An Introduction to Intronics

New High Density DC/DC Converter

W30 Series

Intronics Inc.
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Norwood MA 02062

Trends of the DC/DC Converter Market

- Lower Output Voltages
- Higher Output Current Densities
- Higher Power Densities
- Higher Efficiencies
- Less De-rating of Output Current at High Ambient Temperatures with Little Airflow.
- Higher Input Voltage Ranges
- Lower Profiles
- Lower Cost, Lower Margins
- Faster Time to Market

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W30 Series : Introduction

- 2” x 1” x 0.45”
- 30W Max Power
- 1500 VDC Isolation
- 2 Different Industry Standard Pin Outs on a Single PCB
- RoHS Compliant Available

Vin	Vout	Iout	Eff
9-18 V 9-36 V 18-36 V 36-75 V	1.5 V 1.8 V 2.5 V 3.3 V 5.0 V 12 V 15 V	Up to 10A	Max 94 %

Complete Data Sheet on the Website: www.intronics.com

Highest available Output Currents for Various Vout and Vin Ranges.
(4 : 1 Vin Range Available)

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The W30 Features

- Output Over Voltage Protection @135%
- Output Over Current Protection @ 120%
- Input Under / Over Voltage Lock-out
- “Hiccup” Output Short Circuit Protection
- Remote On/Off Control Pin with Programmable Polarity (Positive/Negative)
- Thermal Shutdown @ 120 deg C

- Fixed Switching Frequency 350kHz Typical
- Synchronous Rectification for very High Efficiency
- -40 deg C to +85 deg C Ambient Operation
- No Minimum Load Required
- MBTF up to 1,000,000 hours @ 50 deg C (Bellcore)

Very reliable Design !!

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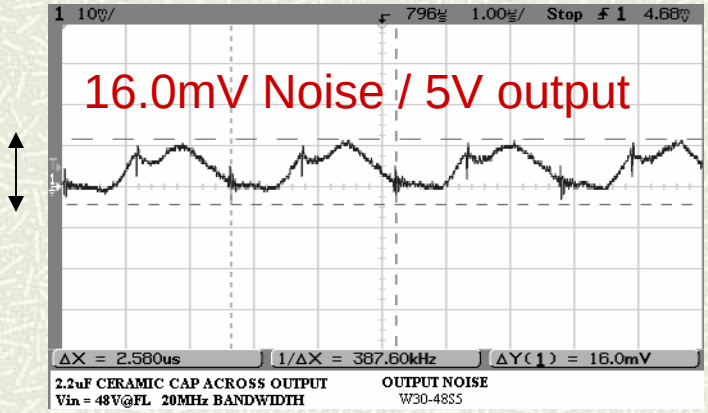
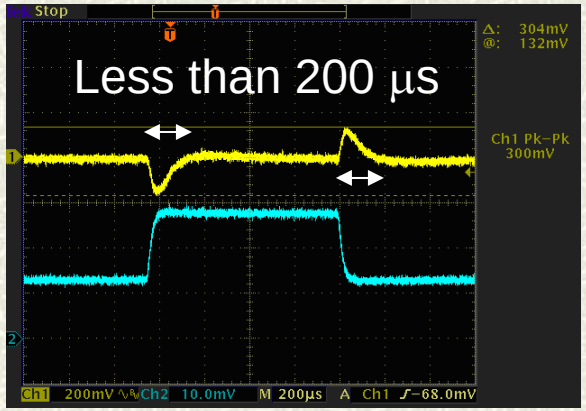
The W30 Features

