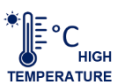


### AP SERIES ■ HIGH TEMPERATURE TYPE 150°C

#### KEY FEATURES



AEC-Q200



°C HIGH TEMPERATURE

- HYBRID CONDUCTIVE POLYMER • SMD type
- Endurance: 150°C • 1 000 hours
- Low ESR and high ripple current
- Vibration Proof (VP) version (up to 30g) available
- AEC-Q200 version available



#### SPECIFICATIONS

| Items  |                | Performance Characteristics   |
|--|----------------|---|
| Operating Temperature Range                    |                | -55 ~ +150°C  |
| Rated Voltage Range                            | $V_R$          | 16 ~ 80V DC   |
| Surge Voltage                                  | $V_S$          | ( $V_R \leq 100V$ ): $V_S = 1.25 \cdot V_R$                           |
| Capacitance Range                              | $C_R$          | 22 ~ 560 $\mu$ F  |
| Cap. Tolerance                                 | $\Delta C$     | $\pm 20\%$ (120Hz • 20°C)   |
| Leakage Current (20°C • $V_R$ applied)         | $I_{LEAK}$     | Not to exceed the values shown in standard ratings<br>After 2 minutes |
| Dissipation Factor % (20°C • 120Hz)            | $\tan \delta$  | Not to exceed the values shown in standard ratings                    |
| Equivalent Series Resistance (20°C • 100kHz)   | ESR            | Not to exceed the values shown in standard ratings                    |
| Lifetime Test                                  |                |   |
| Endurance<br>150°C<br>( $V_R$ & $I_R$ applied) | Test           | 1 000 hours   |
|  | $\Delta C/C_R$ | Within $\pm 30\%$ of the initial value                                |
|  | $\tan \delta$  | Less than 200% of the specified value                                 |
|  | ESR            | Less than 200% of the specified value                                 |
|  | $I_{Leak}$     | Less than the specified value   |

#### MULTIPLIER $K_f$ for RIPPLE CURRENT vs. FREQUENCY

| Frequency (Hz)    | 100 ≤ Freq. < 120 | 120 ≤ Freq. < 200  | 200 ≤ Freq. < 300   | 300 ≤ Freq. < 500 |
|-------------------|-------------------|--------------------|---------------------|-------------------|
| Coefficient $K_f$ | 0.10              | 0.10               | 0.10                | 0.15              |
| Frequency (Hz)    | 500 ≤ Freq. < 1k  | 1k ≤ Freq. < 2k    | 2k ≤ Freq. < 3k     | 3k ≤ Freq. < 5k   |
| Coefficient $K_f$ | 0.20              | 0.30               | 0.40                | 0.45              |
| Frequency (Hz)    | 5k ≤ Freq. < 10k  | 10k ≤ Freq. < 15k  | 15k ≤ Freq. < 20k   | 20k ≤ Freq. < 40k |
| Coefficient $K_f$ | 0.50              | 0.60               | 0.65                | 0.75              |
| Frequency (Hz)    | 40k ≤ Freq. < 50k | 50k ≤ Freq. < 100k | 100k ≤ Freq. < 500k | 500k ≤ Freq. < 1M |
| Coefficient $K_f$ | 0.80              | 0.85               | 1.00                | 1.05              |

## STANDARD RATINGS

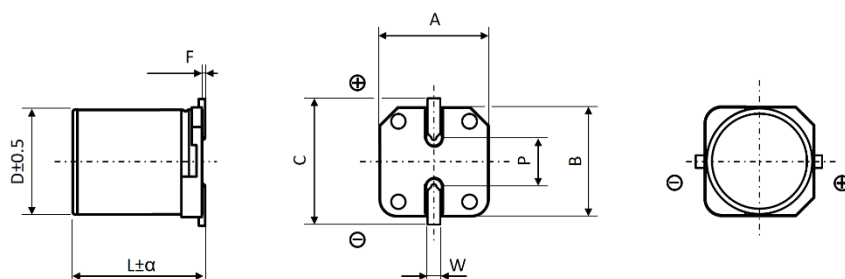
Part number shows blister tape on paper reel

