

## DESCRIPTION

Demonstration circuits 1424A-A and 1424A-B feature the LT3581 in Boost/Inverting Regulator configurations. The Boost is designed to convert a 5V to 10V input source to 12V at 900mA, and the Inverter a 5V to 12V to -12V at 750mA. DC1424A-A is designed to survive output short circuit events with the external MOSFET installed at the output as default. The demo board includes an option to install the MOSFET at the input side. Install Q1 and R1 on the back of the board and refer to Figure 4 for other instructions. DC1424A-B can easily be converted into a SEPIC Converter by swapping L2 and D2 from their respective locations as shown in Figure 5. The LT3581 includes a 42V Master and Slave switch combination with 3.3A total current and can be used in many configurations such

as Boost, SEPIC, CUK and Flyback. It has a 2.5V to 22V operating input range, UVLO, soft-start, programmable switching frequency and many other popular features. The LT3581 is suitable for many applications, such as Local Bias Supplies, VFD, TFT-LCD Supplies and Automotive Engine Control Power. The LT3581 datasheet gives a complete description of the part, its operation and application information. The datasheet must be read in conjunction with this quick start guide for working on or modifying the demo circuit 1424A.

**Design files for this circuit board are available. Call the LTC factory.**

LT is a trademark of Linear Technology Corporation

## PERFORMANCE SUMMARY DC1424A-A

Specifications are at TA = 25°C

| SYMBOL           | PARAMETER FOR BOOST CONVERTER | CONDITIONS                                             | MIN   | TYP | MAX   | UNITS |
|------------------|-------------------------------|--------------------------------------------------------|-------|-----|-------|-------|
| V <sub>IN</sub>  | Input Supply Range            |                                                        | 5     |     | 10    | V     |
| V <sub>OUT</sub> | Output Voltage Accuracy       | V <sub>IN</sub> = 5V to 10V, I <sub>LOAD</sub> = 900mA | 11.60 | 12  | 12.30 | V     |
| Efficiency       |                               | V <sub>IN</sub> = 5V, I <sub>LOAD</sub> = 900mA        |       | 88  |       | %     |
| Ripple           |                               | V <sub>IN</sub> = 5V, I <sub>LOAD</sub> = 900mA        |       | 100 |       | mV    |
| F <sub>s</sub>   | Switching Frequency           |                                                        |       | 1.2 |       | MHz   |

## PERFORMANCE SUMMARY 1424A-B

Specifications are at TA = 25°C

| SYMBOL           | PARAMETER FOR CUK CONVERTER | CONDITIONS                                              | MIN    | TYP   | MAX    | UNITS |
|------------------|-----------------------------|---------------------------------------------------------|--------|-------|--------|-------|
| V <sub>IN</sub>  | Input Supply Range          |                                                         | 5      |       | 12     | V     |
| V <sub>OUT</sub> | Output Voltage Accuracy     | V <sub>IN</sub> = 5V to -12V, I <sub>LOAD</sub> = 750mA | -11.60 | -11.9 | -12.30 | V     |
| Efficiency       |                             | V <sub>IN</sub> = 5V, I <sub>LOAD</sub> = 750mA         |        | 81    |        | %     |
| Ripple           |                             | V <sub>IN</sub> = 5V, I <sub>LOAD</sub> = 750mA         |        | 20    |        | mV    |
| F <sub>s</sub>   | Switching Frequency         |                                                         |        | 1.2   |        | MHz   |

## QUICK START PROCEDURE

Demonstration circuit 1424A-A and 1424A-B is easy to set up to evaluate the performance of the LT3581. Refer to Figures 1 and 2 for proper measurement equipment setup and follow the procedure below:

When measuring the input or output voltage ripple, care must be taken to avoid a long ground lead on the oscilloscope probe. Measure the input or output voltage ripple by touching the probe tip directly across the Vin or Vout and GND terminals. See Figure 2 for proper scope probe technique.

1. Place jumper in the following position:

JP1 On

2. With power off, connect the input power supply to Vin and GND.

Apply 5V to input.

Check for the proper output voltages.

