

# K53-69

TANTALUM SOLID-ELECTROLYTE CAPACITOR

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ADPK.673547.006 TU

Surface mount (SMD) capacitors type K53-69 are suitable for application in direct current, ripple current and pulse current circuits.

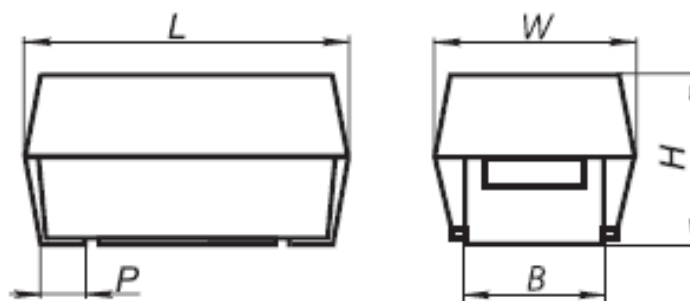
Polar, fixed capacitors are available in all-climate version.



## MAIN PARAMETERS

| Name   | Value                                    |
|--|--|
| Rated voltage, V                             | 4...50                                   |
| Rated capacitance, $\mu\text{F}$             | 0.22...680                               |
| Capacitance tolerance (20°C, 50 Hz), %       | $\pm 5$ ; $\pm 10$ ; $\pm 20$ ; $\pm 30$ |
| Maximum operating temperature $T_{env}$ , °C | +125                                     |
| Minimal operating temperature $T_{env}$ , °C | -60                                      |

## CAPACITORS DIMENSIONAL DRAWING

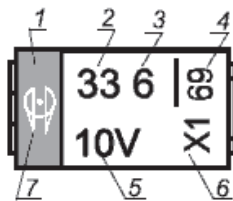
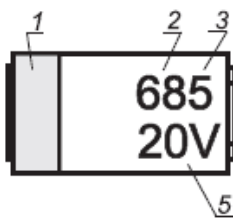


## CAPACITORS OVERALL DIMENSIONS AND MASS

| Case code | L, mm   | W, mm   | H, mm    | P, mm   | B, mm   | Mass, g, max |
|-----------|---------|---------|----------|---------|---------|--------------|
| A         | 3.5±0.2 | 1.6±0.2 | 1.6±0.2  | 0.8±0.3 | 1.2±0.1 | 0.05         |
| B         | 3.5±0.2 | 2.8±0.2 | 1.9±0.2  | 0.8±0.3 | 2.2±0.1 | 0.06         |
| C         | 6.0±0.3 | 3.2±0.3 | 2.5±0.3  | 1.3±0.3 | 2.2±0.1 | 0.3          |
| D         | 7.3±0.3 | 4.3±0.3 | 2.9±0.3  | 1.3±0.3 | 2.4±0.1 | 0.5          |
| E         | 7.3±0.3 | 4.3±0.3 | 4.1±0.3  | 1.3±0.3 | 2.4±0.1 | 0.7          |
| X         | 7.3±0.3 | 6.1±0.3 | 3.45±0.3 | 1.4±0.3 | 3.1±0.1 | 0.8          |

## MARKING OF CAPACITORS

"B" case sizes marking "C", "D", "E", "X" case sizes marking



- 1 – Positive terminal (color stripe)
- 2 – Rated capacitance, pF
- 3 – Capacitance multiplier code
- 4 – Product code (only "69" is marked, stripe unavailability is acceptable)
- 5 – Rated voltage, V
- 6 – Production date code
- 7 – Trade mark

### On size A capacitors

only the polarity designation in the form of a colored strip is marked.

## MARKING CODES DESIGNATION

| Code | Year |
|------|------|
| K    | 2018 |
| L    | 2019 |
| M    | 2020 |
| N    | 2021 |
| P    | 2022 |
| R    | 2023 |
| S    | 2024 |
| T    | 2025 |
| U    | 2026 |
| V    | 2027 |
| W    | 2028 |
| X    | 2029 |

| Code | Month    | Code | Month     |
|------|----------|------|-----------|
| 1    | January  | 7    | July      |
| 2    | February | 8    | August    |
| 3    | March    | 9    | September |
| 4    | April    | O    | October   |
| 5    | May      | N    | November  |
| 6    | June     | D    | December  |

| Capacitance multiplier code | Capacitance multiplier |
|-----------------------------|------------------------|
| 4                           | 10 <sup>4</sup>        |
| 5                           | 10 <sup>5</sup>        |
| 6                           | 10 <sup>6</sup>        |
| 7                           | 10 <sup>7</sup>        |
| 8                           | 10 <sup>8</sup>        |

