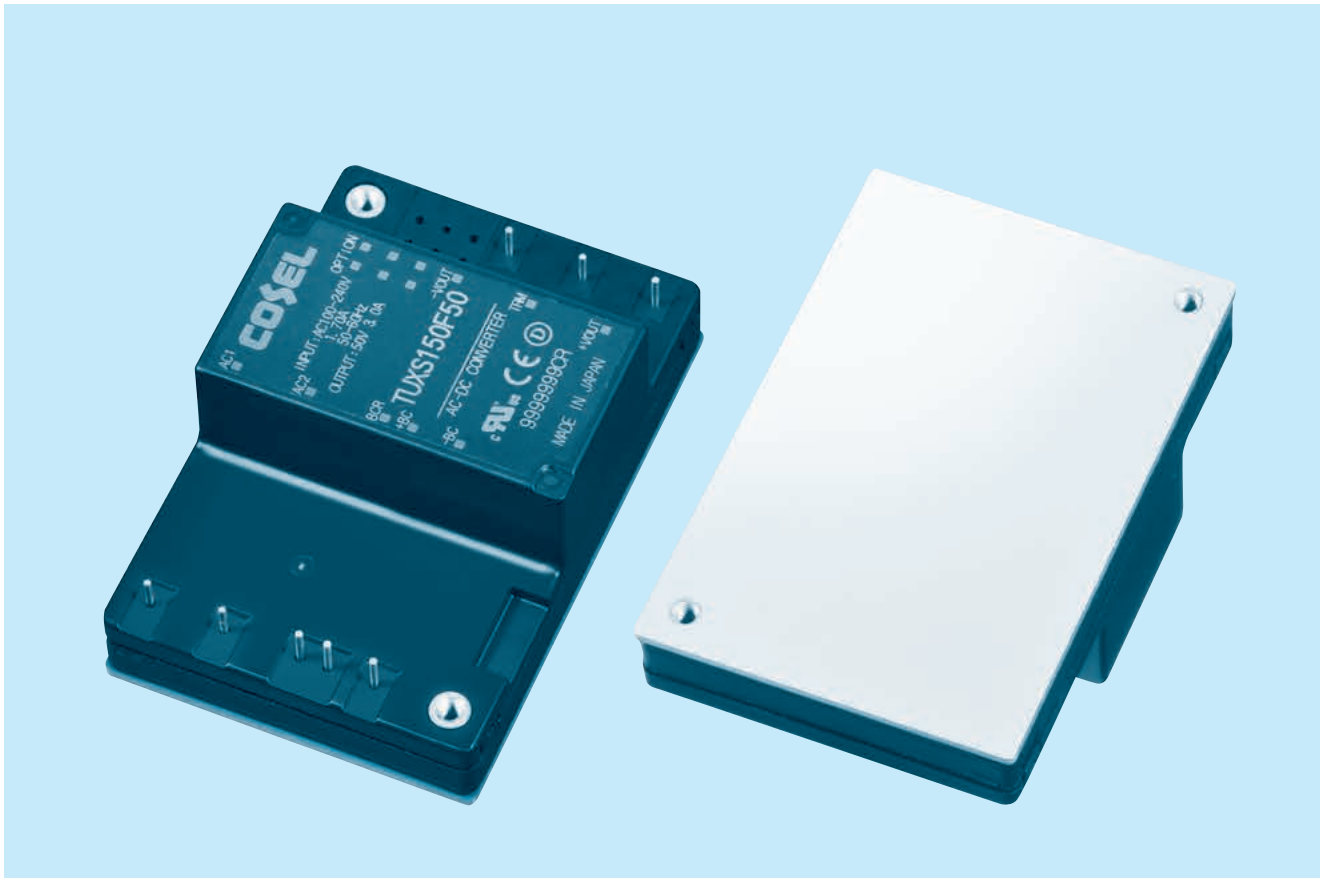




# TUXS-series



## Feature

- AC-DC Power Module Type Converter
- Harmonic attenuator (Complies with IEC61000-3-2 class A)
- Small size
- Built-in overcurrent, overvoltage and thermal protection circuits
- Mounting hole (M3 tapped)
- High efficiency 94%

