

# Solid Tantalum Chip Capacitors, TANTAMOUNT<sup>®</sup>, Ultra-Low ESR, Conformal Coated, Maximum CV



## FEATURES

- New case size offerings
- Terminations: 100 % tin (2) standard; tin/lead available
- Extremely low ESR
- Mounting: Surface mount
- Ripple current up to 4.1 A
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS\***  
Available

## Note

\* This datasheet provides information about parts that are RoHS-compliant and/or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information/tables in this datasheet for details.

## PERFORMANCE CHARACTERISTICS

[www.vishay.com/doc?40088](http://www.vishay.com/doc?40088)

**Operating Temperature:** - 55 °C to + 125 °C  
(above 85 °C, voltage derating is required)

**Capacitance Range:** 10 µF to 1500 µF

**Capacitance Tolerance:** ± 10 %, ± 20 % standard

**Voltage Rating:** 4 V<sub>DC</sub> to 75 V<sub>DC</sub>

## ORDERING INFORMATION

| 597D | 687                                                                                                                    | X0                                       | 6R3                                                                                                                                                | E                                | 2                                                                         | T                                                   |
|------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------|
| TYPE | CAPACITANCE                                                                                                            | CAPACITANCE TOLERANCE                    | DC VOLTAGE RATING AT + 85 °C                                                                                                                       | CASE CODE                        | TERMINATION                                                               | REEL SIZE AND PACKAGING                             |
|      | This is expressed in pF. The first two digits are the significant figures. The third is the number of zeros to follow. | <b>X0 = ± 20 %</b><br><b>X9 = ± 10 %</b> | This is expressed in V. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an "R" (6R3 = 6.3 V). | See Ratings and Case Codes table | <b>2 = 100 % tin</b><br><b>8 = Solder plated (60/40)</b><br>special order | <b>T = Tape and reel</b><br><b>7" [178 mm] reel</b> |

## Note

- Preferred tolerance and reel sizes are in bold.
- We reserve the right to supply higher voltage ratings and tighter capacitance tolerance capacitors in the same case size.
- Low ESR solid tantalum chip capacitors allow delta ESR of 1.25 times the datasheet limits after mounting.

## DIMENSIONS in inches [millimeters]

| CASE CODE | L (MAX.)       | W                                          | H                            | A                            | B                            | D (REF.)       | J (MAX.)       |
|-----------|----------------|--------------------------------------------|------------------------------|------------------------------|------------------------------|----------------|----------------|
| V         | 0.299<br>[7.6] | 0.173 ± 0.016<br>[4.4 ± 0.4]               | 0.079<br>[2.0 max.]          | 0.051 ± 0.012<br>[1.3 ± 0.3] | 0.181 ± 0.024<br>[4.6 ± 0.6] | 0.252<br>[6.4] | 0.004<br>[0.1] |
| D         | 0.299<br>[7.6] | 0.173 ± 0.016<br>[4.4 ± 0.4]               | 0.138<br>[3.5 max.]          | 0.051 ± 0.012<br>[1.3 ± 0.3] | 0.181 ± 0.024<br>[4.6 ± 0.6] | 0.252<br>[6.4] | 0.004<br>[0.1] |
| E         | 0.299<br>[7.6] | 0.173 ± 0.016<br>[4.4 ± 0.4]               | 0.157 ± 0.016<br>[4.0 ± 0.4] | 0.051 ± 0.012<br>[1.3 ± 0.3] | 0.181 ± 0.024<br>[4.6 ± 0.6] | 0.252<br>[6.4] | 0.004<br>[0.1] |
| R         | 0.299<br>[7.6] | 0.238 ± 0.016<br>[6.0 ± 0.4]               | 0.142 ± 0.016<br>[3.6 ± 0.4] | 0.051 ± 0.012<br>[1.3 ± 0.3] | 0.181 ± 0.024<br>[4.6 ± 0.6] | 0.244<br>[6.2] | 0.004<br>[0.1] |
| F         | 0.299<br>[7.6] | 0.238 ± 0.016<br>[6.0 ± 0.4]               | 0.185 ± 0.016<br>[4.7 ± 0.4] | 0.055 ± 0.016<br>[1.4 ± 0.4] | 0.181 ± 0.024<br>[4.6 ± 0.6] | 0.244<br>[6.2] | 0.004<br>[0.1] |
| Z         | 0.299<br>[7.6] | 0.238 ± 0.016<br>[6.0 ± 0.4]               | 0.236 ± 0.016<br>[6.0 ± 0.4] | 0.055 ± 0.016<br>[1.4 ± 0.4] | 0.181 ± 0.024<br>[4.6 ± 0.6] | 0.244<br>[6.2] | 0.004<br>[0.1] |
| M         | 0.315<br>[8.0] | 0.260 ± 0.016/- 0.024<br>[6.6 ± 0.4/- 0.6] | 0.142 ± 0.016<br>[3.6 ± 0.4] | 0.051 ± 0.012<br>[1.3 ± 0.3] | 0.197 ± 0.024<br>[5.0 ± 0.6] | 0.260<br>[6.6] | 0.004<br>[0.1] |
| H         | 0.315<br>[8.0] | 0.260 ± 0.016/- 0.024<br>[6.6 ± 0.4/- 0.6] | 0.205 ± 0.016<br>[5.2 ± 0.4] | 0.055 ± 0.016<br>[1.4 ± 0.4] | 0.197 ± 0.024<br>[5.0 ± 0.6] | 0.260<br>[6.6] | 0.004<br>[0.1] |

