

## ACAH Series

- Feature: Low ESR, Surface mounting, Reduced height, Wide temperature
- Suitable for DC-DC converters, voltage regulators and decoupling applications
- Rate voltage: 2~25Vdc.
- Endurance: Endurance 2000hrs at 105°C
- RoHS Compliant



| Specifications             |                                                                                                                                                                                                            |                                                                                                                                                        |                                                                                                                         |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Item                       | Conditions                                                                                                                                                                                                 | Characteristics                                                                                                                                        |                                                                                                                         |
| Category Temperature Range |                                                                                                                                                                                                            | -55 to +105 °C                                                                                                                                         |                                                                                                                         |
| Rated Voltage Range        |                                                                                                                                                                                                            | 2 to 25 Vdc                                                                                                                                            |                                                                                                                         |
| Capacitance Tolerance      | at 20°C, 120Hz                                                                                                                                                                                             | ±20 % (M) ; Y : +10 ~ -35%                                                                                                                             |                                                                                                                         |
| Leakage Current            | at 20°C after 2 minutes                                                                                                                                                                                    | $I \leq 0.1CV$ (2 V.DC to 6.3 V.DC)<br>$I \leq 0.3CV$ (10 V.DC to 25 V.DC)<br>I : Leakage Current(μA), C : Rated Capacitance(μF), V : Rated Voltage(V) |                                                                                                                         |
| Surge Voltage              | 15 to +35°C                                                                                                                                                                                                | Rated voltage × 1.25 (2 V.DC to 16 V.DC)<br>Rated voltage × 1.15 (20 V.DC to 25 V.DC)                                                                  |                                                                                                                         |
| Dissipation Factor (tanδ)  | at 20°C , 120Hz                                                                                                                                                                                            | 0.06 max.                                                                                                                                              |                                                                                                                         |
| Endurance                  | 105°C, rated voltage applied, 2000 hrs.                                                                                                                                                                    | Appearance                                                                                                                                             | No significant damage                                                                                                   |
|                            |                                                                                                                                                                                                            | Capacitance Change                                                                                                                                     | ±20% of the initial value                                                                                               |
|                            |                                                                                                                                                                                                            | Dissipation Factor                                                                                                                                     | ≤ 200% of the initial specified value                                                                                   |
|                            |                                                                                                                                                                                                            | Leakage Current                                                                                                                                        | 2 V.DC to 6.3 V.DC<br>≤ 300% of the initial specified value<br>10 V.DC to 25 V.DC<br>≤ within the initial limit         |
| Damp Heat, Steady State    | 60°C, 90 to 95%RH, 500 hrs.                                                                                                                                                                                | Appearance                                                                                                                                             | No significant damage                                                                                                   |
|                            |                                                                                                                                                                                                            | Capacitance Change                                                                                                                                     | (2 V.DC to 2.5 V.DC) +70%, -20% of the initial value<br>(10 V.DC to 25 V.DC) +60%, -20% of the initial value            |
|                            |                                                                                                                                                                                                            | Dissipation Factor                                                                                                                                     | ≤ 200% of the initial specified value                                                                                   |
|                            |                                                                                                                                                                                                            | Leakage Current                                                                                                                                        | 2 V.DC to 6.3 V.DC<br>within the initial specified value<br>10 V.DC to 25 V.DC<br>≤ 300% of the initial specified value |
| Surge Voltage              | The capacitors shall be subjected to 1000 cycles each consisting of charge with the surge voltages, at 15°C to 35°C for 30 seconds through a protective resistor(R=1KΩ) and discharge for 5min 30 seconds. | Appearance                                                                                                                                             | No significant damage                                                                                                   |
|                            |                                                                                                                                                                                                            | Capacitance Change                                                                                                                                     | ±10% of the initial value                                                                                               |
|                            |                                                                                                                                                                                                            | Dissipation Factor                                                                                                                                     | within the initial specified value                                                                                      |
|                            |                                                                                                                                                                                                            | Leakage Current                                                                                                                                        | within the initial specified value                                                                                      |

