MB115 Family

115W Single Output
Medical Grade

Medical

FEATURES AND BENEFITS

- Small Size Of 2" X 4" X 1.3"
- For 1U Applications
- 75W Convection Cooled
- 115W With 200 LFM
- Universal Input 90-264VAC
- Approved To UI/CSA/IEC/IEC60601-1, 3rd Edition
- Level V Efficiency Compliant
- -40˚C Start-Up
- -20˚C To 70˚C Operating Temperature Range
- 3 Years Warranty
- Optional LED Indicator For Power-On

MODEL SELECTION

Model Number	Volts	Output Current Convection Cooled	Output Current Forced air(200 LFM) (Total Power)	Ripple & Noise*	Total Regulation	OVP Threshold
MB115S12K	12V	6.25 A	9.00A (108 Watts)	0.5%RMS, 1.5% pk-pk	±2%	14.0 ± 1.1V
MB115S15K	15V	5.00A	7.20A (108 Watts)	0.5%RMS, 1% pk-pk	±2%	18.0 ± 1.5V
MB115S24K	24V	3.13A	4.58A (110 Watts)	0.5%RMS, 1% pk-pk	±2%	28V± 4.0V
MB115S36K	36V	2.08A	3.19A (115 Watts)	0.5%RMS, 1% pk-pk	±2%	42.0 ± 4.0V
MB115S48K	48V	1.56A	2.40A (115 Watts)	0.5%RMS, 1% pk-pk	±2%	55.0 ± 4.0V
MB115S56K	56V	1.34A	2.05A (115 Watts)	0.5%RMS, 1% pk-pk	±2%	63.0 ± 4.0V

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

INPUT

AC Input Voltage	90-264VAC, Single phase	
AC Input Current	115VAC: 2A, 230VAC: 1A	
Inrush Current	65A maximum @ 25C	
Input Fuse	F1:4A, 250VAC	
Earth Leakage Current	<350uA @ 264VAC, 60Hz input, NC	
AC Input Frequency	47-63Hz	Fuse provided on all models

EFFICIENCY

Model Number	Typical	Measured @ 25˚C
MB115S12K, MB115S15K	89% @ 230VAC, Full load	86.5% @ 115VAC, Full load
MB115S24K	89% @ 230VAC, Full load	87% @ 115VAC, Full load
MB115S36K	89% @ 230VAC, Full load	87% @ 115VAC, Full load
MB115S48K	90% @ 230VAC, Full load	88% @ 115VAC, Full load
MB115S56K	90% @ 230VAC, Full load	88% @ 115VAC, Full load

OUTPUT

Hold-up Time	12ms minimum from loss of AC input at 115VAC	
Turn On Time	<2 seconds @115VAC (<3s for 12V output)	
Output Power	Max of 75 Watts for convection cooled Max of 115 Watts for fan cooled (48 & 56V models)	Maximum 108 Watts for 12V output -20 to 50˚C ambient
Ripple and Noise	0.5% RMS, 1% pk-pk for all models	20 MHz Bandwidth, differential mode Measured with noise probe directly across output terminals, and load terminated with 0.1µF ceramic and 10µF low ESR capacitors
Transient Response	500µs typ. response time for return to within 0.5% of final value for a 50% load change, Δi/Δt< 0.2A/µs Max voltage deviation is 3.5%	Measured @ 25˚C
Minimum Load	No minimum load is required	
Total Regulation	±2% for all models	Total regulation is the maximum deviation from nominal voltage for all loading conditions
Cooling	Convection Forced Air of 200 LFM	
Overshoot	5% overshoot at turn-on, 5% overshoot at turn-off, under all conditions	6% for 12V output

ENVIRONMENT

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 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	

SAFETY

UL	EN/CSA/UL/IEC 60601-1 3rd edition & EN60950
CSA	Same as above
Demko	Same as above
CB Report	Yes
Isolation Type	Double/Reinforced between input and output