## Note

- The anode termination (D less B) will be a minimum of 0.012" [0.3 mm]

**RATINGS AND CASE CODES**

| $\mu\text{F}$ | 4 V | 6.3 V | 10 V | 16 V | 20 V | 25 V | 35 V | 50 V | 63 V | 75 V |
|---------------|-----|-------|------|------|------|------|------|------|------|------|
| 10            |     |       |      |      |      |      |      |      | D    | R    |
| 15            |     |       |      |      |      |      |      | E/R  | R    |      |
| 22            |     |       |      |      |      |      |      | R    | F    |      |
| 33            |     |       |      |      |      |      |      | F    |      |      |
| 47            |     |       |      |      |      |      | R    | Z    |      |      |
| 68            |     |       |      |      |      | R    | F    |      |      |      |
| 100           |     |       |      |      |      | F    | F    |      |      |      |
| 150           |     |       |      |      |      | F    |      |      |      |      |
| 220           |     |       |      | E    | R    | M    |      |      |      |      |
| 330           |     | V     | E    | F    | H    |      |      |      |      |      |
| 470           | V   | E     | E    | H    |      |      |      |      |      |      |
| 680           | E   | E     | R    |      |      |      |      |      |      |      |
| 1000          | E/R | R     | F    |      |      |      |      |      |      |      |
| 1500          | R   |       |      |      |      |      |      |      |      |      |
| 2200          |     |       |      |      |      |      |      |      |      |      |

