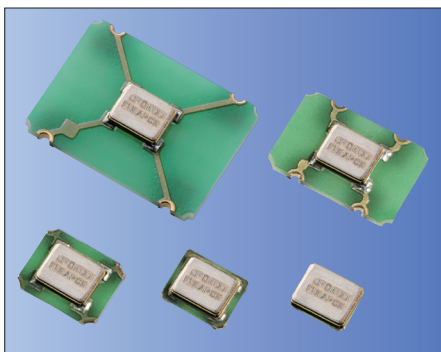




CMOS/ 1.8V, 2.5V, 3.3V, 5.0V / 2.0×1.6, 2.5×2.0, 3.2×2.5, 5.0×3.2, 7.0×5.0mm



RoHS Compliant

**Features**

- Frequency Range 1.5 to 160MHz
- CMOS output
- Wide Supply Voltage
  - 1.6 to 3.63V (Ver.E)
  - 2.5,3.3,5.0V(Ver.N)
- Low current consumption
- Option: Low Phase Noise Version

**Applications**

- Consumer/ Networking/ Industrial/ Audio Codec/ Amuse

Table 1

| Freq. Code | Tol. × 10 <sup>-6</sup> | Operating Temperature Range (°C) | Note                          |
|------------|-------------------------|----------------------------------|-------------------------------|
| 0          | ± 50                    | -10 to +70                       | Standard specifications       |
| S          | ± 30                    |                                  |                               |
| U          | ± 25                    | -40 to +85                       | With only certain frequencies |
| G          | ± 50                    |                                  |                               |
| 6          | ± 50                    |                                  |                               |

**How to Order**

KC2520K 25.0000 C □ □ □ 00  
①                      ②                      ③ ④ ⑤ ⑥ ⑦

- ①Series
- ②Output Frequency (25.0000: 25MHz)
- ③Output Type (C: CMOS)
- ④Supply Voltage  
Standard : Version E

|   |                             |
|---|-----------------------------|
| 1 | 1.8V/ 2.5V/ 3.3V compatible |
| 2 | 2.5V/ 3.3V compatible       |

Low Phase Noise : Version N

|   |      |   |      |
|---|------|---|------|
| 2 | 2.5V | 3 | 3.3V |
| 5 | 5.0V |   |      |

⑤Frequency Tolerance (See Table 1)

⑥Symmetry/ INH Function

|   |         |
|---|---------|
| E | 45/ 55% |
| N | 45/ 55% |

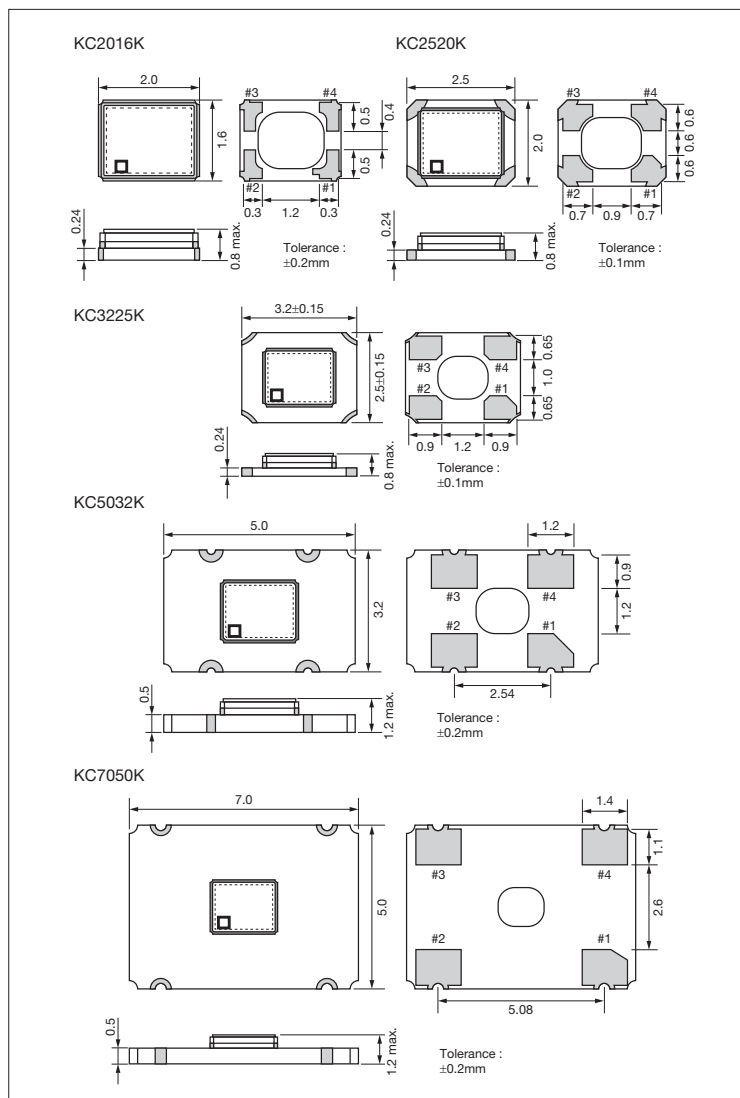
⑦Individual Specification  
(STD Specification is "00".)

