

### Type TYEH 105°C Series

**Key Features**

- High temperature surface mount aluminum electrolytic capacitors
- 105°C temperature rating
- 1000 to 2000 hours load life assured
- Wide capacitance range
- Taped and Reeled
- 15" diameter reel size
- Designed for reflow soldering
- RoHS Compliant



TE Connectivity's vertical chip-type aluminum electrolytic capacitors are designed for surface mounting in high density PCB population. Supplied on tape and reel for use with automatic placement equipment. The TYEH series offers miniature case sizes with an extended temperature range (-40°C to +105°C) and voltage ratings up to 100V dc. Suitable for applications requiring reliability under more demanding conditions.

**Characteristics - Electrical**

|  |                                    | Test Conditions<br>JIS C5101-1,-18   |
|--|------------------------------------|--|
| <b>Operating Temp. Range</b>           | -40°C ~ +105°C                     | —  |
| <b>Rated Voltage</b>                   | DC 6.3 ~ 100V                      | 105°C  |
| <b>Capacitance</b>                     | 0.1 ~ 1000µF                       | 105°C  |
| <b>Capacitance Tolerance</b>           | ±20%                               | 120Hz, 20°C  |
| <b>Leakage Current</b>                 | 0.01CV or 3µA whichever is greater | C = rated capacitance (µF)<br>V = rated DC working voltage (V)<br>Temperature = 20°C                                   |
| <b>Dissipation Factor (Tanδ)</b>       | Rated Voltage                      | 6.3 10 16 25 35 50 63 100  |
|  | Case L = 5.3                       | 0.3 0.3 0.22 0.16 0.13 0.12 - -  |
|  | Case L = 6.5~10                    |  |
|  | Case dia = 6.3                     | 0.32 0.28 0.24 0.18 0.15 0.14 - -  |
|  | Case dia = 8~10                    | 0.3 0.26 0.22 0.16 0.13 0.12 0.11 0.1  |
| <b>Low Temperature Characteristics</b> | Rated Voltage                      | 6.3 10 16 25 35 50 63 100  |
|  | Impedance Ratio (max)              |  |
|  | Z(-25°C)/Z(+20°C)                  | 4 3 2 2 2 2 2 2  |
|  | Z(-40°C)/Z(+20°C)                  | 8 5 4 3 3 3 3 3  |
| <b>Load Life Test Case L = 5.3</b>     | Test Time                          | 1000 Hrs   |
|  | Capacitance Change                 | Within ±20% of initial value   |
|  | Dissipation Factor                 | Less than 200% of specified value  |
|  | Leakage Current                    | Within specified value   |
|  |                                    | Specification satisfied when the capacitors are restored to 20°C after the rated voltage applied for 1000 hrs at 105°C |

## Type TYEH 105°C Series

### Characteristics - Electrical (cont.)

|   |                                   |                                   |     |      |               |  |
|---|-----------------------------------|-----------------------------------|-----|------|---------------|--|
| <b>Load Life Test</b><br>Case L = 6.5~10          | Test Time                         | 2000 Hrs                          |     |      |               | Specification satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2000 hrs at 105°C |
|   | Capacitance Change                |                                   |     |      |               |  |
|   | 6.3V                              | Within ±30% of initial value      |     |      |               |  |
|   | 10~16V                            | Within ±25% of initial value      |     |      |               |  |
|   | 25~100V                           | Within ±20% of initial value      |     |      |               |  |
|   | Dissipation Factor                |                                   |     |      |               |  |
|   | 6.3~16V                           | Less than 300% of specified value |     |      |               |  |
| 25~100V   | Less than 200% of specified value |                                   |     |      |               |  |
| Leakage Current                                   | Within specified value            |                                   |     |      |               |  |
| <b>Shelf Life Test</b>                            | Test Time                         | 1000 hrs                          |     |      |               | Other items same as those for load life test   |
| <b>Ripple Current &amp; Multipliers Frequency</b> | Frequency (Hz)                    | 50                                | 120 | 1k   | 10k and above | —  |
|   | Multiplier ≤16VDC                 | 0.8                               | 1.0 | 1.15 | 1.25          |  |
|   | Multiplier 25~35VDC               | 0.8                               | 1.0 | 1.25 | 1.4           |  |
|   | Multiplier 50~63VDC               | 0.8                               | 1.0 | 1.35 | 1.5           |  |
|   | Multiplier 100VDC                 | 0.7                               | 1.0 | 1.35 | 1.5           |  |

