

# GPD Series

- Guaranteed short time at 150°C
- Downsized and high-ripple current version of GPA series
- For automobile modules and other high temperature applications
- Endurance with ripple current : 2,000 to 3,000 hours at 125°C to 135°C
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

GPA → Downsized Higher ripple current → **GPD**



## ◆ SPECIFICATIONS

| Items  | Characteristics  |                                      |                            |      |            |      |      |  |
|--|--|--------------------------------------|----------------------------|------|------------|------|------|--|
| Category   | -40 to +135°C  |                                      |                            |      |            |      |      |  |
| Temperature Range                                      | -40 to +135°C  |                                      |                            |      |            |      |      |  |
| Rated Voltage Range                                    | 25 to 100V <sub>dc</sub>   |                                      |                            |      |            |      |      |  |
| Capacitance Tolerance                                  | ±20% (M) (at 20°C, 120Hz)  |                                      |                            |      |            |      |      |  |
| Leakage Current  | I=0.03CV or 4μA, whichever is greater.<br>Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C, 1 minute)  |                                      |                            |      |            |      |      |  |
| Dissipation Factor (tan δ)                             | Rated voltage (V <sub>dc</sub> )   | 25V                                  | 35V                        | 50V  | 63V        | 80V  | 100V |  |
|  | tan δ (Max.)   | 0.14                                 | 0.12                       | 0.10 | 0.10       | 0.08 | 0.08 |  |
|  | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz)  |                                      |                            |      |            |      |      |  |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated voltage (V <sub>dc</sub> )   | 25V                                  | 35V                        | 50V  | 63V        | 80V  | 100V |  |
|  | Z(-25°C)/Z(+20°C)  | 2                                    | 2                          | 2    | 2          | 2    | 2    |  |
|  | Z(-40°C)/Z(+20°C)  | 4                                    | 4                          | 4    | 4          | 4    | 4    |  |
| Endurance 1  | The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 125°C or 135°C.  |                                      |                            |      |            |      |      |  |
|  | Time   | 125°C                                | 3,000hours                 |      |            |      |      |  |
|  |  | 135°C                                | 25 to 50V <sub>dc</sub> :  |      | 3,000hours |      |      |  |
|  |  |                                      | 63 to 100V <sub>dc</sub> : |      | 2,000hours |      |      |  |
|  | Capacitance change   | ≤ ±30% of the initial value          |                            |      |            |      |      |  |
| D.F. (tan δ)   | ≤300% of the initial specified value   |                                      |                            |      |            |      |      |  |
| Leakage current  | ≤The initial specified value   |                                      |                            |      |            |      |      |  |
| Endurance 2  | The following specifications shall be satisfied when the capacitors are restored to 20°C after the test condition that the rated voltage is applied for 100 hours at 150°C and DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 125°C or 135°C. |                                      |                            |      |            |      |      |  |
|  | Time   | 125°C                                | 2,500hours                 |      |            |      |      |  |
|  |  | 135°C                                | 25 to 50V <sub>dc</sub> :  |      | 2,500hours |      |      |  |
|  |  |                                      | 63 to 100V <sub>dc</sub> : |      | 1,500hours |      |      |  |
|  | Capacitance change   | ≤ ±30% of the initial value          |                            |      |            |      |      |  |
| D.F. (tan δ)   | ≤300% of the initial specified value   |                                      |                            |      |            |      |      |  |
| Leakage current  | ≤The initial specified value   |                                      |                            |      |            |      |      |  |
| Shelf Life   | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 125°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.  |                                      |                            |      |            |      |      |  |
|  | Capacitance change   | ≤ ±30% of the initial value          |                            |      |            |      |      |  |
|  | D.F. (tan δ)   | ≤300% of the initial specified value |                            |      |            |      |      |  |
|  | Leakage current  | ≤The initial specified value         |                            |      |            |      |      |  |

## ◆ DIMENSIONS [mm]

- Terminal Code : E



| φD  | 12.5                              | 16  | 18  |
|-----|-----------------------------------|-----|-----|
| φd  | 0.6                               | 0.8 | 0.8 |
| F   | 5.0                               | 7.5 | 7.5 |
| φD' | φD±0.5                            |     |     |
| L'  | L <sup>+1.5</sup> <sub>-1.0</sub> |     |     |

