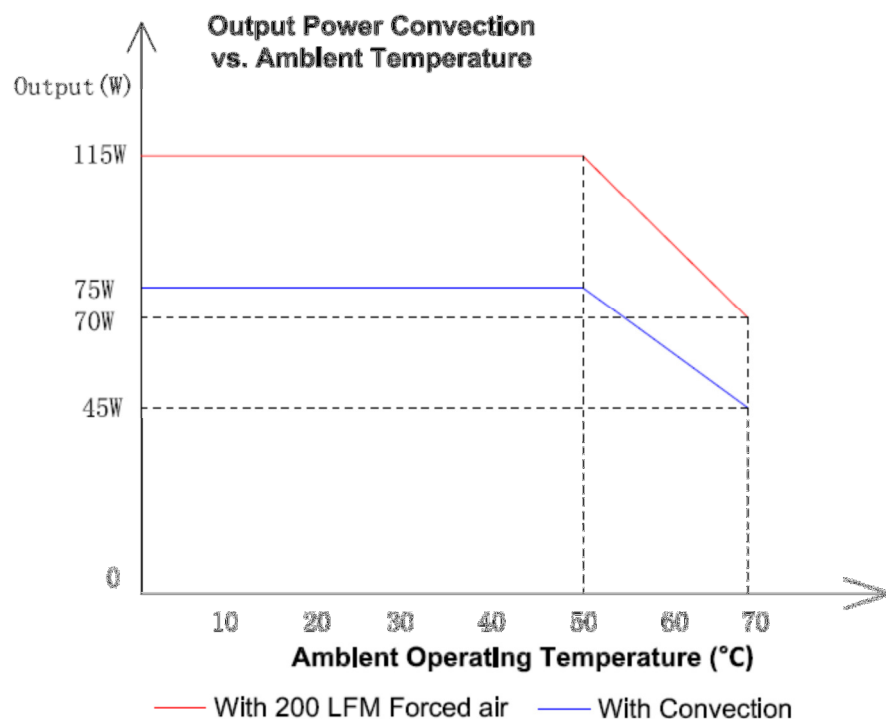
## Connector Information

| Input Connector<br>J2                                               | DC Output<br>Connector<br>J3                                                                 | Ground<br>(FG)J1                                           |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------|
| PIN 1) AC NEUTRAL<br>PIN 2) EMPTY<br>PIN 3) AC LINE                 | PIN 1) +Vout<br>PIN 2) +Vout<br>PIN 3) +Vout<br>PIN 4) -Vout<br>PIN 5) -Vout<br>PIN 6) -Vout | 19-30258-0187 (Keystone 1285)<br>(Zierick 895)(.187*0.020) |
| Mating Connector:<br>Tyco/AMP 640250-3<br>Terminals :<br>3-640252-1 | Mating Connector:<br>AMP 640250-6<br>Terminals :<br>3-640252-1                               | Mating Connector<br>Molex 190020005                        |

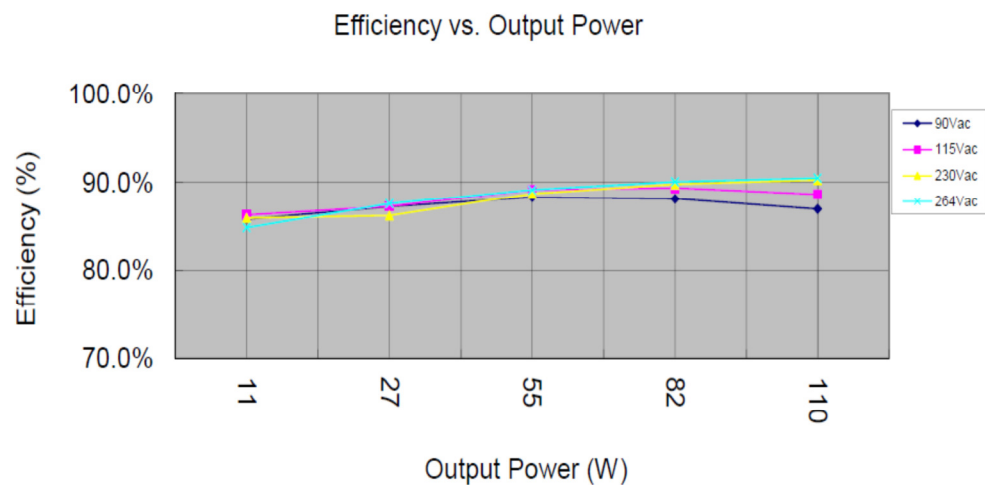
1. All dimensions in inches (mm) undefined tolerance is  $\pm 0.02$ " (**0.5mm**).
2. Mounting holes should be connected together for EMI purpose
3. FG is safety ground connection
4. This power supply requires mounting on metal standoffs 0.20" (5mm) Min. in height

