



50 to 600 Watts; 1 to 3 outputs

### Features

- RoHS Compliant (VE versions)
- Inputs 24, 48, and 300 Vdc
- Any output: 1 to 95 Vdc
- Meets EN55022 Class A conducted emissions (See Notes)
- cULus, cTUVus (60950-1)
- CE marked (LVD)
- 80 – 90% efficiency
- Up to 10 W/cubic inch
- Master disable
- Overvoltage shutdown

### Product Highlights

ComPAC delivers up to 600 W from one, two, or three outputs in a package just 0.99" (25,2 mm) in height with the field proven performance, high efficiency and high reliability inherent in Vicor's component level power converters. ComPAC meets conducted emissions of EN55022 Class A. ComPAC is offered with input voltage ranges optimized for industrial and telecommunication applications and provides extended input overvoltage capability, undervoltage lockout, and master disable.

### Packaging Options

Conduction Cooled Models Available Add "-CC" to the end of the part number.

(Consult factory for details.)

Extended heat sink available add "-H1" to end of part number.

### ComPAC Configuration Chart

| Substitute VE- for VI- for RoHS compliant versions                                      |              |              |                                                  |
|-----------------------------------------------------------------------------------------|--------------|--------------|--------------------------------------------------|
| Configuration                                                                           | Output Power | # of Modules | Dimensions                                       |
| <b>Single Output</b>                                                                    |              |              |                                                  |
| VI-LC  | 50 – 200 W   | 1            | 8.6" x 2.5" x 0.99"<br>(218,4 x 63,5 x 25,2 mm)  |
| VI-MC  | 100 – 400 W  | 2            | 8.6" x 4.9" x 0.99"<br>(218,4 x 124,5 x 25,2 mm) |
| VI-NC  | 300 – 600 W  | 3            | 8.6" x 7.3" x 0.99"<br>(218,4 x 185,4 x 25,2 mm) |
| <b>Dual Output</b>                                                                      |              |              |                                                  |
| VI-PC  | 100 – 400 W  | 2            | 8.6" x 4.9" x 0.99"<br>(218,4 x 124,5 x 25,2 mm) |
| VI-QC  | 150 – 600 W  | 3            | 8.6" x 7.3" x 0.99"<br>(218,4 x 185,4 x 25,2 mm) |
| <b>Triple Output</b>                                                                    |              |              |                                                  |
| VI-RC  | 150 – 600 W  | 3            | 8.6" x 7.3" x 0.99"<br>(218,4 x 185,4 x 25,2 mm) |

### • Input Voltage

| Nominal                             | Input Range Full Power | Maximum Power <sup>a</sup> | Low Line 75% Max. Power | Transient <sup>b</sup> |
|-------------------------------------|------------------------|----------------------------|-------------------------|------------------------|
| 1 = 24 V                            | 21 – 32 V              | (1)                        | 18                      | 36                     |
| W = 24 V                            | 18 – 36 V              | (1)                        | n/a                     | n/a                    |
| 3 = 48 V                            | 42 – 60 V              | (2)                        | 41                      | 72                     |
| N = 48 V                            | 36 – 76 V              | (2)                        | n/a                     | n/a                    |
| 6 = 300 V                           | 200 – 400 V            | (2)                        | 188                     | 425                    |
| <sup>a</sup> Max. Output Per Module |                        |                            |                         |                        |
| (1)                                 | 5 V Outputs            | >5 V Outputs               | <5 V Outputs            |                        |
| (2)                                 | 150 W                  | 150 W                      | 30 A                    |                        |
|                                     | 200 W                  | 200 W                      | 40 A                    |                        |

<sup>b</sup> Transient voltage for one second

### • Product Grade Temps. °C

| Grade | Operating  | Storage     |
|-------|------------|-------------|
| E =   | -10 to +85 | -20 to +100 |
| C =   | -25 to +85 | -40 to +100 |
| I =   | -40 to +85 | -55 to +100 |
| M =   | -55 to +85 | -65 to +100 |

Temperatures apply to product case.