| $V_R$<br>(V) | Standard | Vibration-proof | $C_R$<br>( $\mu F$ ) | $\phi D$<br>(mm) | L<br>(mm) | $I_{LEAK}$<br>( $\mu A$ ,<br>2min) | $\tan\delta$<br>+20°C •<br>120Hz<br>(%) | Max. ESR<br>+20°C •<br>100kHz<br>(m $\Omega$ ) | $I_R$ • Max.<br>Ripple Cur-<br>rent<br>+150°C •<br>100kHz<br>(mA rms) | CapXon Part Number  |
|--------------|----------|-----------------|----------------------|------------------|-----------|------------------------------------|---|--|---|---------------------|
| 16           | •        | •               | 270                  | 8.0              | 10.5      | 43.2                               | 16                                      | 27   | 700   | AP271M016F105PTR □□ |
|              | •        | •               | 330                  | 8.0              | 10.5      | 52.8                               | 16                                      | 25   | 770   | AP331M016F105PTR □□ |
|              | •        | •               | 470                  | 10.0             | 10.5      | 75.2                               | 16                                      | 20   | 900   | AP471M016G105PTR □□ |
|              | •        | •               | 560                  | 10.0             | 12.4      | 89.6                               | 16                                      | 16   | 1050  | AP561M016G124PTR □□ |
| 25           | •        | •               | 220                  | 8.0              | 10.5      | 55.0                               | 14                                      | 27   | 700   | AP221M025F105PTR □□ |
|              | •        | •               | 270                  | 8.0              | 11.7      | 67.5                               | 14                                      | 25   | 770   | AP271M025F117PTR □□ |
|              | •        | •               | 330                  | 10.0             | 10.5      | 82.5                               | 14                                      | 20   | 900   | AP331M025G105PTR □□ |
|              | •        | •               | 470                  | 10.0             | 12.4      | 117.5                              | 14                                      | 16   | 1050  | AP471M025G124PTR □□ |
|              | •        | •               | 560                  | 10.0             | 12.4      | 117.5                              | 14                                      | 16   | 1050  | AP561M025G124PTR □□ |
| 35           | •        | •               | 100                  | 8.0              | 10.5      | 35.0                               | 12                                      | 27   | 700   | AP101M035F105PTR □□ |
|              | •        | •               | 150                  | 8.0              | 10.5      | 52.5                               | 12                                      | 27   | 700   | AP151M035F105PTR □□ |
|              | •        | •               | 180                  | 8.0              | 11.7      | 63.0                               | 12                                      | 25   | 770   | AP181M035F117PTR □□ |
|              | •        | •               | 270                  | 10.0             | 10.5      | 94.5                               | 12                                      | 20   | 900   | AP271M035G105PTR □□ |
|              | •        | •               | 330                  | 10.0             | 12.4      | 115.5                              | 12                                      | 17   | 1020  | AP331M035G124PTR □□ |
| 50           | •        | •               | 56                   | 10.0             | 10.5      | 28.0                               | 10                                      | 28   | 800   | AP560M050G105PTR □□ |
|              | •        | •               | 68                   | 8.0              | 10.5      | 34.0                               | 10                                      | 30   | 600   | AP680M050F105PTR □□ |
|              | •        | •               | 82                   | 8.0              | 11.7      | 41.0                               | 10                                      | 28   | 660   | AP820M050F117PTR □□ |
|              | •        | •               | 100                  | 10.0             | 10.5      | 50.0                               | 10                                      | 28   | 800   | AP101M050G105PTR □□ |
|              | •        | •               | 120                  | 10.0             | 10.5      | 60.0                               | 10                                      | 28   | 800   | AP121M050G105PTR □□ |
|              | •        | •               | 120                  | 10.0             | 12.4      | 60.0                               | 10                                      | 25   | 900   | AP121M050G124PTR □□ |
| 63           | •        | •               | 33                   | 8.0              | 10.5      | 20.8                               | 8                                       | 40   | 600   | AP330M063F105PTR □□ |
|              | •        | •               | 47                   | 8.0              | 10.5      | 29.6                               | 8                                       | 40   | 600   | AP470M063F105PTR □□ |
|              | •        | •               | 47                   | 8.0              | 11.7      | 29.6                               | 8                                       | 38   | 650   | AP470M063F117PTR □□ |
|              | •        | •               | 56                   | 10.0             | 10.5      | 35.3                               | 8                                       | 30   | 800   | AP560M063G105PTR □□ |
|              | •        | •               | 68                   | 10.0             | 10.5      | 42.8                               | 8                                       | 30   | 800   | AP680M063G105PTR □□ |
|              | •        | •               | 82                   | 10.0             | 12.4      | 51.7                               | 8                                       | 27   | 900   | AP820M063G124PTR □□ |
| 80           | •        | •               | 22                   | 8.0              | 10.5      | 17.6                               | 8                                       | 45   | 560   | AP220M080F105PTR □□ |
|              | •        | •               | 27                   | 8.0              | 11.7      | 21.6                               | 8                                       | 43   | 580   | AP270M080F117PTR □□ |
|              | •        | •               | 33                   | 8.0              | 10.5      | 26.4                               | 8                                       | 36   | 730   | AP330M080G105PTR □□ |
|              | •        | •               | 47                   | 10.0             | 10.5      | 37.6                               | 8                                       | 36   | 730   | AP470M080G105PTR □□ |
|              | •        | •               | 56                   | 10.0             | 12.4      | 44.8                               | 8                                       | 34   | 800   | AP560M080G124PTR □□ |
|              | •        | •               | 68                   | 10.0             | 12.4      | 54.4                               | 8                                       | 34   | 800   | AP680M080G124PTR □□ |

