

Chip Monolithic Ceramic Capacitors



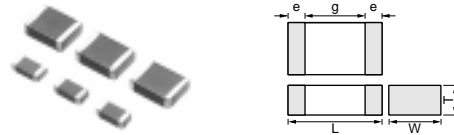
Medium Voltage High Capacitance for General Use

■ Features

1. A new monolithic structure for small, high capacitance capable of operating at high voltage levels.
2. Sn-plated external electrodes realizes good solderability.
3. Use the GRM18/21/31 types with flow or reflow soldering, and other types with reflow soldering only.

■ Applications


1. Ideal for use on diode-snubber circuits for switching power supplies.
2. Ideal for use as primary-secondary coupling for DC-DC converter.
3. Ideal for use on line filters and ringer detectors for telephones, facsimiles and modems.



| Part Number | Dimensions (mm) | | | | |
|-------------|-----------------|-----------|--------------|------------|--------|
| | L | W | T | e | g min. |
| GRM188 | 1.6 ±0.1 | 0.8 ±0.1 | 0.8 ±0.1 | 0.2 to 0.5 | 0.4 |
| GRM21A | 2.0 ±0.2 | 1.25 ±0.2 | 1.0 +0,-0.3 | | 0.7 |
| GRM21B | | | 1.25 ±0.2 | | 1.2 |
| GRM31B | 3.2 ±0.2 | 1.6 ±0.2 | 1.25 +0,-0.3 | | |
| GRM31C | | | 1.6 ±0.2 | | |
| GRM32Q | 3.2 ±0.3 | 2.5 ±0.2 | 1.5 +0,-0.3 | | |
| GRM32D | | | 2.0 +0,-0.3 | | |
| GRM43Q | 4.5 ±0.4 | 3.2 ±0.3 | 1.5 +0,-0.3 | | |
| GRM43D | | | 2.0 +0,-0.3 | | |
| GRM55D | 5.7 ±0.4 | 5.0 ±0.4 | 2.0 +0,-0.3 | | |