Packaging Tape & Reel

|                           |                 |
|---------------------------|-----------------|
| KC7050K/ KC5032K          | 1000 pcs./ reel |
| KC3225K/ KC2520K/ KC2016K | 2000 pcs./ reel |

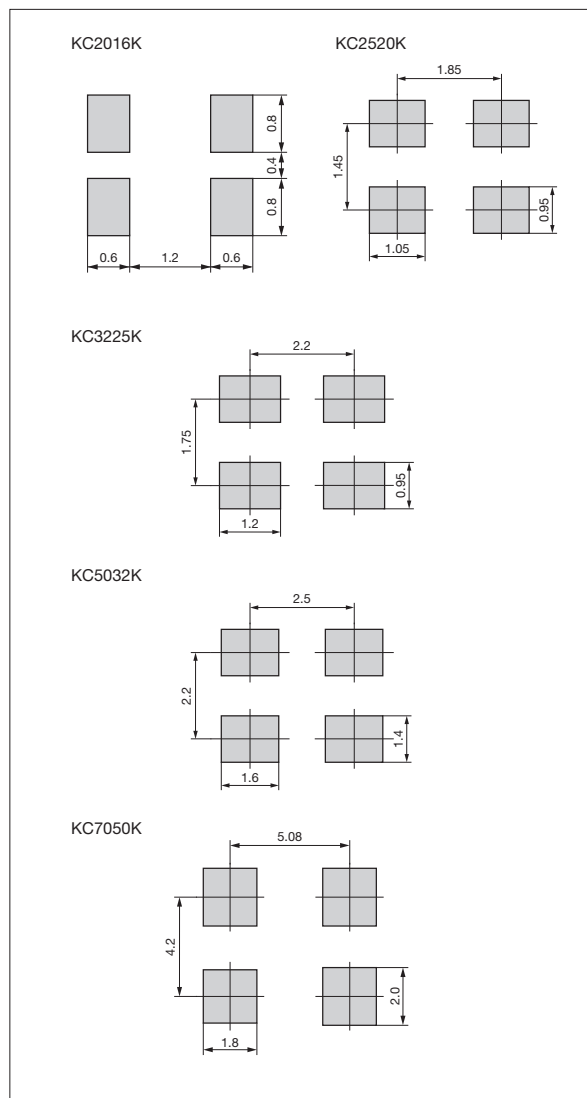
**Dimensions**

(Unit: mm)



**Recommended Land Pattern**

(Unit: mm)