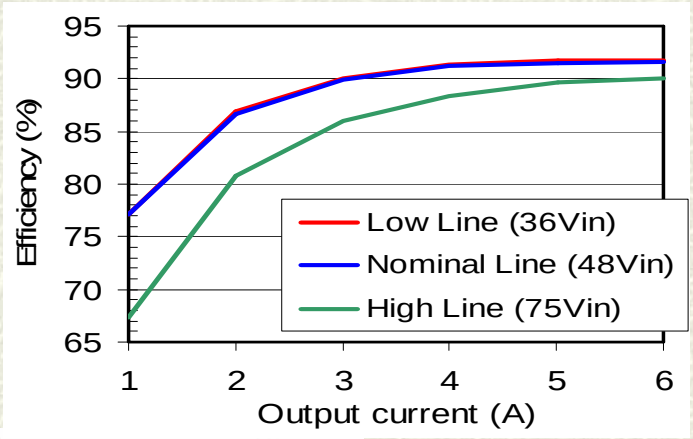
Ultra Low Output Noise



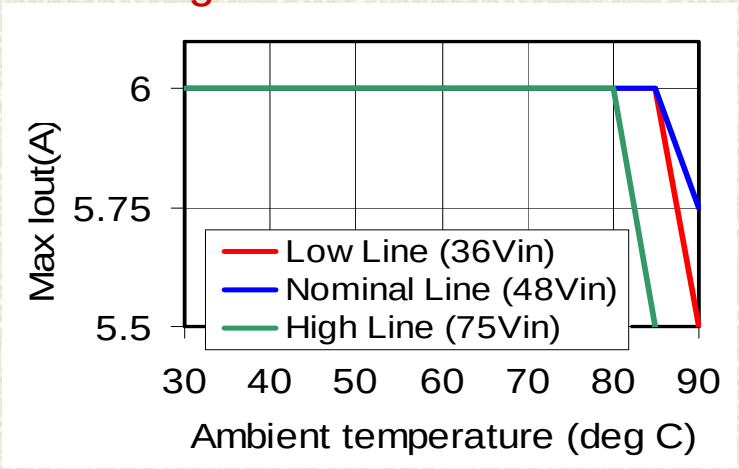
Excellent Turn On, and Output Load Transient Characteristics



Very High Efficiency for a DC/DC Converter with Isolation



Excellent Thermal De-rating Spec. up to 85 deg C with No Airflow Needed.



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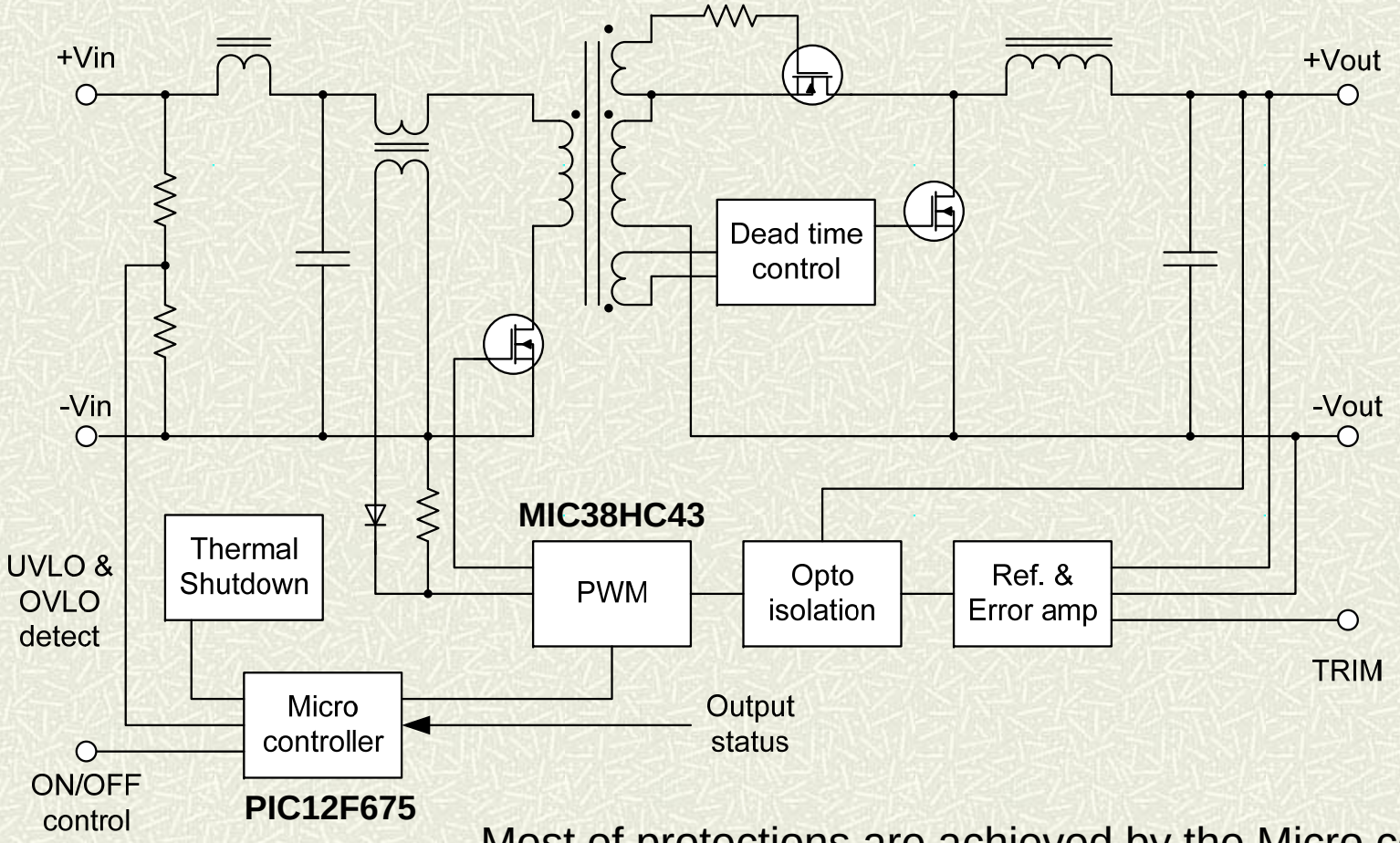
Model: W30-48S5B