□□: Leave **blank** for Standard package  
 □□: Enter **W** for Vibration proof version

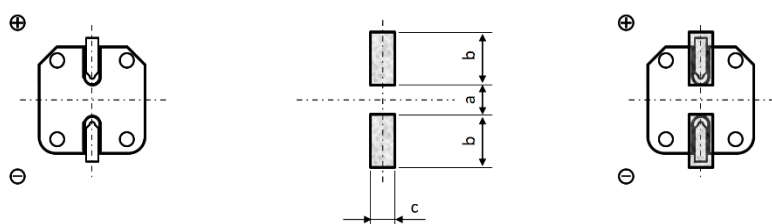
□□: Enter **X** for AEC-Q200  
 □□: Enter **XW** for AEC-Q200 and Vibration proof version

### DIMENSIONS STANDARD PACKAGE ▀ All dimensions in mm



| $\phi D$ | L    | $\alpha$ | $A \pm 0.2$ | $B \pm 0.2$ | $C \pm 0.2$ | F        | $P \pm 0.2$ | W          |
|----------|------|----------|-------------|-------------|-------------|----------|-------------|------------|
| 8.0      | 10.5 | 0.3      | 8.3         | 8.3         | 9.0         | 0.3 max. | 3.1         | 0.7 to 1.1 |
| 8.0      | 11.7 | 0.3      | 8.3         | 8.3         | 9.0         | 0.3 max. | 3.1         | 0.7 to 1.1 |
| 10.0     | 10.5 | 0.3      | 10.3        | 10.3        | 11.0        | 0.3 max. | 4.5         | 0.7 to 1.1 |
| 10.0     | 12.4 | 0.3      | 10.3        | 10.3        | 11.0        | 0.3 max. | 4.5         | 1.0 to 1.4 |

