

# TQC Series High Voltage Products

## Feature

TQC series is perfect for high voltage, low ESR and low profile applications. It is the most suitable for pass-con of the motor driver by 12V, the input of the DCDC converter.

Peak temperature 250°C lead free reflow soldering products. (See P17)

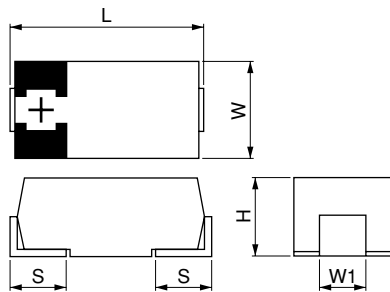
★Please contact us, if your reflow condition exceeds this condition.



## Specifications

| Items  | Condition  | Characteristics                              |                                       |
|--|--|--|---------------------------------------|
| Operating Temperature range                    | —  | -55 to +105 (°C)                             |                                       |
| Rated capacitance range                        | 120Hz/20°C   | 5.6 to 68 (μF)                               |                                       |
| Capacitance tolerance                          | 120Hz/20°C   | M:±20%                                       |                                       |
| Rated voltage                                  | —  | 16 to 25 (V.DC)                              |                                       |
| Dissipation Factor (D.F.)                      | 120Hz/20°C   | ≤ 10.0 (%)                                   |                                       |
| Leakage current (μA)                           | Rated voltage applied, after 5 minutes   | ≤ 0.1CV ★B2size: ≤ 0.3CV                     |                                       |
| Equivalent series resistance (E.S.R. mΩmax.)   | 100kHz/20°C  | Please see the attached characteristics list |                                       |
| Temperature characteristics of impedance ratio | 100kHz/+20°C   | -55°C Z/Z <sub>20°C</sub>                    | 1.0 to 2.0                            |
|  |  | +105°C Z/Z <sub>20°C</sub>                   | 0.6 to 1.0                            |
| Endurance                                      | 105°C, 2000h<br>→25TQC15M, 25TQC22M (category voltage applied), 20TQC22M, 16TQC33M, 16TQC47M (rated voltage applied)   | ΔC/C   | Within±20% of the initial value       |
|  | 105°C, 1000h<br>→25TQC5R6M, 25TQC33M, 25TQC22MV, 25TQC15MV, 25TQC10M (category voltage applied), 20TQC8R2M, 20TQC47M, 16TQC10M, 16TQC68M, 20TQC15M, 16TQC22M, 20TQC22MV, 20TQC33MV, 16TQC33MV, 16TQC47MV (rated voltage applied) | tanδ   | ≤ 1.5 times the initial limit         |
|  |  | L.C.   | ≤ The initial limit                   |
| Damp heat (Steady state)                       | 60°C, 90to95%RH, 500h, No voltage applied  | ΔC/C   | Within+40%, -20% of the initial value |
|  |  | tanδ   | ≤ 1.5 times the initial limit         |
|  |  | L.C.   | ≤ 3 times the initial limit           |
| Surge  | 15to35°C, 1000 times, 1kΩdischarge resistance, surge voltage applied   | ΔC/C   | Within±5% of the initial value        |
|  |  | tanδ   | ≤ The initial limit                   |
|  |  | L.C.   | ≤ 3 times the initial limit           |

## Dimensions



(unit: mm)

| Size code | L*1 (±0.2) | W (±0.2) | H*2 (±0.1) | S (±0.2) | W1 (±0.1) |
|-----------|------------|----------|------------|----------|-----------|
| B2        | 3.5        | 2.8      | 1.9        | 0.8      | 2.2       |
| C         | 6.0        | 3.2      | 2.8        | 1.3      | 1.8       |
| D2        | 7.3        | 4.3      | 1.9        | 1.3      | 2.4       |
| D3L       | 7.3        | 4.3      | 2.8        | 1.3      | 2.4       |

\*1 ±0.3:D3L \*2 ±0.2:C,D3L

## Size List

| RV (SV) | 16 (20) | 20 (23) | 25 (29) |
|---------|---------|---------|---------|
| 5.6     |         |         | B2      |
| 8.2     |         | B2      |         |
| 10      | B2      |         | C       |
| 15      |         | C       | D2      |
| 22      | C       | D2      | D2      |
| 33      | D2      | D2      | D3L     |
| 47      | D2      | D3L     |         |
| 68      | D3L     |         |         |