### • Output Power/Current

| V <sub>OUT</sub> ≥ 5 V | V <sub>OUT</sub> < 5 V |
|------------------------|------------------------|
| W = 100 W              | W = 20 A               |
| V = 150 W              | V = 30 A               |
| U = 200 W              | U = 40 A               |
| S = 300 W              | S = 60 A               |
| Q = 400 W              | Q = 80 A               |

### • Output Voltage

|            |            |
|------------|------------|
| Z = 2 V    | 2 = 15 V   |
| Y = 3.3 V  | N = 18.5 V |
| O = 5 V    | 3 = 24 V   |
| X = 5.2 V  | L = 28 V   |
| W = 5.5 V  | J = 36 V   |
| V = 5.8 V  | K = 40 V   |
| T = 6.5 V  | 4 = 48 V   |
| R = 7.5 V  | H = 52 V   |
| M = 10 V   | F = 72 V   |
| 1 = 12 V   | D = 85 V   |
| P = 13.8 V | B = 95 V   |

### • Output Power/Current

| V <sub>OUT</sub> ≥ 5 V | V <sub>OUT</sub> < 5 V |
|------------------------|------------------------|
| Y = 50 W               | Y = 10 A               |
| X = 75 W               | X = 15 A               |
| W = 100 W              | W = 20 A               |
| V = 150 W              | V = 30 A               |
| U = 200 W              | U = 40 A               |

### • Output Power/Current

| V <sub>OUT</sub> ≥ 5 V | V <sub>OUT</sub> < 5 V |
|------------------------|------------------------|
| S = 300 W              | S = 60 A               |
| P = 450 W              | P = 90 A               |
| M = 600 W              | M = 120 A              |

## COMPAC SPECIFICATIONS

(typical at  $T_{BP} = 25^{\circ}\text{C}$ , nominal line and 75% load, unless otherwise specified,  $V_{NOM}$  is factory set output voltage and  $I_{NOM}$  is maximum rated output current.)

### ■ INPUT SPECIFICATIONS

| Parameter                                                           | E-Grade |     |     | C-, I-, M-Grade |     |     | Unit  | Test Conditions                                                                                                                          |
|---------------------------------------------------------------------|---------|-----|-----|-----------------|-----|-----|-------|------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                     | Min     | Typ | Max | Min             | Typ | Max |       |                                                                                                                                          |
| 24 V                                                                | 21      | 24  | 32  | 21              | 24  | 32  | Vdc   | See Fusing Information on Page 3                                                                                                         |
| 24 V Wide                                                           | 18      | 24  | 36  | 18              | 24  | 36  | Vdc   |                                                                                                                                          |
| 48 V                                                                | 42      | 48  | 60  | 42              | 48  | 60  | Vdc   |                                                                                                                                          |
| 48 V Wide                                                           | 36      | 48  | 76  | 36              | 48  | 76  | Vdc   |                                                                                                                                          |
| 300 V                                                               | 200     | 300 | 400 | 200             | 300 | 400 | Vdc   |                                                                                                                                          |
| No load power dissipation <sup>a</sup>                              | 1.35    |     | 2   | 1.35            |     | 2   | Watts |                                                                                                                                          |
| Master disable input current <sup>a</sup><br>(Absolute max., 20 mA) | 4       |     |     | 4               |     |     | mA    | Sink or source to disable optocoupler (See <a href="#">Section 18</a> ComPAC Technical Description in VI-200/VI-J00 Applications Manual) |
| Quiescent Input current<br>logic disable <sup>a</sup>               |         | 7   | 10  |                 | 7   | 10  | mA    | Current drawn from source when disabled                                                                                                  |

<sup>a</sup> For MC, PC series, multiply value by 2; for NC, QC, RC series, multiply value by 3.