### PAD LAYOUT STANDARD PACKAGE ▀ All dimensions in mm



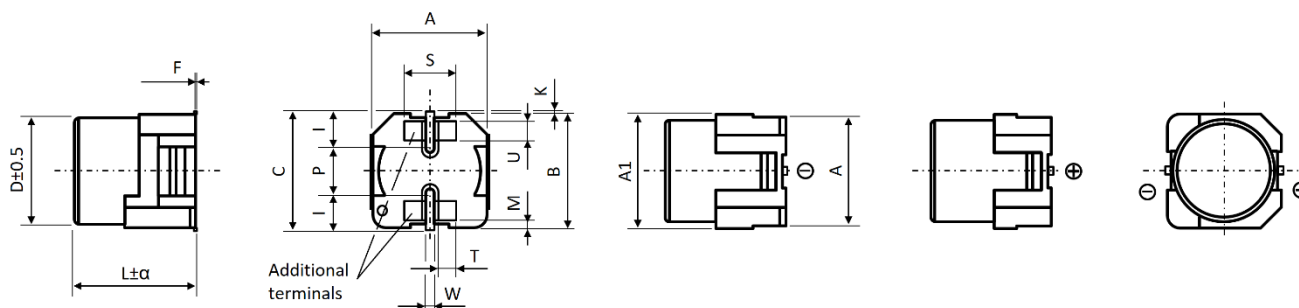
Bottom view

Recommended land patterns

Capacitor mounted on pads

| $\phi D$ | L    | a   | b   | c   |
|----------|------|-----|-----|-----|
| 8.0      | 10.5 | 2.8 | 4.2 | 1.9 |
| 8.0      | 11.7 | 2.8 | 4.2 | 1.9 |
| 10.0     | 10.5 | 4.3 | 4.4 | 1.9 |
| 10.0     | 12.4 | 4.3 | 4.4 | 1.9 |

### DIMENSIONS VP PACKAGE (VIBRATION-PROOF) Ø D8 and D10 ▪ All dimensions in mm

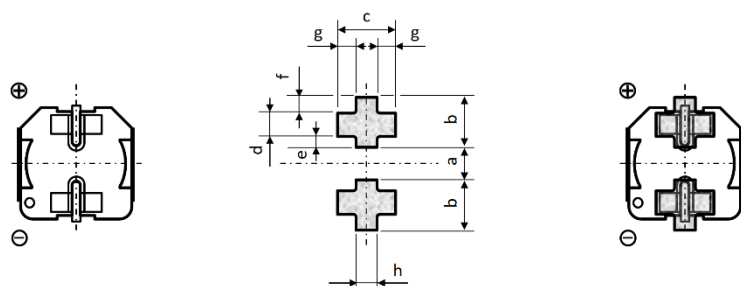


**Note:** Additional terminals electrical connected to anode or cathode terminal.

| Ø D  | L    | α         | A ± 0.2 | A1 (max.) | B ± 0.2 | C (max.) | F         | K ± 0.2 |
|------|------|-----------|---------|-----------|---------|----------|-----------|---------|
| 8.0  | 10.5 | -0.3/+0.7 | 8.3     | 8.8       | 8.3     | 10.0     | 0 to 0.15 | 0.7     |
| 8.0  | 11.7 | -0.3/+0.7 | 8.3     | 8.8       | 8.3     | 10.0     | 0 to 0.15 | 0.7     |
| 10.0 | 10.5 | -0.3/+0.7 | 10.3    | 10.8      | 10.3    | 12.0     | 0 to 0.15 | 0.7     |
| 10.0 | 12.4 | -0.3/+0.7 | 10.3    | 10.8      | 10.3    | 12.0     | 0 to 0.15 | 0.7     |

| Ø D  | L    | I ± 0.1 | M ± 0.1 | P ± 0.2 | S ± 0.1 | T ± 0.1 | U ± 0.1 | W ± 0.1 |
|------|------|---------|---------|---------|---------|---------|---------|---------|
| 8.0  | 10.5 | 3.3     | 0.75    | 3.1     | 3.3     | 0.9     | 0.8     | 1.2     |
| 8.0  | 11.7 | 3.3     | 0.75    | 3.1     | 3.3     | 0.9     | 0.8     | 1.2     |
| 10.0 | 10.5 | 3.5     | 0.9     | 4.6     | 3.3     | 0.9     | 0.8     | 1.2     |
| 10.0 | 12.4 | 3.5     | 0.9     | 4.6     | 3.3     | 0.9     | 0.8     | 1.2     |