## CAPACITORS CASE CODE

| $C_R, \mu F$ | 4        | 6.3       | 10      | 16    | 20      | 25     | 32    | 40      | 50    |
|--------------|----------|-----------|---------|-------|---------|--------|-------|---------|-------|
|              | $U_R, V$ |           |         |       |         |        |       |         |       |
| 0.1          |          |           |         |       |         |        | A     | A       | A     |
| 0.15         |          |           |         |       |         |        | A     | A       | A,B   |
| 0.22         |          |           |         |       |         |        | A     | A       | A,B   |
| 0.33         |          |           |         |       |         |        | A     | A       | A,B   |
| 0.47         | C        | C         | C       | C     | C       | A,C    | A,B,C | A,B,C   | B,C   |
| 0.68         | C        | C         | C       | C     | A,C     | A,C    | A,B,C | A,B,C   | B,C   |
| 1            | C        | C         | C       | A,C   | A,C     | A,B,C  | A,B,C | B,C     | B,C,D |
| 1.5          | C        | C         | A,C     | A,C   | A,C     | A,B,C  | B,C   | C       | C,D   |
| 2.2          | C        | A,C       | A,C     | A,B,C | A,B,C   | A,B,C  | B,C,D | B**,C,D | C,D   |
| 3.3          | C        | A,C       | A,B,C   | A,B,C | A,B,C   | B,C    | C,D,E | C,D,E   | C,D,E |
| 4.7          | C        | A,C       | A,B,C   | A,B,C | B,C     | B,C    | C,D,E | C,D,E   | D,E   |
| 6.8          | C        | A,B,C     | A,B,C   | A,B,C | B,C     | B,C,D  | C,D,E | C*,D,E  | D,E   |
| 10           | B,C      | A,B,C     | B,C     | B,C   | B,C     | C***,D | D,E   | D,E     | D,E,X |
| 15           | B,C      | A,B,C     | B,C     | B,C,D | B*,C,D  | C,D,E  | D,E   | D*,E    | E,X   |
| 22           | B,C      | B,C       | B,C     | C,D   | C,D     | D,E    | E     | E       |       |
| 33           | B,C      | B,C,D     | B,C,D   | C,D   | C**,D,E | E      | E,X   |         |       |
| 47           | C        | B,C,D     | B**,C,D | C,D,E | D,E     | E      |       |         |       |
| 68           | C,D      | C,D       | C,D     | D,E   | D,E     | E,X    |       |         |       |
| 100          | C,D      | B**,C,D,E | C*,D,E  | D,E   | E,X     |        |       |         |       |
| 150          | C,D      | C,D,E     | D,E     | E,X   | E,X     |        |       |         |       |
| 220          | C,D      | D,E       | D,E     | E,X   |         |        |       |         |       |
| 330          | D,E      | D,E       | E,X     |       |         |        |       |         |       |
| 470          | D,E      | E,X       | E,X     |       |         |        |       |         |       |
| 680          | E        | E,X       |         |       |         |        |       |         |       |
| 1000         | E        | X         |         |       |         |        |       |         |       |

\* Only -  $\pm 20\%$ ;

\*\* Only -  $\pm 30\%$ ;

\*\*\* Only -  $\pm 20\%, \pm 30\%$

## CAPACITORS RELIABILITY

| Reliability Operation modes   | Minimal nonfailure operating time, $t_{\lambda}$ , hours |
|---|--|
| Maximum-permissible mode ( $U_R$ , $T_{env}=85^{\circ}\text{C}$ )     | 25 000   |
| Maximum-permissible mode ( $0.7U_R$ , $T_{env}=125^{\circ}\text{C}$ ) | 2 000  |
| Light mode ( $(0.2-0.6)U_R$ , $T_{env}=55^{\circ}\text{C}$ )          | 150 000  |
| Storageability<br>Gamma-rated time of capacitor storageability, years | 25   |

## CAPACITOR ELECTRIC PARAMETERS VALUE WHEN DELIVERED

| $U_R$ , V | $C_R$ , $\mu\text{F}$ | Case code | $\text{tg } \delta$ , %, max | $I_{LEAK}$ , $\mu\text{A}$ , max | ESR, Ohm, max |
|-----------|-----------------------|-----------|------------------------------|----------------------------------|---------------|
| 4         | 0.47                  | C         | 6                            | 0.5                              | 13            |
| 4         | 0.68                  | C         | 6                            | 0.5                              | 13            |
| 4         | 1                     | C         | 6                            | 0.5                              | 12            |
| 4         | 1.5                   | C         | 6                            | 0.5                              | 11            |
| 4         | 2.2                   | C         | 6                            | 0.5                              | 10            |
| 4         | 3.3                   | C         | 6                            | 0.5                              | 9             |
| 4         | 4.7                   | C         | 6                            | 0.5                              | 7             |
| 4         | 6.8                   | C         | 6                            | 0.5                              | 6             |
| 4         | 10                    | B         | 8                            | 0.5                              | 3.5           |
| 4         | 10                    | C         | 8                            | 0.5                              | 4.5           |
| 4         | 15                    | B         | 8                            | 0.6                              | 3.5           |
| 4         | 15                    | C         | 8                            | 0.6                              | 4             |
| 4         | 22                    | B         | 8                            | 0.9                              | 3.5           |
| 4         | 22                    | C         | 8                            | 0.9                              | 3.5           |
| 4         | 33                    | B         | 8                            | 1.3                              | 3.5           |
| 4         | 33                    | C         | 8                            | 1.3                              | 2.5           |
| 4         | 47                    | C         | 8                            | 1.9                              | 2.3           |
| 4         | 68                    | C         | 8                            | 2.7                              | 1.6           |
| 4         | 68                    | D         | 8                            | 2.7                              | 1.4           |
| 4         | 100                   | C         | 10                           | 4                                | 1.6           |
| 4         | 100                   | D         | 10                           | 4                                | 1             |
| 4         | 150                   | C         | 10                           | 6                                | 1.2           |
| 4         | 150                   | D         | 10                           | 6                                | 0.8           |
| 4         | 220                   | C         | 14                           | 8.8                              | 1             |

