# CINT3110

110W Triple Output
Industrial Series

## Features

- 2” x 4” x 1.3” Package
- Suitable for 1U Applications
- 110W w/air, 80W convection cooled
- Universal Input 90-264Vac
- Efficiency 87% typical
- Approved to CSA/EN/IEC/UL60950-1, 2nd Edition
- Power Fail Signal
- Remote Sense
- 3 Year Warranty
- RoHS Compliant

## Description

The CINT3110 Series are industrial grade, high efficiency, triple output power supplies in a small 2” x 4” size. The CINT3110 family is ideal for Industrial and ITE applications requiring multiple outputs and small footprint. Compliant to IEC60950-1 2nd edition, the CINT3110 models feature outputs of 5/±12V, 5/±15V, 5/±24V, includes a Power Fail/DC OK signal, and meet Class B Conducted EMI.

## Model Selection

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

Notes:
* 5V output is adjustable with +/-10% range
** Total convection power is 80 Watts.
*** Measured with noise probe directly across output terminals, and load terminated with 0.1µF ceramic and 10µF low ESR capacitors. Ripple & Noise of V2 at no load is 2% maximum.

## General Specifications

| | | | |
|---|---|---|---|
| **AC Input** | 100-240Vac, ±10%, 47-63Hz, 1∅<br>120–370Vdc | **Turn On Time** | Less than 2 sec. @115Vac (inversely proportional to input voltage and thermistor temperature) |
| **Input Current** | 115Vac: 1.5A, 230Vac: 0.75A | **Hold-up Time** | 16mS typical at 110W, 120Vac input |

## General Specifications (continued)

| | | | |
|---|---|---|---|
| **Inrush Current** | 264Vac, cold start: will not exceed 45A | **Signals** | AC Power Fail, DC OK |
| **Input Fuses** | F1, F2: 2.5A, 250Vac fuses provided on all models | **Overload Protection** | 150%-300% above rating for V2 & V3, 110%-200% for V1. Hiccup Mode |
| **Earth Leakage Current** | <290µA@264Vac, 60Hz, NC | **Short Circuit Protection** | Provided - no damage will occur if the output is shorted. |
| **Efficiency** | 87% typical at 230Vac | **Overvoltage Protection** | See models chart for trip range. |
| **Output Power** | 110W continuous with 200 lfm airflow, 80W convection cooled – See chart for specific voltage model ratings. | **Switching Frequency** | PFC: 75kHz typical |
| **Transient Response** | 500µS typ. for return to within 0.5% of nominal, 50% load step. $\Delta i/\Delta t$ <0.2A/µS. Max Volt Deviation = 3% | **Isolation** | Input-Output: 4000Vac<br>Input-Ground: 1800Vac<br>Output-Ground: 500Vac |
| **Ripple and Noise** | See models chart | **Operating Temperature** | -10°C to +70°C |
| **Output Voltage** | See models chart | **Temperature Derating** | Derate output power linearly above 50°C to 50% at 70°C |
| **Voltage Adjustability** | +/-10% from nominal on 5V output | **Storage Temperature** | -40°C to +85°C |
| **Minimum Load** | Not required | **Altitude** | Operating: -500 to 10,000 ft.<br>Non-operating: -500 to 40,000 ft. |
| **Total Regulation** | See models chart | **Relative Humidity** | 5% to 95%, non-condensing |
| **Vibration** | Operating: 0.003g²/Hz, 1.5grms overall, 3 axes, 10 min/axis<br>Non-Operating: 0.026g²/Hz, 5.0grms overall, 3 axes, 1 hr/axis | **Shock** | Operating: Half-sine, 20gpk, 10ms, 3 axes, 6 shocks total<br>Non-Operating: Half-sine, 40 gpk, 10 ms, 3 axes, 6 shocks total |
| **Dimensions** | W: 2.0” x L: 4.0” x H: 1.3” | **Safety Standards** | EN/CSA/UL/IEC 60950-1, 2nd Edition |
| **Weight** | 200g | **MTBF** | 245,000 hours, 25°C Ambient, 110Vac input |

## Auxiliary Signals

| | | | |
|---|---|---|---|
| **AC Power Fail:** | During normal operation, stays HIGH. Signal goes LOW with at least 6mS warning before loss of DC output from AC failure. | **DC OK:** | Open collector logic signal goes and stays HIGH 100mS to 500mS after main output reaches regulation. |
| **Remote Sense:** | (5V output, optional) Will compensate for 0.5V drop min. Will operate without remote sense connected. Reverse connection protected. | | |

