

TS-HA/HB Series 105°C, 3000 hours

- Long 3000 hour life at 105°C with high ripple current capability
- 2 and 3 pin versions available
- Can vent construction



| | | |
|---|---|---|
| Rated Working Voltage: | 10 ~ 250 VDC | 385 ~ 450 VDC |
| Operating Temperature: | -40 ~ +105°C | -25 ~ +105°C |
| Nominal Capacitance: | 180~68000µF | 82~560µF |
| Capacitance Tolerance: | ± 20% | |
| Dissipation Factor: (120 Hz, +20°C) | Working Voltage [V]: | 10 16 25 35 50 63 80 100 ~ 450 |
| | Max. D.F. (%): | 55 45 35 30 25 20 17 15 |
| For capacitance values > 33000µF, add the value of: $\frac{\text{(rated cap. } \mu\text{F)} - 33000}{1000}$ | | |
| Leakage Current: | 3√CV (µA) max. after 5 minutes; C = Capacitance in µF, V = WV | |
| Ripple Current Multipliers: | Frequency(Hz): | 50 60 100~120 500 1k 10k |
| | 16~100WV: | 0.93 0.95 1.0 1.05 1.08 1.15 |
| | 160~450WV: | 0.75 0.8 1.0 1.2 1.25 1.4 |
| Ripple Current Ambient Temperature Factors** | | |
| Temperature (°C): 105°C 85°C 70°C 60°C ≤45°C | | |
| Multiplier: 1.0 1.7 2.0 2.2 2.35 | | |
| Endurance: | 3000 hours* at +105°C with maximum specified ripple current (see page 4) *2000 hours for 20mm length sizes | |

**Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

Part Number System

E C

A

B **Capacitance Code**

Series Code

Suffix
 A Standard Ratings
 X Extended CV Ratings
 L 20mm Length Ratings

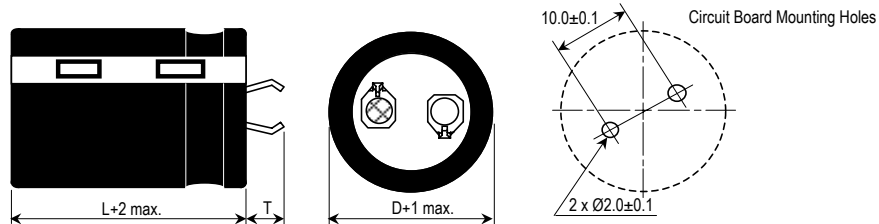
RoHS compliant PVC sleeve and top plate is standard. PET sleeve is available without top plate.

| Terminal Style | | |
|----------------|--------|-----------|
| Prefix | Length | # of Pins |
| ECOS | 6.3mm | 2 |
| ECEC | 4.0mm | 2 |
| ECE3 | 4.0mm | 3 |

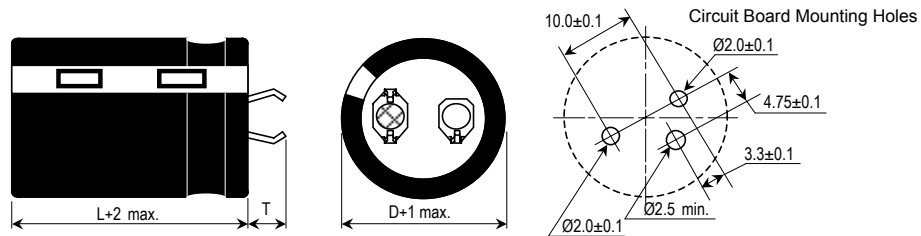
| Voltage Code | | | | | | | | | | | | | |
|--------------|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| 1A | 1C | 1E | 1V | 1H | 1J | 1K | 2A | 2C | 2D | 2E | 2T | 2G | 2W |
| 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160 | 200 | 250 | 385 | 400 | 450 |

| Diameter | |
|----------|------|
| Diameter | Code |
| 22 | B |
| 25 | C |
| 30 | D |
| 35 | E |

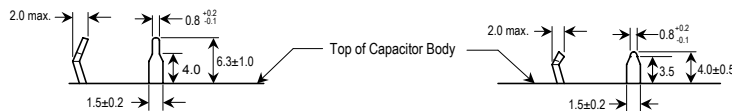
2 Pin Mounting Style



3 Pin Mounting Style



Pin Dimensions



"T" 6.3mm Length: Standard on 2 Pin Mounting Style

4mm Length: Standard on 3 Pin, Available on 2 Pin Mounting Styles

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When safety concerns arise, please contact Panasonic immediately for technical consultation.