ACAH Series

Standard Ratings

| WV(VDC) | Cap<br>(μF)@120Hz | tanδ Max.<br>@120Hz | Leakage<br>Current<br>Max. (μA) | ESR Max.<br>(mΩ)<br>@100kHz | Ripple<br>Current<br>(mA <sub>rms</sub> )<br>@100kHz | Part No.        |
|---------|-------------------|---------------------|---------------------------------|-----------------------------|------------------------------------------------------|-----------------|
| 2       | 470               | 0.06                | 94                              | 9.0                         | 6,300                                                | ACAH2R0S471E09  |
|         | 470               | 0.06                | 94                              | 9.0                         | 6,300                                                | ACAH2R0S471E09Y |
|         | 470               | 0.06                | 94                              | 6.0                         | 7,500                                                | ACAH2R0S471E06  |
|         | 470               | 0.06                | 94                              | 4.5                         | 8,500                                                | ACAH2R0S471E04  |
|         | 470               | 0.06                | 94                              | 3.0                         | 10,200                                               | ACAH2R0S471E03  |
|         | 560               | 0.06                | 112                             | 4.5                         | 8,500                                                | ACAH2R0S561E04  |
| 2.5     | 470               | 0.06                | 117.5                           | 9.0                         | 6,300                                                | ACAH2R5S471E09  |
|         | 470               | 0.06                | 117.5                           | 9.0                         | 6,300                                                | ACAH2R5S471E09Y |
|         | 470               | 0.06                | 117.5                           | 6.0                         | 7,500                                                | ACAH2R5S471E06  |
|         | 470               | 0.06                | 117.5                           | 4.5                         | 8,500                                                | ACAH2R5S471E04  |
|         | 470               | 0.06                | 117.5                           | 3.0                         | 10,200                                               | ACAH2R5S471E03  |
|         | 560               | 0.06                | 140                             | 4.5                         | 8,500                                                | ACAH2R5S561E04  |
| 10      | 100               | 0.06                | 300                             | 40                          | 3,200                                                | ACAH100S101E40  |
|         | 100               | 0.06                | 300                             | 40                          | 3,200                                                | ACAH100S101E40Y |
| 16      | 47                | 0.06                | 225.6                           | 40                          | 3,200                                                | ACAH160S470E40  |
|         | 56                | 0.06                | 268.8                           | 40                          | 3,200                                                | ACAH160S560E40  |
| 20      | 33                | 0.06                | 198.0                           | 40                          | 3,200                                                | ACAH200S330E40  |
| 25      | 33                | 0.06                | 247.5                           | 40                          | 3,200                                                | ACAH250S330E40  |

| Temperature Compensation Multipliers for Ripple Current |       |               |                |
|---------------------------------------------------------|-------|---------------|----------------|
|                                                         | ≤ 45℃ | 45℃ < T ≤ 85℃ | 85℃ < T ≤ 105℃ |
| 2 V.DC to 6.3 V.DC                                      | 1.0   | 0.7           | 0.25           |
| 10 V.DC to 25 V.DC                                      | 1.0   | 0.8           | 0.5            |

PRODUCT IDENTIFICATION

|         |               |             |             |            |                          |
|---------|---------------|-------------|-------------|------------|--------------------------|
| ACAH    | 2R5           | S           | 471         | E04        | <input type="checkbox"/> |
| Product | Rated Voltage | Case Height | Capacitance | ESR        | Suffix for special code  |
|         | 2R5: 2.5V     | S:1.9mm     | 471=470μF   | E04: 4.5mΩ | Y=+10~-35%               |

DIMENSIONS AND MARKING

| Case size | L       | WA      | WB      | H       | P       |
|-----------|---------|---------|---------|---------|---------|
| S         | 7.3±0.3 | 4.3±0.3 | 2.4±0.2 | 1.9±0.3 | 1.3±0.2 |

