

### AS SERIES ■ LONG LIFE UP TO 10000 HOURS

#### KEY FEATURES



- HYBRID CONDUCTIVE POLYMER • THT type
- Endurance: 105°C ■ 2 000 up to 10 000 hours
- Low ESR and high ripple current
- Superior electrical stability over application lifetime
- AEC-Q200 version available

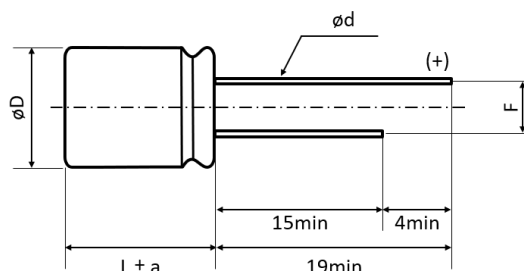


#### SPECIFICATIONS

| Items                                        |               | Performance Characteristics                                                             |
|----------------------------------------------|---------------|-----------------------------------------------------------------------------------------|
| Operating Temperature Range                  |               | -55 ~ +105°C                                                                            |
| Rated Voltage Range                          | $V_R$         | 16 ~ 400V DC                                                                            |
| Surge Voltage                                | $V_S$         | ( $V_R \leq 100V$ ): $V_S = 1.25 \cdot V_R$ ( $V_R \geq 200V$ ): $V_S = 1.15 \cdot V_R$ |
| Capacitance Range                            | $C_R$         | 1.2 ~ 1500 $\mu$ 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>105°C<br>( $V_R$ & $I_R$ applied) | Test           | 10 000 hours                           |
|                                                |                | 5 000 hours                            |
|                                                |                | 5 000 hours                            |
|                                                |                | 2 000 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          |

#### DIMENSIONS ■ All dimensions in mm



| $\phi D$ | L    | $\phi D \pm 0.5$ | a   | F $\pm 0.5$ | $\phi d \pm 0.05$ |
|----------|------|------------------|-----|-------------|-------------------|
| 6.3      | 8    | 6.3              | 1   | 2.5         | 0.6               |
| 8        | 9    | 8                | 1.5 | 3.5         | 0.6               |
| 8        | 11.5 | 8                | 1.5 | 3.5         | 0.6               |
| 10       | 10   | 10               | 1.5 | 5           | 0.6               |
| 10       | 12.5 | 10               | 1.5 | 5           | 0.8               |
| 10       | 18   | 10               | 2   | 5           | 0.8               |