### ■ OUTPUT SPECIFICATIONS (Applies to each output individually)

| Parameter                                    | E-Grade |      |      | C-, I-, M-Grade |       |      | Units              | Test Conditions                            |
|----------------------------------------------|---------|------|------|-----------------|-------|------|--------------------|--------------------------------------------|
|                                              | Min     | Typ  | Max  | Min             | Typ   | Max  |                    |                                            |
| Set point accuracy                           |         | 1%   | 2%   |                 | 0.5%  | 1%   | $V_{NOM}$          |                                            |
| Load / line regulation                       |         |      | 0.5% |                 | 0.05% | 0.2% | $V_{NOM}$          | LL to HL, 10% to full load                 |
| Load / line regulation                       |         |      | 1%   |                 | 0.2%  | 0.5% | $V_{NOM}$          | LL to HL, no load to full load             |
| Output temperature drift                     |         | 0.02 |      |                 | 0.01  | 0.02 | $^{\circ}\text{C}$ | Over rated temperature range               |
| Long term drift                              |         | 0.02 |      |                 | 0.02  |      | %/1 k hrs.         |                                            |
| Output ripple                                |         |      |      |                 |       |      |                    |                                            |
| 2 V, 3.3 V                                   |         |      | 150  |                 | 60    | 100  | mVp-p              | 20 MHz bandwidth                           |
| 5 V                                          |         |      | 250  |                 | 100   | 150  | mVp-p              | 20 MHz bandwidth                           |
| 10 – 48 V                                    |         |      | 3%   |                 | 0.75% | 1.5% | $V_{NOM}$ -p       | 20 MHz bandwidth                           |
| Output voltage trimming <sup>a</sup>         | 50%     |      | 110% | 50%             |       | 110% | $V_{NOM}$          |                                            |
| Total remote sense compensation <sup>a</sup> | 0.5     |      |      | 0.5             |       |      | Volts              | 0.25 V maximum allowable drop in –Out lead |
| OVP set point                                |         | 125% |      | 115%            | 125%  | 135% | $V_{NOM}$          | Recycle power to restart                   |
| Current limit                                | 105%    |      | 135% | 105%            |       | 125% | $I_{NOM}$          | Automatic restart                          |
| Short circuit current <sup>b</sup>           | 20%     |      | 140% | 20%             |       | 130% | $I_{NOM}$          |                                            |

<sup>a</sup> 10 V, 12 V and 15 V outputs, trim range  $\pm 10\%$ . Consult factory for wider trim range.

<sup>b</sup> Output voltages of 5 V or less incorporate foldback current limiting, outputs greater than 5 V incorporate straight line current limiting.

**CONFIGURABLE SPECIFICATIONS (Cont.)****■ THERMAL CHARACTERISTICS**

| Parameter                           | <b>E-Grade</b> |          |     | <b>C-, I-, M-Grade</b> |          |     | Units | Test Conditions                   |
|-------------------------------------|----------------|----------|-----|------------------------|----------|-----|-------|-----------------------------------|
|                                     | Min            | Typ      | Max | Min                    | Typ      | Max |       |                                   |
| Efficiency                          |                | 78 – 88% |     |                        | 80 – 90% |     |       | for 5 V outputs and higher        |
| Shut down temp. — case <sup>a</sup> | 90             | 95       | 105 | 90                     | 95       | 105 | °C    | Cool and recycle power to restart |
| Operating temp. — case              |                |          | 85  |                        |          | 85  | °C    | See Thermal Curves                |

<sup>a</sup> Shut down temperature threshold is above maximum operating temperature. For over temperature protection, external means of disable should be employed below maximum operating temperature.