## CE marking

- Low voltage directive
- RoHS Directive

## Safety Approval

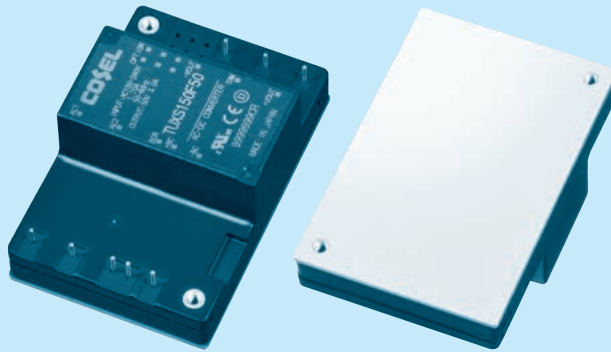
- UL60950-1, C-UL, EN60950-1

## 5-year warranty

## TUXS150F

TUX S 150 F 50 -□

① ② ③ ④ ⑤ ⑥



- ① Series name  
 ② Single output  
 ③ Output wattage  
 ④ Universal Input  
 ⑤ Output voltage  
 ⑥ Optional  
 T : with Mounting hole  
 (φ 3.4 thru)  
 N : Auto restart in protection  
 circuit working

\* Avoid short circuit between +BC and -BC. It may cause the failure of inside components.

\* Keep TRM open, if output voltage adjustment is not necessary.

|                       |            |
|-----------------------|------------|
| MODEL                 | TUXS150F50 |
| MAX OUTPUT WATTAGE[W] | 150.0      |
| DC OUTPUT             | 50V 3A     |

## SPECIFICATIONS

|                                     |                                      |                                                                                                                     |
|-------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------|
|                                     | MODEL                                | TUXS150F50                                                                                                          |
| INPUT                               | VOLTAGE[V]                           | AC85 - 264 1 φ                                                                                                      |
|                                     | CURRENT[A]                           | ACIN 100V 1.70typ (Io=100%)                                                                                         |
|                                     |                                      | ACIN 200V 0.80typ (Io=100%)                                                                                         |
|                                     | FREQUENCY[Hz]                        | 50/60 (45 - 66)                                                                                                     |
|                                     | EFFICIENCY[%]                        | ACIN 100V 93typ                                                                                                     |
|                                     |                                      | ACIN 200V 94typ                                                                                                     |
|                                     | POWER FACTOR (Io=100%)               | ACIN 100V 0.96typ                                                                                                   |
|                                     |                                      | ACIN 200V 0.93typ                                                                                                   |
| OUTPUT                              | INRUSH CURRENT                       | Limited by external components (Thermistor)                                                                         |
|                                     | LEAKAGE CURRENT[ma]                  | 0.75max (ACIN 240V 60Hz, Io=100%, According to IEC60950-1)                                                          |
|                                     | VOLTAGE[V]                           | 50                                                                                                                  |
|                                     | CURRENT[A]                           | 3                                                                                                                   |
|                                     | LINE REGULATION[mV]                  | 100max                                                                                                              |
|                                     | LOAD REGULATION[mV]                  | 100max                                                                                                              |
|                                     | RIPPLE[mVp-p]                        | -20 to +100°C *1 200max                                                                                             |
|                                     |                                      | -40 to -20°C *1 300max                                                                                              |
|                                     | RIPPLE NOISE[mVp-p]                  | -20 to +100°C *1 200max                                                                                             |
|                                     |                                      | -40 to -20°C *1 300max                                                                                              |
| PROTECTION<br>CIRCUIT AND<br>OTHERS | TEMPERATURE REGULATION[mV]           | 0 to +100°C 500max<br>-40 to +100°C 1000max                                                                         |
|                                     | DRIFT[mV]                            | *2 200max                                                                                                           |
|                                     | OUTPUT VOLTAGE ADJUSTMENT RANGE[V]   | Fixed (TRM pin open), adjustable by external resistor or external signal<br>45.0 - 55.0                             |
|                                     | OUTPUT VOLTAGE SETTING[V]            | 49.2 - 50.8                                                                                                         |
|                                     | OVERCURRENT PROTECTION               | Works over 105% of rating and recovers automatically                                                                |
|                                     | OVERVOLTAGE PROTECTION[V]            | 57.5 - 67.5                                                                                                         |
| ISOLATION                           | REMOTE SENSING                       | Not provided                                                                                                        |
|                                     | REMOTE ON/OFF                        | Not provided                                                                                                        |
|                                     | INPUT-OUTPUT                         | AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)                                                  |
|                                     | INPUT-FG                             | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)                                                  |
| ENVIRONMENT                         | OUTPUT-FG                            | AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15°C)                                                   |
|                                     | OPERATING TEMP., HUMID. AND ALTITUDE | -40 to +100°C (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to "Derating"), 4,000m (13,000 feet) max |
|                                     | STORAGE TEMP., HUMID. AND ALTITUDE   | -40 to +100°C, 20 - 95%RH (Non condensing), 9,000m (30,000 feet) max                                                |
|                                     | VIBRATION                            | 10 - 55Hz, 49.0m/s² (5G), 3minutes period, 60minutes each along X, Y and Z axis                                     |
| SAFETY AND<br>NOISE REGULATIONS     | IMPACT                               | 196.1m/s² (20G), 11ms, once each along X, Y and Z axis                                                              |
|                                     | AGENCY APPROVALS                     | UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178                                                                    |
| OTHERS                              | HARMONIC ATTENUATOR                  | Complies with IEC61000-3-2 (Class A) *3                                                                             |
|                                     | CASE SIZE/WEIGHT                     | 76.2×28.5×50.8mm [3.0×1.12×2.0 inches] (W×H×D) / 150g max                                                           |
|                                     | COOLING METHOD                       | Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)                     |