### PAD LAYOUT VP PACKAGE (VIBRATION-PROOF) Ø D8 and D10 ▪ All dimensions in mm



Bottom view






Recommended land patterns

Capacitor mounted on pads

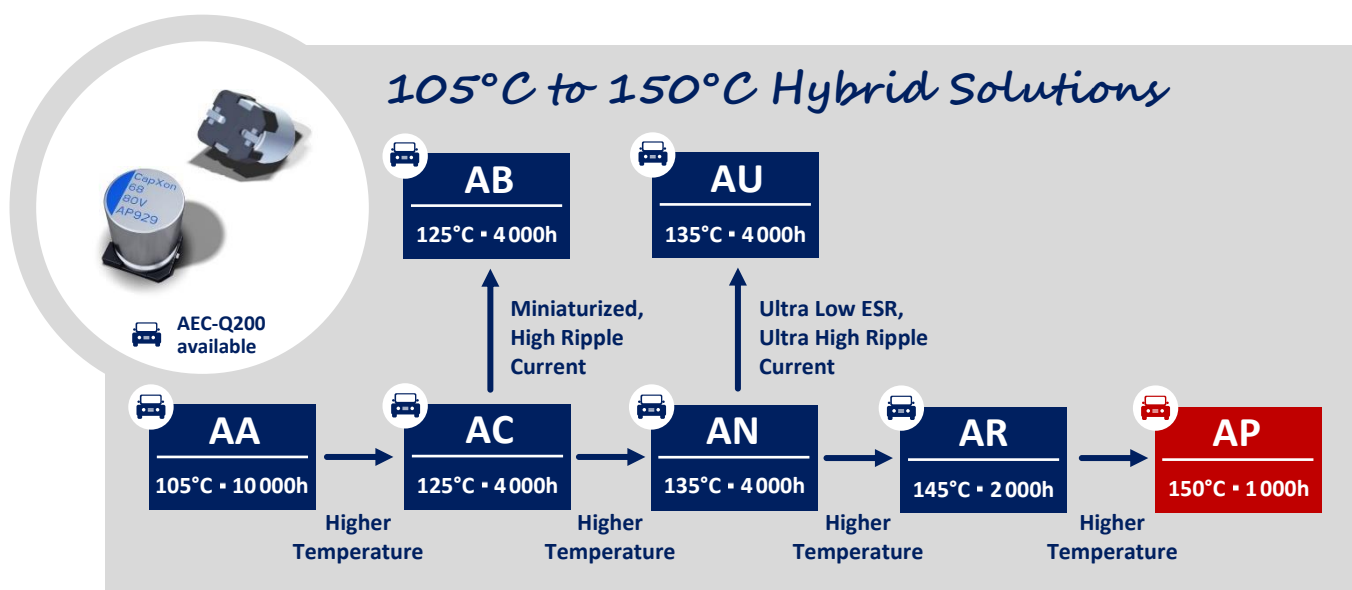
| Ø D  | L    | a   | b   | c   | d   | e   | f   | g   | h   |
|------|------|-----|-----|-----|-----|-----|-----|-----|-----|
| 8.0  | 10.5 | 2.7 | 4.0 | 4.7 | 1.3 | 1.0 | 1.7 | 1.1 | 2.5 |
| 8.0  | 11.7 | 2.7 | 4.0 | 4.7 | 1.3 | 1.0 | 1.7 | 1.1 | 2.5 |
| 10.0 | 10.5 | 3.9 | 4.4 | 4.7 | 1.3 | 1.2 | 1.9 | 1.1 | 2.5 |
| 10.0 | 12.4 | 3.9 | 4.4 | 4.7 | 1.3 | 1.2 | 1.9 | 1.1 | 2.5 |

### PRECAUTIONS, GUIDELINES AND PACKAGING INFORMATION

Unless otherwise agreed in individual specifications, all products are subject to our “General Precautions and Guidelines” as well as our “Packaging Information”. Please refer to the following links in the table.

|   |   |   |  |   |
|---|---|---|--|---|
|  |  |  |  |  |
| <a href="#">General Precautions &amp; Guidelines</a>                              | <a href="#">Packaging Information</a>   | <a href="#">Vibration Test Profiles</a>   | <a href="#">3D Models</a>  | <a href="#">Reliability Tests</a>   |

### GROUP CHART



#### DISCLAIMER

All product related data (e.g. specification, statements and general information) are subject to change without any notice. It is necessary that the customer observes all product related technical / application information and handling instructions.

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Particular operating conditions (ambient temperature, ripple current, voltage, thermal resistance, etc.) as well as storage, production or assembly may affect the performance and the lifetime of the capacitor. Please consult CapXon for lifetime estimation, failure mode considerations or worst-case scenarios according to the product technology, product tolerances / deviations or change of the characteristics of the capacitor due to shipment, storage, handling, production and usage.

For aerospace or military application, life-saving, life-sustaining, safety critical applications or any application where failure may cause severe personal injury or death, please consult us before design-in the capacitor in your application.

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