### Product Availability Chart

| Capacitance |      | Rated Voltage (V.DC) |           |           |           |           |           |         |         |
|-------------|------|----------------------|-----------|-----------|-----------|-----------|-----------|---------|---------|
|             |      | 6.3                  | 10        | 16        | 25        | 35        | 50        | 63      | 100     |
| µF          | Code | Dia x L              | Dia x L   | Dia x L   | Dia x L   | Dia x L   | Dia x L   | Dia x L | Dia x L |
| 0.1         | 104  |                      |           |           |           |           | 4 x 5.3   |         |         |
| 0.22        | 224  |                      |           |           |           |           | 4 x 5.3   |         |         |
| 0.33        | 334  |                      |           |           |           |           | 4 x 5.3   |         |         |
| 0.47        | 474  |                      |           |           |           |           | 4 x 5.3   |         |         |
| 1.0         | 105  |                      |           |           |           |           | 4 x 5.3   |         |         |
| 2.2         | 225  |                      |           |           |           |           | 4 x 5.3   |         |         |
| 3.3         | 335  |                      |           |           |           |           | 4 x 5.3   |         |         |
| 4.7         | 475  |                      |           |           | 4 x 5.3   | 4 x 5.3   | 5 x 5.3   |         |         |
| 10          | 106  |                      |           | 4 x 5.3   | 5 x 5.3   | 5 x 5.3   | 6.3 X 5.3 |         | 8 x 10  |
| 22          | 226  | 4 x 5.3              | 5 x 5.3   | 5 x 5.3   | 6.3 x 5.3 | 6.3 x 5.3 | 8 x 6.5   | 8 x 10  | 8 x 10  |
| 33          | 336  | 5 x 5.3              | 5 x 5.3   | 6.3 x 5.3 | 6.3 x 5.3 | 6.3 x 5.7 | 6.3 x 7.7 | 10 x 10 | 10 x 10 |
| 47          | 476  | 5 x 5.3              | 6.3 x 5.3 | 6.3 x 5.3 | 6.3 x 5.3 | 8 x 10    | 6.3 x 7.7 | 8 x 10  |         |
| 100         | 107  | 6.3 x 5.3            | 6.3 x 5.3 | 6.3 x 5.3 | 6.3 x 7.7 | 8 x 10    | 8 x 10    |         |         |
| 220         | 227  |                      | 6.3 x 7.7 | 6.3 x 7.7 | 8 x 10    | 10 x 10   | 10 x 10   |         |         |
| 330         | 337  | 8 x 10               | 8 x 10    | 8 x 10    | 10 x 10   | 10 x 10   |           |         |         |
| 470         | 477  | 8 x 10               | 8 x 10    | 8 x 10    | 10 x 10   |           |           |         |         |
| 1000        | 108  | 10 x 10              | 10 x 10   |           |           |           |           |         |         |

### Standard Product Table

| Rated Voltage V.DC | Capacitance µF | Capacitance Code | Case Size Dia x L | Case Code | Dissipation Factor (%)* | Ripple Current (mA)* | Part Number     |
|--------------------|----------------|------------------|-------------------|-----------|-------------------------|----------------------|-----------------|
| 6.3                | 22             | 226              | 4 x 5.3           | D55       | 30                      | 21                   | TYEH0J226D55MTR |
| 6.3                | 33             | 336              | 5 x 5.3           | E55       | 30                      | 30                   | TYEH0J336E55MTR |
| 6.3                | 47             | 476              | 5 x 5.3           | E55       | 30                      | 36                   | TYEH0J476E55MTR |
| 6.3                | 100            | 107              | 6.3 x 5.3         | F55       | 30                      | 61                   | TYEH0J107F55MTR |
| 6.3                | 330            | 337              | 8 x 10            | G10       | 30                      | 178                  | TYEH0J337G10MTR |
| 6.3                | 470            | 477              | 8 x 10            | G10       | 30                      | 210                  | TYEH0J477G10MTR |
| 6.3                | 1000           | 108              | 10 x 10           | H10       | 30                      | 440                  | TYEH0J108H10MTR |
| 10                 | 22             | 226              | 5 x 5.3           | E55       | 26                      | 25                   | TYEH1A226E55MTR |