| $U_R, V$ | $C_R, \mu F$ | Case code | $tg \delta, \%, \max$ | $I_{LEAK}, \mu A, \max$ | $ESR, Ohm, \max$ |
|----------|--------------|-----------|-----------------------|-------------------------|------------------|
| 4        | 220          | D         | 10                    | 8.8                     | 0.8              |
| 4        | 330          | D         | 12                    | 13.2                    | 0.8              |
| 4        | 330          | E         | 12                    | 13.2                    | 0.8              |
| 4        | 470          | D         | 14                    | 18.8                    | 0.65             |
| 4        | 470          | E         | 12                    | 18.8                    | 0.7              |
| 4        | 680          | E         | 12                    | 27.2                    | 0.6              |
| 4        | 1000         | E         | 20                    | 40                      | 0.45             |
| 6.3      | 0.47         | C         | 6                     | 0.5                     | 13               |
| 6.3      | 0.68         | C         | 6                     | 0.5                     | 12               |
| 6.3      | 1            | C         | 6                     | 0.5                     | 11               |
| 6.3      | 1.5          | C         | 6                     | 0.5                     | 10               |
| 6.3      | 2.2          | A         | 8                     | 0.5                     | 8                |
| 6.3      | 2.2          | C         | 6                     | 0.5                     | 10               |
| 6.3      | 3.3          | A         | 8                     | 0.5                     | 8                |
| 6.3      | 3.3          | C         | 6                     | 0.5                     | 7                |
| 6.3      | 4.7          | A         | 8                     | 0.5                     | 6                |
| 6.3      | 4.7          | C         | 6                     | 0.5                     | 5.5              |
| 6.3      | 6.8          | A         | 8                     | 0.5                     | 6                |
| 6.3      | 6.8          | B         | 8                     | 0.5                     | 3.5              |
| 6.3      | 6.8          | C         | 8                     | 0.5                     | 4.5              |
| 6.3      | 10           | A         | 14                    | 0.6                     | 5                |
| 6.3      | 10           | B         | 8                     | 0.6                     | 3.5              |
| 6.3      | 10           | C         | 8                     | 0.6                     | 4                |
| 6.3      | 15           | A         | 14                    | 0.9                     | 4.5              |
| 6.3      | 15           | B         | 8                     | 0.9                     | 3.5              |
| 6.3      | 15           | C         | 8                     | 0.9                     | 3.8              |
| 6.3      | 22           | B         | 8                     | 1.4                     | 3.5              |
| 6.3      | 22           | C         | 8                     | 1.4                     | 2.5              |
| 6.3      | 33           | B         | 12                    | 2.1                     | 3.5              |
| 6.3      | 33           | C         | 8                     | 2.1                     | 1.8              |
| 6.3      | 33           | D         | 8                     | 2.1                     | 1.6              |
| 6.3      | 47           | B         | 12                    | 3                       | 3                |
| 6.3      | 47           | C         | 10                    | 3                       | 1.6              |
| 6.3      | 47           | D         | 8                     | 3                       | 1.5              |
| 6.3      | 68           | C         | 10                    | 4.3                     | 1.2              |