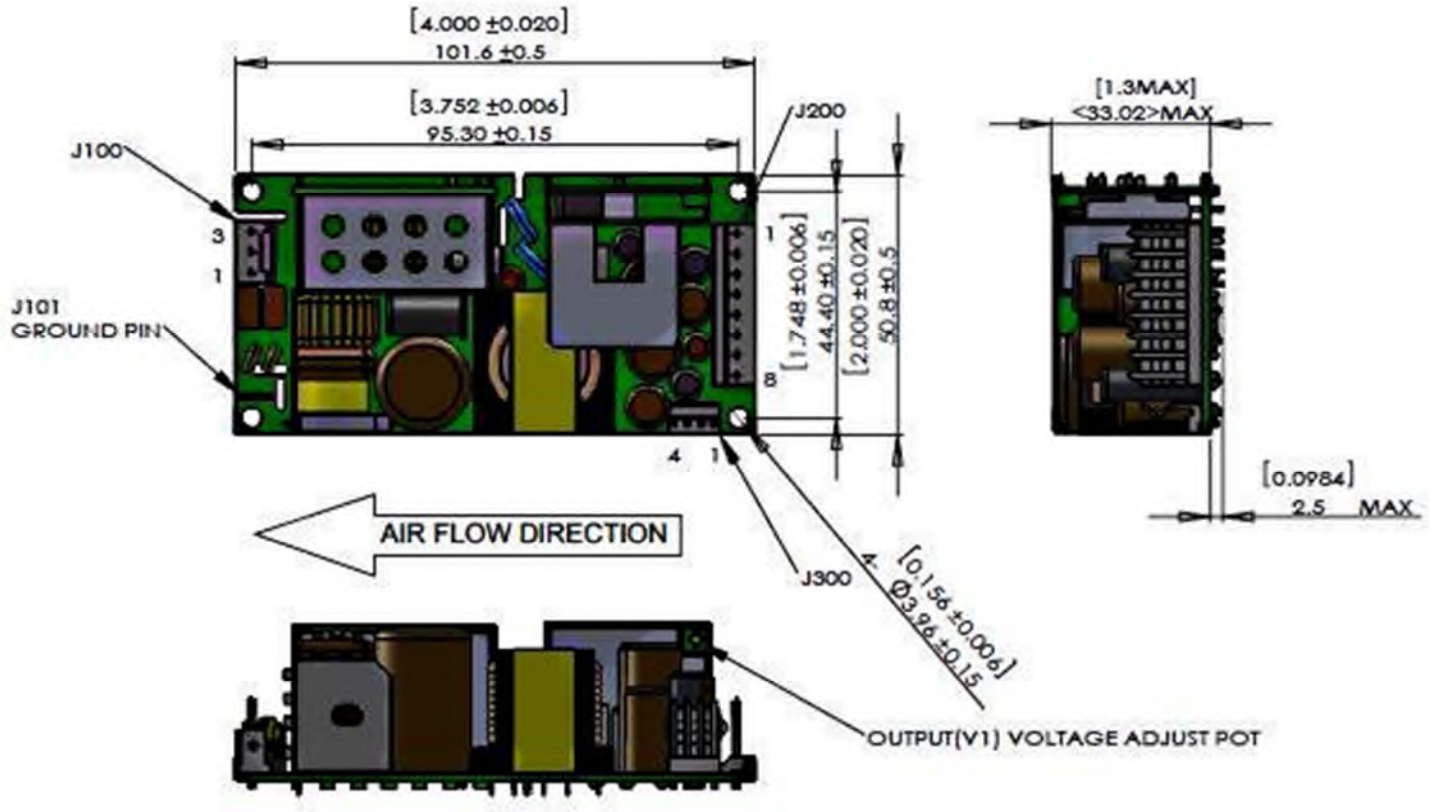
**Notes:**

1. Specifications are for convection rating at factory settings at 115 Vac input, 25°C ambient unless otherwise stated.
2. For DC input an external DC safety rated fuse must be used.

## 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 |
| **Static Discharge Immunity** | EN61000-4-2, Criteria A, 6kV Contact Discharge, 8kV air discharge |
| **Radiated RF Immunity** | EN61000-4-3, 3V/m. Criteria A |
| **EFT/Burst Immunity** | EN61000-4-4, 2kV/5kHz, Criteria A |
| **Line Surge Immunity** | EN61000-4-5, 1kV differential, 2kV common-mode, Criteria A |
| **Conducted RF Immunity** | EN61000-4-6, 3Vrms, Criteria A |
| **Power Frequency Magnetic Field Immunity** | EN61000-4-8, 3A/m, Criteria A |
| **Voltage Dip Immunity** | EN61000-4-11, 0% Vin, 0.5cycle; 40% Vin, 5 cycles; 70% Vin, 25 cycles; Criteria A |
| **Line Harmonic Emissions** | EN61000-3-2, Class A, B, C, & D |
| **Flicker Test** | EN61000-3-3, Complies (dmax<6%) |

## Mechanical Drawing




**Notes:**

1. All dimensions in inches (mm), tolerance is ±.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 m) in height.

## Connector Information

| Input Connector J100 | Ground J101 | DC Output Connector J200 | Signal Connector J300 |
|---|---|---|---|
| PIN 1) AC NEUTRAL<br>PIN 2) EMPTY<br>PIN 3) AC LINE | 0.187" FASTON TAB | PIN 1) +V1 PIN 4) GND PIN 7) V2<br>PIN 2) +V1 PIN 5) GND PIN 8) V3<br>PIN 3) GND PIN 6) GND | PIN 1) Power Fail/DC OK<br>PIN 2) GND<br>PIN 3) +Remote Sense<br>PIN 4) –Remote Sense |
| Mating Connector:<br>Molex 09-50-3031<br>Pins= 08-52-0072 | Mating Connector:<br>Molex 01-90020001 | Mating Connector:<br>JST VHR-8N<br>Pins = SVH-21T-P1.1 | Mating Connector:<br>Molex 51065-0400<br>Pins = 50212-8100 |

## Isolation Specifications

| Parameter | Conditions/Description | Min | Nom | Max | Units |
|---|---|---|---|---|---|
| Insulation Safety Rating | Input/Ground<br>Input/Output<br>Output/Ground | | Basic<br>Reinforced<br>Operational | | |
| Electric Strength Test Voltage | Input/Ground<br>Input/Output<br>Output/Ground | 1800<br>4000<br>500 | - | - | Vac<br>Vac<br>Vac |

## Leakage Current

| Parameter | Conditions/Description | Max |
|---|---|---|
| Earth Leakage Current | Normal Condition (NC)<br>Single Fault Condition (SFC) | 290µA<br>420µA |
| Touch Current | Normal Condition (NC)<br>Single Fault Condition (SFC) | 90µA<br>170µA |

## Input Specifications

*All specifications apply over specified input voltage, output load, and temperature range, unless otherwise noted.*

| Parameter | Conditions/Description | Min | Nom | Max | Units |
|---|---|---|---|---|---|
| Input Voltage | | 90 | 115/230 | 264 | Vac |
| Input Frequency | | 47 | 50/60 | 63 | Hz |
| Input Current | 115Vac/max load | | | 1.5 | A |
| Input Current | 230Vac/max load | | | 0.75 | A |
| Inrush Current | 264Vac, cold start, 25°C | - | - | 45 | A |
| Efficiency | $Vi_{nom}$, $Io_{nom}$<br>CINT3110A0508K01<br>CINT3110A1708K01<br>CINT3110A1908K01 | - | 87% | - | % |