## ◆ PART NUMBERING SYSTEM



Please refer to "Product code guide (radial lead type)"

## GPD Series

### ◆ STANDARD RATINGS

| WV<br>(V <sub>dc</sub> ) | Cap<br>(μF) | Case size<br>φD×L(mm) | tan δ | ESR<br>(Ω max./100kHz) |       | Rated ripple current<br>(mA rms/100kHz) |                    | Part No.           |
|--------------------------|-------------|-----------------------|-------|------------------------|-------|---|--------------------|--------------------|
|                          |             |                       |       | 20°C                   | -40°C | 125°C                                   | 135°C              |                    |
| 25                       | 2,000       | 12.5 × 20             | 0.16  | 0.042                  | 0.48  | 2,760                                   | 1,690              | EGPD250E□□202MK20H |
|                          | 3,000       | 12.5 × 25             | 0.18  | 0.033                  | 0.30  | 3,480                                   | 2,010              | EGPD250E□□302MK25H |
|                          | 3,300       | 16 × 20               | 0.18  | 0.035                  | 0.27  | 3,040                                   | 1,860              | EGPD250E□□332ML20H |
|                          | 3,600       | 12.5 × 30             | 0.18  | 0.028                  | 0.24  | 4,490                                   | 2,900              | EGPD250E□□362MK30H |
|                          | 4,300       | 18 × 20               | 0.20  | 0.034                  | 0.22  | 3,250                                   | 1,870              | EGPD250E□□432MM20H |
|                          | 4,700       | 12.5 × 35             | 0.20  | 0.025                  | 0.21  | 5,140                                   | 3,190              | EGPD250E□□472MK35H |
|                          | 4,700       | 16 × 25               | 0.20  | 0.028                  | 0.22  | 4,260                                   | 2,870              | EGPD250E□□472ML25H |
|                          | 5,100       | 12.5 × 40             | 0.22  | 0.024                  | 0.19  | 5,810                                   | 3,470              | EGPD250E□□512MK40H |
|                          | 5,600       | 16 × 30               | 0.22  | 0.023                  | 0.18  | 5,480                                   | 3,400              | EGPD250E□□562ML30H |
|                          | 6,200       | 18 × 25               | 0.24  | 0.027                  | 0.19  | 4,500                                   | 2,900              | EGPD250E□□622MM25H |
|                          | 7,500       | 16 × 35               | 0.26  | 0.020                  | 0.14  | 6,070                                   | 3,630              | EGPD250E□□752ML35H |
|                          | 7,500       | 18 × 30               | 0.26  | 0.022                  | 0.16  | 5,600                                   | 3,470              | EGPD250E□□752MM30H |
|                          | 9,100       | 16 × 40               | 0.30  | 0.019                  | 0.12  | 6,810                                   | 3,930              | EGPD250E□□912ML40H |
| 10,000                   | 18 × 35     | 0.32                  | 0.019 | 0.12                   | 6,280 | 3,750                                   | EGPD250E□□103MM35H |                    |
| 12,000                   | 18 × 40     | 0.36                  | 0.018 | 0.10                   | 7,070 | 4,080                                   | EGPD250E□□123MM40H |                    |
| 35                       | 1,300       | 12.5 × 20             | 0.12  | 0.042                  | 0.48  | 2,760                                   | 1,690              | EGPD350E□□132MK20H |
|                          | 1,800       | 12.5 × 25             | 0.12  | 0.033                  | 0.30  | 3,480                                   | 2,010              | EGPD350E□□182MK25H |
|                          | 2,000       | 16 × 20               | 0.14  | 0.035                  | 0.27  | 3,040                                   | 1,860              | EGPD350E□□202ML20H |