**Type TYEH 105°C Series**

**Standard Product Table (cont.)**

| Rated Voltage V.DC | Capacitance $\mu$ F | Capacitance Code | Case Size Dia x L | Case Code | Dissipation Factor (%)* | Ripple Current (mA)* | Part Number     |
|--------------------|---------------------|------------------|-------------------|-----------|-------------------------|----------------------|-----------------|
| 10                 | 33                  | 336              | 5 x 5.3           | E55       | 26                      | 31                   | TYEH1A336E55MTR |
| 10                 | 47                  | 476              | 6.3 x 5.3         | F55       | 26                      | 43                   | TYEH1A476F55MTR |
| 10                 | 100                 | 107              | 6.3 x 5.3         | F55       | 26                      | 65                   | TYEH1A107F55MTR |
| 10                 | 100                 | 107              | 8 x 6.5           | G68       | 26                      | 110                  | TYEH1A107G68MTR |
| 10                 | 220                 | 227              | 6.3 x 7.7         | F80       | 28                      | 105                  | TYEH1A227F80MTR |
| 10                 | 220                 | 227              | 8 x 10            | G10       | 26                      | 178                  | TYEH1A227G10MTR |
| 10                 | 330                 | 337              | 8 x 10            | G10       | 26                      | 215                  | TYEH1A337G10MTR |
| 10                 | 470                 | 477              | 8 x 10            | G10       | 26                      | 250                  | TYEH1A477G10MTR |
| 10                 | 470                 | 477              | 10 x 10           | H10       | 26                      | 324                  | TYEH1A477H10MTR |
| 10                 | 1000                | 108              | 10 x 10           | H10       | 26                      | 440                  | TYEH1A108H10MTR |
| 16                 | 10                  | 106              | 4 x 5.3           | D55       | 22                      | 16                   | TYEH1C106D55MTR |
| 16                 | 22                  | 226              | 5 x 5.3           | E55       | 22                      | 28                   | TYEH1C226E55MTR |
| 16                 | 33                  | 336              | 6.3 x 5.3         | F55       | 22                      | 40                   | TYEH1C336F55MTR |
| 16                 | 47                  | 476              | 6.3 x 5.3         | F55       | 22                      | 47                   | TYEH1C476F55MTR |
| 16                 | 100                 | 107              | 6.3 x 5.3         | F55       | 22                      | 70                   | TYEH1C107F55MTR |
| 16                 | 220                 | 227              | 6.3 x 7.7         | F80       | 24                      | 110                  | TYEH1C227F80MTR |
| 16                 | 220                 | 227              | 10 x 10           | H10       | 22                      | 324                  | TYEH1C227H10MTR |
| 16                 | 330                 | 337              | 8 x 10            | G10       | 22                      | 300                  | TYEH1C337G10MTR |
| 16                 | 330                 | 337              | 10 x 10           | H10       | 22                      | 324                  | TYEH1C337H10MTR |
| 16                 | 470                 | 477              | 8 x 10            | G10       | 22                      | 330                  | TYEH1C477G10MTR |
| 16                 | 470                 | 477              | 10 x 10           | H10       | 22                      | 324                  | TYEH1C477H10MTR |
| 25                 | 4.7                 | 475              | 4 x 5.3           | D55       | 16                      | 12                   | TYEH1E475D55MTR |
| 25                 | 10                  | 106              | 5 x 5.3           | E55       | 16                      | 21                   | TYEH1E106E55MTR |
| 25                 | 22                  | 226              | 6.3 x 5.3         | F55       | 16                      | 36                   | TYEH1E226F55MTR |
| 25                 | 33                  | 336              | 6.3 x 5.3         | F55       | 16                      | 44                   | TYEH1E336F55MTR |
| 25                 | 47                  | 476              | 6.3 x 5.3         | F55       | 16                      | 60                   | TYEH1E476F55MTR |