| Part Number | Rated Voltage (V) | TC Code (Standard) | Capacitance | Length L (mm) | Width W (mm) | Thickness T (mm) | Electrode g min. (mm) | Electrode e (mm) |
|--------------------|-------------------|--------------------|--------------|---------------|--------------|------------------|-----------------------|------------------|
| GRM188R72E221KW07D | DC250 | X7R (EIA) | 220pF ±10% | 1.6 | 0.8 | 0.8 | 0.4 | 0.2 to 0.5 |
| GRM188R72E331KW07D | DC250 | X7R (EIA) | 330pF ±10% | 1.6 | 0.8 | 0.8 | 0.4 | 0.2 to 0.5 |
| GRM188R72E471KW07D | DC250 | X7R (EIA) | 470pF ±10% | 1.6 | 0.8 | 0.8 | 0.4 | 0.2 to 0.5 |
| GRM188R72E681KW07D | DC250 | X7R (EIA) | 680pF ±10% | 1.6 | 0.8 | 0.8 | 0.4 | 0.2 to 0.5 |
| GRM188R72E102KW07D | DC250 | X7R (EIA) | 1000pF ±10% | 1.6 | 0.8 | 0.8 | 0.4 | 0.2 to 0.5 |
| GRM21AR72E102KW01D | DC250 | X7R (EIA) | 1000pF ±10% | 2.0 | 1.25 | 1.0 | 0.7 | 0.3 min. |
| GRM188R72E152KW07D | DC250 | X7R (EIA) | 1500pF ±10% | 1.6 | 0.8 | 0.8 | 0.4 | 0.2 to 0.5 |
| GRM21AR72E152KW01D | DC250 | X7R (EIA) | 1500pF ±10% | 2.0 | 1.25 | 1.0 | 0.7 | 0.3 min. |
| GRM188R72E222KW07D | DC250 | X7R (EIA) | 2200pF ±10% | 1.6 | 0.8 | 0.8 | 0.4 | 0.2 to 0.5 |
| GRM21AR72E222KW01D | DC250 | X7R (EIA) | 2200pF ±10% | 2.0 | 1.25 | 1.0 | 0.7 | 0.3 min. |
| GRM21AR72E332KW01D | DC250 | X7R (EIA) | 3300pF ±10% | 2.0 | 1.25 | 1.0 | 0.7 | 0.3 min. |
| GRM21AR72E472KW01D | DC250 | X7R (EIA) | 4700pF ±10% | 2.0 | 1.25 | 1.0 | 0.7 | 0.3 min. |
| GRM21AR72E682KW01D | DC250 | X7R (EIA) | 6800pF ±10% | 2.0 | 1.25 | 1.0 | 0.7 | 0.3 min. |
| GRM21BR72E103KW03L | DC250 | X7R (EIA) | 10000pF ±10% | 2.0 | 1.25 | 1.25 | 0.7 | 0.3 min. |
| GRM31BR72E153KW01L | DC250 | X7R (EIA) | 15000pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31BR72E223KW01L | DC250 | X7R (EIA) | 22000pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31CR72E333KW03L | DC250 | X7R (EIA) | 33000pF ±10% | 3.2 | 1.6 | 1.6 | 1.2 | 0.3 min. |
| GRM31CR72E473KW03L | DC250 | X7R (EIA) | 47000pF ±10% | 3.2 | 1.6 | 1.6 | 1.2 | 0.3 min. |
| GRM31BR72E683KW01L | DC250 | X7R (EIA) | 68000pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM32QR72E683KW01L | DC250 | X7R (EIA) | 68000pF ±10% | 3.2 | 2.5 | 1.5 | 1.2 | 0.3 min. |
| GRM31CR72E104KW03L | DC250 | X7R (EIA) | 0.10µF ±10% | 3.2 | 1.6 | 1.6 | 1.2 | 0.3 min. |
| GRM32DR72E104KW01L | DC250 | X7R (EIA) | 0.10µF ±10% | 3.2 | 2.5 | 2.0 | 1.2 | 0.3 min. |
| GRM43QR72E154KW01L | DC250 | X7R (EIA) | 0.15µF ±10% | 4.5 | 3.2 | 1.5 | 2.2 | 0.3 min. |
| GRM32DR72E224KW01L | DC250 | X7R (EIA) | 0.22µF ±10% | 3.2 | 2.5 | 2.0 | 1.2 | 0.3 min. |
| GRM43DR72E224KW01L | DC250 | X7R (EIA) | 0.22µF ±10% | 4.5 | 3.2 | 2.0 | 2.2 | 0.3 min. |
| GRM43DR72E334KW01L | DC250 | X7R (EIA) | 0.33µF ±10% | 4.5 | 3.2 | 2.0 | 2.2 | 0.3 min. |
| GRM55DR72E334KW01L | DC250 | X7R (EIA) | 0.33µF ±10% | 5.7 | 5.0 | 2.0 | 3.2 | 0.3 min. |
| GRM43DR72E474KW01L | DC250 | X7R (EIA) | 0.47µF ±10% | 4.5 | 3.2 | 2.0 | 2.2 | 0.3 min. |
| GRM55DR72E474KW01L | DC250 | X7R (EIA) | 0.47µF ±10% | 5.7 | 5.0 | 2.0 | 3.2 | 0.3 min. |
| GRM55DR72E105KW01L | DC250 | X7R (EIA) | 1.0µF ±10% | 5.7 | 5.0 | 2.0 | 3.2 | 0.3 min. |
| GRM31BR72J102KW01L | DC630 | X7R (EIA) | 1000pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31BR72J152KW01L | DC630 | X7R (EIA) | 1500pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |

Continued on the following page.