## Output Specifications

| Parameter | Conditions/Description | Min | Nom | Max | Units |
|---|---|---|---|---|---|
| Output Current V1<br>Output Current V2<br>Output Current V3 | CINT3110A0508K01 | 0<br>0<br>0 | 10.0<br>4.5<br>1 | 14.0<br>6.0<br>1 | ADC |
| Output Current V1<br>Output Current V2<br>Output Current V3 | CINT3110A1708K01 | 0<br>0<br>0 | 10.0<br>3.5<br>1 | 14.0<br>4.5<br>1 | ADC |
| Output Current V1<br>Output Current V2<br>Output Current V3 | CINT3110A1908K01 | 0<br>0<br>0 | 8.0<br>3.0<br>1 | 12.0<br>4.0<br>1 | ADC |

## Output Specifications (continued)

| Parameter | Conditions/Description | Min | Nom | Max | Units |
|---|---|---|---|---|---|
| Static Line Regulation V1 | *Vi* min-*Vi* max, *Vi* nom, 0-100% *Io*1 max | -2 | - | 2 | % *Vo* nom |
| Static Line Regulation V2 | *Vi* min-*Vi* max, *Vi* nom, 0-100% *Io*2 max | -3 | - | 3 | % *Vo* nom |
| Static Line Regulation V3 | *Vi* min-*Vi* max, *Vi* nom, 0-100% *Io*3 max | -10 | - | 10 | % *Vo* nom |
| Static Load Regulation V1 (Droop Characteristic) | *Vi* min-*Vi* max, *Vi* nom, 0-100% *Io*1 max | -2 | - | 2 | % *Vo* nom |
| Static Load Regulation V2 (Droop Characteristic) | *Vi min-Vi max, Vi nom, 0-100% Io2 max* | -3 | - | 3 | % Vo nom |
| Static Load Regulation V3 (Droop Characteristic) | *Vi min-Vi max, Vi nom, 0-100% Io3 max* | -10 | - | 10 | % Vo nom |
| Hold-Up Time | *Vin* = 120Vac, *Po* = 110W | 16 | - | - | mS |
| Dynamic Load Regulation V1, V2, V3 | Load change =50%, di/dt = 0.2A/µS | 0 | | 3 | % Vo nom |
| Start-Up Time | *Vin* = 115Vac, *Io* nom | 0 | - | 2 | S |
| Ripple & Noise V1 | 20MHz bandwidth | 0 | | 1% | % Vo nom |
| Ripple & Noise V2 | 20MHz bandwidth | 0 | | 1% | % Vo nom |
| Ripple & Noise V3 | 20MHz bandwidth | 0 | | 2% | % Vo nom |

## Protection

All specifications apply over specified input voltage, output load, and temperature range, unless otherwise noted.

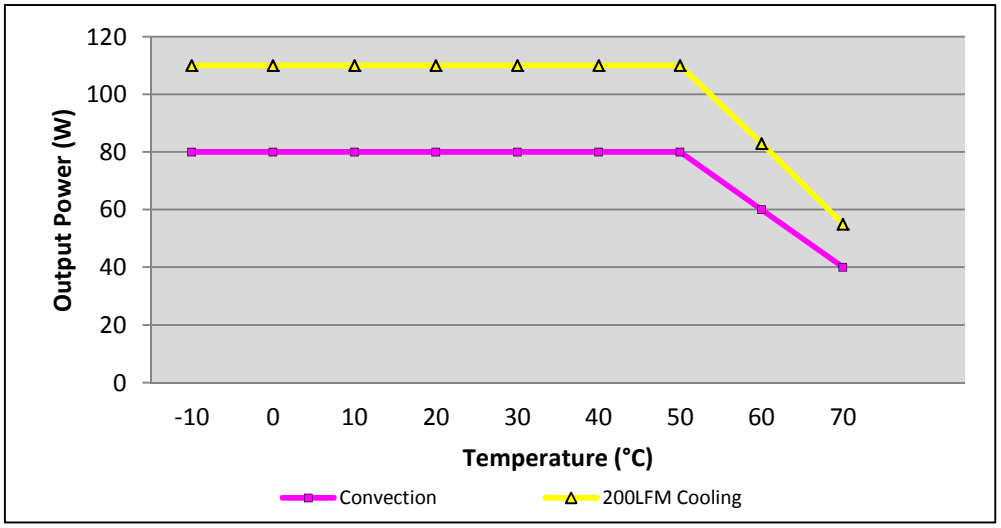
| Parameter | Conditions/Description | Min | Nom | Max | Units |
|---|---|---|---|---|---|
| Input Fuse | T2.5A/250V internal fuse in both line & neutral | Not user accessible | | | |
| Input Transient Protection | 2KV(CM) and 1KV(DM) surge | | | 2 | KV (CM) |
| Short Circuit Protection | | Hiccup Mode | | | |
| Overload Protection | | Hiccup Mode | | | |
| Overvoltage Protection | Latching Type, recycle AC input to reset | See models chart for trip ranges | | | |