## STANDARD RATINGS

| V <sub>R</sub><br>(V) | C <sub>R</sub><br>(μF) | ø D<br>(mm) | L<br>(mm) | I <sub>LEAK</sub><br>(μA, 2min) | tanδ<br>+20°C •<br>120Hz<br>(%) | Max. ESR<br>+20°C •<br>100kHz<br>(mΩ) | I <sub>R</sub> • Max.<br>Ripple Current<br>+105°C • 100kHz<br>(mA rms) | CapXon Part Number |
|-----------------------|------------------------|-------------|-----------|---------------------------------|---------------------------------|---------------------------------------|------------------------------------------------------------------------|--------------------|
| 16                    | 120                    | 6.3         | 8         | 19.2                            | 16                              | 40                                    | 1500                                                                   | AS121M016E080PTC   |
|                       | 270                    | 8           | 9         | 43.2                            | 16                              | 26                                    | 2000                                                                   | AS271M016F090PTD   |
|                       | 330                    | 8           | 11.5      | 52.8                            | 16                              | 23                                    | 2350                                                                   | AS331M016F115PTD   |
|                       | 470                    | 10          | 10        | 75.2                            | 16                              | 21                                    | 2600                                                                   | AS471M016G100PTA   |
|                       | 560                    | 10          | 12.5      | 89.6                            | 16                              | 15                                    | 3000                                                                   | AS561M016G125PTA   |
|                       | 1500                   | 10          | 18        | 240.0                           | 16                              | 12                                    | 5000                                                                   | AS152M016G180PTA   |
| 25                    | 68                     | 6.3         | 8         | 17.0                            | 16                              | 45                                    | 1400                                                                   | AS680M025E080PTC   |
|                       | 150                    | 8           | 9         | 37.5                            | 16                              | 27                                    | 1900                                                                   | AS151M025F090PTD   |
|                       | 220                    | 8           | 11.5      | 55.0                            | 16                              | 24                                    | 2250                                                                   | AS221M025F115PTD   |
|                       | 270                    | 10          | 10        | 67.5                            | 16                              | 22                                    | 2530                                                                   | AS271M025G100PTA   |
|                       | 330                    | 10          | 12.5      | 82.5                            | 16                              | 16                                    | 2900                                                                   | AS331M025G125PTA   |
|                       | 1000                   | 10          | 18        | 250.0                           | 16                              | 12                                    | 5000                                                                   | AS102M025G180PTA   |
| 35                    | 47                     | 6.3         | 8         | 16.5                            | 16                              | 60                                    | 1300                                                                   | AS470M035E080PTC   |
|                       | 100                    | 8           | 9         | 35.0                            | 16                              | 30                                    | 1800                                                                   | AS101M035F090PTD   |
|                       | 150                    | 8           | 11.5      | 52.5                            | 16                              | 25                                    | 2100                                                                   | AS151M035F115PTD   |
|                       | 150                    | 10          | 10        | 52.5                            | 16                              | 23                                    | 2470                                                                   | AS151M035G100PTA   |
|                       | 220                    | 10          | 12.5      | 77.0                            | 16                              | 17                                    | 2830                                                                   | AS221M035G125PTA   |
|                       | 680                    | 10          | 18        | 238.0                           | 16                              | 14                                    | 4600                                                                   | AS681M035G180PTA   |
| 40                    | 27                     | 6.3         | 8         | 10.8                            | 16                              | 70                                    | 1250                                                                   | AS270M040E080PTC   |
|                       | 56                     | 8           | 9         | 22.4                            | 16                              | 32                                    | 1750                                                                   | AS560M040F090PTD   |
|                       | 82                     | 8           | 11.5      | 32.8                            | 16                              | 27                                    | 2000                                                                   | AS820M040F115PTD   |
|                       | 100                    | 10          | 10        | 40.0                            | 16                              | 24                                    | 2400                                                                   | AS101M040G100PTA   |
|                       | 120                    | 10          | 10        | 48.0                            | 16                              | 18                                    | 2750                                                                   | AS121M040G100PTA   |
|                       | 180                    | 10          | 12.5      | 72.0                            | 16                              | 18                                    | 3000                                                                   | AS181M040G125PTA   |
| 50                    | 15                     | 6.3         | 8         | 7.5                             | 16                              | 80                                    | 1200                                                                   | AS150M050E080PTC   |
|                       | 33                     | 8           | 9         | 16.5                            | 16                              | 35                                    | 1670                                                                   | AS330M050F090PTD   |
|                       | 47                     | 8           | 11.5      | 23.5                            | 16                              | 30                                    | 1900                                                                   | AS470M050F115PTD   |
|                       | 56                     | 10          | 10        | 28.0                            | 16                              | 25                                    | 2320                                                                   | AS560M050G100PTA   |
|                       | 82                     | 10          | 12.5      | 41.0                            | 16                              | 19                                    | 2650                                                                   | AS820M050G125PTA   |
|                       | 220                    | 10          | 18        | 110.0                           | 16                              | 15                                    | 4350                                                                   | AS221M050G180PTA   |
| 63                    | 10                     | 6.3         | 8         | 6.3                             | 16                              | 100                                   | 1060                                                                   | AS100M063E080PTC   |
|                       | 22                     | 8           | 9         | 13.9                            | 16                              | 40                                    | 1560                                                                   | AS220M063F090PTD   |
|                       | 27                     | 8           | 11.5      | 17.0                            | 16                              | 35                                    | 1750                                                                   | AS270M063F115PTD   |
|                       | 33                     | 10          | 10        | 20.8                            | 16                              | 30                                    | 2100                                                                   | AS330M063G100PTA   |
|                       | 47                     | 10          | 10        | 29.6                            | 16                              | 30                                    | 2100                                                                   | AS470M063G100PTA   |
|                       | 56                     | 10          | 12.5      | 35.3                            | 16                              | 22                                    | 2400                                                                   | AS560M063G125PTA   |
|                       | 150                    | 10          | 18        | 94.5                            | 16                              | 18                                    | 4000                                                                   | AS151M063G180PTA   |
| 80                    | 8.2                    | 8           | 9         | 6.6                             | 16                              | 90                                    | 1050                                                                   | AS82M080F115PTD    |
|                       | 15                     | 8           | 11.5      | 12.0                            | 16                              | 70                                    | 1400                                                                   | AS150M080F115PTD   |
|                       | 12                     | 10          | 10        | 9.6                             | 16                              | 70                                    | 1600                                                                   | AS120M080G100PTA   |
|                       | 15                     | 10          | 10        | 12.0                            | 16                              | 70                                    | 1600                                                                   | AS150M080G100PTA   |
|                       | 18                     | 10          | 12.5      | 14.4                            | 16                              | 50                                    | 1830                                                                   | AS180M080G125PTA   |