ISOLATION SPECIFICATIONS

Insulation Safety Rating	Input to Ground	Basic Insulation
	Input to Output	Double/Reinforced
Electric Strength Test Voltage	Input to Ground	2,000VAC
	Input to Output	4,000VAC
	Output to Ground	500VAC

PROTECTION

Overtemperature Protection	Automatic power shutdown	Thermistor temperature is 130˚C
Overload Protection	120% - 180% of rated output current value, Hiccup mode	For 12V output, it is 110 to 180%
Short Circuit Protection	Short across the output terminals will not cause damage to the unit. Hiccup mode	
Overvoltage Protection	OVP firing reduces output voltage to <50% of nominal in <50ms. See chart for trip range	

EMI/EMC COMPLIANCE

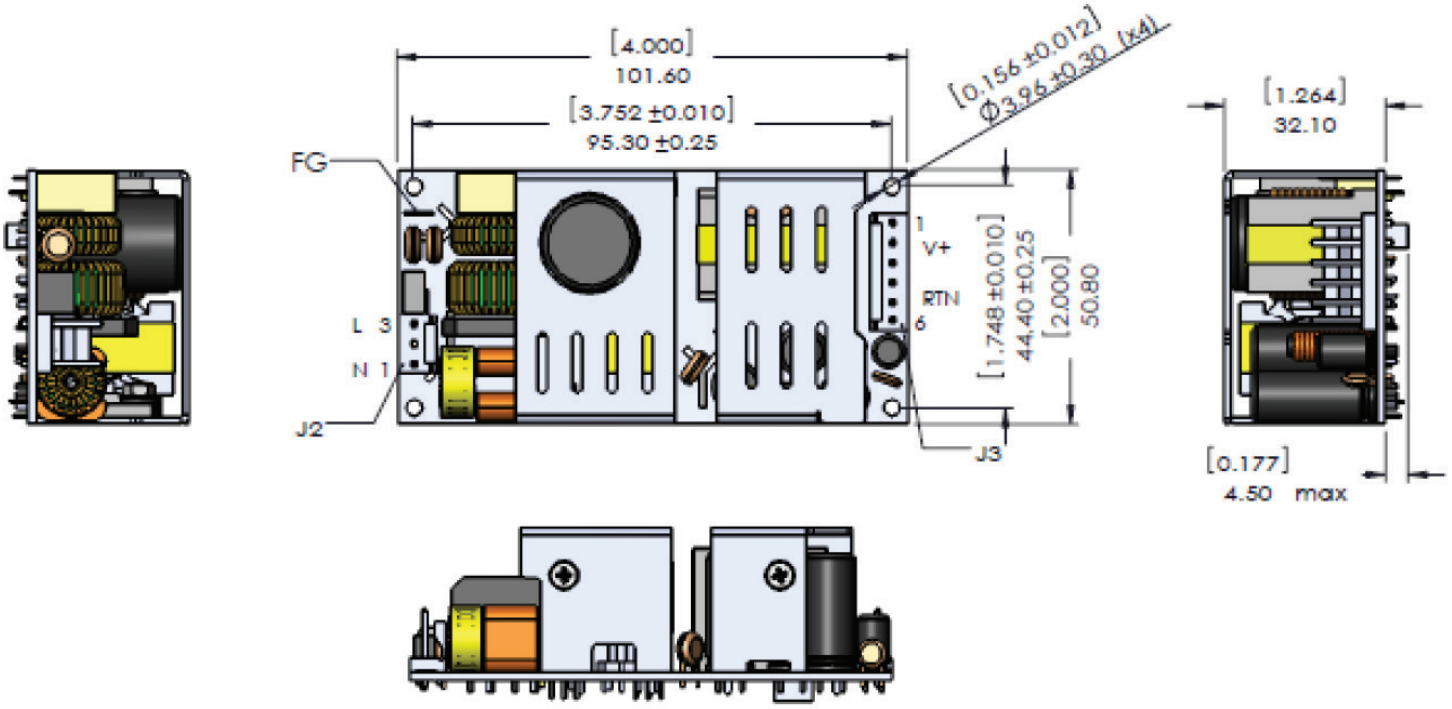
Conducted Emissions	EN55011/22 Class B; FCC Part 15	Also meets EN55015 Class B
Radiated Emissions	EN55011/22 Class A; FCC Part 15	
Harmonic Current Emissions	EN61000-3-2, Class A, B, C & D	Meets class C from 5 to 115W. This is based on limits set @ 115W
Voltage Fluctuations & Flicker	EN61000-3-3	
Static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

Note: 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.