## Characteristic Curves

*(Note: All waveforms below are based on CINT3110A0508K01 model)*

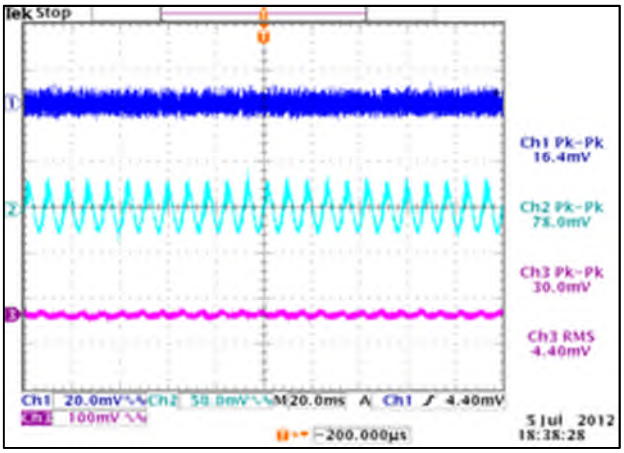
### Output vs. Temperature

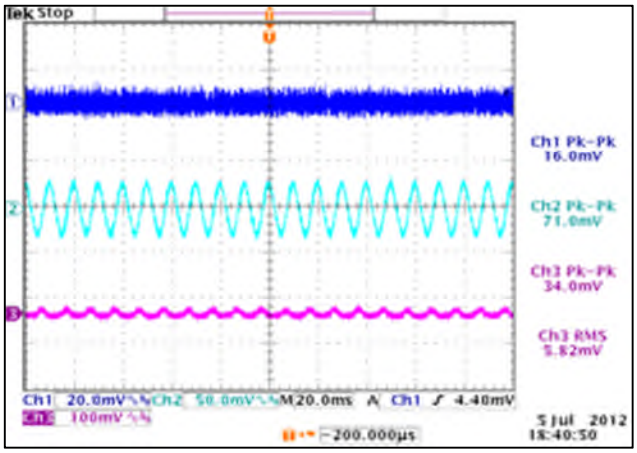
80W convection cooled and 110W continuous with 200 LFM airflow. Derate output power to 50% at 70°C.



## Ripple & Noise

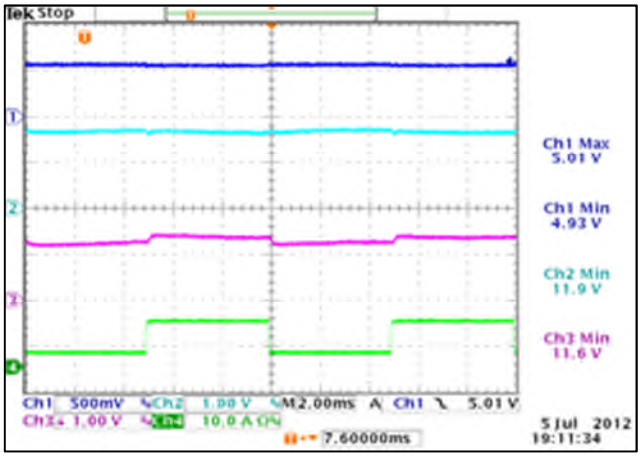
To verify that the output ripple and noise does not exceed the level specified in the product specification. Measured using a scope probe socket with 0.1µF ceramic and a 10µF electrolytic capacitor connected in parallel across it, BW limit with 20MHz.

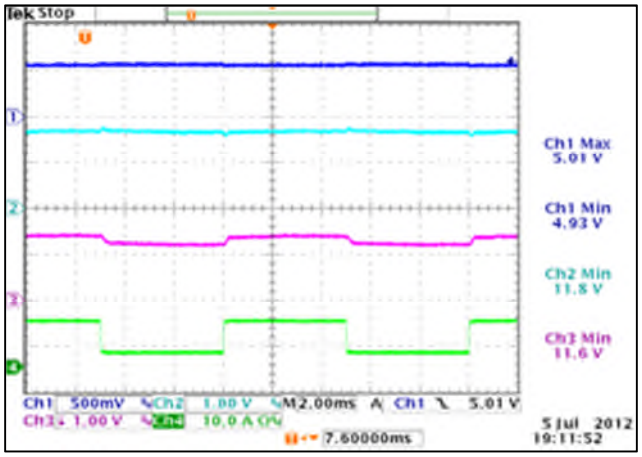



## Output Transient Response V1

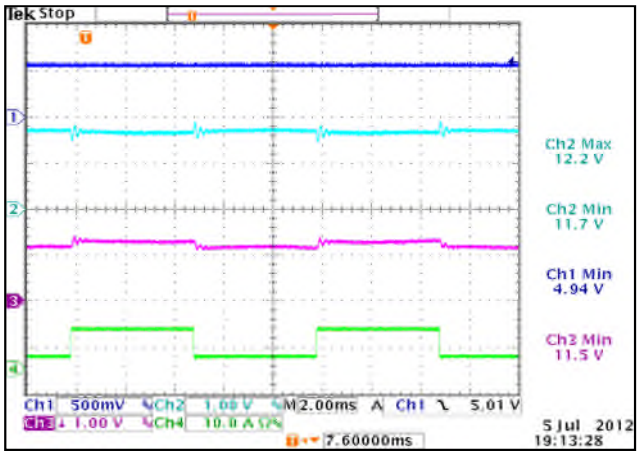
50% load step within the regulation limits of minimum and maximum load, di/dt<0.2A/µSec. Recovery time not specified as there is no laps in regulation with a 50% Load Step. Maximum voltage deviation is 3%.

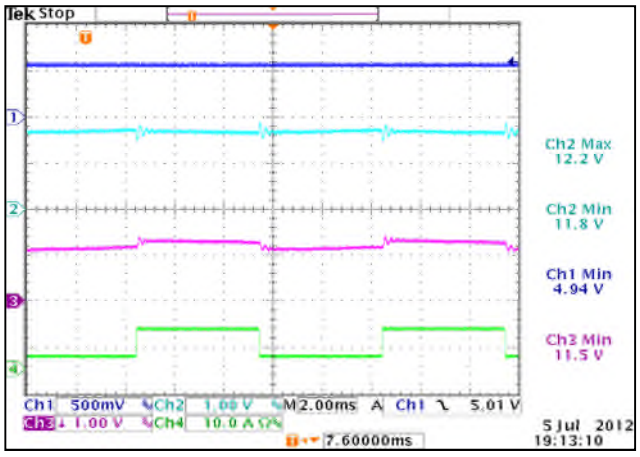



## Output Transient Response V2

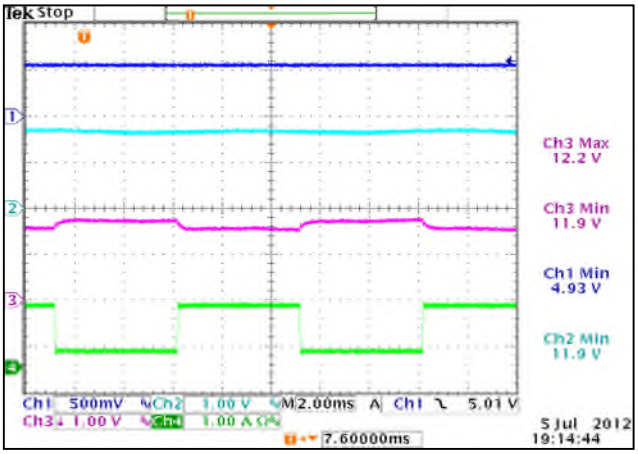
50% load step within the regulation limits of minimum and maximum load, di/dt<0.2A/µSec. Recovery time not specified as there is no laps in regulation with a 50% Load Step. Maximum voltage deviation is 3%.