| 25                 | 47                  | 476              | 8 x 6.5           | G68       | 16                      | 110                  | TYEH1E476G68MTR |
| 25                 | 100                 | 107              | 6.3 x 7.7         | F80       | 18                      | 85                   | TYEH1E107F80MTR |
| 25                 | 100                 | 107              | 8 x 10            | G10       | 16                      | 178                  | TYEH1E107G10MTR |
| 25                 | 220                 | 227              | 8 x 10            | G10       | 16                      | 178                  | TYEH1E227G10MTR |
| 25                 | 220                 | 227              | 10 x 10           | H10       | 16                      | 324                  | TYEH1E227H10MTR |
| 25                 | 330                 | 337              | 10 x 10           | H10       | 16                      | 324                  | TYEH1E337H10MTR |
| 25                 | 470                 | 477              | 10 x 10           | H10       | 16                      | 350                  | TYEH1E477H10MTR |
| 35                 | 4.7                 | 475              | 4 x 5.3           | D55       | 13                      | 14                   | TYEH1V475D55MTR |
| 35                 | 10                  | 106              | 5 x 5.3           | E55       | 13                      | 23                   | TYEH1V106E55MTR |
| 35                 | 22                  | 226              | 6.3 x 5.3         | F55       | 13                      | 50                   | TYEH1V226F55MTR |
| 35                 | 33                  | 336              | 6.3 x 5.7         | F60       | 15                      | 60                   | TYEH1V336F60MTR |
| 35                 | 33                  | 336              | 8 x 6.5           | G68       | 13                      | 110                  | TYEH1V336G68MTR |
| 35                 | 47                  | 476              | 8 x 10            | G10       | 13                      | 178                  | TYEH1V476G10MTR |
| 35                 | 100                 | 107              | 8 x 10            | G10       | 13                      | 215                  | TYEH1V107G10MTR |
| 35                 | 100                 | 107              | 10 x 10           | H10       | 13                      | 324                  | TYEH1V107H10MTR |
| 35                 | 220                 | 227              | 10 x 10           | H10       | 13                      | 324                  | TYEH1V227H10MTR |
| 35                 | 330                 | 337              | 10 x 10           | H10       | 13                      | 350                  | TYEH1V337H10MTR |
| 50                 | 0.1                 | 104              | 4 x 5.3           | D55       | 12                      | 2.0                  | TYEH1H104D55MTR |
| 50                 | 0.22                | 224              | 4 x 5.3           | D55       | 12                      | 3.0                  | TYEH1H224D55MTR |
| 50                 | 0.33                | 334              | 4 x 5.3           | D55       | 12                      | 4.0                  | TYEH1H334D55MTR |
| 50                 | 0.47                | 474              | 4 x 5.3           | D55       | 12                      | 5.0                  | TYEH1H474D55MTR |
| 50                 | 1.0                 | 105              | 4 x 5.3           | D55       | 12                      | 7.0                  | TYEH1H105D55MTR |
| 50                 | 2.2                 | 225              | 4 x 5.3           | D55       | 12                      | 10                   | TYEH1H225D55MTR |
| 50                 | 3.3                 | 335              | 4 x 5.3           | D55       | 12                      | 12                   | TYEH1H335D55MTR |
| 50                 | 4.7                 | 475              | 5 x 5.3           | E55       | 12                      | 17                   | TYEH1H475E55MTR |
| 50                 | 10                  | 106              | 6.3 X 5.3         | F55       | 12                      | 26                   | TYEH1H106F55MTR |
| 50                 | 22                  | 226              | 8 x 6.5           | G68       | 12                      | 65                   | TYEH1H226G68MTR |
| 50                 | 33                  | 336              | 6.3 x 7.7         | F80       | 14                      | 60                   | TYEH1H336F80MTR |
| 50                 | 33                  | 336              | 8 x 10            | G10       | 12                      | 99                   | TYEH1H336G10MTR |