**■ ISOLATION CHARACTERISTICS**

| Parameter       | <b>E-Grade</b> |     |     | <b>C-, I-, M-Grade</b> |     |     | Unit | Test Conditions |
|-----------------|----------------|-----|-----|------------------------|-----|-----|------|-----------------|
|                 | Min            | Typ | Max | Min                    | Typ | Max |      |                 |
| Isolation       |                |     |     |                        |     |     |      |                 |
| Input to output | 4,242          |     |     | 4,242                  |     |     | Vdc  |                 |
| Output to case  | 707            |     |     | 707                    |     |     | Vdc  |                 |
| Input to case   | 2,121          |     |     | 2,121                  |     |     | Vdc  |                 |

**■ MECHANICAL SPECIFICATIONS**

| Parameter           | <b>E-Grade</b> |     |     | <b>C-, I-, M-Grade</b> |     |     | Units  | Test Conditions |
|---------------------|----------------|-----|-----|------------------------|-----|-----|--------|-----------------|
|                     | Min            | Typ | Max | Min                    | Typ | Max |        |                 |
| Weight <sup>a</sup> | 19.2           |     |     | 19.2                   |     |     | Ounces |                 |
|                     | 544            |     |     | 544                    |     |     | Grams  |                 |

<sup>a</sup> For MC, PC series, multiply value by 2; for NC, QC, RC series, multiply value by 3.

**■ FUSING INFORMATION**

| Input Voltage             | 24 V | 48 V | 300 V |
|---------------------------|------|------|-------|
| LC series (200 W)         | 10 A | 7 A  | 2 A   |
| MC, PC series (400 W)     | 20 A | 15 A | 4 A   |
| NC, QC, RC series (600 W) | 35 A | 25 A | 6 A   |

**CONFIGURABLE SPECIFICATIONS (Cont.)****■ AGENCY APPROVALS**

| Safety Standards                                                               | Markings                          | Notes                                                          |
|--------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------|
| ANSI / ISA 12.12.01 - 2012, C22.2 No. 213-M1987<br>UL / CSA / EN / IEC 60950-1 | cURus<br>cURus, cTÜVus, CE Marked | Low Voltage Directive and RoHS Recast Directive as applicable. |

**■ EMI/EMC Characteristics** (Performed on selected samples representative of the ComPac product family.)

| Parameter                                | Notes                                                                                                                                   |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Conducted Emissions<br>EN 55022, class A | 3 Module configurations may require additional filter components under certain line and load conditions to comply with EN55022 class A. |
| ESD<br>IEC 61000-4-2 level 4             | Top, Bottom and Sides                                                                                                                   |