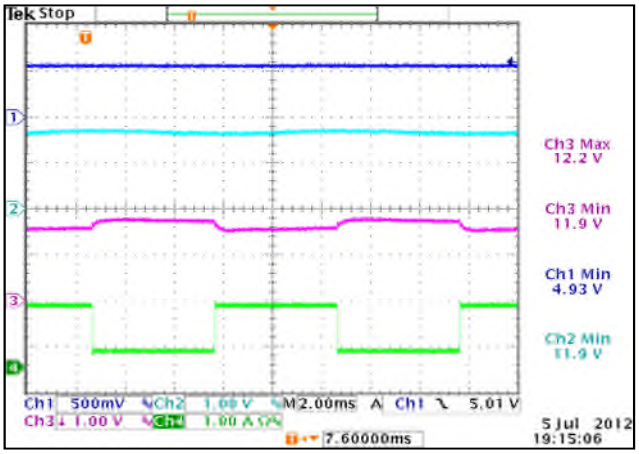


## Output Transient Response V3

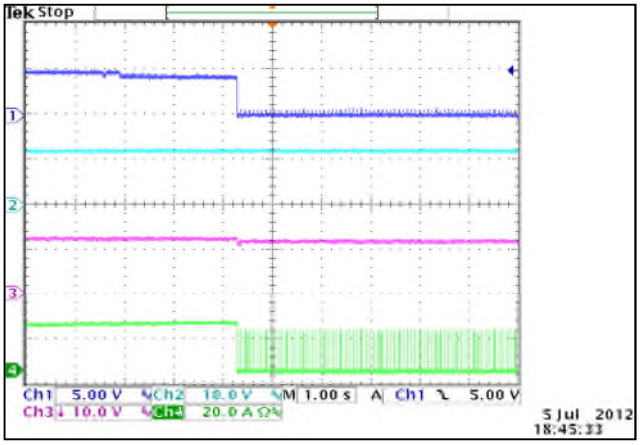
50% load step within the regulation limits of minimum and maximum load, di/dt<0.2A/µSec. Recovery time not specified as there is no laps in regulation with a 50% Load Step. Maximum voltage deviation is 3%.

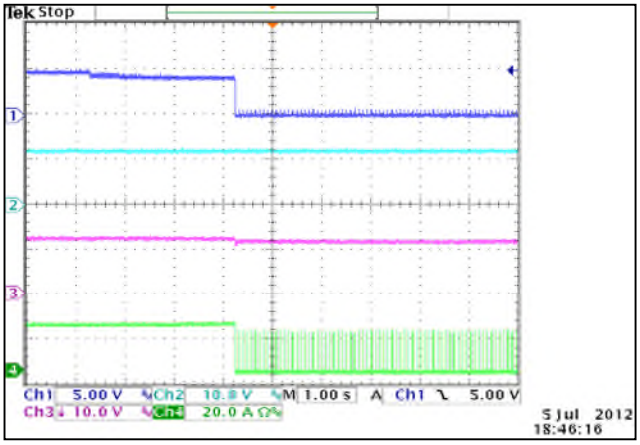


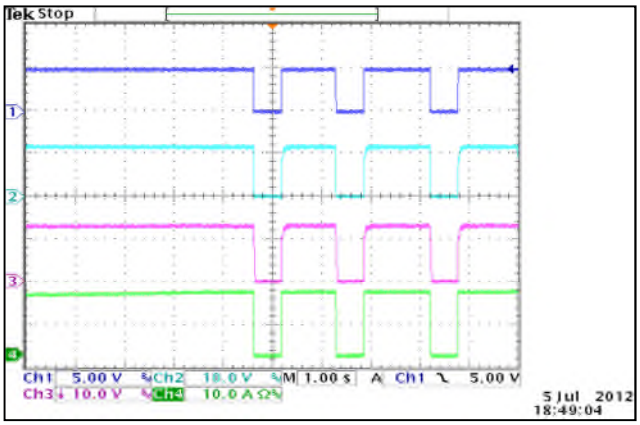

## Output Overload Characteristic V1

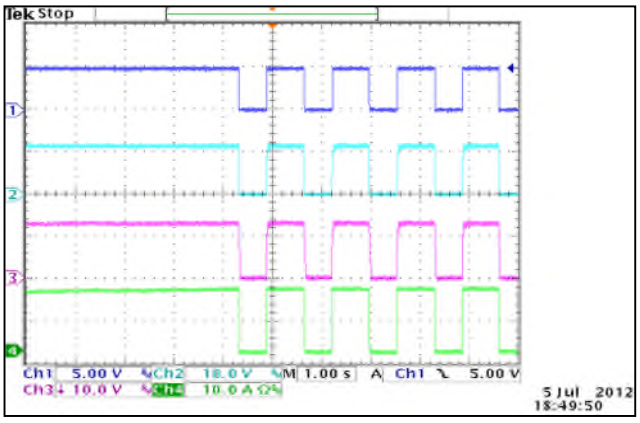
Supply shall protect itself against Overload conditions. The Power Supply shall recover from Overload Conditions without operator intervention.