\*1 Refer to instruction manual for measuring method of electric characteristics.

\*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.

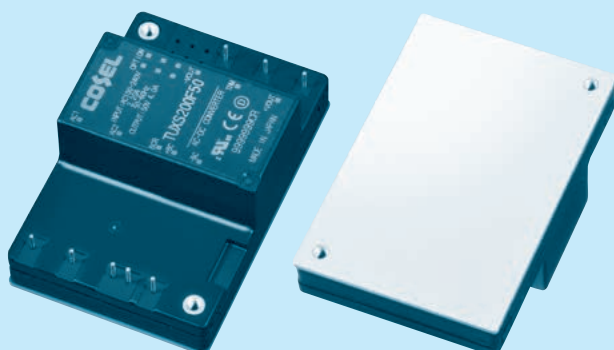
\*3 Please contact us about another class.



# TUXS200F

TUX S 200 F 50 -□

① ② ③ ④ ⑤ ⑥



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal Input
- ⑤ Output voltage
- ⑥ Optional
  - T : with Mounting hole (φ 3.4 thru)
  - N : Auto restart in protection circuit working

\* Avoid short circuit between +BC and -BC. It may cause the failure of inside components.

\* Keep TRM open, if output voltage adjustment is not necessary.

| MODEL                 | TUXS200F24 | TUXS200F28 | TUXS200F32 | TUXS200F42 | TUXS200F50 |
|-----------------------|------------|------------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 199.2      | 196.0      | 198.4      | 197.4      | 200.0      |
| DC OUTPUT             | 24V 8.3A   | 28V 7.0A   | 32V 6.2A   | 42V 4.7A   | 50V 4.0A   |