| $U_R, V$ | $C_R, \mu F$ | Case code | $tg \delta, \%$ max | $I_{LEAK}, \mu A$ max | ESR, Ohm, max |
|----------|--------------|-----------|---------------------|-----------------------|---------------|
| 6.3      | 68           | D         | 8                   | 4.3                   | 1.4           |
| 6.3      | 100          | B         | 16                  | 6.3                   | 3.5           |
| 6.3      | 100          | C         | 10                  | 6.3                   | 0.9           |
| 6.3      | 100          | D         | 10                  | 6.3                   | 1.2           |
| 6.3      | 100          | E         | 10                  | 6.3                   | 0.8           |
| 6.3      | 150          | C         | 10                  | 9.5                   | 0.9           |
| 6.3      | 150          | D         | 10                  | 9.5                   | 0.8           |
| 6.3      | 150          | E         | 10                  | 9.5                   | 0.8           |
| 6.3      | 220          | D         | 12                  | 13.9                  | 0.8           |
| 6.3      | 220          | E         | 12                  | 13.9                  | 0.8           |
| 6.3      | 330          | D         | 12                  | 20.8                  | 0.6           |
| 6.3      | 330          | E         | 12                  | 20.8                  | 0.6           |
| 6.3      | 470          | E         | 12                  | 29.6                  | 0.6           |
| 6.3      | 470          | X         | 12                  | 29.6                  | 0.5           |
| 6.3      | 680          | E         | 12                  | 42.8                  | 0.4           |
| 6.3      | 680          | X         | 12                  | 42.8                  | 0.5           |
| 6.3      | 1000         | X         | 16                  | 63                    | 0.35          |
| 10       | 0.47         | C         | 6                   | 0.5                   | 12            |
| 10       | 0.68         | C         | 6                   | 0.5                   | 11            |
| 10       | 1            | C         | 6                   | 0.5                   | 10            |
| 10       | 1.5          | A         | 8                   | 0.5                   | 8             |
| 10       | 1.5          | C         | 6                   | 0.5                   | 9             |
| 10       | 2.2          | A         | 8                   | 0.5                   | 8             |
| 10       | 2.2          | C         | 6                   | 0.5                   | 7             |
| 10       | 3.3          | A         | 8                   | 0.5                   | 6             |
| 10       | 3.3          | B         | 8                   | 0.5                   | 6             |
| 10       | 3.3          | C         | 6                   | 0.5                   | 5.5           |
| 10       | 4.7          | A         | 8                   | 0.5                   | 8             |
| 10       | 4.7          | B         | 8                   | 0.5                   | 3.5           |
| 10       | 4.7          | C         | 8                   | 0.5                   | 4.5           |
| 10       | 6.8          | A         | 10                  | 0.7                   | 5.5           |
| 10       | 6.8          | B         | 8                   | 0.7                   | 3.5           |
| 10       | 6.8          | C         | 8                   | 0.7                   | 4             |
| 10       | 10           | B         | 8                   | 1                     | 3.5           |
| 10       | 10           | C         | 8                   | 1                     | 3.8           |

| $U_R, V$ | $C_R, \mu F$ | Case code | $tg \delta, \%$ , max | $I_{LEAK}, \mu A$ , max | ESR, Ohm, max |
|----------|--------------|-----------|-----------------------|-------------------------|---------------|
| 10       | 15           | B         | 8                     | 1.5                     | 2.8           |
| 10       | 15           | C         | 8                     | 1.5                     | 2.5           |
| 10       | 22           | B         | 10                    | 2.2                     | 1.5           |
| 10       | 22           | C         | 8                     | 2.2                     | 1.8           |
| 10       | 33           | B         | 10                    | 3.3                     | 1.4           |
| 10       | 33           | C         | 8                     | 3.3                     | 1.5           |
| 10       | 33           | D         | 8                     | 3.3                     | 1.4           |
| 10       | 47           | B         | 16                    | 4.7                     | 3             |
| 10       | 47           | C         | 8                     | 4.7                     | 1.2           |
| 10       | 47           | D         | 8                     | 4.7                     | 1.4           |
| 10       | 68           | C         | 10                    | 6.8                     | 1.2           |
| 10       | 68           | D         | 8                     | 6.8                     | 0.8           |
| 10       | 100          | C         | 10                    | 10                      | 1.2           |
| 10       | 100          | D         | 10                    | 10                      | 0.8           |
| 10       | 100          | E         | 10                    | 10                      | 0.8           |
| 10       | 150          | D         | 12                    | 15                      | 0.8           |
| 10       | 150          | E         | 12                    | 15                      | 0.8           |
| 10       | 220          | D         | 12                    | 22                      | 0.5           |
| 10       | 220          | E         | 12                    | 22                      | 0.6           |
| 10       | 330          | E         | 12                    | 33                      | 0.5           |
| 10       | 330          | X         | 12                    | 33                      | 0.6           |
| 10       | 470          | E         | 12                    | 47                      | 0.3           |
| 10       | 470          | X         | 14                    | 47                      | 0.4           |
| 16       | 0.47         | C         | 6                     | 0.5                     | 11            |
| 16       | 0.68         | C         | 6                     | 0.5                     | 10            |
| 16       | 1            | A         | 8                     | 0.5                     | 12            |
| 16       | 1            | C         | 6                     | 0.5                     | 9             |
| 16       | 1.5          | A         | 8                     | 0.5                     | 8             |
| 16       | 1.5          | C         | 6                     | 0.5                     | 8             |
| 16       | 2.2          | A         | 8                     | 0.5                     | 6             |
| 16       | 2.2          | B         | 8                     | 0.5                     | 6             |
| 16       | 2.2          | C         | 6                     | 0.5                     | 6.5           |
| 16       | 3.3          | A         | 8                     | 0.5                     | 6             |
| 16       | 3.3          | B         | 8                     | 0.5                     | 3.5           |
| 16       | 3.3          | C         | 8                     | 0.5                     | 5             |