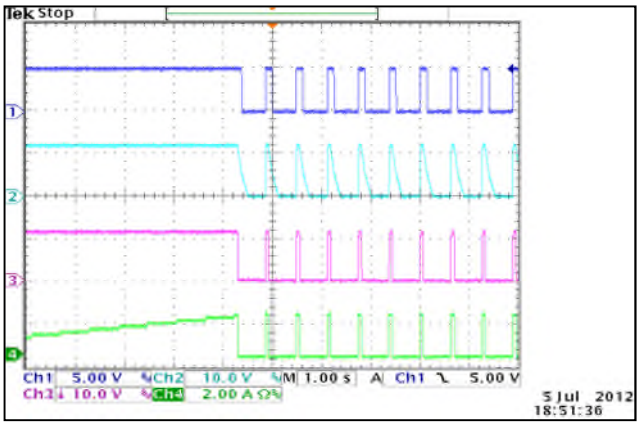



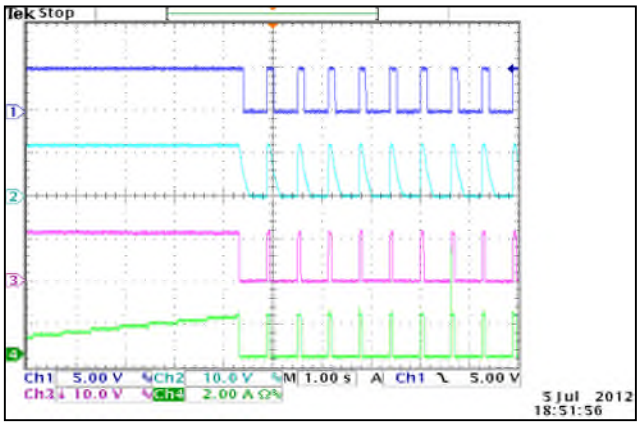

## Output Overload Characteristic V2



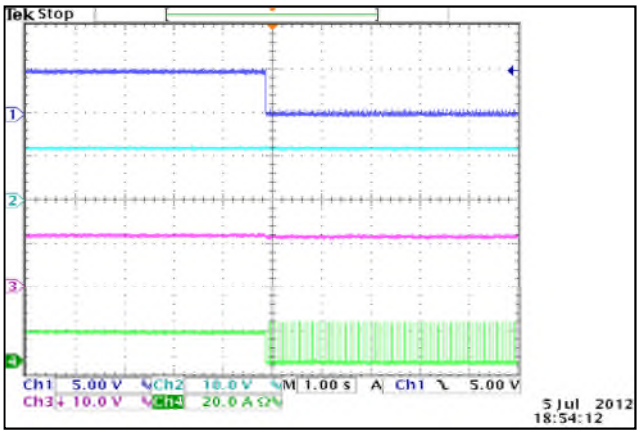
### Output Overload Characteristic V3

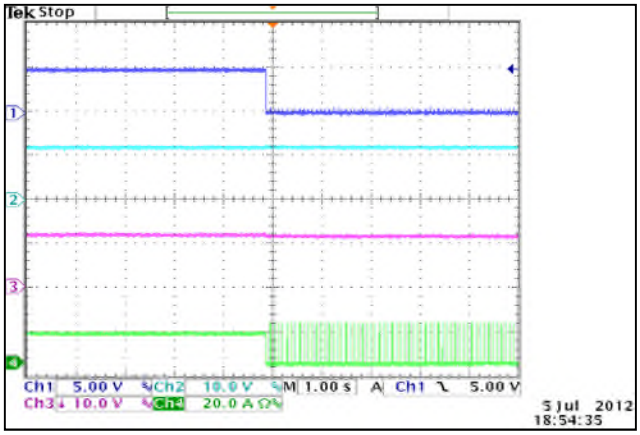


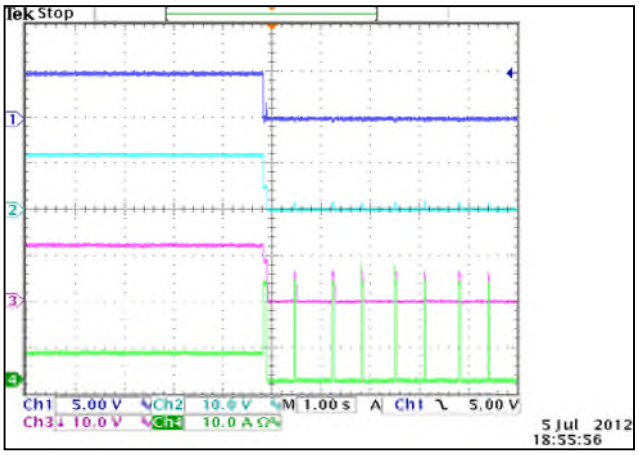

### Output Short Circuit Characteristic V1

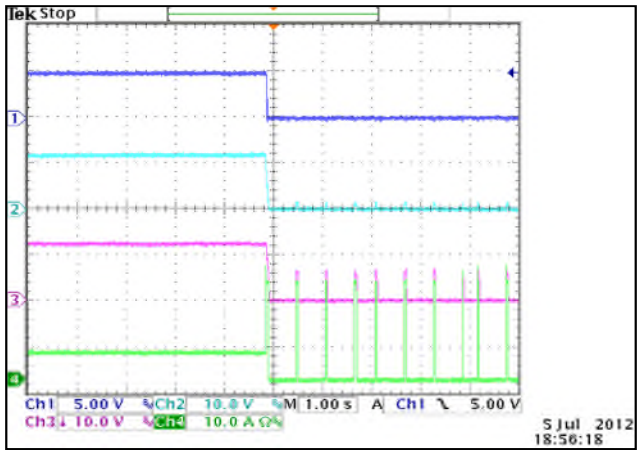
Supply shall protect itself against Short Circuit conditions. The Power Supply shall recover from short circuit conditions without operator intervention.