CMOS/ 1.8V, 2.5V, 3.3V, 5.0V / 2.0×1.6, 2.5×2.0, 3.2×2.5, 5.0×3.2, 7.0×5.0mm

Specifications

| Item                                      | Symbol                          | Conditions  | Version E (Standard)  |                           | Version N (Low Phase Noise) |                     | Unit                 |                   |      |    |
|---|---------------------------------|---|---|---------------------------|-----------------------------|---------------------|----------------------|-------------------|------|----|
|   |                                 |   | Min.  | Max.                      | Min.(codeU)                 | Max.(codeU)         |                      |                   |      |    |
| Output Frequency Range <sup>Note1</sup>   | f <sub>o</sub>                  |   | 1.5   | 160                       | 1.5                         | 80                  | MHz                  |                   |      |    |
| Frequency Tolerance                       | f <sub>tol</sub>                | Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1 year @25°C), Shock and vibration | Temp.: -10 to +70°C/<br>-40 to +85°C/ -40 to +105°C             | -50                       | +50                         | -50                 | +50                  | ×10 <sup>-6</sup> |      |    |
|   |                                 |   | Temp.: -10 to +70°C   | -30                       | +30                         | -30                 | +30                  |                   |      |    |
|   |                                 |   | Temp.: -10 to +70°C   | -25                       | +25                         | -25                 | +25                  |                   |      |    |
| Frequency Aging                           | f <sub>age</sub>                | @25°C First year  | -3  | +3                        | -3                          | +3                  | ×10 <sup>-6</sup> /y |                   |      |    |
| Storage Temperature Range                 | T <sub>stg</sub>                |   | -55   | +125                      | -55                         | +125                | °C                   |                   |      |    |
| Operating Temperature Range               | T <sub>use</sub>                |   | -10   | +70                       | -10                         | +70                 | °C                   |                   |      |    |
|   |                                 |   | -40   | +85                       | -40                         | +85                 |                      |                   |      |    |
|   |                                 |   | -40   | +105                      | -40                         | +105                |                      |                   |      |    |
| Max. Supply Voltage                       | —                               |   | -0.3  | +4.0                      | -0.3                        | +7.0                | V                    |                   |      |    |
| Supply Voltage                            | V <sub>cc</sub>                 | CodeⓄ : 1/ E : 1.5≤F <sub>0</sub> ≤125MHz   | +1.60   | +3.63                     | —                           | —                   | V                    |                   |      |    |
|   |                                 | CodeⓄ : 2/ E : 125<F <sub>0</sub> ≤160MHz   | +2.25   | +3.63                     | —                           | —                   |                      |                   |      |    |
|   |                                 | CodeⓄ : 2/ N : 1.5≤F <sub>0</sub> ≤80MHz  | —   | —                         | +2.25(+2.38)                | +2.75(+2.62)        |                      |                   |      |    |
|   |                                 | CodeⓄ : 3/ N : 1.5≤F <sub>0</sub> ≤80MHz  | —   | —                         | +2.97(+3.14)                | +3.63(+3.46)        |                      |                   |      |    |
|   |                                 | CodeⓄ : 5/ N : 1.5≤F <sub>0</sub> ≤80MHz  | —   | —                         | +4.5(+4.75)                 | +5.5(+5.25)         |                      |                   |      |    |
| Current Consumption (Maximum Loaded)      | I <sub>cc</sub>                 | 1.5≤F <sub>0</sub> ≤24MHz   | E : 1.6≤V <sub>cc</sub> ≤2.25V                                  | —                         | 2.5                         | —                   | —                    | mA                |      |    |
|   |                                 |   | E : 2.25<V <sub>cc</sub> ≤2.8V/ N : 2.25≤V <sub>cc</sub> ≤2.75V | —                         | 3.0                         | —                   | 4                    |                   |      |    |
|   |                                 |   | E : 2.8<V <sub>cc</sub> ≤3.63V/ N : 2.97≤V <sub>cc</sub> ≤3.63V | —                         | 3.5                         | —                   | 6                    |                   |      |    |
|   |                                 |   | N : 4.50≤V <sub>cc</sub> ≤5.50V                                 | —                         | —                           | —                   | 24                   |                   |      |    |
|   |                                 | 24<F <sub>0</sub> ≤40MHz  | E : 1.6≤V <sub>cc</sub> ≤2.25V                                  | —                         | 3.5                         | —                   | —                    |                   |      |    |
|   |                                 |   | E : 2.25<V <sub>cc</sub> ≤2.8V/ N : 2.25≤V <sub>cc</sub> ≤2.75V | —                         | 4.5                         | —                   | 5                    |                   |      |    |
|   |                                 |   | E : 2.8<V <sub>cc</sub> ≤3.63V/ N : 2.97≤V <sub>cc</sub> ≤3.63V | —                         | 5.0                         | —                   | 7                    |                   |      |    |
|   |                                 |   | N : 4.50≤V <sub>cc</sub> ≤5.50V                                 | —                         | —                           | —                   | 24                   |                   |      |    |
|   |                                 | 40<F <sub>0</sub> ≤62.5MHz  | E : 1.6≤V <sub>cc</sub> ≤2.25V                                  | —                         | 5.0                         | —                   | —                    |                   |      |    |
|   |                                 |   | E : 2.25<V <sub>cc</sub> ≤2.8V/ N : 2.25≤V <sub>cc</sub> ≤2.75V | —                         | 5.5                         | —                   | 8                    |                   |      |    |
|   |                                 |   | E : 2.8<V <sub>cc</sub> ≤3.63V/ N : 2.97≤V <sub>cc</sub> ≤3.63V | —                         | 6.0                         | —                   | 11                   |                   |      |    |
|   |                                 |   | N : 4.50≤V <sub>cc</sub> ≤5.50V                                 | —                         | —                           | —                   | 24                   |                   |      |    |