## SPECIFICATIONS

|                               | MODEL                               |                 | TUXS200F24                                                                                                         | TUXS200F28                                                               | TUXS200F32    | TUXS200F42    | TUXS200F50    |
|-------------------------------|-------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------|---------------|---------------|
| INPUT                         | VOLTAGE[V]                          |                 | AC85 - 264 1 φ                                                                                                     |                                                                          |               |               |               |
|                               | CURRENT[A]                          | ACIN 100V       | 2.20typ (Io=100%)                                                                                                  |                                                                          |               |               |               |
|                               |                                     | ACIN 200V       | 1.10typ (Io=100%)                                                                                                  |                                                                          |               |               |               |
|                               | FREQUENCY[Hz]                       |                 | 50/60 (45 - 66)                                                                                                    |                                                                          |               |               |               |
|                               | EFFICIENCY[%]                       | ACIN 100V       | 90typ                                                                                                              | 90typ                                                                    | 91typ         | 91typ         | 92typ         |
|                               |                                     | ACIN 200V       | 91typ                                                                                                              | 91typ                                                                    | 92typ         | 92typ         | 93typ         |
|                               | POWER FACTOR (Io=100%)              | ACIN 100V       | 0.96typ                                                                                                            |                                                                          |               |               |               |
|                               |                                     | ACIN 200V       | 0.93typ                                                                                                            |                                                                          |               |               |               |
| INRUSH CURRENT                |                                     |                 | Limited by external components (Thermistor)                                                                        |                                                                          |               |               |               |
| LEAKAGE CURRENT[ma]           |                                     |                 | 0.75max (ACIN 240V 60Hz, Io=100%, According to IEC60950-1)                                                         |                                                                          |               |               |               |
| OUTPUT                        | VOLTAGE[V]                          |                 | 24                                                                                                                 | 28                                                                       | 32            | 42            | 50            |
|                               | CURRENT[A]                          |                 | 8.3                                                                                                                | 7.0                                                                      | 6.2           | 4.7           | 4.0           |
|                               | LINE REGULATION[mV]                 |                 | 48max                                                                                                              | 56max                                                                    | 64max         | 84max         | 100max        |
|                               | LOAD REGULATION[mV]                 |                 | 48max                                                                                                              | 56max                                                                    | 64max         | 84max         | 100max        |
|                               | RIPPLE[mVp-p]                       | -20 to +100℃ *1 | 144max                                                                                                             | 168max                                                                   | 192max        | 252max        | 300max        |
|                               |                                     | -40 to -20℃ *1  | 192max                                                                                                             | 224max                                                                   | 256max        | 336max        | 400max        |
|                               | RIPPLE NOISE[mVp-p]                 | -20 to +100℃ *1 | 144max                                                                                                             | 168max                                                                   | 192max        | 252max        | 300max        |
|                               |                                     | -40 to -20℃ *1  | 192max                                                                                                             | 224max                                                                   | 256max        | 336max        | 400max        |
|                               | TEMPERATURE REGULATION[mV]          | 0 to +100℃      | 240max                                                                                                             | 280max                                                                   | 320max        | 420max        | 500max        |
|                               |                                     | -40 to +100℃    | 480max                                                                                                             | 560max                                                                   | 640max        | 820max        | 1000max       |
|                               | DRIFT[mV] *2                        |                 | 96max                                                                                                              | 112max                                                                   | 128max        | 168max        | 200max        |
|                               | OUTPUT VOLTAGE ADJUSTMENT RANGE[V]  |                 |                                                                                                                    | Fixed (TRM pin open), adjustable by external resistor or external signal |               |               |               |
| PROTECTION CIRCUIT AND OTHERS | OVERCURRENT PROTECTION              |                 | Works over 105% of rating and recovers automatically                                                               |                                                                          |               |               |               |
|                               | OVERVOLTAGE PROTECTION[V]           |                 | 27.60 - 28.80                                                                                                      | 32.20 - 33.60                                                            | 36.80 - 38.40 | 48.30 - 50.40 | 57.50 - 60.00 |
|                               | REMOTE SENSING                      |                 | Not provided                                                                                                       |                                                                          |               |               |               |
|                               | REMOTE ON/OFF                       |                 | Not provided                                                                                                       |                                                                          |               |               |               |
|                               | INPUT-OUTPUT                        |                 | AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15℃)                                                  |                                                                          |               |               |               |
| ISOLATION                     | INPUT-FG                            |                 | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15℃)                                                  |                                                                          |               |               |               |
|                               | OUTPUT-FG                           |                 | AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15℃)                                                   |                                                                          |               |               |               |
|                               | OPERATING TEMP., HUMID.AND ALTITUDE |                 | -40 to +100℃ (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to "Derating"), 4,000m (13,000 feet) max |                                                                          |               |               |               |
| ENVIRONMENT                   | STORAGE TEMP., HUMID. AND ALTITUDE  |                 | -40 to +100℃, 20 - 95%RH (Non condensing), 9,000m (30,000 feet) max                                                |                                                                          |               |               |               |
|                               | VIBRATION                           |                 | 10 - 55Hz, 49.0m/s² (5G), 3minutes period, 60minutes each along X, Y and Z axis                                    |                                                                          |               |               |               |
|                               | IMPACT                              |                 | 196.1m/s² (20G), 11ms, once each along X, Y and Z axis                                                             |                                                                          |               |               |               |
| SAFETY AND NOISE REGULATIONS  | AGENCY APPROVALS                    |                 | UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178                                                                   |                                                                          |               |               |               |
|                               | HARMONIC ATTENUATOR                 |                 | Complies with IEC61000-3-2 (Class A) *3                                                                            |                                                                          |               |               |               |
| OTHERS                        | CASE SIZE/WEIGHT                    |                 | 76.2×28.5×50.8mm [3.0×1.12×2.0 inches] (W×H×D) / 150g max                                                          |                                                                          |               |               |               |
|                               | COOLING METHOD                      |                 | Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)                    |                                                                          |               |               |               |