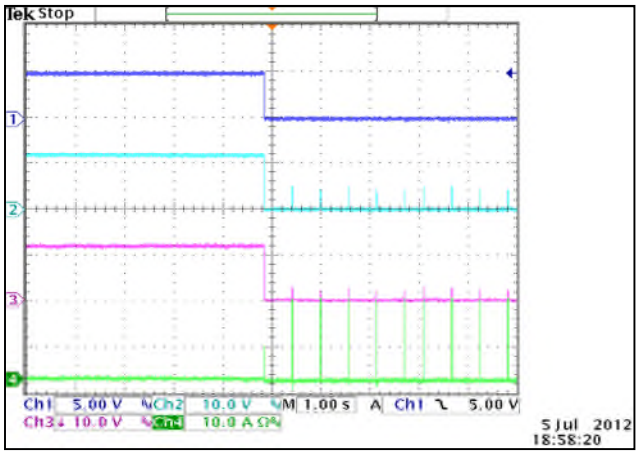



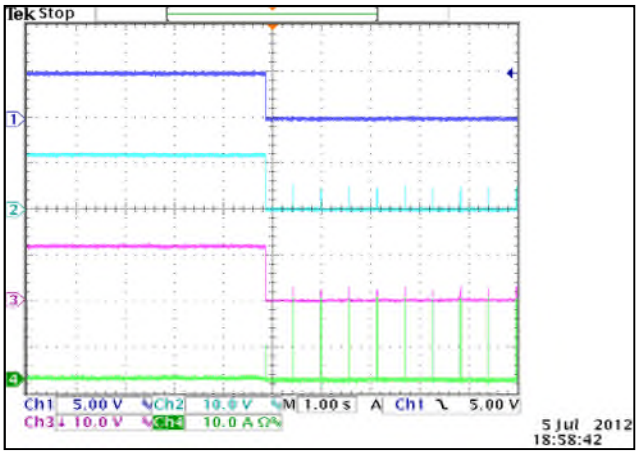

### Output Short Circuit Characteristic V2



## Output Short Circuit Characteristic V3

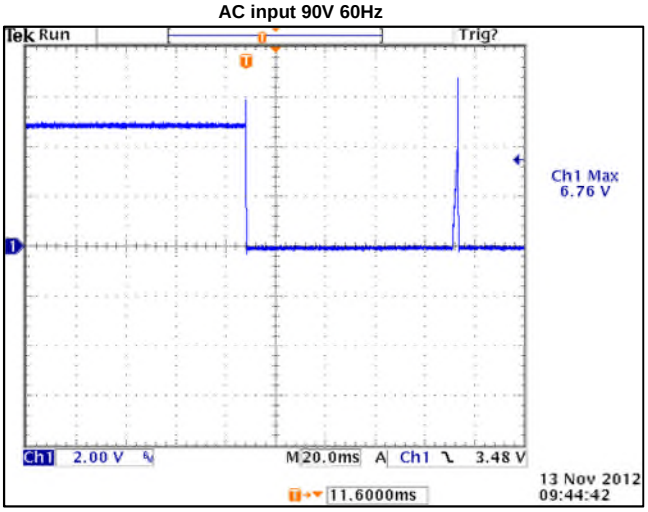


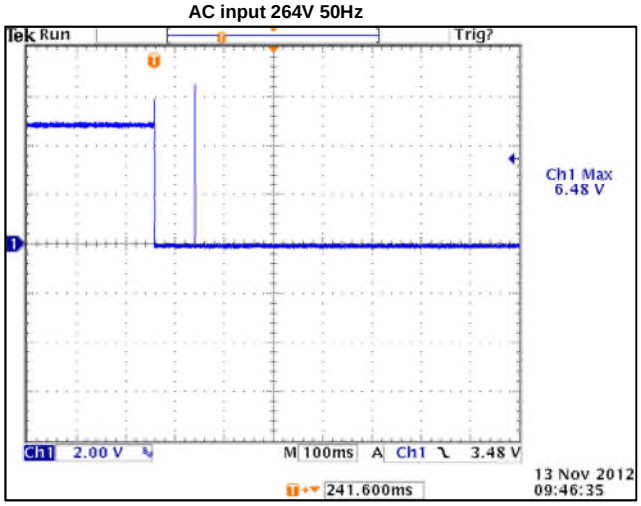

## Output Overvoltage Characteristic V1

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

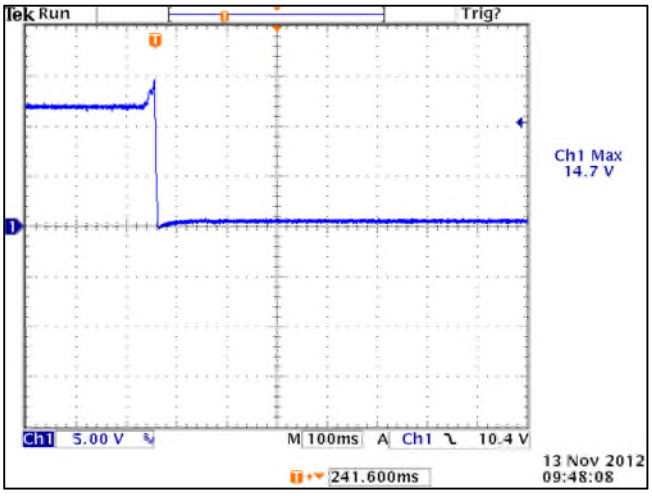
**AC input 90V 60Hz**

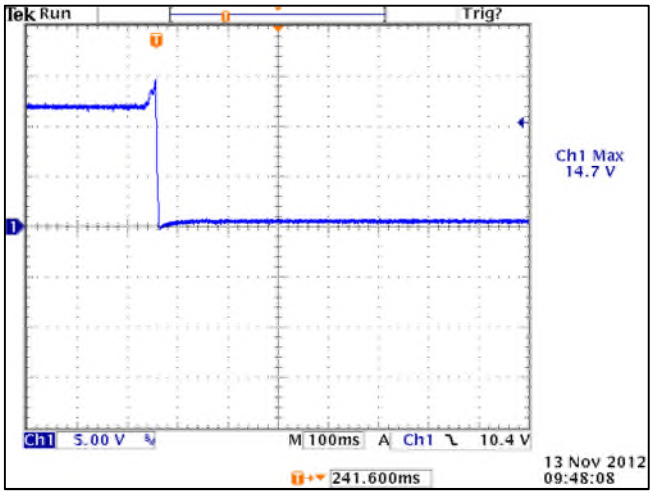



**AC input 264V 50Hz**

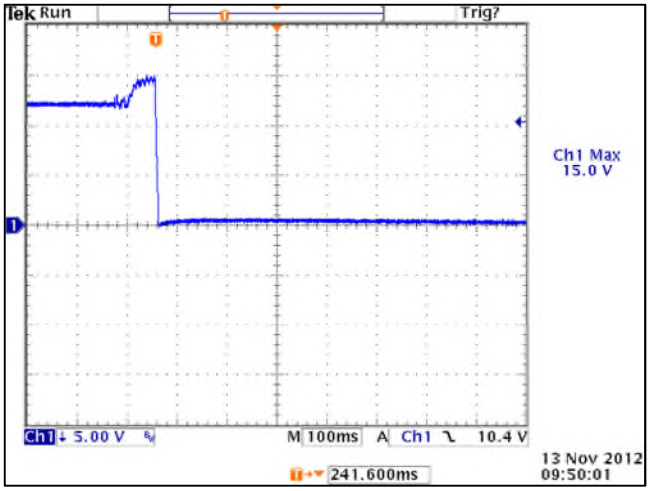


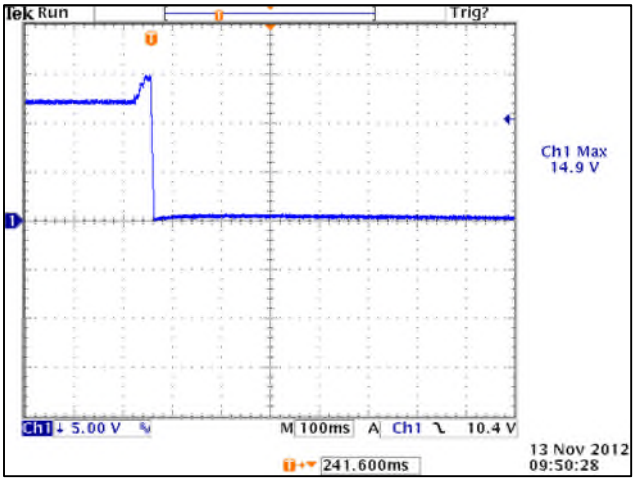

## Output Overvoltage Characteristic V2



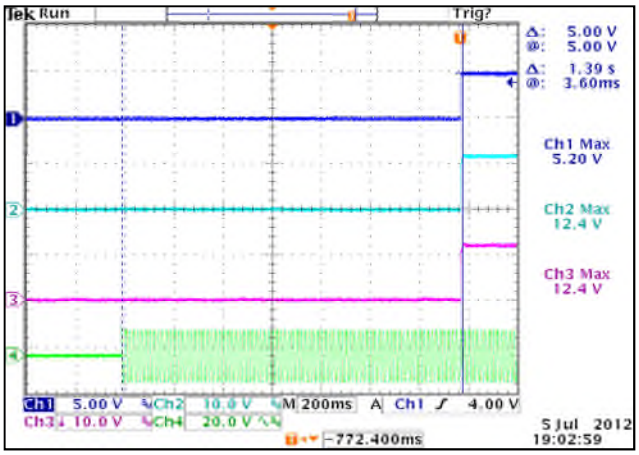