W30 Simplified Schematic



Most of protections are achieved by the Micro controller

- 8 bit Flash based CMOS 8 pin SMT
- Programmed with Assembly language
- MPLAB IDE software
- 4 MHz Oscillator

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Our Design:
Hybrid of Analog and Digital Technology

Hybrid !!

Digital : Microcontroller for Protections

- Low Cost
- Small Size
- Low complexity, Easy to Program
- In House Programming Manufacturing Process
- Fast Time to Market

Analog : PWM and the other circuitries

- Easy to Compensate for Stability using Current Mode Control PWM.
- Well known and Established Technology
- Known Design Time Cost
- Very fast Pulse by Pulse Overload Protection

Full digital disadvantages

- High Complexity Feedback loop programming
- Digital PWM
  - How Known is the PWM?
  - How Fast is the Short Circuit Protection?
  - Is it Pulse by Pulse Current Limit?
- Size of the Part is Too Big for High Density Converters
- Cost of the Part

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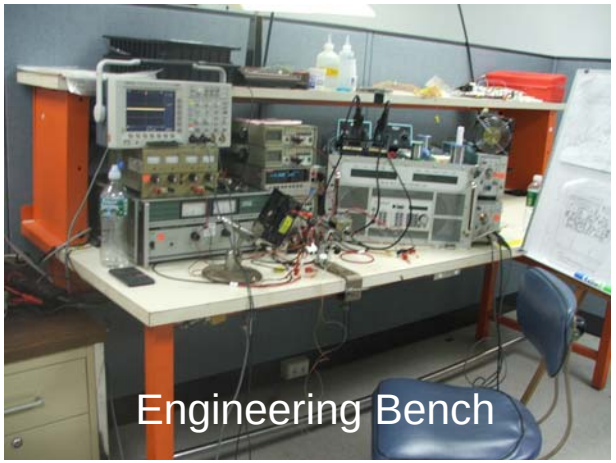
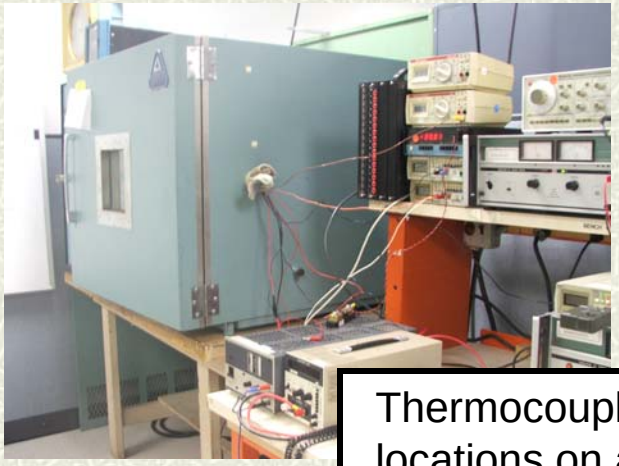
Design Verification

- Basic functional test
- Loop stability analysis (Bode plots)
- Steady state voltage waveforms on all power switching devices
- Transient response
- Turn on time
- Input ripple current
- Switching frequency
- Open loop over voltage protection