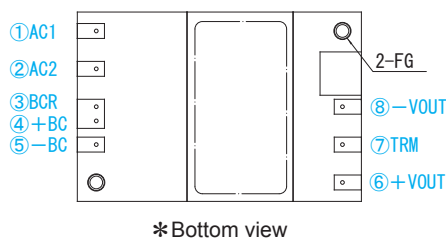
\*1 Refer to instruction manual for measuring method of electric characteristics.

\*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.

\*3 Please contact us about another class.



## Pin Configuration



| No. | Pin Connection | Function                     |
|-----|----------------|------------------------------|
| ①   | AC1            | AC input                     |
| ②   | AC2            |                              |
| ③   | BCR            | +BC output                   |
| ④   | +BC            | +BC output                   |
| ⑤   | -BC            | -BC output                   |
| ⑥   | +VOUT          | +DC output                   |
| ⑦   | TRM            | Adjustment of output voltage |
| ⑧   | -VOUT          | -DC output                   |
| -   | FG             | Mounting hole (FG)           |

## Implementation • Mounting Method

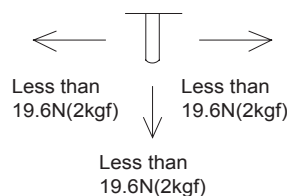
### Mounting method

- The unit can be mounted in any direction. When two or more power supplies are used side by side, position them with proper intervals to allow enough air ventilation. Aluminum base plate temperature of each power supply should not exceed the temperature range shown in "Derating".
- Avoid placing the AC input line pattern layout underneath the unit. It will increase the line conducted noise. Make sure to leave an ample distance between the line pattern layout and the unit. Also avoid placing the DC output line pattern underneath the unit because it may increase the output noise. Lay out the pattern away from the unit.
- Avoid placing the signal line pattern layout underneath the unit because the power supply might become unstable. Lay out the pattern away from the unit.
- High-frequency noise radiates directly from the unit to the atmosphere. Therefore, design the shield pattern on the printed circuit board and connect it to FG.  
The shield pattern prevents noise radiation.
- When a heat sink cannot be fixed on the base plate side, order the power module with "-T" option. A heat sink can be mounted by affixing a M3 tap on the heat sink. Please make sure a mounting hole will be connected to a grounding capacitor CY.

|               | Mounting hole |
|---------------|---------------|
| Standard      | M3 tapped     |
| Optional : -T | φ 3.4 thru    |

### Stress onto the pins

- When too much stress is applied to the pins may damage internal connections. Avoid applying stress in excess of that shown in right figure.
- The pins are soldered onto the internal PCB.  
Therefore, Do not bend or pull the leads with excessive force.
- Mounting hole diameter of PCB should be 3.5mm to reduce the stress to the pins.
- Fix the unit on PCB (fixing fittings) by screws to reduce the stress to the pins. Be sure to mount the unit first, then solder the unit.