### Output Overvoltage Characteristic V3



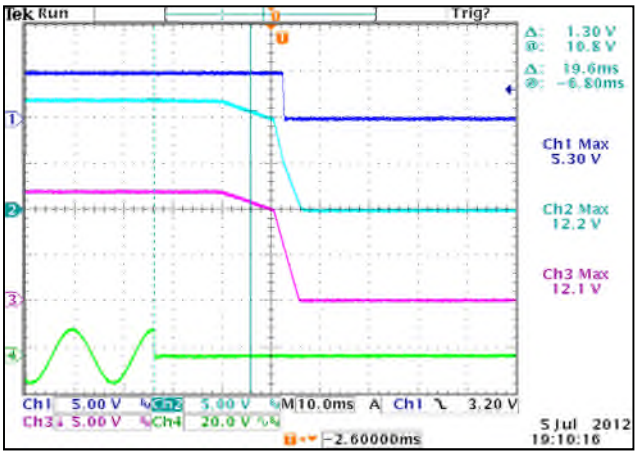

### Startup Time

Start up time is <2seconds



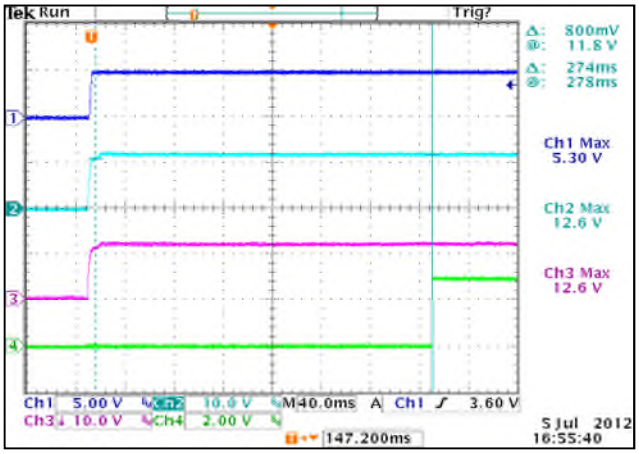

### Hold-up Time

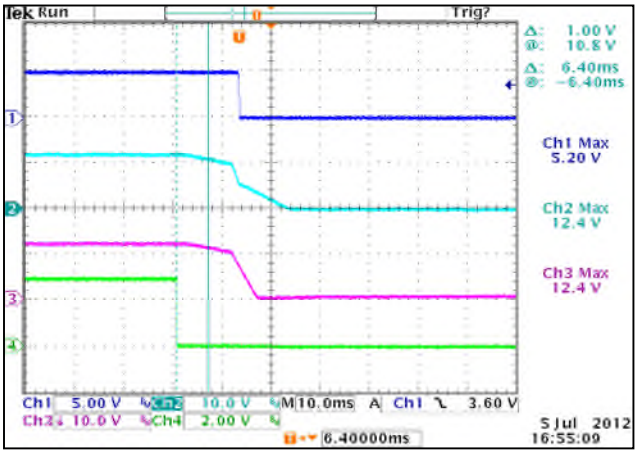
Hold up time is 16mS minimum




### Power Fail Signal Timing

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



Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

**Данный компонент на территории Российской Федерации**

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

**Офис по работе с юридическими лицами:**

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9