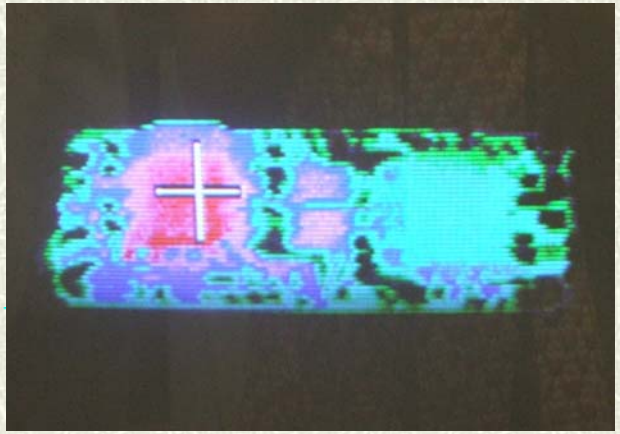

Engineering Bench

- Thermal Test in a sealed enclosure within an environmental chamber at Still Air



Thermocouples at 18 locations on a board

- Thermal Imaging



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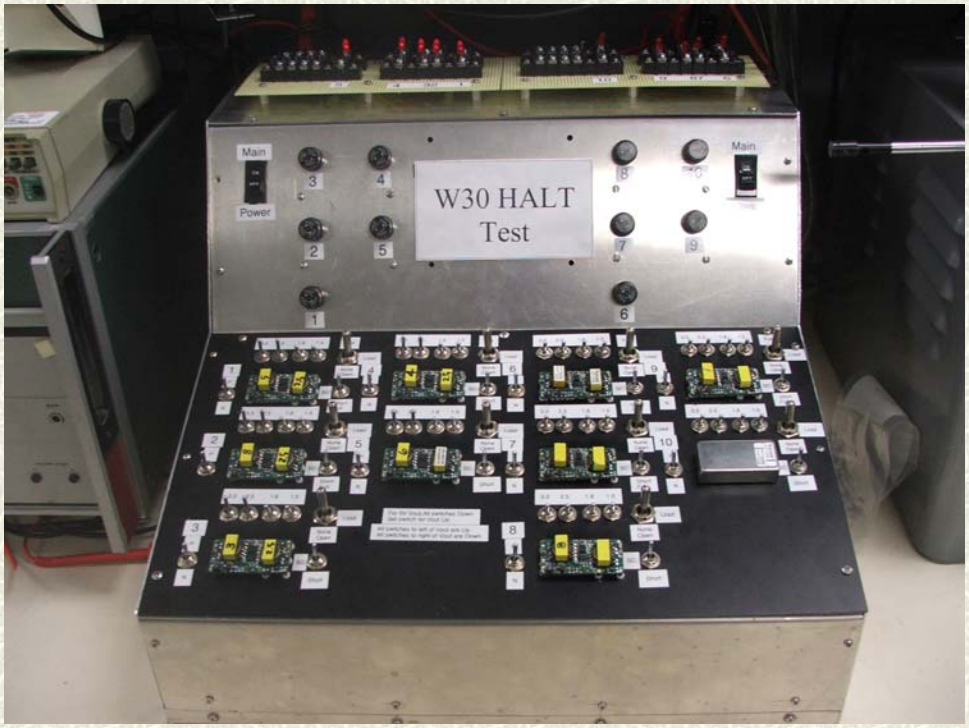
Design Verification

- All Pre-Release units go through 1000 hours of High Accelerated Life Testing
  - Input Voltage step changing from Low to High line
  - Programmed ON/OFF sequence
  - Short Circuit into “Hiccup” mode at all line and load conditions



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Quality

- ISO 9001:2000 Certified Facility in Norwood, MA

SMT Assembly

Wave Soldering

Aqueous Cleaning

Inspection

Automated Test

Burn-In

Hi-Pot Testing

Final Inspection

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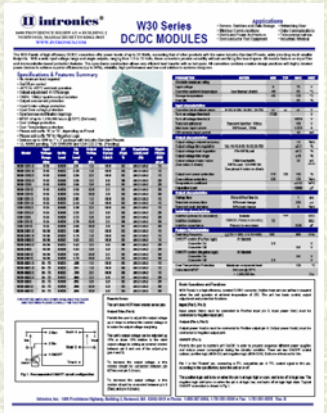
For more information

- Visit our website

  http://www.intronics.com

  And get a complete datasheet !

- Contact our Sales and Marketing Dept.
  - TEL: 1-800-367-0004
  - FAX: 1-781-551-5555
  - info@intronicspower.com



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