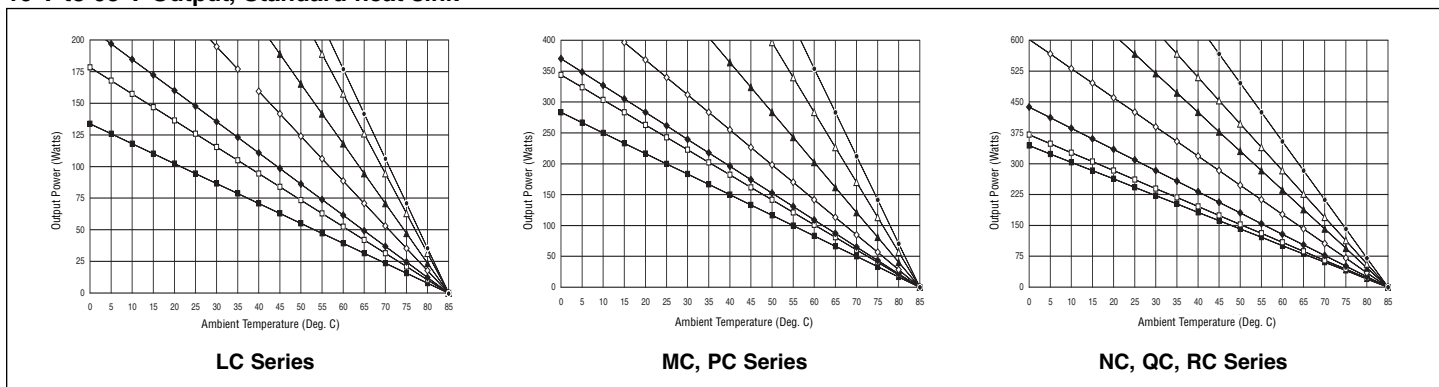
## THERMAL CURVES

■ FREE AIR    □ 50 LFM    ◆ 100 LFM    ◇ 250 LFM    ▲ 500 LFM    △ 750 LFM    ● 1000 LFM

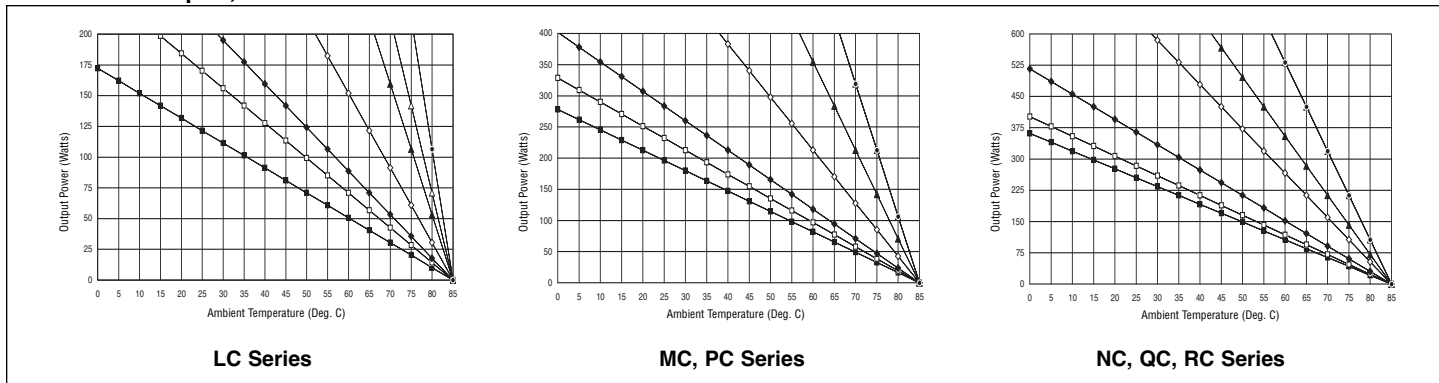
### 2 V to 7.5 V Output, Standard heat sink



### 10 V to 95 V Output, Standard heat sink



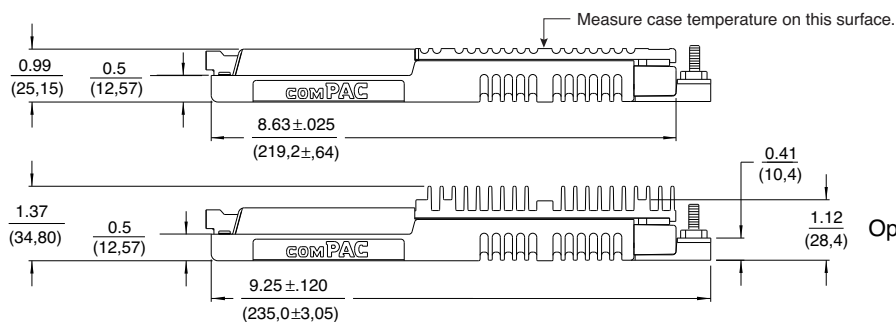
### 2 V to 7.5 V Output , H1 heat sink



### 10 V to 95 V Output, H1 heat sink



| INPUTS  |          |
|---------|----------|
| 1       | Ground   |
| 2       | -Input   |
| 3       | +Input   |
| 4       | Disable- |
| 5       | Disable+ |
| OUTPUTS |          |
| A       | +Output  |
| B       | +Sense   |
| C       | Trim     |
| D       | -Sense   |
| E       | -Output  |



Optional heat sink (H1)

[illegible][illegible]

## LONG TERM SAFE OPERATING AREA CURVES

(1% duty cycle max.,  $Z_s = .5$ , for short duration transient capability refer to specifications)