RELIABILITY

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

MECHANICAL DRAWING



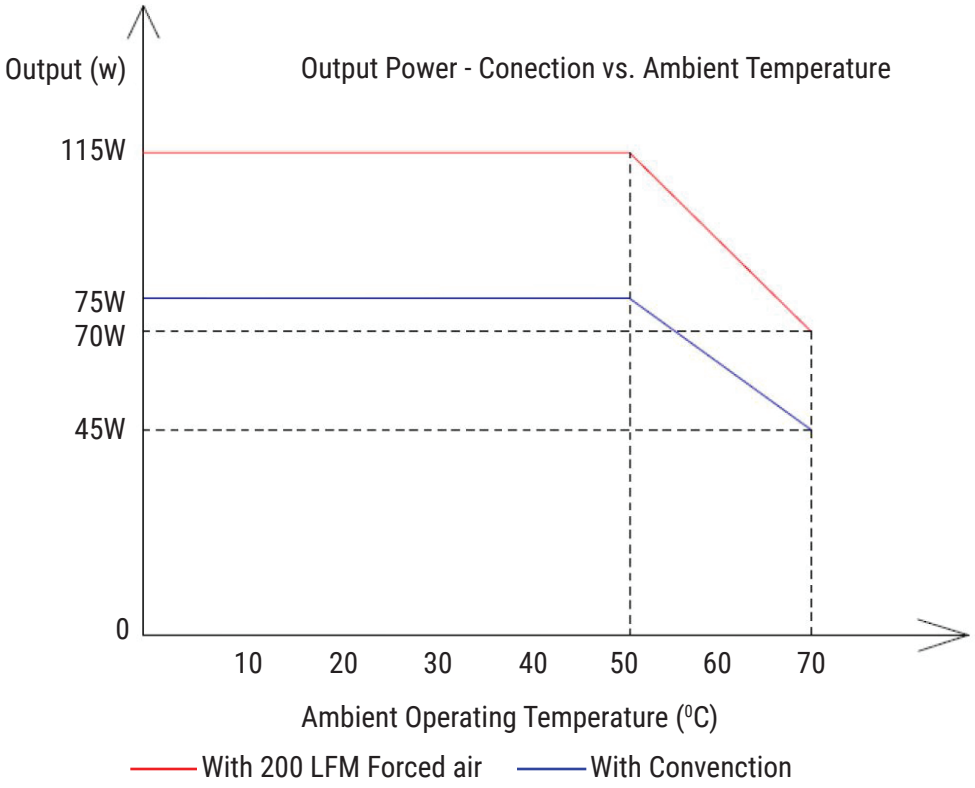
CONNECTOR INFORMATION

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

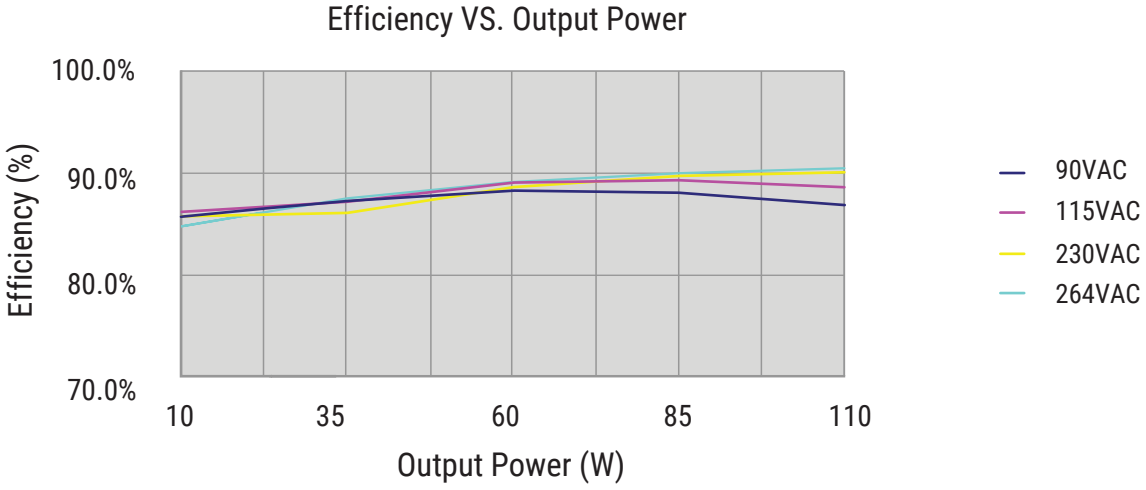
Note: 1. All dimensions in inches (mm) undefined tolerance is ±.02" (0.5mm).
2. Mounting holes should be connected together for EMI purpose.
3. FG is safety ground connection.
4. This power supply requires mounting on metal standoffs 0.20" (5mm) Min. in height.