| $U_R, V$ | $C_R, \mu F$ | Case code | $tg \delta, \%$ , max | $I_{LEAK}, \mu A$ , max | ESR, Ohm, max |
|----------|--------------|-----------|-----------------------|-------------------------|---------------|
| 16       | 4.7          | A         | 10                    | 0.8                     | 7             |
| 16       | 4.7          | B         | 8                     | 0.8                     | 3.5           |
| 16       | 4.7          | C         | 8                     | 0.8                     | 4             |
| 16       | 6.8          | A         | 10                    | 1.1                     | 7             |
| 16       | 6.8          | B         | 8                     | 1.1                     | 3.5           |
| 16       | 6.8          | C         | 8                     | 1.1                     | 3             |
| 16       | 10           | B         | 8                     | 1.6                     | 3.5           |
| 16       | 10           | C         | 8                     | 1.6                     | 2.5           |
| 16       | 15           | B         | 10                    | 2.4                     | 2.5           |
| 16       | 15           | C         | 8                     | 2.4                     | 1.8           |
| 16       | 15           | D         | 8                     | 2.4                     | 1.6           |
| 16       | 22           | C         | 8                     | 3.6                     | 1.6           |
| 16       | 22           | D         | 8                     | 3.6                     | 1.6           |
| 16       | 33           | C         | 8                     | 5.3                     | 1.2           |
| 16       | 33           | D         | 8                     | 5.3                     | 1.4           |
| 16       | 47           | C         | 12                    | 7.5                     | 1.2           |
| 16       | 47           | D         | 8                     | 7.5                     | 0.8           |
| 16       | 47           | E         | 8                     | 7.5                     | 0.8           |
| 16       | 68           | D         | 10                    | 10.5                    | 0.7           |
| 16       | 68           | E         | 10                    | 10.5                    | 0.8           |
| 16       | 100          | D         | 12                    | 16                      | 0.7           |
| 16       | 100          | E         | 12                    | 16                      | 0.8           |
| 16       | 150          | E         | 12                    | 24                      | 0.8           |
| 16       | 150          | X         | 12                    | 24                      | 0.6           |
| 16       | 220          | E         | 14                    | 35.2                    | 0.4           |
| 16       | 220          | X         | 14                    | 35.2                    | 0.5           |
| 20       | 0.47         | C         | 6                     | 0.5                     | 11            |
| 20       | 0.68         | A         | 6                     | 0.5                     | 12            |
| 20       | 0.68         | C         | 6                     | 0.5                     | 10            |
| 20       | 1            | A         | 6                     | 0.5                     | 10            |
| 20       | 1            | C         | 6                     | 0.5                     | 9             |
| 20       | 1.5          | A         | 8                     | 0.5                     | 8             |
| 20       | 1.5          | C         | 6                     | 0.5                     | 8             |
| 20       | 2.2          | A         | 8                     | 0.5                     | 7             |
| 20       | 2.2          | B         | 8                     | 0.5                     | 3.5           |



| $U_R, V$ | $C_R, \mu F$ | Case code | $tg \delta, \%, \max$ | $I_{LEAK}, \mu A, \max$ | ESR, Ohm, max |
|----------|--------------|-----------|-----------------------|-------------------------|---------------|
| 20       | 2.2          | C         | 8                     | 0.5                     | 6             |
| 20       | 3.3          | A         | 10                    | 0.7                     | 7             |
| 20       | 3.3          | B         | 8                     | 0.7                     | 3.5           |
| 20       | 3.3          | C         | 8                     | 0.7                     | 4             |
| 20       | 4.7          | B         | 8                     | 1                       | 3.5           |
| 20       | 4.7          | C         | 8                     | 1                       | 3             |
| 20       | 6.8          | B         | 8                     | 1.4                     | 3.5           |
| 20       | 6.8          | C         | 8                     | 1.4                     | 2.5           |
| 20       | 10           | B         | 10                    | 2                       | 3             |
| 20       | 10           | C         | 8                     | 2                       | 1.8           |
| 20       | 15           | B         | 10                    | 3                       | 2             |
| 20       | 15           | C         | 8                     | 3                       | 1.7           |
| 20       | 15           | D         | 8                     | 3                       | 1.4           |
| 20       | 22           | C         | 8                     | 4.4                     | 1.2           |
| 20       | 22           | D         | 8                     | 4.4                     | 1.4           |
| 20       | 33           | C         | 10                    | 6.6                     | 1.2           |
| 20       | 33           | D         | 8                     | 6.6                     | 0.8           |
| 20       | 33           | E         | 8                     | 6.6                     | 0.8           |
| 20       | 47           | D         | 8                     | 9.4                     | 0.7           |
| 20       | 47           | E         | 8                     | 9.4                     | 0.8           |
| 20       | 68           | D         | 10                    | 13.6                    | 0.7           |
| 20       | 68           | E         | 8                     | 13.6                    | 0.8           |
| 20       | 100          | E         | 10                    | 20                      | 0.8           |
| 20       | 100          | X         | 10                    | 20                      | 0.6           |
| 20       | 150          | E         | 12                    | 30                      | 0.4           |
| 20       | 150          | X         | 12                    | 30                      | 0.45          |
| 25       | 0.47         | A         | 6                     | 0.5                     | 14            |
| 25       | 0.47         | C         | 4                     | 0.5                     | 11            |
| 25       | 0.68         | A         | 6                     | 0.5                     | 10            |
| 25       | 0.68         | C         | 4                     | 0.5                     | 10            |
| 25       | 1            | A         | 6                     | 0.5                     | 8             |
| 25       | 1            | B         | 6                     | 0.5                     | 5             |
| 25       | 1            | C         | 6                     | 0.5                     | 8             |
| 25       | 1.5          | A         | 8                     | 0.5                     | 8             |
| 25       | 1.5          | B         | 6                     | 0.5                     | 5             |