|   |                                 | 62.5<F <sub>0</sub> ≤80MHz  | E : 1.6≤V <sub>cc</sub> ≤2.25V                                  | —                         | 6.0                         | —                   | —                    |                   |      |    |
|   |                                 |   | E : 2.25<V <sub>cc</sub> ≤2.8V/ N : 2.25≤V <sub>cc</sub> ≤2.75V | —                         | 6.5                         | —                   | 14                   |                   |      |    |
|   |                                 |   | E : 2.8<V <sub>cc</sub> ≤3.63V/ N : 2.97≤V <sub>cc</sub> ≤3.63V | —                         | 8.0                         | —                   | 18                   |                   |      |    |
|   |                                 |   | N : 4.50≤V <sub>cc</sub> ≤5.50V                                 | —                         | —                           | —                   | 40                   |                   |      |    |
|   |                                 | 80<F <sub>0</sub> ≤125MHz   | E : 1.6≤V <sub>cc</sub> ≤2.25V                                  | —                         | 11.0                        | —                   | —                    |                   |      |    |
|   |                                 |   | E : 2.25<V <sub>cc</sub> ≤2.8V                                  | —                         | 14.0                        | —                   | —                    |                   |      |    |
|   |                                 |   | E : 2.8<V <sub>cc</sub> ≤3.63V                                  | —                         | 17.0                        | —                   | —                    |                   |      |    |
|   |                                 |   | E : 2.25<V <sub>cc</sub> ≤2.8V                                  | —                         | 25.0                        | —                   | —                    |                   |      |    |
|   |                                 | 125<F <sub>0</sub> ≤160MHz  | E : 2.8<V <sub>cc</sub> ≤3.63V                                  | —                         | 27.0                        | —                   | —                    |                   |      |    |
|   |                                 |   | E : 2.8<V <sub>cc</sub> ≤3.63V                                  | —                         | 27.0                        | —                   | —                    |                   |      |    |
|   |                                 | Stand-by Current  | I <sub>std</sub>  | 1.5≤F <sub>0</sub> ≤80MHz | —                           | 5.0                 | —                    |                   | 10.0 | μA |
|   |                                 |   |   | 80≤F <sub>0</sub> ≤125MHz | —                           | 5.0                 | —                    |                   | —    |    |
| 125≤F <sub>0</sub> ≤160MHz                | —                               |   |   | 10.0                      | —                           | —                   |                      |                   |      |    |
| Symmetry                                  | SYM                             | @50% V <sub>cc</sub>  | 45  | 55                        | 45                          | 55                  | %                    |                   |      |    |
| Rise/ Fall Time (10% to 90% Output Level) | Tr/ Tf                          | 1.5≤F <sub>0</sub> ≤80MHz   | E : 1.6≤V <sub>cc</sub> ≤2.25V                                  | —                         | 6.0                         | —                   | —                    | ns                |      |    |
|   |                                 |   | E : 2.25<V <sub>cc</sub> ≤2.8V/ N : 2.25≤V <sub>cc</sub> ≤2.75V | —                         | 5.0                         | —                   | 6.0                  |                   |      |    |
|   |                                 |   | E : 2.8<V <sub>cc</sub> ≤3.63V/ N : 2.97≤V <sub>cc</sub> ≤3.63V | —                         | 4.5                         | —                   | 5.0                  |                   |      |    |
|   |                                 |   | N : 4.50≤V <sub>cc</sub> ≤5.50V                                 | —                         | —                           | —                   | 8.0                  |                   |      |    |
|   |                                 | 80<F <sub>0</sub> ≤125MHz   | E : 1.6<V <sub>cc</sub> ≤3.63V                                  | —                         | 4.0                         | —                   | —                    |                   |      |    |
| 125<F <sub>0</sub> ≤160MHz                | E : 2.25<V <sub>cc</sub> ≤3.63V | —   | 2.5   | —                         | —                           |                     |                      |                   |      |    |
| Low Level Output Voltage                  | V <sub>OL</sub>                 | E : I <sub>OL</sub> = 4mA   | —   | 10% V <sub>cc</sub>       | —                           | 10% V <sub>cc</sub> | V                    |                   |      |    |
|   |                                 | N (1.5≤F <sub>0</sub> ≤62.5MHz) : I <sub>OL</sub> = 4mA   |   |                           |                             |                     |                      |                   |      |    |
|   |                                 | N (62.5<F <sub>0</sub> ≤80MHz) : I <sub>OL</sub> = 8mA  |   |                           |                             |                     |                      |                   |      |    |
| High Level Output Voltage                 | V <sub>OH</sub>                 | E : I <sub>OH</sub> = -4mA  | 90% V <sub>cc</sub>   | —                         | 90% V <sub>cc</sub>         | —                   | V                    |                   |      |    |
|   |                                 | N (1.5≤F <sub>0</sub> ≤62.5MHz) : I <sub>OH</sub> = -4mA  |   |                           |                             |                     |                      |                   |      |    |
|   |                                 | N (62.5<F <sub>0</sub> ≤80MHz) : I <sub>OH</sub> = -8mA   |   |                           |                             |                     |                      |                   |      |    |
| Output Load                               | L <sub>CMOS</sub>               |   | 15  |                           | 30                          |                     | pF                   |                   |      |    |
| Low Level Input Voltage                   | V <sub>IL</sub>                 |   | —   | 30% V <sub>cc</sub>       | —                           | 30% V <sub>cc</sub> | V                    |                   |      |    |
| High Level Input Voltage                  | V <sub>IH</sub>                 |   | 70% V <sub>cc</sub>   | —                         | 70% V <sub>cc</sub>         | —                   | V                    |                   |      |    |