CHARACTERISTIC CURVES

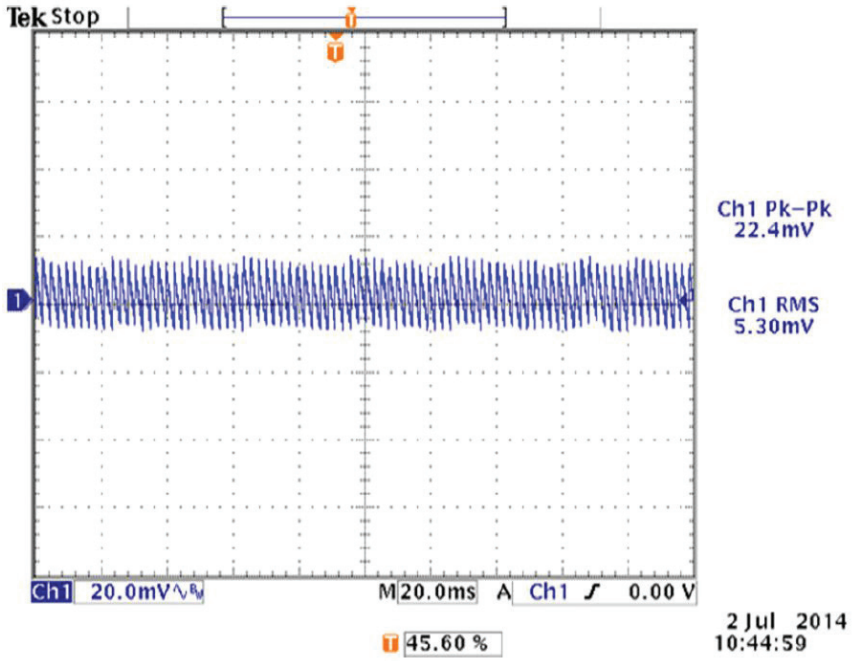
OUTPUT POWER VS. TEMPERATURE



EFFICIENCY VS. LOADING

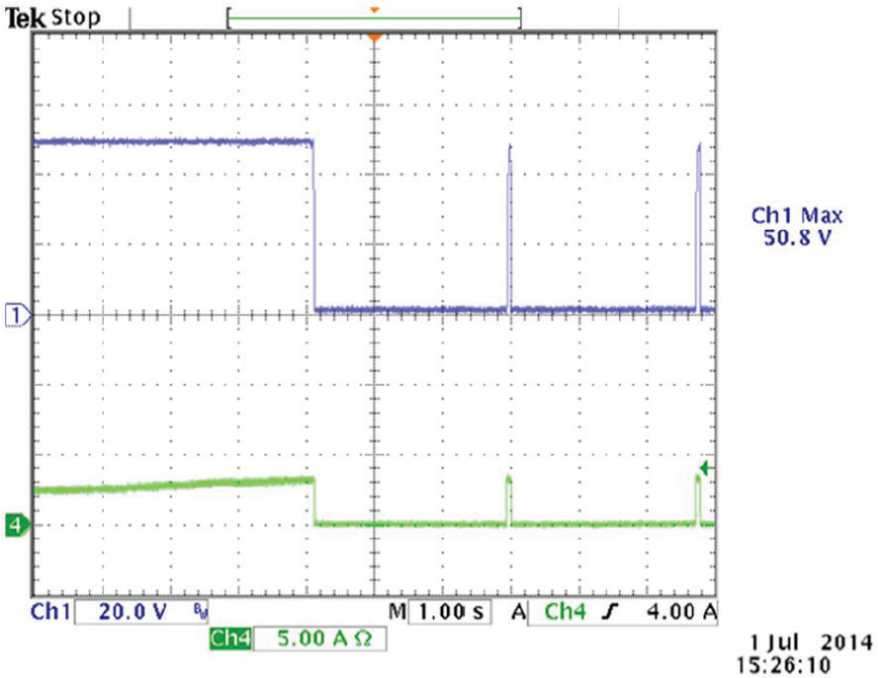


RIPPLE & NOISE

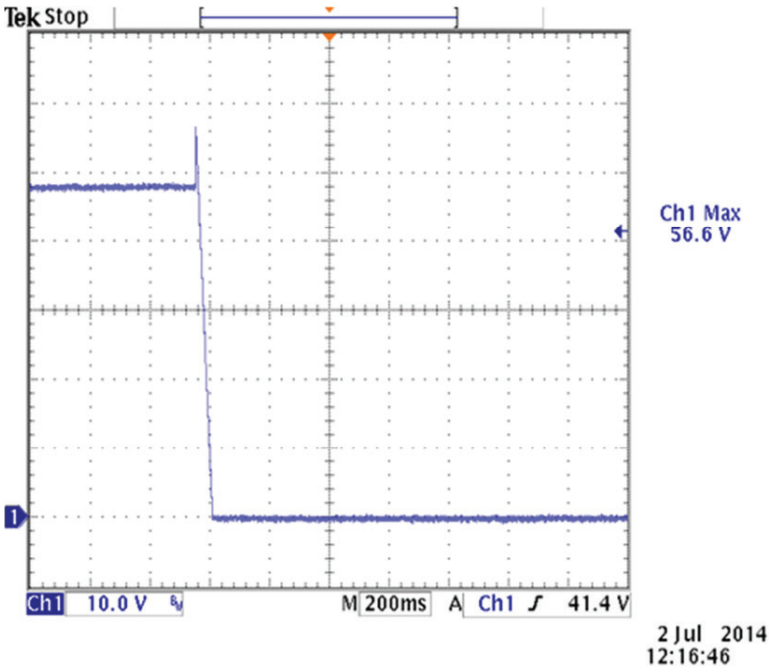


To verify that the output ripple and noise does not exceed the level specified in the product specification, measured using a scope probe socket with 0.1uF ceramic and a 10uF electrolytic capacitor connected in parallel across it, 20MHz BW.