 Continued from the preceding page.

| Part Number | Rated Voltage (V) | TC Code (Standard) | Capacitance | Length L (mm) | Width W (mm) | Thickness T (mm) | Electrode g min. (mm) | Electrode e (mm) |
|--------------------|-------------------|--------------------|--------------|---------------|--------------|------------------|-----------------------|------------------|
| GRM31BR72J222KW01L | DC630 | X7R (EIA) | 2200pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31BR72J332KW01L | DC630 | X7R (EIA) | 3300pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31BR72J472KW01L | DC630 | X7R (EIA) | 4700pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31BR72J682KW01L | DC630 | X7R (EIA) | 6800pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31BR72J103KW01L | DC630 | X7R (EIA) | 10000pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31CR72J153KW03L | DC630 | X7R (EIA) | 15000pF ±10% | 3.2 | 1.6 | 1.6 | 1.2 | 0.3 min. |
| GRM32QR72J223KW01L | DC630 | X7R (EIA) | 22000pF ±10% | 3.2 | 2.5 | 1.5 | 1.2 | 0.3 min. |
| GRM32DR72J333KW01L | DC630 | X7R (EIA) | 33000pF ±10% | 3.2 | 2.5 | 2.0 | 1.2 | 0.3 min. |
| GRM32DR72J473KW01L | DC630 | X7R (EIA) | 47000pF ±10% | 3.2 | 2.5 | 2.0 | 1.2 | 0.3 min. |
| GRM43QR72J683KW01L | DC630 | X7R (EIA) | 68000pF ±10% | 4.5 | 3.2 | 1.5 | 2.2 | 0.3 min. |
| GRM43DR72J104KW01L | DC630 | X7R (EIA) | 0.10μF ±10% | 4.5 | 3.2 | 2.0 | 2.2 | 0.3 min. |
| GRM55DR72J154KW01L | DC630 | X7R (EIA) | 0.15μF ±10% | 5.7 | 5.0 | 2.0 | 3.2 | 0.3 min. |
| GRM55DR72J224KW01L | DC630 | X7R (EIA) | 0.22μF ±10% | 5.7 | 5.0 | 2.0 | 3.2 | 0.3 min. |
| GRM31BR73A471KW01L | DC1000 | X7R (EIA) | 470pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31BR73A102KW01L | DC1000 | X7R (EIA) | 1000pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31BR73A152KW01L | DC1000 | X7R (EIA) | 1500pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31BR73A222KW01L | DC1000 | X7R (EIA) | 2200pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31BR73A332KW01L | DC1000 | X7R (EIA) | 3300pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM31BR73A472KW01L | DC1000 | X7R (EIA) | 4700pF ±10% | 3.2 | 1.6 | 1.25 | 1.2 | 0.3 min. |
| GRM32QR73A682KW01L | DC1000 | X7R (EIA) | 6800pF ±10% | 3.2 | 2.5 | 1.5 | 1.2 | 0.3 min. |
| GRM32QR73A103KW01L | DC1000 | X7R (EIA) | 10000pF ±10% | 3.2 | 2.5 | 1.5 | 1.2 | 0.3 min. |
| GRM32DR73A153KW01L | DC1000 | X7R (EIA) | 15000pF ±10% | 3.2 | 2.5 | 2.0 | 1.2 | 0.3 min. |
| GRM32DR73A223KW01L | DC1000 | X7R (EIA) | 22000pF ±10% | 3.2 | 2.5 | 2.0 | 1.2 | 0.3 min. |
| GRM43DR73A333KW01L | DC1000 | X7R (EIA) | 33000pF ±10% | 4.5 | 3.2 | 2.0 | 2.2 | 0.3 min. |
| GRM43DR73A473KW01L | DC1000 | X7R (EIA) | 47000pF ±10% | 4.5 | 3.2 | 2.0 | 2.2 | 0.3 min. |
| GRM55DR73A104KW01L | DC1000 | X7R (EIA) | 0.10μF ±10% | 5.7 | 5.0 | 2.0 | 3.2 | 0.3 min. |