## Characteristic Curves

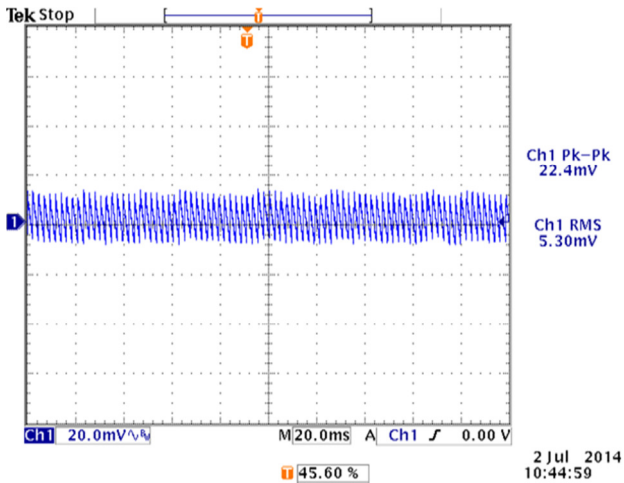
### Output Power vs. Temperature



### Efficiency vs. Loading

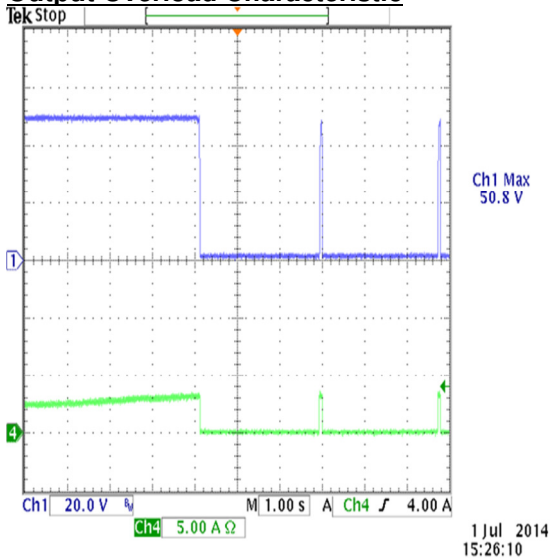


### Ripple & Noise

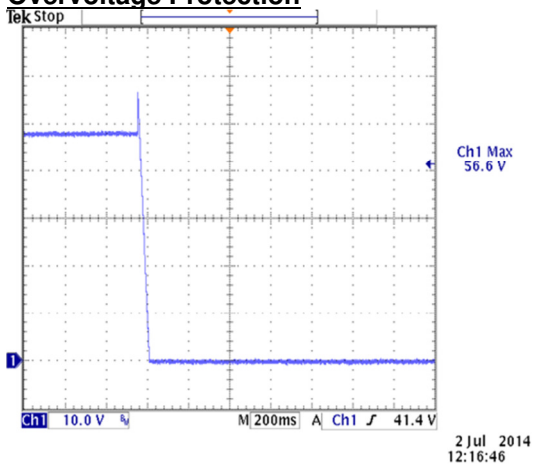


To verify that the output ripple and noise does not exceed the level specified in the product specification, measured using a scope probe socket with 0.1uF ceramic and a 10uF electrolytic capacitor connected in parallel across it, 20MHz BW.

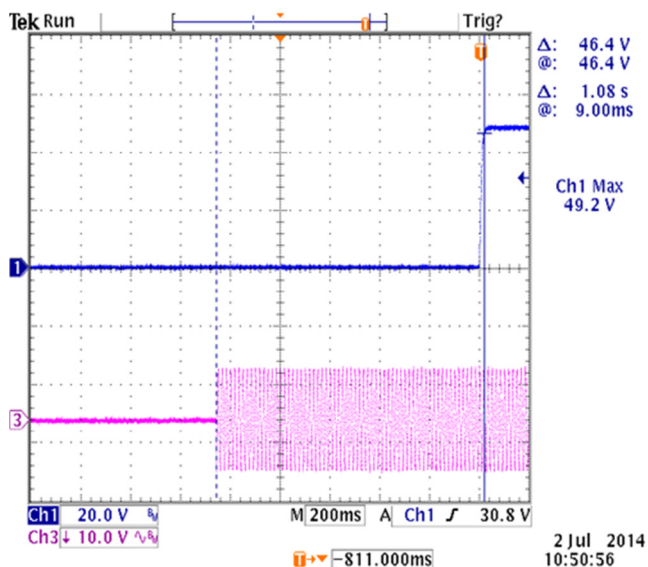
### Output Overload Characteristic



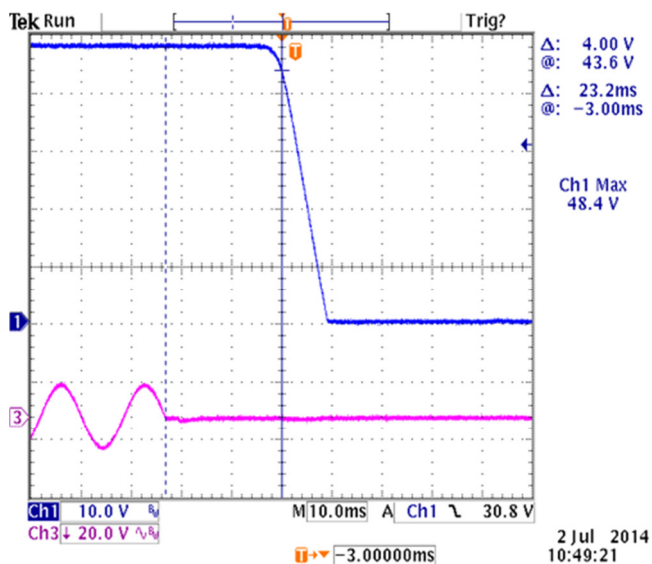
### Overvoltage Protection



### Turn On Time



### Hold Up Time



|            |      |       |      |      |
|------------|------|-------|------|------|
| CH1:       | Vout | Vin:  | 115  | Vac  |
| CH3:       | Vin  | Iout: | 2.40 | Amps |
| Min_Limit: | 16   | Meas: | 23.2 | mS   |

# Mouser Electronics

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