Crystal Oscillators





CMOS/ 1.8V, 2.5V, 3.3V, 5.0V / 2.0×1.6, 2.5×2.0, 3.2×2.5, 5.0×3.2, 7.0×5.0mm

| Item                | Symbol             | Conditions    |   | Version E (Standard) |      | Version N (Low Phase Noise) |             | Unit    |
|---------------------|--------------------|---------------|---|----------------------|------|-----------------------------|-------------|---------|
|                     |                    |               |   | Min.                 | Max. | Min.(codeU)                 | Max.(codeU) |         |
| Disable Time        | t <sub>dis</sub>   | 1.5≤F0≤80MHz  |   | —                    | 200  | —                           | 150         | ns      |
|                     |                    | 80<F0≤125MHz  |   | —                    | 200  | —                           | —           |         |
|                     |                    | 125<F0≤160MHz |   | —                    | 100  | —                           | —           |         |
| Enable Time         | t <sub>ena</sub>   |               |   | —                    | 5    | —                           | 5           | ms      |
| Start-up Time       | t <sub>str</sub>   | 1.5≤F0≤80MHz  | @Minimum operating voltage to be 0 sec. | —                    | 5    | —                           | 5           | ms      |
|                     |                    | 80<F0≤125MHz  |   | —                    | 5    | —                           | —           |         |
|                     |                    | 125<F0≤160MHz |   | —                    | 10   | —                           | —           |         |
| 1 Sigma Jitter      | J <sub>Sigma</sub> | 1.5≤F0≤80MHz  | Measured with Wavecrest SIA-3000        | —                    | 5    | —                           | 4           | ps      |
|                     |                    | 80<F0≤125MHz  |   | —                    | 5    | —                           | —           |         |
|                     |                    | 125<F0≤160MHz |   | —                    | 3    | —                           | —           |         |
| Peak to Peak Jitter | J <sub>PK-PK</sub> | 1.5≤F0≤80MHz  |   | —                    | 50   | —                           | 40          | ps      |
|                     |                    | 80<F0≤125MHz  |   | —                    | 50   | —                           | —           |         |
|                     |                    | 125<F0≤160MHz |   | —                    | 25   | —                           | —           |         |
| Phase Jitter        | J <sub>Phase</sub> | @25MHz        | BW : 12kHz to 20MHz                     | —                    | 1.0  | —                           | 0.5         | ps      |
| Phase Noise         | —                  | @25MHz        | @10Hz offset                            | Typ. -89             |      | Typ. -92                    |             | dBc/ Hz |
|                     |                    |               | @100Hz offset                           | Typ. -119            |      | Typ. -126                   |             |         |
|                     |                    |               | @1kHz offset                            | Typ. -143            |      | Typ. -151                   |             |         |
|                     |                    |               | @10kHz offset                           | Typ. -157            |      | Typ. -160                   |             |         |
|                     |                    |               | @100kHz offset                          | Typ. -160            |      | Typ. -167                   |             |         |
|                     |                    |               | @1MHz offset                            | Typ. -162            |      | Typ. -170                   |             |         |
|                     |                    |               | @10MHz offset                           | Typ. -162            |      | Typ. -170                   |             |         |

Note: All electrical characteristics are defined at the maximum load and operating temperature range.