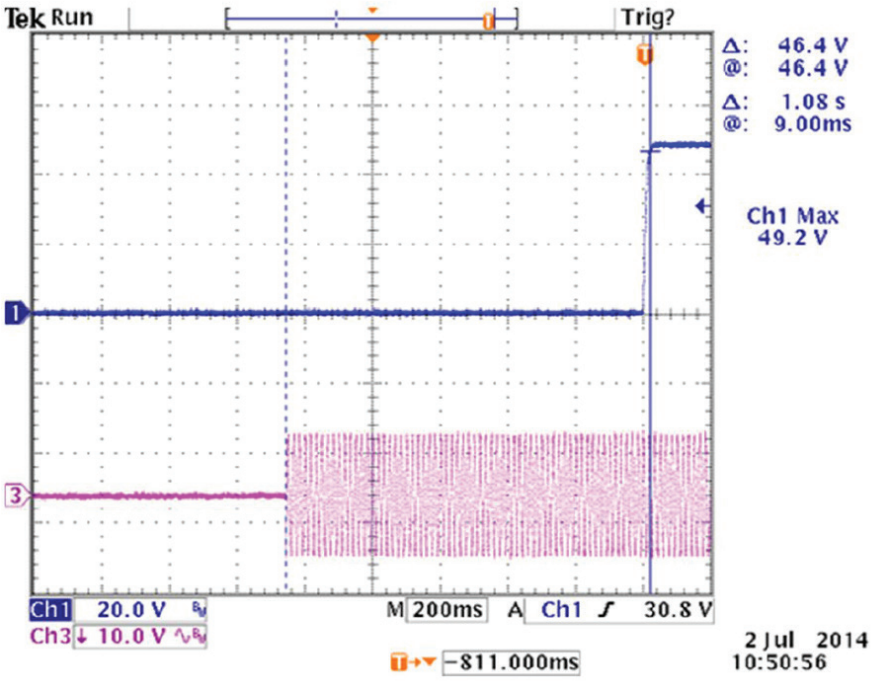
OUTPUT OVERLOAD CHARACTERISTIC



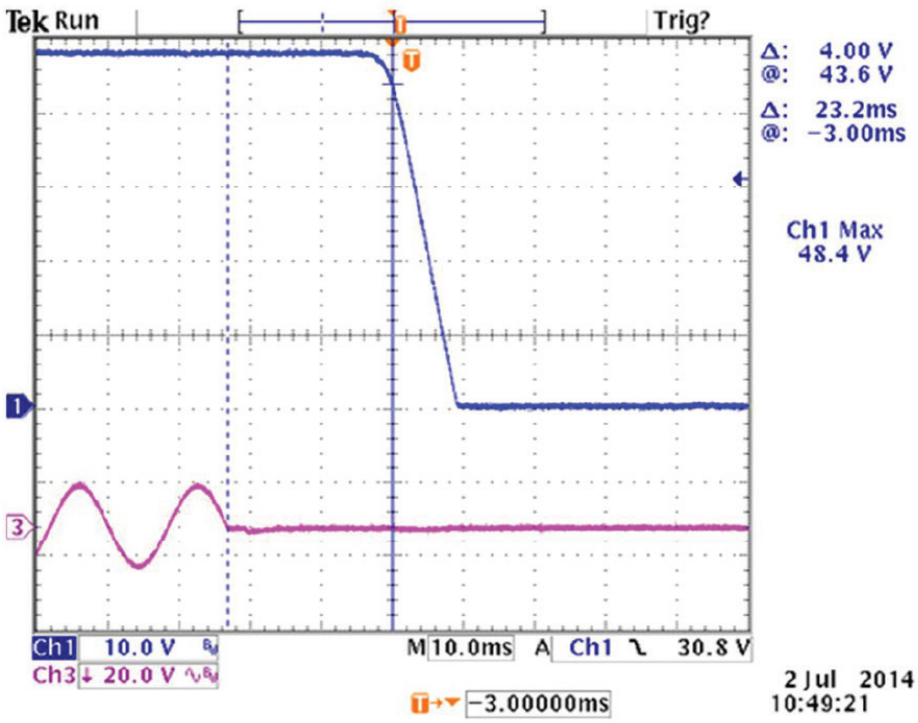
OVERVOLTAGE PROTECTION



TURN ON TIME



HOLD UP TIME



CH1:	V_{out}	V_{in}:	115	VAC
CH3:	V_{in}	I_{out}:	2.40	Amps
Min_Limit:	16	Meas	23.2	ms

LifeElectronics
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