**NOTE.** If there is no output, temporarily disconnect the load to make sure that the load is not set too high.

Once the proper output voltage is established, adjust the load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

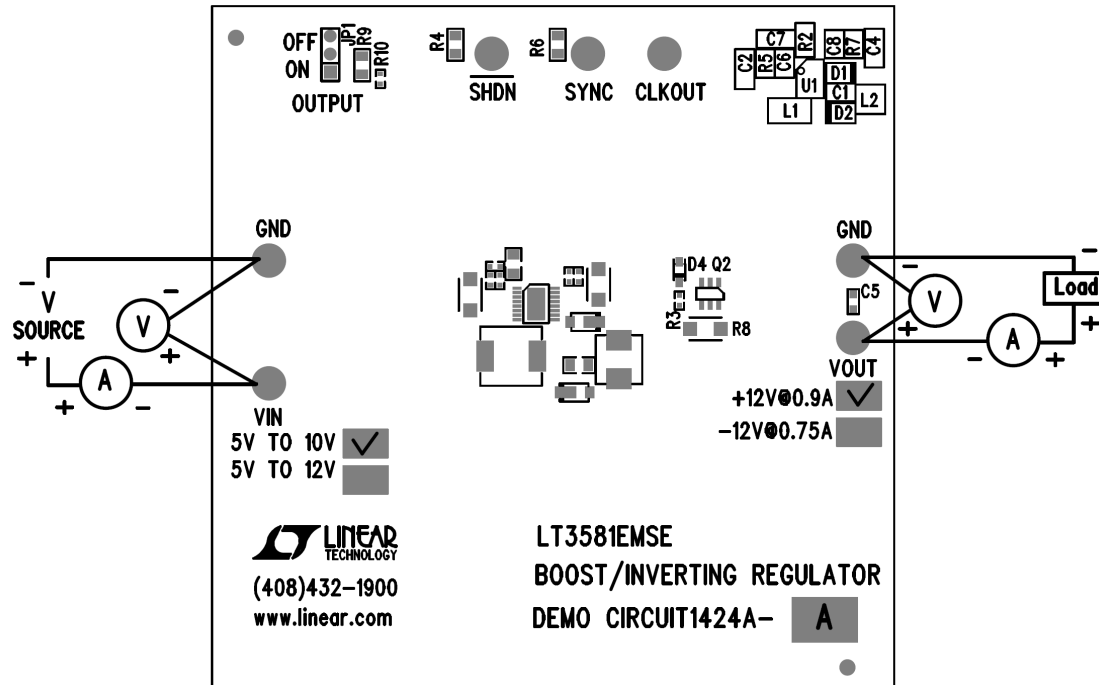


Figure 1. DC1424A-A Proper Equipment Setup

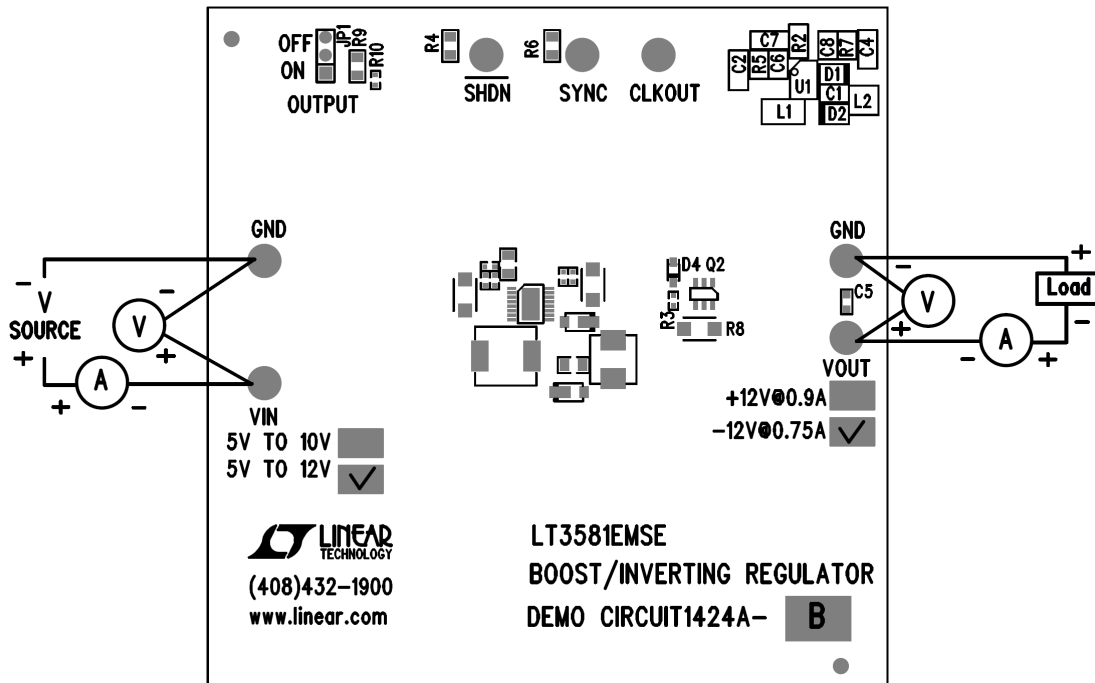


Figure 2. DC1424A-B Proper Equipment Setup

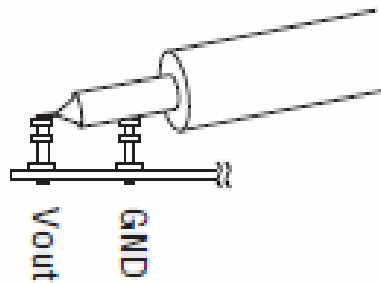
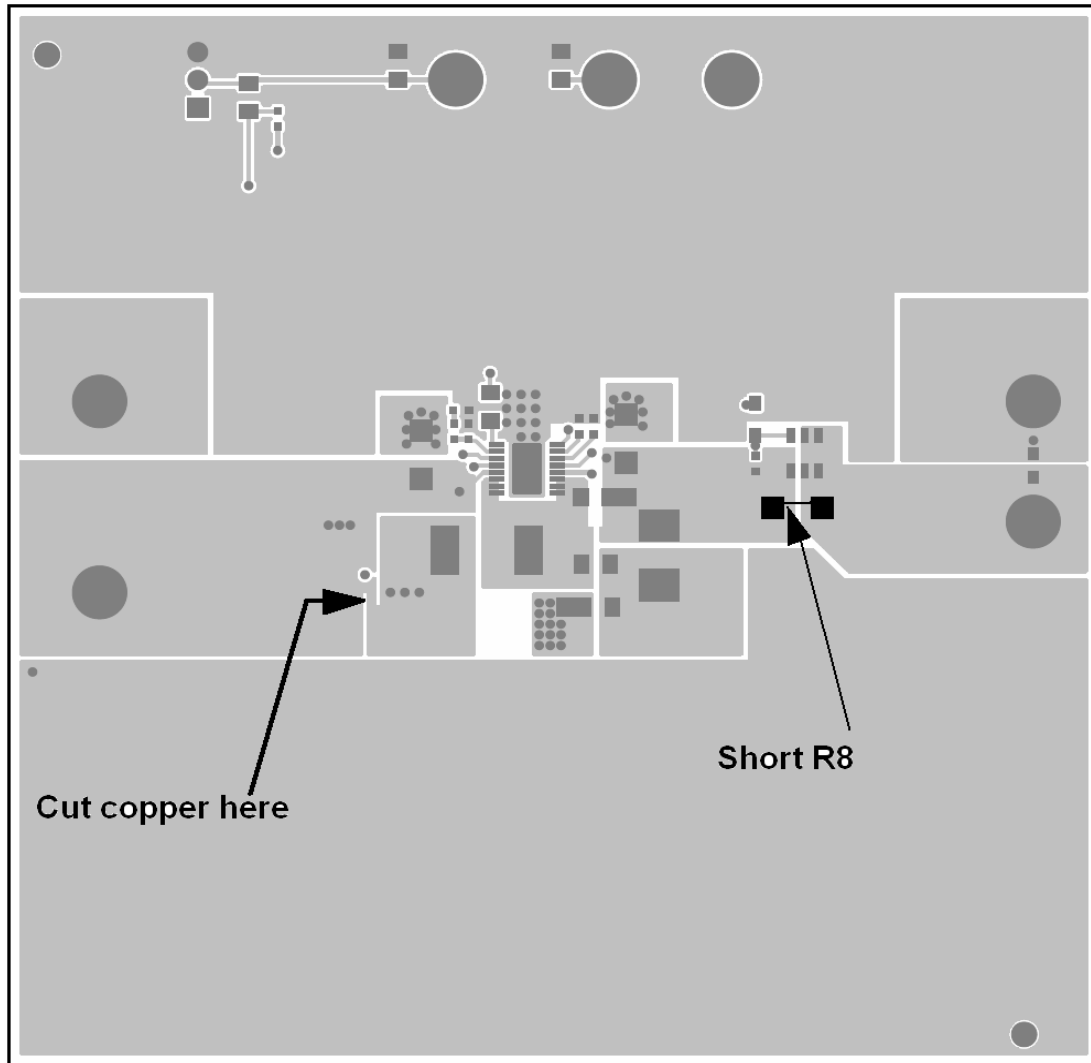