|                          | 2,200       | 12.5 × 30             | 0.14  | 0.028                  | 0.24  | 4,490                                   | 2,900              | EGPD350E□□222MK30H |
|                          | 2,400       | 18 × 20               | 0.14  | 0.034                  | 0.22  | 3,250                                   | 1,870              | EGPD350E□□242MM20H |
|                          | 2,700       | 12.5 × 35             | 0.14  | 0.025                  | 0.21  | 5,140                                   | 3,190              | EGPD350E□□272MK35H |
|                          | 3,000       | 16 × 25               | 0.16  | 0.028                  | 0.22  | 4,260                                   | 2,870              | EGPD350E□□302ML25H |
|                          | 3,300       | 12.5 × 40             | 0.16  | 0.024                  | 0.19  | 5,810                                   | 3,470              | EGPD350E□□332MK40H |
|                          | 3,600       | 16 × 30               | 0.16  | 0.023                  | 0.18  | 5,480                                   | 3,400              | EGPD350E□□362ML30H |
|                          | 3,900       | 18 × 25               | 0.16  | 0.027                  | 0.19  | 4,500                                   | 2,900              | EGPD350E□□392MM25H |
|                          | 4,300       | 16 × 35               | 0.18  | 0.020                  | 0.14  | 6,070                                   | 3,630              | EGPD350E□□432ML35H |
|                          | 4,700       | 18 × 30               | 0.18  | 0.022                  | 0.16  | 5,600                                   | 3,470              | EGPD350E□□472MM30H |
|                          | 5,600       | 16 × 40               | 0.20  | 0.019                  | 0.12  | 6,810                                   | 3,930              | EGPD350E□□562ML40H |
| 6,200                    | 18 × 35     | 0.22                  | 0.019 | 0.12                   | 6,280 | 3,750                                   | EGPD350E□□622MM35H |                    |
| 7,500                    | 18 × 40     | 0.24                  | 0.018 | 0.10                   | 7,070 | 4,080                                   | EGPD350E□□752MM40H |                    |
| 50                       | 620         | 12.5 × 20             | 0.10  | 0.073                  | 0.88  | 2,400                                   | 1,470              | EGPD500E□□621MK20H |
|                          | 820         | 12.5 × 25             | 0.10  | 0.058                  | 0.67  | 3,350                                   | 2,260              | EGPD500E□□821MK25H |
|                          | 1,000       | 16 × 20               | 0.10  | 0.050                  | 0.55  | 2,960                                   | 1,870              | EGPD500E□□102ML20H |
|                          | 1,100       | 12.5 × 30             | 0.10  | 0.048                  | 0.52  | 4,220                                   | 2,520              | EGPD500E□□112MK30H |
|                          | 1,300       | 12.5 × 35             | 0.10  | 0.042                  | 0.44  | 4,810                                   | 2,780              | EGPD500E□□132MK35H |
|                          | 1,300       | 16 × 25               | 0.10  | 0.042                  | 0.44  | 4,040                                   | 2,500              | EGPD500E□□132ML25H |
|                          | 1,300       | 18 × 20               | 0.10  | 0.042                  | 0.44  | 3,130                                   | 2,110              | EGPD500E□□132MM20H |
|                          | 1,600       | 12.5 × 40             | 0.10  | 0.037                  | 0.36  | 5,240                                   | 3,020              | EGPD500E□□162MK40H |
|                          | 1,600       | 16 × 30               | 0.10  | 0.035                  | 0.36  | 5,130                                   | 2,960              | EGPD500E□□162ML30H |