TS-HA Standard Ratings

Part numbers shown with 2 pins

| Cap. (μ F) | Size (mm) D x L | Max 105°C R.C. (A_{rms}) | | 20°C ESR (Ω , max.) | | Panasonic Part Number (By Terminal Length) | |
|-------------------------------------|--------------------|------------------------------|--------|-----------------------------|-------|--|-----------------------|
| | | 120Hz | 10kHz~ | 120Hz | 20kHz | 6.3mm Length Terminal | 4.0mm Length Terminal |
| 10 VDC Working, 13 VDC Surge | | | | | | | |
| 10000 | 22 x 25 | 1.80 | 2.07 | 0.075 | 0.063 | ECOS1AA103BA | ECEC1AA103BA |
| 12000 | 22 x 30 | 2.20 | 2.53 | 0.062 | 0.053 | ECOS1AA123BA | ECEC1AA123BA |
| 15000 | 22 x 35 | 2.30 | 2.65 | 0.053 | 0.045 | ECOS1AA153BA | ECEC1AA153BA |
| | 25 x 25 | 2.30 | 2.65 | 0.053 | 0.045 | ECOS1AA153CA | ECEC1AA153CA |
| 18000 | 22 x 40 | 2.40 | 2.76 | 0.044 | 0.038 | ECOS1AA183BA | ECEC1AA183BA |
| | 25 x 30 | 2.40 | 2.76 | 0.044 | 0.038 | ECOS1AA183CA | ECEC1AA183CA |
| 22000 | 22 x 45 | 2.60 | 2.99 | 0.038 | 0.032 | ECOS1AA223BA | ECEC1AA223BA |
| | 25 x 35 | 2.60 | 2.99 | 0.038 | 0.032 | ECOS1AA223CA | ECEC1AA223CA |
| | 30 x 25 | 2.60 | 2.99 | 0.038 | 0.032 | ECOS1AA223DA | ECEC1AA223DA |
| 27000 | 22 x 50 | 3.10 | 3.57 | 0.033 | 0.028 | ECOS1AA273BA | ECEC1AA273BA |
| | 25 x 40 | 3.10 | 3.57 | 0.033 | 0.028 | ECOS1AA273CA | ECEC1AA273CA |
| | 30 x 30 | 3.10 | 3.57 | 0.033 | 0.028 | ECOS1AA273DA | ECEC1AA273DA |
| | 35 x 25 | 3.10 | 3.57 | 0.033 | 0.028 | ECOS1AA273EA | ECEC1AA273EA |
| 33000 | 25 x 45 | 3.40 | 3.91 | 0.027 | 0.023 | ECOS1AA333CA | ECEC1AA333CA |
| | 30 x 35 | 3.40 | 3.91 | 0.027 | 0.023 | ECOS1AA333DA | ECEC1AA333DA |
| | 35 x 30 | 3.40 | 3.91 | 0.027 | 0.023 | ECOS1AA333EA | ECEC1AA333EA |
| 39000 | 25 x 50 | 3.70 | 4.26 | 0.025 | 0.021 | ECOS1AA393CA | ECEC1AA393CA |
| | 30 x 40 | 3.70 | 4.26 | 0.025 | 0.021 | ECOS1AA393DA | ECEC1AA393DA |
| | 35 x 30 | 3.70 | 4.26 | 0.025 | 0.021 | ECOS1AA393EA | ECEC1AA393EA |
| 47000 | 30 x 45 | 4.20 | 4.83 | 0.023 | 0.020 | ECOS1AA473DA | ECEC1AA473DA |
| | 35 x 35 | 4.20 | 4.83 | 0.023 | 0.020 | ECOS1AA473EA | ECEC1AA473EA |
| 56000 | 30 x 50 | 5.00 | 5.75 | 0.022 | 0.019 | ECOS1AA563DA | ECEC1AA563DA |
| | 35 x 40 | 5.00 | 5.75 | 0.022 | 0.021 | ECOS1AA563EA | ECEC1AA563EA |
| 68000 | 35 x 50 | 5.50 | 6.33 | 0.021 | 0.020 | ECOS1AA683EA | ECEC1AA683EA |
| 16 VDC Working, 20 VDC Surge | | | | | | | |
| 3300 | 22 x 20 | 1.30 | 1.50 | 0.216 | 0.173 | ECOS1CA332BL | ECEC1CA332BL |
| 4700 | 25 x 20 | 1.60 | 1.84 | 0.152 | 0.121 | ECOS1CA472CL | ECEC1CA472CL |
| 6800 | 22 x 25 | 2.20 | 2.53 | 0.085 | 0.068 | ECOS1CA682BA | ECEC1CA682BA |
| | 30 x 20 | 1.80 | 2.07 | 0.105 | 0.084 | ECOS1CA682DL | ECEC1CA682DL |