## Type TYEH 105°C Series

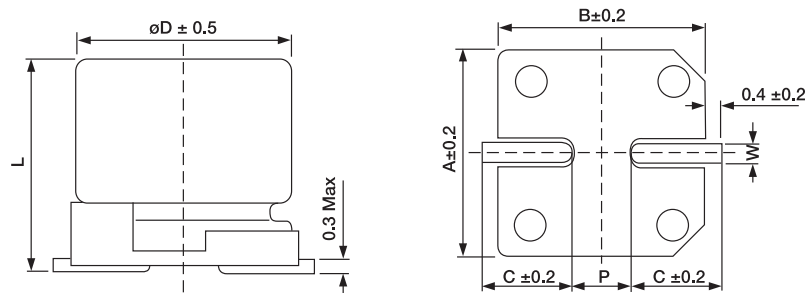
### Standard Product Table (cont.)

| Rated Voltage V.DC | Capacitance $\mu$ F | Capacitance Code | Case Size Dia x L | Case Code | Dissipation Factor (%) <sup>*</sup> | Ripple Current (mA) <sup>*</sup> | Part Number     |
|--------------------|---------------------|------------------|-------------------|-----------|-------------------------------------|----------------------------------|-----------------|
| 50                 | 47                  | 476              | 6.3 x 7.7         | F80       | 14                                  | 70                               | TYEH1H476F80MTR |
| 50                 | 47                  | 476              | 8 x 10            | G10       | 12                                  | 99                               | TYEH1H476G10MTR |
| 50                 | 100                 | 107              | 8 x 10            | G10       | 12                                  | 135                              | TYEH1H107G10MTR |
| 50                 | 100                 | 107              | 10 x 10           | H10       | 12                                  | 160                              | TYEH1H107H10MTR |
| 50                 | 220                 | 227              | 10 x 10           | H10       | 12                                  | 210                              | TYEH1H227H10MTR |
| 63                 | 22                  | 226              | 8 x 10            | G10       | 11                                  | 99                               | TYEH1J226G10MTR |
| 63                 | 33                  | 336              | 10 x 10           | H10       | 11                                  | 160                              | TYEH1J336H10MTR |
| 63                 | 47                  | 476              | 8 x 10            | G10       | 11                                  | 140                              | TYEH1J476G10MTR |
| 63                 | 47                  | 476              | 10 x 10           | H10       | 11                                  | 160                              | TYEH1J476H10MTR |
| 100                | 10                  | 106              | 8 x 10            | G10       | 10                                  | 67                               | TYEH2A106G10MTR |
| 100                | 22                  | 226              | 8 x 10            | G10       | 10                                  | 100                              | TYEH2A226G10MTR |
| 100                | 22                  | 226              | 10 x 10           | H10       | 10                                  | 133                              | TYEH2A226H10MTR |
| 100                | 33                  | 336              | 10 x 10           | H10       | 10                                  | 150                              | TYEH2A336H10MTR |

<sup>\*</sup> DF measured at 120Hz, 20°C

<sup>\*</sup> RC measured at 120Hz, 105°C

### Dimensions



| Case Code | Dimensions (mm) |               |      |      |     |            |             |
|-----------|-----------------|---------------|------|------|-----|------------|-------------|
|           | Dia             | L             | A    | B    | C   | W          | P $\pm$ 0.2 |
| D55       | 4.0             | 5.3 $\pm$ 0.3 | 4.3  | 4.3  | 2.0 | 0.5 to 0.8 | 1.0         |
| E55       | 5.0             | 5.3 $\pm$ 0.3 | 5.3  | 5.3  | 2.3 | 0.5 to 0.8 | 1.5         |
| F55       | 6.3             | 5.3 $\pm$ 0.3 | 6.6  | 6.6  | 2.7 | 0.5 to 0.8 | 2.0         |
| F80       | 6.3             | 7.7 $\pm$ 0.3 | 6.6  | 6.6  | 2.7 | 0.5 to 0.8 | 2.0         |
| G68       | 8.0             | 6.5 $\pm$ 0.3 | 8.4  | 8.4  | 3.4 | 0.5 to 0.8 | 2.3         |
| G10       | 8.0             | 10 $\pm$ 0.5  | 8.4  | 8.4  | 3.0 | 0.7 to 1.1 | 3.1         |
| H10       | 10              | 10 $\pm$ 0.5  | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7         |

### How to Order

| TYEH        | 0J   | 226         | D55       | M         | TR   |
|-------------|--|-------------|-----------|-----------|--|
| Common Part | Voltage Code   | Capacitance | Case Code | Tolerance | Packaging  |
| TYEH        | 0J (6.3V)<br>1A (10V)<br>1C (16V)<br>1E (25V)<br>1V (35V)<br>1H (50V)<br>1J (63V)<br>2A (100V) | e.g. 226    | e.g. D55  | M (20%)   | TR = 15" Reels<br>D55 Case - 2000 pcs<br>E55, F55, F80 and G68 Case - 1000 pcs<br>G10 and H10 Case - 500 pcs |

TE Connectivity, TE connectivity (logo) and TE (logo) are trademarks.  
Other logos, product and Company names mentioned herein may be trademarks of their respective owners.

While TE has made every reasonable effort to ensure the accuracy of the information in this datasheet, TE does not guarantee that it is error-free, nor does TE make any other representation, warranty or guarantee that the information is accurate, correct, reliable or current. TE reserves the right to make any adjustments to the information contained herein at any time without notice. TE expressly disclaims all implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose. The dimensions in this datasheet are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice. Consult TE for the latest dimensions and design specifications.