| $U_R, V$ | $C_R, \mu F$ | Case code | $tg \delta, \%$ , max | $I_{LEAK}, \mu A$ , max | ESR, Ohm, max |
|----------|--------------|-----------|-----------------------|-------------------------|---------------|
| 25       | 1.5          | C         | 6                     | 0.5                     | 7             |
| 25       | 2.2          | A         | 8                     | 0.6                     | 7.5           |
| 25       | 2.2          | B         | 6                     | 0.6                     | 4.5           |
| 25       | 2.2          | C         | 6                     | 0.6                     | 6             |
| 25       | 3.3          | B         | 6                     | 0.9                     | 3.5           |
| 25       | 3.3          | C         | 6                     | 0.9                     | 4             |
| 25       | 4.7          | B         | 12                    | 1.2                     | 3.5           |
| 25       | 4.7          | C         | 8                     | 1.2                     | 3.2           |
| 25       | 6.8          | B         | 12                    | 1.7                     | 3.8           |
| 25       | 6.8          | C         | 8                     | 1.7                     | 2             |
| 25       | 6.8          | D         | 8                     | 1.7                     | 1.9           |
| 25       | 10           | C         | 8                     | 2.5                     | 1.5           |
| 25       | 10           | D         | 8                     | 2.5                     | 1.6           |
| 25       | 15           | C         | 10                    | 3.8                     | 1.2           |
| 25       | 15           | D         | 8                     | 3.8                     | 1.2           |
| 25       | 15           | E         | 8                     | 3.8                     | 1             |
| 25       | 22           | D         | 8                     | 5.5                     | 0.8           |
| 25       | 22           | E         | 8                     | 5.5                     | 0.8           |
| 25       | 33           | E         | 8                     | 8.3                     | 0.8           |
| 25       | 47           | E         | 8                     | 11.8                    | 0.7           |
| 25       | 68           | E         | 8                     | 17                      | 0.7           |
| 25       | 68           | X         | 12                    | 17                      | 0.9           |
| 32       | 0.1          | A         | 6                     | 0.5                     | 20            |
| 32       | 0.15         | A         | 6                     | 0.5                     | 19            |
| 32       | 0.22         | A         | 6                     | 0.5                     | 18            |
| 32       | 0.33         | A         | 6                     | 0.5                     | 15            |
| 32       | 0.47         | A         | 6                     | 0.5                     | 14            |
| 32       | 0.47         | B         | 6                     | 0.5                     | 8             |
| 32       | 0.47         | C         | 6                     | 0.5                     | 11            |
| 32       | 0.68         | A         | 8                     | 0.5                     | 12            |
| 32       | 0.68         | B         | 6                     | 0.5                     | 6.5           |
| 32       | 0.68         | C         | 6                     | 0.5                     | 8             |
| 32       | 1            | A         | 8                     | 0.5                     | 8             |
| 32       | 1            | B         | 6                     | 0.5                     | 5             |
| 32       | 1            | C         | 6                     | 0.5                     | 7             |