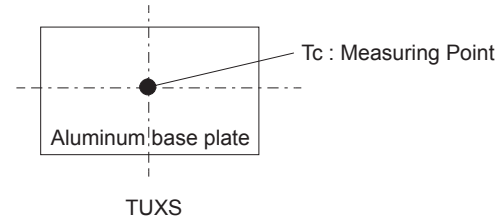
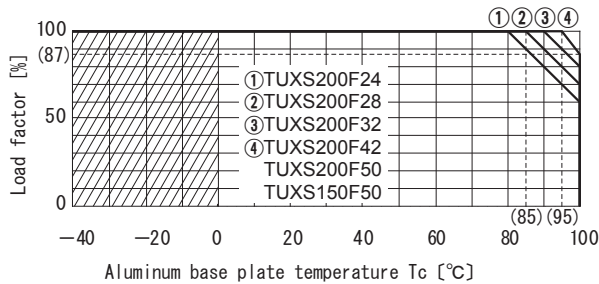
### Soldering

- Flow soldering : 260°C less than 15 seconds.
- Soldering iron (26W) : 450°C less than 5 seconds.

## Derating

## Output voltage derating curve

- Use the power modules with conduction cooling (e.g. heat dissipation from the aluminum base plate to the attached heat sink). Below shows the derating curves with respect to the aluminum base plate temperature. Note that operation within the hatched areas will cause a significant level of ripple and ripple noise.
- Please measure the temperature on the aluminum base plate edge side when you cannot measure the temperature of the center part of the aluminum base plate. In this case, please take 5deg temperature margin from the derating characteristics shown in Below. Please reduce the temperature fluctuation range as much as possible when the up and down of the temperature are frequently generated. Contact us for more information on cooling methods.



## Instruction Manual

- ◆ It is necessary to read the "Instruction Manual" and "Before using our product" before you use our product.

Instruction Manual <https://en.cosel.co.jp/product/powersupply/TUXS/>  
 Before using our product <https://en.cosel.co.jp/technical/caution/index.html>

TUXS



NOTICE



## Basic Characteristics Data

| Model    | Circuit method         | Switching frequency [kHz] | Input current [A] *1 | Inrush current protection circuit | PCB/Pattern |              |              | Series/Parallel operation availability |                    |
|----------|------------------------|---------------------------|----------------------|-----------------------------------|-------------|--------------|--------------|----------------------------------------|--------------------|
|          |                        |                           |                      |                                   | Material    | Single sided | Double sided | Series operation                       | Parallel operation |
| TUXS150F | Active filter          | 80-600                    | 1.70                 | Thermistor                        | Aluminum    | Yes          |              | Yes                                    | *2                 |
|          | LLC resonant converter | 100-300                   |                      |                                   |             |              |              |                                        |                    |
| TUXS200F | Active filter          | 80-600                    | 2.20                 | Thermistor                        | Aluminum    | Yes          |              | Yes                                    | *2                 |
|          | LLC resonant converter | 100-300                   |                      |                                   |             |              |              |                                        |                    |

\*1 The value of input current is at ACIN 100V and rated load.

\*2 Refer to instruction manual.



## Макро Групп – это:

- дистрибьютор электронных компонентов с 1994 года
- контрактный производитель электроники с 2007 года с собственным производством в Санкт-Петербурге (компания Макро ЕМС, входит в ГК Макро Групп)
- поставщик полупроводниковых материалов
- комплексный поставщик электронных компонентов
- моделирование и производство полупроводниковых эпитаксиальных гетероструктур для задач оптоэлектроники

Головной офис расположен в Санкт-Петербурге. Собственные представительства в крупных промышленных городах России и стран СНГ.

## Преимущества для наших заказчиков:

- работа по тендерам с 2012 года
- оформление банковских гарантий
- отсрочки платежей
- поставка электронных компонентов по проектным ценам
- инженерная поддержка проектов заказчиков
- сертификат системы менеджмента качества ISO 9001-2015
- необходимые сертификаты и лицензии

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