Figure 3. Proper Input/Output Ripple Measurement Technique



**Figure 4. Using Disconnect MOSFET at the Input Side**

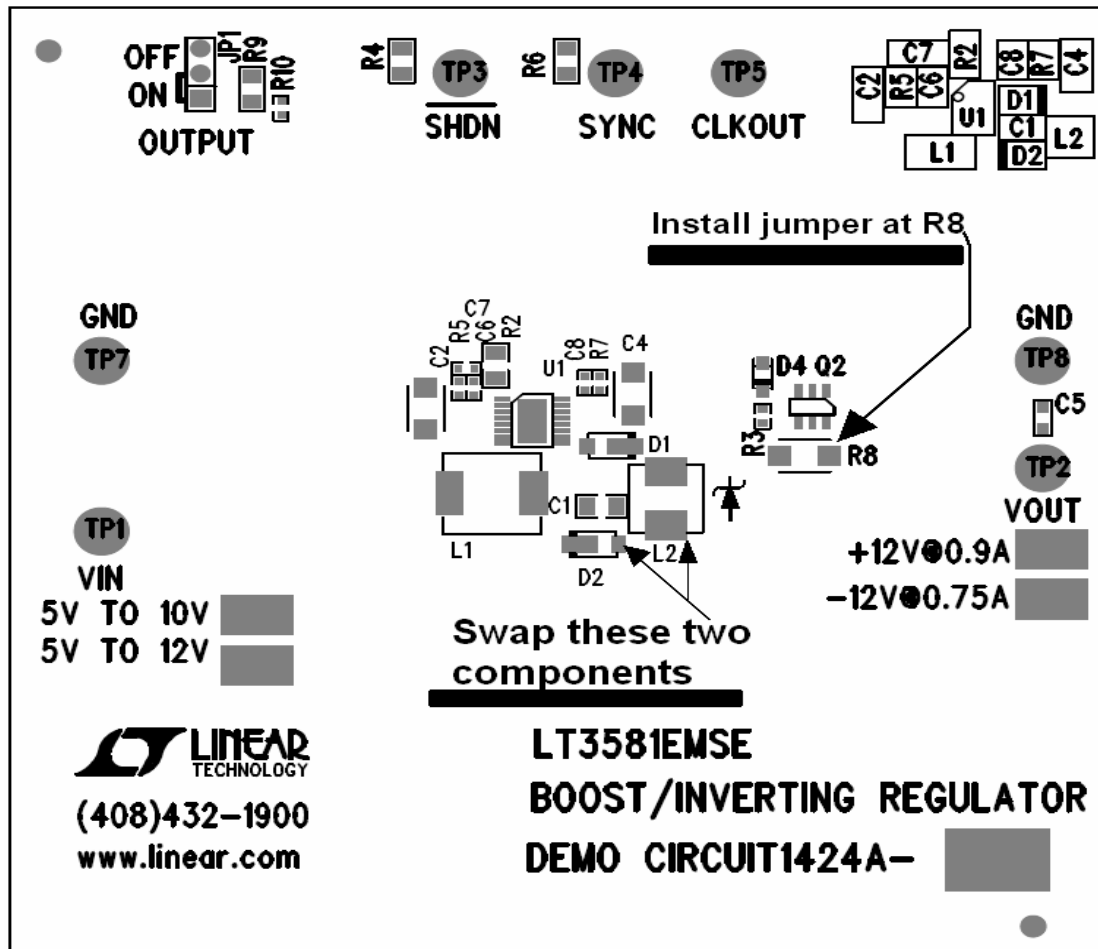
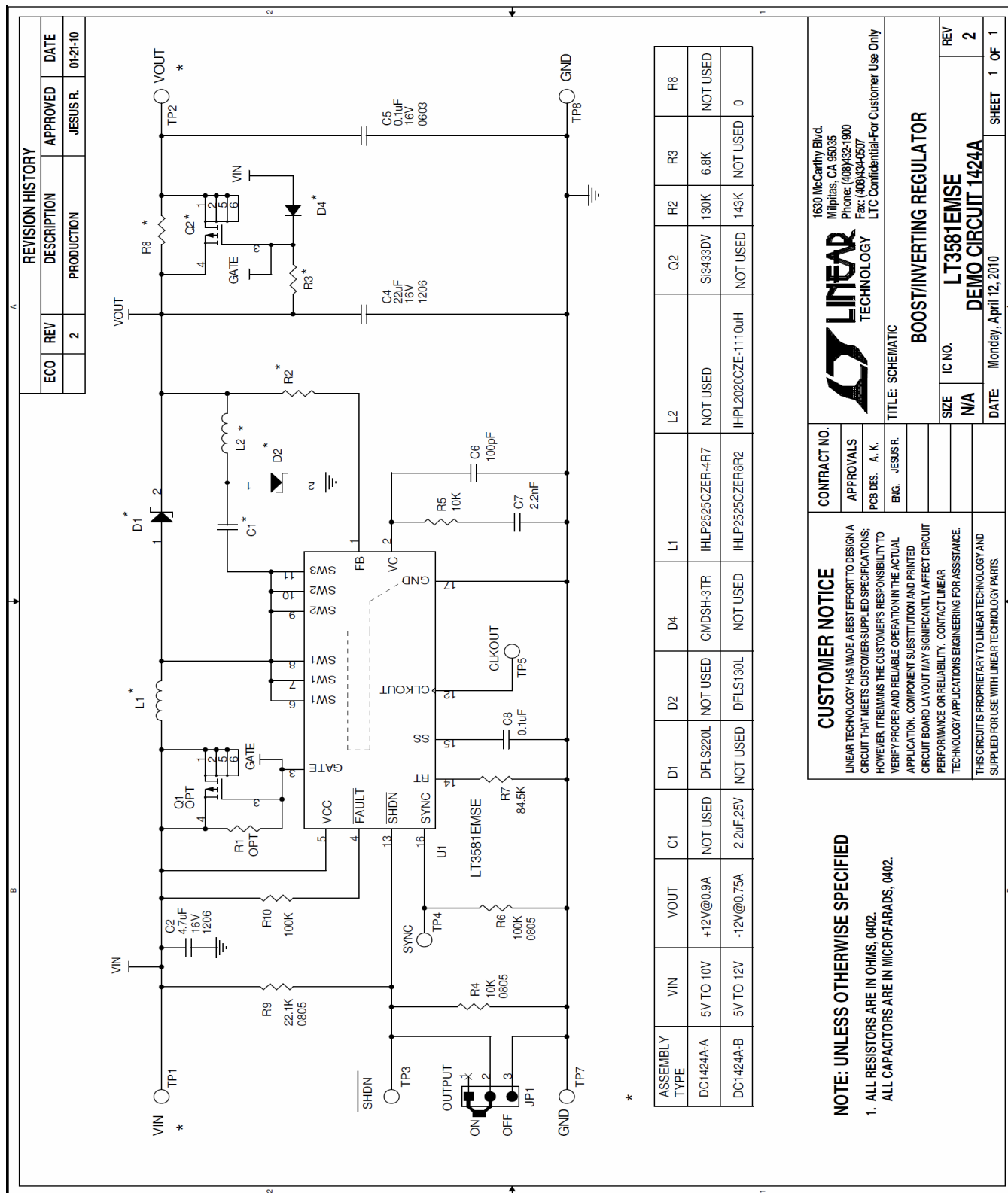