**STANDARD RATINGS**

| CAPACITANCE<br>( $\mu\text{F}$ )                                   | CASE CODE | PART NUMBER          | MAX. DCL<br>AT + 25 °C<br>( $\mu\text{A}$ ) | MAX. DF<br>AT + 25 °C<br>120 Hz<br>(%) | MAX. ESR<br>AT + 25 °C<br>100 kHz<br>(m $\Omega$ ) | MAX. RIPPLE<br>100 kHz<br>$I_{\text{RMS}}$<br>(A) |
|--------------------------------------------------------------------|-----------|----------------------|---------------------------------------------|----------------------------------------|----------------------------------------------------|---------------------------------------------------|
| <b>4 V<sub>DC</sub> AT + 85 °C; 2.7 V<sub>DC</sub> AT + 125 °C</b> |           |                      |                                             |                                        |                                                    |                                                   |
| 470                                                                | V         | 597D477(1)004V(2)(3) | 19                                          | 8                                      | 60                                                 | 2.2                                               |
| 680                                                                | E         | 597D687(1)004E(2)(3) | 27                                          | 6                                      | 25                                                 | 2.9                                               |
| 1000                                                               | E         | 597D108(1)004E(2)(3) | 40                                          | 8                                      | 20                                                 | 3.3                                               |
| 1000                                                               | R         | 597D108(1)004R(2)(3) | 40                                          | 8                                      | 18                                                 | 3.7                                               |
| 1500                                                               | R         | 597D158(1)004R(2)(3) | 60                                          | 8                                      | 24                                                 | 2.9                                               |
| <b>6.3 V<sub>DC</sub> AT + 85 °C; 4 V<sub>DC</sub> AT + 125 °C</b> |           |                      |                                             |                                        |                                                    |                                                   |
| 330                                                                | V         | 597D337(1)6R3V(2)(3) | 21                                          | 8                                      | 56                                                 | 2.0                                               |
| 470                                                                | E         | 597D477(1)6R3E(2)(3) | 30                                          | 6                                      | 30                                                 | 2.7                                               |
| 680                                                                | E         | 597D687(1)6R3E(2)(3) | 43                                          | 6                                      | 25                                                 | 2.9                                               |
| 1000                                                               | R         | 597D108(1)6R3R(2)(3) | 63                                          | 8                                      | 31                                                 | 2.8                                               |
| <b>10 V<sub>DC</sub> AT + 85 °C; 7 V<sub>DC</sub> AT + 125 °C</b>  |           |                      |                                             |                                        |                                                    |                                                   |
| 330                                                                | E         | 597D337(1)010E(2)(3) | 33                                          | 6                                      | 35                                                 | 2.5                                               |
| 470                                                                | E         | 597D477(1)010E(2)(3) | 47                                          | 6                                      | 28                                                 | 2.8                                               |
| 680                                                                | R         | 597D687(1)010R(2)(3) | 68                                          | 6                                      | 28                                                 | 3.0                                               |
| 1000                                                               | F         | 597D108(1)010F(2)(3) | 100                                         | 20                                     | 120                                                | 1.4                                               |
| <b>16 V<sub>DC</sub> AT + 85 °C; 10 V<sub>DC</sub> AT + 125 °C</b> |           |                      |                                             |                                        |                                                    |                                                   |
| 220                                                                | E         | 597D227(1)016E(2)(3) | 35                                          | 8                                      | 60                                                 | 2.3                                               |
| 330                                                                | F         | 597D337(1)016F(2)(3) | 53                                          | 10                                     | 100                                                | 1.6                                               |
| 470                                                                | H         | 597D477(1)016H(2)(3) | 75                                          | 14                                     | 100                                                | 1.4                                               |
| <b>20 V<sub>DC</sub> AT + 85 °C; 13 V<sub>DC</sub> AT + 125 °C</b> |           |                      |                                             |                                        |                                                    |                                                   |
| 220                                                                | R         | 597D227(1)020R(2)(3) | 44                                          | 8                                      | 80                                                 | 1.8                                               |
| 330                                                                | H         | 597D337(1)020H(2)(3) | 66                                          | 10                                     | 100                                                | 1.6                                               |
| <b>25 V<sub>DC</sub> AT + 85 °C; 17 V<sub>DC</sub> AT + 125 °C</b> |           |                      |                                             |                                        |                                                    |                                                   |
| 68                                                                 | R         | 597D686(1)025R(2)(3) | 17                                          | 6                                      | 100                                                | 1.6                                               |
| 100                                                                | F         | 597D107(1)025F(2)(3) | 25                                          | 8                                      | 100                                                | 1.6                                               |