|                          | 1,800       | 18 × 25               | 0.10  | 0.033                  | 0.32  | 4,230                                   | 2,530              | EGPD500E□□182MM25H |
|                          | 2,200       | 16 × 35               | 0.12  | 0.029                  | 0.27  | 5,480                                   | 3,160              | EGPD500E□□222ML35H |
|                          | 2,400       | 18 × 30               | 0.12  | 0.028                  | 0.25  | 5,240                                   | 3,020              | EGPD500E□□242MM30H |
|                          | 2,700       | 16 × 40               | 0.12  | 0.025                  | 0.22  | 5,930                                   | 3,420              | EGPD500E□□272ML40H |
| 3,000                    | 18 × 35     | 0.14                  | 0.024 | 0.20                   | 5,870 | 3,390                                   | EGPD500E□□302MM35H |                    |
| 3,600                    | 18 × 40     | 0.14                  | 0.023 | 0.16                   | 6,420 | 3,700                                   | EGPD500E□□362MM40H |                    |
| 63                       | 390         | 12.5 × 20             | 0.10  | 0.072                  | 0.56  | 1,640                                   | 1,420              | EGPD630E□□391MK20H |
|                          | 560         | 12.5 × 25             | 0.10  | 0.052                  | 0.39  | 2,520                                   | 2,050              | EGPD630E□□561MK25H |
|                          | 680         | 16 × 20               | 0.10  | 0.053                  | 0.34  | 2,140                                   | 1,910              | EGPD630E□□681ML20H |
|                          | 750         | 12.5 × 30             | 0.10  | 0.042                  | 0.30  | 3,110                                   | 2,630              | EGPD630E□□751MK30H |
|                          | 910         | 12.5 × 35             | 0.10  | 0.035                  | 0.25  | 3,760                                   | 2,970              | EGPD630E□□911MK35H |
|                          | 910         | 18 × 20               | 0.10  | 0.044                  | 0.26  | 2,350                                   | 2,100              | EGPD630E□□911MM20H |
|                          | 1,000       | 16 × 25               | 0.10  | 0.038                  | 0.23  | 2,940                                   | 2,680              | EGPD630E□□102ML25H |
|                          | 1,100       | 12.5 × 40             | 0.10  | 0.031                  | 0.22  | 4,610                                   | 3,260              | EGPD630E□□112MK40H |
|                          | 1,200       | 16 × 30               | 0.10  | 0.034                  | 0.20  | 3,860                                   | 3,050              | EGPD630E□□122ML30H |
|                          | 1,300       | 18 × 25               | 0.10  | 0.033                  | 0.19  | 3,080                                   | 2,810              | EGPD630E□□132MM25H |
|                          | 1,600       | 16 × 35               | 0.10  | 0.027                  | 0.15  | 4,590                                   | 3,420              | EGPD630E□□162ML35H |
|                          | 1,600       | 18 × 30               | 0.10  | 0.028                  | 0.15  | 4,080                                   | 3,220              | EGPD630E□□162MM30H |
|                          | 1,800       | 16 × 40               | 0.10  | 0.025                  | 0.14  | 5,190                                   | 3,670              | EGPD630E□□182ML40H |
| 2,200                    | 18 × 35     | 0.12                  | 0.022 | 0.12                   | 5,220 | 3,690                                   | EGPD630E□□222MM35H |                    |
| 2,400                    | 18 × 40     | 0.12                  | 0.021 | 0.11                   | 5,660 | 3,820                                   | EGPD630E□□242MM40H |                    |