| $U_R, V$ | $C_R, \mu F$ | Case code | $tg \delta, \%$ , max | $I_{LEAK}, \mu A$ , max | ESR, Ohm, max |
|----------|--------------|-----------|-----------------------|-------------------------|---------------|
| 32       | 1.5          | B         | 6                     | 0.5                     | 5             |
| 32       | 1.5          | C         | 6                     | 0.5                     | 6             |
| 32       | 2.2          | B         | 10                    | 0.8                     | 6             |
| 32       | 2.2          | C         | 6                     | 0.8                     | 4             |
| 32       | 2.2          | D         | 8                     | 0.8                     | 4             |
| 32       | 3.3          | C         | 6                     | 1.2                     | 3             |
| 32       | 3.3          | D         | 6                     | 1.2                     | 2.8           |
| 32       | 3.3          | E         | 8                     | 1.2                     | 2.5           |
| 32       | 4.7          | C         | 8                     | 1.7                     | 2.5           |
| 32       | 4.7          | D         | 8                     | 1.7                     | 2             |
| 32       | 4.7          | E         | 8                     | 1.7                     | 2.5           |
| 32       | 6.8          | C         | 12                    | 2.4                     | 3.5           |
| 32       | 6.8          | D         | 8                     | 2.4                     | 1.8           |
| 32       | 6.8          | E         | 8                     | 2.4                     | 1.3           |
| 32       | 10           | D         | 8                     | 3.5                     | 1.6           |
| 32       | 10           | E         | 8                     | 3.5                     | 1.4           |
| 32       | 15           | D         | 10                    | 5.3                     | 0.8           |
| 32       | 15           | E         | 8                     | 5.3                     | 0.9           |
| 32       | 22           | E         | 8                     | 7.7                     | 0.8           |
| 32       | 33           | E         | 10                    | 11                      | 0.6           |
| 32       | 33           | X         | 10                    | 11                      | 0.6           |
| 40       | 0.1          | A         | 6                     | 0.5                     | 20            |
| 40       | 0.15         | A         | 6                     | 0.5                     | 19            |
| 40       | 0.22         | A         | 6                     | 0.5                     | 18            |
| 40       | 0.33         | A         | 6                     | 0.5                     | 15            |
| 40       | 0.47         | A         | 8                     | 0.5                     | 12            |
| 40       | 0.47         | B         | 6                     | 0.5                     | 9             |
| 40       | 0.47         | C         | 6                     | 0.5                     | 10            |
| 40       | 0.68         | A         | 12                    | 0.5                     | 12            |
| 40       | 0.68         | B         | 6                     | 0.5                     | 8             |
| 40       | 0.68         | C         | 6                     | 0.5                     | 8             |
| 40       | 1            | B         | 6                     | 0.5                     | 8             |
| 40       | 1            | C         | 6                     | 0.5                     | 6.5           |
| 40       | 1.5          | C         | 6                     | 0.6                     | 5             |
| 40       | 2.2          | B         | 12                    | 0.9                     | 6             |

| $U_R, V$ | $C_R, \mu F$ | Case code | $tg \delta, \%$ , max | $I_{LEAK}, \mu A$ , max | ESR, Ohm, max |
|----------|--------------|-----------|-----------------------|-------------------------|---------------|
| 40       | 2.2          | C         | 8                     | 0.9                     | 3.5           |
| 40       | 2.2          | D         | 8                     | 0.9                     | 3.3           |
| 40       | 3.3          | C         | 8                     | 1.5                     | 3.5           |
| 40       | 3.3          | D         | 8                     | 1.5                     | 2.6           |
| 40       | 3.3          | E         | 8                     | 1.5                     | 1.8           |
| 40       | 4.7          | C         | 8                     | 2                       | 3             |
| 40       | 4.7          | D         | 8                     | 2                       | 1.5           |
| 40       | 4.7          | E         | 8                     | 2                       | 1.6           |
| 40       | 6.8          | C         | 14                    | 3                       | 4             |
| 40       | 6.8          | D         | 10                    | 3                       | 2.5           |
| 40       | 6.8          | E         | 8                     | 3                       | 1.2           |
| 40       | 10           | D         | 10                    | 4                       | 1             |
| 40       | 10           | E         | 8                     | 4                       | 0.9           |
| 40       | 15           | D         | 10                    | 6                       | 1.2           |
| 40       | 15           | E         | 8                     | 6                       | 0.9           |
| 40       | 22           | E         | 10                    | 8.8                     | 0.8           |
| 50       | 0.1          | A         | 6                     | 0.5                     | 20            |
| 50       | 0.15         | A         | 6                     | 0.5                     | 19            |
| 50       | 0.15         | B         | 6                     | 0.5                     | 16            |
| 50       | 0.22         | A         | 6                     | 0.5                     | 18            |
| 50       | 0.22         | B         | 6                     | 0.5                     | 14            |
| 50       | 0.33         | A         | 6                     | 0.5                     | 16            |
| 50       | 0.33         | B         | 6                     | 0.5                     | 10            |
| 50       | 0.47         | B         | 6                     | 0.5                     | 9             |
| 50       | 0.47         | C         | 6                     | 0.5                     | 9             |
| 50       | 0.68         | B         | 6                     | 0.5                     | 8             |
| 50       | 0.68         | C         | 6                     | 0.5                     | 7             |
| 50       | 1            | B         | 8                     | 0.5                     | 8             |
| 50       | 1            | C         | 8                     | 0.5                     | 5.5           |
| 50       | 1            | D         | 8                     | 0.5                     | 5             |
| 50       | 1.5          | C         | 8                     | 0.8                     | 4.5           |
| 50       | 1.5          | D         | 8                     | 0.8                     | 4.4           |
| 50       | 2.2          | C         | 8                     | 1.1                     | 3.5           |
| 50       | 2.2          | D         | 8                     | 1.1                     | 3.5           |
| 50       | 3.3          | C         | 8                     | 1.7                     | 3             |