| 8200 | 22 x 30 | 2.40 | 2.76 | 0.071 | 0.057 | ECOS1CA822BA | ECEC1CA822BA |
| 10000 | 22 x 30 | 2.60 | 2.99 | 0.066 | 0.053 | ECOS1CA103BA | ECEC1CA103BA |
| | 25 x 25 | 2.60 | 2.99 | 0.066 | 0.053 | ECOS1CA103CA | ECEC1CA103CA |
| | 35 x 20 | 2.40 | 2.76 | 0.071 | 0.057 | ECOS1CA103EL | ECEC1CA103EL |
| 12000 | 22 x 35 | 2.90 | 3.34 | 0.055 | 0.044 | ECOS1CA123BA | ECEC1CA123BA |
| | 25 x 30 | 2.90 | 3.34 | 0.055 | 0.044 | ECOS1CA123CA | ECEC1CA123CA |
| | 30 x 25 | 2.90 | 3.34 | 0.055 | 0.044 | ECOS1CA123DA | ECEC1CA123DA |
| 15000 | 22 x 40 | 3.20 | 3.68 | 0.046 | 0.037 | ECOS1CA153BA | ECEC1CA153BA |
| | 25 x 35 | 3.20 | 3.68 | 0.046 | 0.037 | ECOS1CA153CA | ECEC1CA153CA |
| | 30 x 30 | 3.20 | 3.68 | 0.046 | 0.037 | ECOS1CA153DA | ECEC1CA153DA |
| 18000 | 22 x 45 | 3.50 | 4.03 | 0.040 | 0.034 | ECOS1CA183BA | ECEC1CA183BA |
| | 25 x 40 | 3.50 | 4.03 | 0.040 | 0.034 | ECOS1CA183CA | ECEC1CA183CA |
| | 30 x 30 | 3.50 | 4.03 | 0.040 | 0.034 | ECOS1CA183DA | ECEC1CA183DA |
| | 35 x 25 | 3.50 | 4.03 | 0.040 | 0.034 | ECOS1CA183EA | ECEC1CA183EA |
| 22000 | 25 x 45 | 3.80 | 4.37 | 0.033 | 0.028 | ECOS1CA223CA | ECEC1CA223CA |
| | 30 x 35 | 3.80 | 4.37 | 0.033 | 0.028 | ECOS1CA223DA | ECEC1CA223DA |
| | 35 x 30 | 3.80 | 4.37 | 0.033 | 0.028 | ECOS1CA223EA | ECEC1CA223EA |
| 27000 | 25 x 50 | 4.20 | 4.83 | 0.028 | 0.025 | ECOS1CA273CA | ECEC1CA273CA |
| | 30 x 40 | 4.20 | 4.83 | 0.028 | 0.025 | ECOS1CA273DA | ECEC1CA273DA |
| | 35 x 30 | 4.20 | 4.83 | 0.028 | 0.025 | ECOS1CA273EA | ECEC1CA273EA |
| 33000 | 30 x 45 | 4.70 | 5.41 | 0.023 | 0.020 | ECOS1CA333DA | ECEC1CA333DA |
| | 35 x 35 | 4.70 | 5.41 | 0.023 | 0.020 | ECOS1CA333EA | ECEC1CA333EA |
| 39000 | 30 x 50 | 5.10 | 5.87 | 0.022 | 0.020 | ECOS1CA393DA | ECEC1CA393DA |
| | 35 x 40 | 5.10 | 5.87 | 0.022 | 0.020 | ECOS1CA393EA | ECEC1CA393EA |
| 47000 | 35 x 45 | 5.50 | 6.33 | 0.020 | 0.018 | ECOS1CA473EA | ECEC1CA473EA |
| 56000 | 35 x 50 | 6.00 | 6.90 | 0.019 | 0.017 | ECOS1CA563EA | ECEC1CA563EA |
| 25 VDC Working, 32 VDC Surge | | | | | | | |
| 2200 | 22 x 20 | 1.30 | 1.50 | 0.241 | 0.181 | ECOS1EA222BL | ECEC1EA222BL |
| 3300 | 25 x 20 | 1.60 | 1.84 | 0.161 | 0.121 | ECOS1EA332CL | ECEC1EA332CL |
| 4700 | 22 x 25 | 2.00 | 2.30 | 0.106 | 0.079 | ECOS1EA472BA | ECEC1EA472BA |
| | 30 x 20 | 1.80 | 2.07 | 0.113 | 0.085 | ECOS1EA472DL | ECEC1EA472DL |
| 5600 | 22 x 30 | 2.20 | 2.53 | 0.089 | 0.067 | ECOS1EA562BA | ECEC1EA562BA |
| 6800 | 22 x 30 | 2.40 | 2.76 | 0.073 | 0.055 | ECOS1EA682BA | ECEC1EA682BA |
| | 25 x 25 | 2.40 | 2.76 | 0.073 | 0.055 | ECOS1EA682CA | ECEC1EA682CA |
| | 35 x 20 | 2.30 | 2.65 | 0.080 | 0.060 | ECOS1EA682EL | ECEC1EA682EL |