## Characteristics List

| Size code | SANYO Part number | Rated Voltage (V) | Rated Temperature (°C) | Category Voltage (V) | Category Temperature (°C) | Rated Capacitance (μF) | D.F. (%max.) | L.C. (μA) max./5min. | E.S.R. (mΩmax.) 100kHz/20°C | Maximum allowable ripple current (mA)rms/100kHz*3 | MSL                  |                      |
|-----------|-------------------|-------------------|------------------------|----------------------|---------------------------|------------------------|--------------|----------------------|-----------------------------|---|----------------------|----------------------|
|           |                   |                   |                        |                      |                           |                        |              |                      |                             |   | Reflow Temp. ≤ 260°C | Reflow Temp. ≤ 250°C |
| B2        | 25TQC5R6M         | 25*4              | 85                     | 20                   | 105                       | 5.6                    | 10.0         | 42.0                 | 100                         | 800   | Under evaluation     | 3                    |
|           | 20TQC8R2M         | 20                | 105                    | —                    | —                         | 8.2                    | 10.0         | 49.2                 | 100                         | 800   |                      |                      |
|           | 16TQC10M          | 16                | 105                    | —                    | —                         | 10                     | 10.0         | 48.0                 | 100                         | 800   |                      |                      |
| C         | 25TQC10M          | 25*4              | 85                     | 20                   | 105                       | 10                     | 10.0         | 25.0                 | 95                          | 900   |                      |                      |
|           | 20TQC15M          | 20                | 105                    | —                    | —                         | 15                     | 10.0         | 30.0                 | 80                          | 1000  |                      |                      |
|           | 16TQC22M          | 16                | 105                    | —                    | —                         | 22                     | 10.0         | 35.2                 | 80                          | 1000  |                      |                      |
| D2        | 25TQC22M          | 25*4              | 85                     | 20                   | 105                       | 22                     | 10.0         | 44.0                 | 90                          | 1000  |                      |                      |
|           | 25TQC22MV         | 25*4              | 85                     | 20                   | 105                       | 22                     | 10.0         | 55.0                 | 45                          | 1500  |                      |                      |
|           | 25TQC15M          | 25*4              | 85                     | 20                   | 105                       | 15                     | 10.0         | 38.0                 | 90                          | 1000  |                      |                      |
|           | 25TQC15MV         | 25*4              | 85                     | 20                   | 105                       | 15                     | 10.0         | 38.0                 | 45                          | 1500  |                      |                      |
|           | 20TQC22M          | 20                | 105                    | —                    | —                         | 22                     | 10.0         | 44.0                 | 80                          | 1300  |                      |                      |
|           | 20TQC22MV*5       | 20                | 105                    | —                    | —                         | 22                     | 10.0         | 44.0                 | 45                          | 1500  |                      |                      |
|           | 20TQC33MV*5       | 20                | 105                    | —                    | —                         | 33                     | 10.0         | 66.0                 | 45                          | 1500  |                      |                      |
|           | 16TQC33M          | 16                | 105                    | —                    | —                         | 33                     | 10.0         | 52.8                 | 70                          | 1400  |                      |                      |
|           | 16TQC33MV*5       | 16                | 105                    | —                    | —                         | 33                     | 10.0         | 52.8                 | 45                          | 1500  |                      |                      |
| D3L       | 16TQC47M          | 16                | 105                    | —                    | —                         | 47                     | 10.0         | 75.2                 | 70                          | 1400  |                      |                      |
|           | 16TQC47MV*5       | 16                | 105                    | —                    | —                         | 47                     | 10.0         | 75.2                 | 45                          | 1500  |                      |                      |
|           | 25TQC33M          | 25*4              | 85                     | 20                   | 105                       | 33                     | 10.0         | 82.5                 | 60                          | 1400  |                      |                      |
|           | 20TQC47M          | 20                | 105                    | —                    | —                         | 47                     | 10.0         | 94.0                 | 55                          | 1450  |                      |                      |
|           | 16TQC68M          | 16                | 105                    | —                    | —                         | 68                     | 10.0         | 108.8                | 50                          | 1500  |                      |                      |

\*3 100k to 500kHz, 105°C \*4 Please reduce 0.25V per 1°C from over 85°C for 25V products \*5 Under development