**Note**

- Part number definitions:
  - (1) Tolerance: For 10 % tolerance, specify "X9", for 20 % tolerance, change to "X0"
  - (2) Termination: For 100 % tin specify "2", for solder plated 60/40 specify "8"
  - (3) Packaging code: For 7" reels specify "T"

**STANDARD RATINGS**

| CAPACITANCE<br>( $\mu$ F)                                          | CASE CODE | PART NUMBER          | MAX. DCL<br>AT + 25 °C<br>( $\mu$ A) | MAX. DF<br>AT + 25 °C<br>120 Hz<br>(%) | MAX. ESR<br>AT + 25 °C<br>100 kHz<br>(m $\Omega$ ) | MAX. RIPPLE<br>100 kHz<br>I <sub>RMS</sub><br>(A) |
|--------------------------------------------------------------------|-----------|----------------------|--------------------------------------|----------------------------------------|----------------------------------------------------|---------------------------------------------------|
| <b>25 V<sub>DC</sub> AT + 85 °C; 17 V<sub>DC</sub> AT + 125 °C</b> |           |                      |                                      |                                        |                                                    |                                                   |
| 150                                                                | F         | 597D157(1)025F(2)(3) | 38                                   | 8                                      | 80                                                 | 1.8                                               |
| 220                                                                | M         | 597D227(1)025M(2)(3) | 55                                   | 8                                      | 100                                                | 1.6                                               |
| <b>35 V<sub>DC</sub> AT + 85 °C; 23 V<sub>DC</sub> AT + 125 °C</b> |           |                      |                                      |                                        |                                                    |                                                   |
| 47                                                                 | R         | 597D476(1)035R(2)(3) | 17                                   | 6                                      | 100                                                | 1.6                                               |
| 68                                                                 | F         | 597D686(1)035F(2)(3) | 24                                   | 6                                      | 100                                                | 1.6                                               |
| 100                                                                | F         | 597D107X0035F(2)(3)  | 35                                   | 8                                      | 100                                                | 1.6                                               |
| <b>50 V<sub>DC</sub> AT + 85 °C; 33 V<sub>DC</sub> AT + 125 °C</b> |           |                      |                                      |                                        |                                                    |                                                   |
| 15                                                                 | E         | 597D156(1)050E(2)(3) | 8                                    | 6                                      | 300                                                | 0.9                                               |
| 15                                                                 | R         | 597D156(1)050R(2)(3) | 8                                    | 6                                      | 250                                                | 1.0                                               |
| 22                                                                 | R         | 597D226(1)050R(2)(3) | 11                                   | 6                                      | 220                                                | 1.1                                               |
| 33                                                                 | F         | 597D336(1)050F(2)(3) | 17                                   | 6                                      | 150                                                | 1.3                                               |
| 47                                                                 | Z         | 597D476(1)050Z(2)(3) | 24                                   | 6                                      | 240                                                | 1.1                                               |
| <b>63 V<sub>DC</sub> AT + 85 °C; 42 V<sub>DC</sub> AT + 125 °C</b> |           |                      |                                      |                                        |                                                    |                                                   |
| 10                                                                 | D         | 597D106(1)063D(2)(3) | 10                                   | 6                                      | 400                                                | 0.6                                               |
| 15                                                                 | R         | 597D156(1)063R(2)(3) | 10                                   | 6                                      | 400                                                | 0.8                                               |
| 22                                                                 | F         | 597D226(1)063F(2)(3) | 14                                   | 6                                      | 250                                                | 1.0                                               |
| <b>75 V<sub>DC</sub> AT + 85 °C; 50 V<sub>DC</sub> AT + 125 °C</b> |           |                      |                                      |                                        |                                                    |                                                   |
| 10                                                                 | R         | 597D106(1)075R(2)(3) | 8                                    | 6                                      | 500                                                | 0.7                                               |