| <b>U<sub>R</sub>, V</b> | <b>C<sub>R</sub>, μF</b> | <b>Case code</b> | <b>tg δ, %, max</b> | <b>I<sub>LEAK</sub>, μA, max</b> | <b>ESR, Ohm, max</b> |
|-------------------------|--------------------------|------------------|---------------------|----------------------------------|----------------------|
| 50                      | 3.3                      | D                | 8                   | 1.7                              | 2.5                  |
| 50                      | 3.3                      | E                | 8                   | 1.7                              | 1.2                  |
| 50                      | 4.7                      | D                | 8                   | 2.4                              | 1.5                  |
| 50                      | 4.7                      | E                | 8                   | 2.4                              | 0.8                  |
| 50                      | 6.8                      | D                | 8                   | 3.5                              | 1.2                  |
| 50                      | 6.8                      | E                | 8                   | 3.5                              | 1                    |
| 50                      | 10                       | D                | 12                  | 5                                | 1                    |
| 50                      | 10                       | E                | 8                   | 5                                | 0.7                  |
| 50                      | 10                       | X                | 10                  | 5                                | 1                    |
| 50                      | 15                       | E                | 8                   | 7.5                              | 0.7                  |
| 50                      | 15                       | X                | 10                  | 7.5                              | 0.8                  |

## CODED SYMBOL FOR CAPACITORS (IDENTIFICATION NUMBER (PARTNUMBER))

CAPACITOR K53-69 – 10V – 330MF (±10)% – ADPK.673547.006TU  
(K53-69-D-337K-L7Z3B4Z3H4Z1-REEL500-006)

| 1                | 2   | 3           | 4    | 5         | 6         | 7         | 8       | 9                 |
|------------------|-----|-------------|------|-----------|-----------|-----------|---------|-------------------|
| Capacitor K53-69 | 10V | 330 $\mu$ F | ±10% | L = 7.3mm | B = 4.3mm | H = 4.1mm | Package | ADPK.673547.006TU |
| K53-69           | D   | 337         | K    | L7Z3      | B4Z3      | H4Z1      | REEL500 | 006               |

### 1. K53-69 - capacitor K53-69

### 2. Rated voltage code

| Code               | C | B   | D  | E  | F  | G  | H  | S  | J  |
|--------------------|---|-----|----|----|----|----|----|----|----|
| U <sub>R</sub> , V | 4 | 6.3 | 10 | 16 | 20 | 25 | 32 | 40 | 50 |

### 3. Nominal capacity code

| Code                     | 224  | 334  | 474  | 684  | 105 | 155 | 225 | 335 |
|--------------------------|------|------|------|------|-----|-----|-----|-----|
| C <sub>R</sub> , $\mu$ F | 0.22 | 0.33 | 0.47 | 0.68 | 1   | 1.5 | 2.2 | 3.3 |

| Code                     | 475 | 685 | 106 | 156 | 226 | 336 | 476 |
|--------------------------|-----|-----|-----|-----|-----|-----|-----|
| C <sub>R</sub> , $\mu$ F | 4.7 | 6.8 | 10  | 15  | 22  | 33  | 47  |

| Code                     | 686 | 107 | 157 | 227 | 337 | 477 | 687 |
|--------------------------|-----|-----|-----|-----|-----|-----|-----|
| C <sub>R</sub> , $\mu$ F | 68  | 100 | 150 | 220 | 330 | 470 | 680 |

### 4. Capacity approval code

| Code          | J  | K   | M   | N   |
|---------------|----|-----|-----|-----|
| Admittance, % | ±5 | ±10 | ±20 | ±30 |

### 5. Case length code

| Code       | L3Z5 | L6 | L7Z3 |
|------------|------|----|------|
| Length, mm | 3.5  | 6  | 7.3  |

## 6. Case width code

|                  |      |      |      |
|------------------|------|------|------|
| <b>Code</b>      | B2Z8 | B3Z2 | B4Z3 |
| <b>Width, mm</b> | 2.8  | 3.2  | 4.3  |

## 7. Case height code

|                   |      |      |      |      |
|-------------------|------|------|------|------|
| <b>Code</b>       | H1Z9 | H2Z5 | H2Z9 | H4Z1 |
| <b>Height, mm</b> | 1.9  | 2.5  | 2.9  | 4.1  |

## 8. Type of packaging

| <b>Code</b>     | <b>Decryption</b>  | <b>Quantity in a reel, pcs.</b> | <b>Dimension</b> |
|-----------------|--|---------------------------------|------------------|
| <b>REEL500</b>  | Packing in a tape on a reel                                      | 500                             | E                |
| <b>REEL750</b>  |  | 750                             | C, D             |
| <b>REEL2200</b> |  | 2200                            | E                |
| <b>BULK</b>     | Bulk packaging (for manual installation) in a quantity of 1 pcs. | -                               | -                |

## 9. Code TU

|             |                       |
|-------------|-----------------------|
| <b>Code</b> | <b>TU designation</b> |
| <b>006</b>  | ADPK.673547.006TU     |

## EXAMPLE OF REFERENCE DESIGNATION FOR ORDERING

CAPACITOR K53-69 "C" – 16V – 6.8 $\mu$ F  $\pm$ 20% ADPK.673547.006 TU