**I.S.W.:** Input surge withstand, no degradation of performance. **R.E.:** Ratings Exceeded **S.D.:** Shutdown

**Vicor's comprehensive line of power solutions includes high density AC-DC and DC-DC modules and accessory components, fully configurable AC-DC and DC-DC power supplies, and complete custom power systems.**

Information furnished by Vicor is believed to be accurate and reliable. However, no responsibility is assumed by Vicor for its use. Vicor makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication. Vicor reserves the right to make changes to any products, specifications, and product descriptions at any time without notice. Information published by Vicor has been checked and is believed to be accurate at the time it was printed; however, Vicor assumes no responsibility for inaccuracies. Testing and other quality controls are used to the extent Vicor deems necessary to support Vicor's product warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

**Specifications are subject to change without notice.**

**Vicor's Standard Terms and Conditions**

All sales are subject to Vicor's Standard Terms and Conditions of Sale, which are available on Vicor's webpage or upon request.

**Product Warranty**

In Vicor's standard terms and conditions of sale, Vicor warrants that its products are free from non-conformity to its Standard Specifications (the "Express Limited Warranty"). This warranty is extended only to the original Buyer for the period expiring two (2) years after the date of shipment and is not transferable.

UNLESS OTHERWISE EXPRESSLY STATED IN A WRITTEN SALES AGREEMENT SIGNED BY A DULY AUTHORIZED VICOR SIGNATORY, VICOR DISCLAIMS ALL REPRESENTATIONS, LIABILITIES, AND WARRANTIES OF ANY KIND (WHETHER ARISING BY IMPLICATION OR BY OPERATION OF LAW) WITH RESPECT TO THE PRODUCTS, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR REPRESENTATIONS AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, INFRINGEMENT OF ANY PATENT, COPYRIGHT, OR OTHER INTELLECTUAL PROPERTY RIGHT, OR ANY OTHER MATTER.

This warranty does not extend to products subjected to misuse, accident, or improper application, maintenance, or storage. Vicor shall not be liable for collateral or consequential damage. Vicor disclaims any and all liability arising out of the application or use of any product or circuit and assumes no liability for applications assistance or buyer product design. Buyers are responsible for their products and applications using Vicor products and components. Prior to using or distributing any products that include Vicor components, buyers should provide adequate design, testing and operating safeguards.

Vicor will repair or replace defective products in accordance with its own best judgment. For service under this warranty, the buyer must contact Vicor to obtain a Return Material Authorization (RMA) number and shipping instructions. Products returned without prior authorization will be returned to the buyer. The buyer will pay all charges incurred in returning the product to the factory. Vicor will pay all reshipment charges if the product was defective within the terms of this warranty.

**Life Support Policy**

VICOR'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE CHIEF EXECUTIVE OFFICER AND GENERAL COUNSEL OF VICOR CORPORATION. As used herein, life support devices or systems are devices which (a) are intended for surgical implant into the body, or (b) support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in a significant injury to the user. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system or to affect its safety or effectiveness. Per Vicor Terms and Conditions of Sale, the user of Vicor products and components in life support applications assumes all risks of such use and indemnifies Vicor against all liability and damages.

**Intellectual Property Notice**

Vicor and its subsidiaries own Intellectual Property (including issued U.S. and Foreign Patents and pending patent applications) relating to the products described in this data sheet. No license, whether express, implied, or arising by estoppel or otherwise, to any intellectual property rights is granted by this document. Interested parties should contact Vicor's Intellectual Property Department.

**Vicor Corporation**

25 Frontage Road  
Andover, MA, USA 01810  
Tel: 800-735-6200  
Fax: 978-475-6715

**email**

Customer Service: [custserv@vicorpower.com](mailto:custserv@vicorpower.com)

Technical Support: [apps@vicorpower.com](mailto:apps@vicorpower.com)

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Vicor:](#)

[VI-NC13-IP](#)

## 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](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9