□□ : Enter the appropriate lead forming or taping code.

**GPD Series**
**◆STANDARD RATINGS**

| WV<br>(V <sub>dc</sub> ) | Cap<br>(μF) | Case size<br>φD×L(mm) | tan δ | ESR<br>(Ω max./100kHz) |       | Rated ripple current<br>(mA <sub>rms</sub> /100kHz) |                    | Part No.           |
|--------------------------|-------------|-----------------------|-------|------------------------|-------|---|--------------------|--------------------|
|                          |             |                       |       | 20°C                   | -40°C | 125°C   | 135°C              |                    |
| 80                       | 270         | 12.5 × 20             | 0.08  | 0.072                  | 0.56  | 1,640   | 1,420              | EGPD800E□□271MK20H |
|                          | 390         | 12.5 × 25             | 0.08  | 0.052                  | 0.39  | 2,520   | 2,050              | EGPD800E□□391MK25H |
|                          | 470         | 16 × 20               | 0.08  | 0.053                  | 0.34  | 2,140   | 1,910              | EGPD800E□□471ML20H |
|                          | 510         | 12.5 × 30             | 0.08  | 0.042                  | 0.30  | 3,110   | 2,630              | EGPD800E□□511MK30H |
|                          | 620         | 12.5 × 35             | 0.08  | 0.035                  | 0.25  | 3,760   | 2,970              | EGPD800E□□621MK35H |
|                          | 620         | 18 × 20               | 0.08  | 0.044                  | 0.26  | 2,350   | 2,100              | EGPD800E□□621MM20H |
|                          | 680         | 16 × 25               | 0.08  | 0.038                  | 0.23  | 2,940   | 2,680              | EGPD800E□□681ML25H |
|                          | 750         | 12.5 × 40             | 0.08  | 0.031                  | 0.22  | 4,610   | 3,260              | EGPD800E□□751MK40H |
|                          | 750         | 16 × 30               | 0.08  | 0.034                  | 0.20  | 3,860   | 3,050              | EGPD800E□□751ML30H |
|                          | 820         | 18 × 25               | 0.08  | 0.033                  | 0.19  | 3,080   | 2,810              | EGPD800E□□821MM25H |
|                          | 1,000       | 16 × 35               | 0.08  | 0.027                  | 0.15  | 4,590   | 3,420              | EGPD800E□□102ML35H |
|                          | 1,100       | 18 × 30               | 0.08  | 0.028                  | 0.15  | 4,080   | 3,220              | EGPD800E□□112MM30H |
|                          | 1,300       | 16 × 40               | 0.08  | 0.025                  | 0.14  | 5,190   | 3,670              | EGPD800E□□132ML40H |
|                          | 1,300       | 18 × 35               | 0.08  | 0.022                  | 0.12  | 5,220   | 3,690              | EGPD800E□□132MM35H |
| 1,600                    | 18 × 40     | 0.08                  | 0.021 | 0.11                   | 5,660 | 3,820   | EGPD800E□□162MM40H |                    |
| 100                      | 160         | 12.5 × 20             | 0.08  | 0.090                  | 0.75  | 1,580   | 1,410              | EGPD101E□□161MK20H |
|                          | 220         | 12.5 × 25             | 0.08  | 0.068                  | 0.55  | 2,140   | 1,960              | EGPD101E□□221MK25H |
|                          | 270         | 16 × 20               | 0.08  | 0.067                  | 0.47  | 2,050   | 1,670              | EGPD101E□□271ML20H |
|                          | 300         | 12.5 × 30             | 0.08  | 0.052                  | 0.41  | 2,950   | 2,330              | EGPD101E□□301MK30H |
|                          | 360         | 12.5 × 35             | 0.08  | 0.045                  | 0.35  | 3,530   | 2,630              | EGPD101E□□361MK35H |
|                          | 360         | 18 × 20               | 0.08  | 0.061                  | 0.35  | 2,270   | 1,860              | EGPD101E□□361MM20H |
|                          | 390         | 16 × 25               | 0.08  | 0.048                  | 0.33  | 2,790   | 2,360              | EGPD101E□□391ML25H |
|                          | 430         | 12.5 × 40             | 0.08  | 0.038                  | 0.29  | 4,140   | 2,920              | EGPD101E□□431MK40H |
|                          | 470         | 16 × 30               | 0.08  | 0.041                  | 0.27  | 3,440   | 2,720              | EGPD101E□□471ML30H |
|                          | 510         | 18 × 25               | 0.08  | 0.045                  | 0.25  | 2,920   | 2,470              | EGPD101E□□511MM25H |
|                          | 560         | 16 × 35               | 0.08  | 0.036                  | 0.23  | 4,190   | 2,960              | EGPD101E□□561ML35H |
|                          | 620         | 18 × 30               | 0.08  | 0.037                  | 0.20  | 3,920   | 2,920              | EGPD101E□□621MM30H |
|                          | 750         | 16 × 40               | 0.08  | 0.028                  | 0.18  | 5,020   | 3,380              | EGPD101E□□751ML40H |
|                          | 820         | 18 × 35               | 0.08  | 0.030                  | 0.16  | 4,710   | 3,330              | EGPD101E□□821MM35H |
|                          | 910         | 18 × 40               | 0.08  | 0.026                  | 0.14  | 5,280   | 3,560              | EGPD101E□□911MM40H |

□□ : Enter the appropriate lead forming or taping code.

**◆RATED RIPPLE CURRENT MULTIPLIERS**
**●Frequency Multipliers**

| Capacitance(μF) | Frequency(Hz) |      |      |      |
|-----------------|---------------|------|------|------|
|                 | 120           | 1k   | 10k  | 100k |
| 160             | 0.40          | 0.75 | 0.90 | 1.00 |
| 220 to 620      | 0.50          | 0.85 | 0.94 | 1.00 |
| 680 to 2,000    | 0.60          | 0.87 | 0.95 | 1.00 |
| 2,200 to 4,300  | 0.75          | 0.90 | 0.95 | 1.00 |
| 4,700 to 12,000 | 0.85          | 0.95 | 0.98 | 1.00 |

Please contact us for lifetime estimation.