**Note**

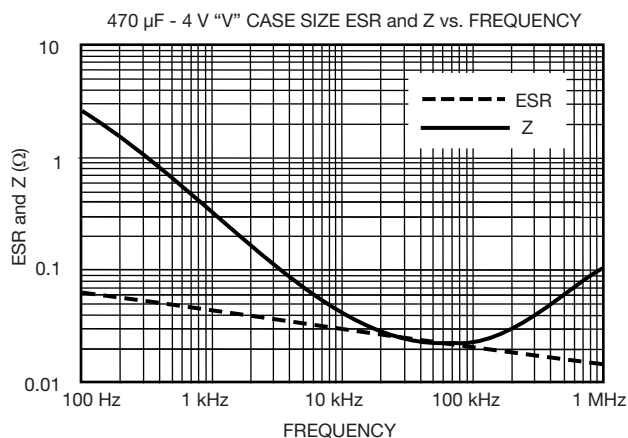
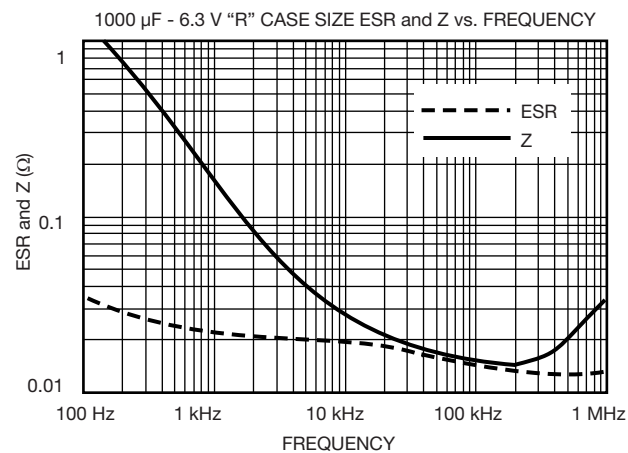
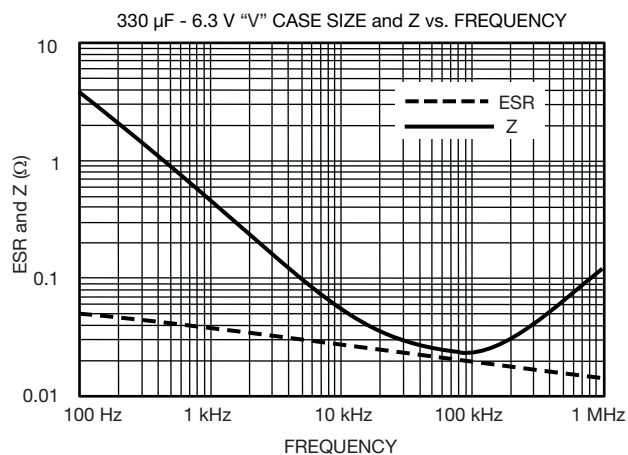
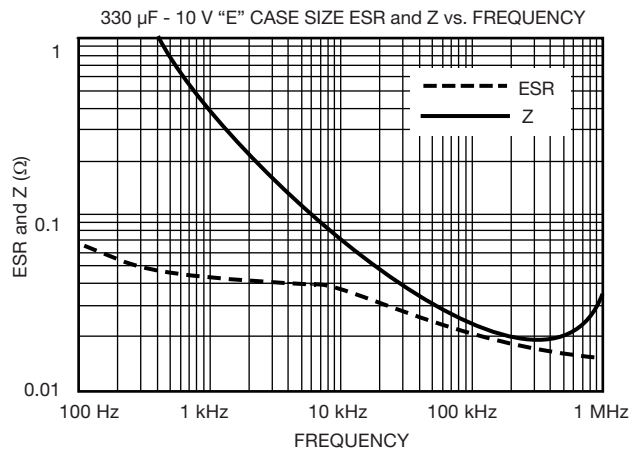
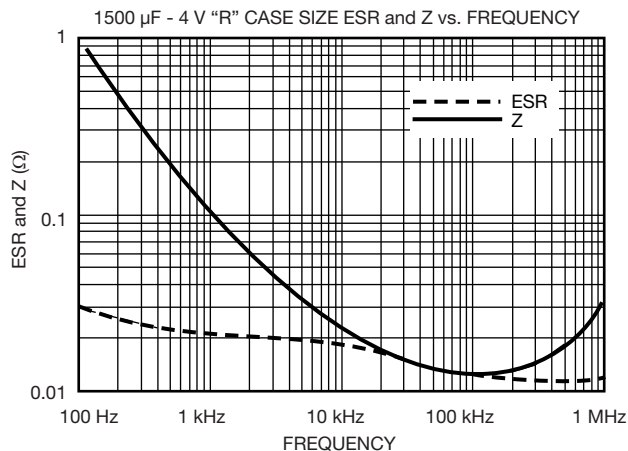
- Part number definitions:
  - (1) Tolerance: For 10 % tolerance, specify "X9", for 20 % tolerance, change to "X0"
  - (2) Termination: For 100 % tin specify "2", for solder plated 60/40 specify "8"
  - (3) Packaging code: For 7" reels specify "T"