Figure 5. SEPIC Conversion Instructions



### CUSTOMER NOTICE

LINEAR TECHNOLOGY HAS MADE A BEST EFFORT TO DESIGN A CIRCUIT THAT MEETS CUSTOMER-SUPPLIED SPECIFICATIONS; HOWEVER, IT REMAINS THE CUSTOMER'S RESPONSIBILITY TO VERIFY PROPER AND RELIABLE OPERATION IN THE ACTUAL APPLICATION. COMPONENT SUBSTITUTION AND PRINTED CIRCUIT BOARD LAYOUT MAY SIGNIFICANTLY AFFECT CIRCUIT PERFORMANCE OR RELIABILITY. CONTACT LINEAR TECHNOLOGY APPLICATIONS ENGINEERING FOR ASSISTANCE.

THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.



1630 McCarthy Blvd.  
Milpitas, CA 95035  
Phone: (408)432-1900  
Fax: (408)434-0507  
LTC Confidential-For Customer Use Only

### BOOST/INVERTING REGULATOR

| CONTRACT NO. | APPROVALS | PCB DES. | ENG. | JESUS R. |
|--------------|-----------|----------|------|----------|
|              | A. K.     |          |      |          |

| SIZE | IC NO.     | REV |
|------|------------|-----|
| N/A  | LT3581EMSE | 2   |

DATE: Monday, April 12, 2010



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.