see description at end of standard ratings

Part number shows taped version with straight leads and Ammo Pack packaging.

See "PACKAGING INFORMATION" for further lead treatment options.

## STANDARD RATINGS

| $V_R$<br>(V) | $C_R$<br>( $\mu$ F) | $\phi$ D<br>(mm) | L<br>(mm) | $I_{LEAK}$<br>( $\mu$ A, 2min) | $\tan\delta$<br>+20°C •<br>120Hz<br>(%) | Max. ESR<br>+20°C •<br>100kHz<br>(m $\Omega$ ) | $I_R$ • Max.<br>Ripple Current<br>+105°C • 100kHz<br>(mA rms) | CapXon Part Number |
|--------------|---------------------|------------------|-----------|--------------------------------|-----------------------------------------|------------------------------------------------|---------------------------------------------------------------|--------------------|
| 100          | 8.2                 | 8                | 9         | 8.2                            | 16                                      | 100                                            | 1000                                                          | AS8R2M100F090PTD   |
|              | 10                  | 8                | 11.5      | 10.0                           | 16                                      | 80                                             | 1300                                                          | AS100M100F115PTD   |
|              | 10                  | 10               | 10        | 10.0                           | 16                                      | 80                                             | 1450                                                          | AS100M100G100PTA   |
|              | 12                  | 10               | 10        | 12.0                           | 16                                      | 80                                             | 1450                                                          | AS120M100G100PTA   |
|              | 15                  | 10               | 12.5      | 15.0                           | 16                                      | 60                                             | 1660                                                          | AS150M100G125PTA   |
|              | 47                  | 10               | 12.5      | 15.0                           | 16                                      | 60                                             | 1660                                                          | AS470M100G125PTA   |
| 250          | 8.2                 | 10               | 12.5      | 20.5                           | 16                                      | 120                                            | 740                                                           | AS8R2M250G125PTA   |
| 400          | 1.2                 | 8                | 9         | 4.8                            | 16                                      | 200                                            | 430                                                           | AS1R2M400F090PTD   |
|              | 2.2                 | 8                | 11.5      | 8.8                            | 16                                      | 170                                            | 510                                                           | AS2R2M400F115PTD   |
|              | 4.7                 | 10               | 12.5      | 18.8                           | 16                                      | 150                                            | 650                                                           | AS4R7M400G125PTA   |

: Leave **blank** for Standard type

: Enter **X** for AEC-Q200 type

Part number shows taped version with straight leads and Ammo Pack packaging.

See “PACKAGING INFORMATION” for further lead treatment options.

## 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                | 0.70              |
| 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              |

## 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="#">3D Models</a> | <a href="#">Reliability Tests</a> |

### 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.

CapXon products are designed and manufactured according to severe quality and safety standards. Under no circumstance, CapXon warrants that any CapXon product is suitable for the purposes intended for your application, even CapXon knows the application. It is customer's duty and obligation to check and make sure that CapXon products are suitable for the purposes intended and select the correct and proper CapXon product. Customers are requested to perform a sufficient validation and reliability evaluation to assure needed safety level and reliability performance by suitable designs and to apply proper safeguards (e.g. redundancies, protective circuits).

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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