**RECOMMENDED VOLTAGE DERATING GUIDELINES (for temperature below + 85 °C)****STANDARD CONDITIONS. FOR EXAMPLE: OUTPUT FILTERS**

| Capacitor Voltage Rating | Operating Voltage |
|--------------------------|-------------------|
| 4.0                      | 2.5               |
| 6.3                      | 3.6               |
| 10                       | 6.0               |
| 16                       | 10                |
| 20                       | 12                |
| 25                       | 15                |
| 35                       | 24                |
| 50                       | 28                |
| 63                       | 37.8              |
| 75                       | 45                |

**SEVERE CONDITIONS. FOR EXAMPLE: INPUT FILTERS**

| Capacitor Voltage Rating | Operating Voltage |
|--------------------------|-------------------|
| 4.0                      | 2.5               |
| 6.3                      | 3.3               |
| 10                       | 5.0               |
| 16                       | 8.0               |
| 20                       | 10                |
| 25                       | 12                |
| 35                       | 15                |
| 50                       | 24                |
| 63                       | 32                |
| 75                       | 37                |

**TYPICAL CURVES**


**POWER DISSIPATION**

| CASE CODE | MAXIMUM PERMISSIBLE POWER DISSIPATION AT + 25 °C (W) IN FREE AIR |
|-----------|------------------------------------------------------------------|
| V         | 0.141                                                            |
| D         | 0.215                                                            |
| E         | 0.240                                                            |
| R, F, M   | 0.250                                                            |
| Z         | 0.265                                                            |
| H         | 0.265                                                            |

**STANDARD PACKAGING QUANTITY**

| CASE CODE | UNITS PER 7" REEL |
|-----------|-------------------|
| V         | 1000              |
| D         | 400               |
| E         | 500               |
| R         | 300               |
| F         | 250               |
| Z         | 250               |
| M         | 200               |
| H         | 200               |

**PRODUCT INFORMATION**

|                               |                                                                        |
|-------------------------------|------------------------------------------------------------------------|
| Conformal Coated Guide        | <a href="http://www.vishay.com/doc?40150">www.vishay.com/doc?40150</a> |
| Pad Dimensions                |                                                                        |
| Packaging Dimensions          |                                                                        |
| Moisture Sensitivity          | <a href="http://www.vishay.com/doc?40135">www.vishay.com/doc?40135</a> |
| <b>SELECTOR GUIDES</b>        |                                                                        |
| Solid Tantalum Selector Guide | <a href="http://www.vishay.com/doc?49053">www.vishay.com/doc?49053</a> |
| <b>FAQ</b>                    |                                                                        |
| Frequently Asked Questions    | <a href="http://www.vishay.com/doc?40110">www.vishay.com/doc?40110</a> |



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## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**



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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.);

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- 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

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