Note1: Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

| Pad Connections |          |
|-----------------|----------|
| #1              | INH      |
| #2              | Case GND |
| #3              | Output   |
| #4              | Vcc      |

| INH Function |                         |
|--------------|-------------------------|
| Pad1         | Pad3 (Output)           |
| Open         | Active                  |
| "H" Level    | Active                  |
| "L" Level    | High Z (No-Oscillation) |



# Mouser Electronics

Authorized Distributor

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## Kyocera:

[KC7050K32.0000C1GE00](#) [KC3225K24.5760C1GE00](#) [KC7050K24.5760C1GE00](#) [KC7050K20.0000C1GE00](#)  
[KC3225K32.0000C1GE00](#) [KC3225K50.0000C1GE00](#) [KC3225K27.0000C1GE00](#) [KC7050K27.0000C1GE00](#)  
[KC7050K48.0000C1GE00](#) [KC7050K33.3333C1GE00](#) [KC7050K24.0000C1GE00](#) [KC3225K20.0000C1GE00](#)  
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[KC2520K32.0000C1GE00](#) [KC2016K22.5792C10E00](#) [KC5032K40.0000C10E00](#) [KC7050K16.0000C10E00](#)  
[KC7050K10.0000C10E00](#) [KC2016K10.0000C10E00](#) [KC7050K32.7680C1GE00](#) [KC2520K66.6667C1GE00](#)  
[KC2520K1.8432C1GE00](#) [KC2016K33.0000C10E00](#) [KC2520K24.5760C10E00](#) [KC5032K50.0000C1GE00](#)  
[KC5032K16.0000C10E00](#) [KC2520K13.5600C1GE00](#) [KC7050K3.6864C1GE00](#) [KC5032K50.0000C10E00](#)  
[KC5032K80.0000C10E00](#) [KC7050K14.3182C10E00](#) [KC2016K14.3182C10E00](#) [KC5032K24.5760C10E00](#)  
[KC2520K2.0480C1GE00](#) [KC5032K4.0000C10E00](#) [KC2016K24.0000C1GE00](#) [KC2016K32.0000C10E00](#)  
[KC5032K32.0000C10E00](#) [KC7050K11.2896C10E00](#) [KC5032K32.7680C1GE00](#) [KC5032K13.5600C1GE00](#)  
[KC3225K7.3728C10E00](#) [KC7050K33.3333C10E00](#) [KC5032K48.0000C10E00](#) [KC2520K48.0000C1GE00](#)  
[KC7050K14.7456C10E00](#) [KC7050K25.0000C10E00](#) [KC2016K40.0000C10E00](#) [KC2016K20.0000C10E00](#)  
[KC7050K13.5600C1GE00](#) [KC2016K33.3333C1GE00](#) [KC2520K12.2880C1GE00](#) [KC2016K18.4320C1GE00](#)  
[KC3225K11.2896C1GE00](#) [KC2016K12.0000C1GE00](#) [KC7050K32.0000C10E00](#) [KC3225K12.0000C1GE00](#)  
[KC2016K12.2880C10E00](#) [KC7050K4.0000C1GE00](#) [KC7050K16.3840C10E00](#) [KC2016K27.0000C10E00](#)  
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[KC2016K40.0000C1GE00](#) [KC5032K18.4320C1GE00](#) [KC3225K75.0000C10E00](#) [KC2016K3.6864C1GE00](#)  
[KC5032K12.2880C1GE00](#) [KC2016K13.5600C1GE00](#) [KC2016K28.6364C1GE00](#) [KC2016K16.3840C1GE00](#)  
[KC2016K12.0000C10E00](#) [KC2520K33.3333C10E00](#) [KC5032K14.3182C10E00](#) [KC5032K22.5792C10E00](#)  
[KC2520K7.3728C10E00](#) [KC3225K8.0000C10E00](#) [KC3225K14.7456C10E00](#) [KC2520K14.3182C10E00](#)  
[KC2016K11.2896C10E00](#) [KC5032K60.0000C10E00](#) [KC7050K33.0000C10E00](#) [KC7050K66.6667C1GE00](#)  
[KC2016K14.7456C1GE00](#) [KC5032K28.6364C10E00](#) [KC3225K14.3182C10E00](#) [KC3225K12.0000C10E00](#)



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;
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- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
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- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
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Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

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- 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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**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.