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TS-HA Standard Ratings (continued)

Part numbers shown with 2 pins

| Cap. (μ F) | Size (mm) D x L | Max 105°C R.C. (A_{rms}) | | 20°C ESR (Ω , max.) | | Panasonic Part Number (By Terminal Length) | |
|---|--------------------|------------------------------|--------|-----------------------------|-------|--|-----------------------|
| | | 120Hz | 10kHz~ | 120Hz | 20kHz | 6.3mm Length Terminal | 4.0mm Length Terminal |
| 25 VDC Working, 32 VDC Surge (continued) | | | | | | | |
| 8200 | 22 x 35 | 2.70 | 3.11 | 0.061 | 0.045 | ECOS1EA822BA | ECEC1EA822BA |
| | 25 x 30 | 2.70 | 3.11 | 0.061 | 0.045 | ECOS1EA822CA | ECEC1EA822CA |
| | 30 x 25 | 2.70 | 3.11 | 0.061 | 0.045 | ECOS1EA822DA | ECEC1EA822DA |
| 10000 | 22 x 40 | 3.00 | 3.45 | 0.051 | 0.039 | ECOS1EA103BA | ECEC1EA103BA |
| | 25 x 35 | 3.00 | 3.45 | 0.051 | 0.039 | ECOS1EA103CA | ECEC1EA103CA |
| | 30 x 30 | 3.00 | 3.45 | 0.051 | 0.039 | ECOS1EA103DA | ECEC1EA103DA |
| 12000 | 22 x 45 | 3.20 | 3.68 | 0.044 | 0.033 | ECOS1EA123BA | ECEC1EA123BA |
| | 25 x 40 | 3.20 | 3.68 | 0.044 | 0.035 | ECOS1EA123CA | ECEC1EA123CA |
| | 30 x 30 | 3.20 | 3.68 | 0.044 | 0.035 | ECOS1EA123DA | ECEC1EA123DA |
| | 35 x 25 | 3.20 | 3.68 | 0.044 | 0.035 | ECOS1EA123EA | ECEC1EA123EA |
| 15000 | 25 x 45 | 3.60 | 4.14 | 0.036 | 0.031 | ECOS1EA153CA | ECEC1EA153CA |
| | 30 x 35 | 3.60 | 4.14 | 0.036 | 0.031 | ECOS1EA153DA | ECEC1EA153DA |
| | 35 x 30 | 3.60 | 4.14 | 0.036 | 0.031 | ECOS1EA153EA | ECEC1EA153EA |
| 18000 | 25 x 50 | 3.90 | 4.49 | 0.030 | 0.027 | ECOS1EA183CA | ECEC1EA183CA |
| | 30 x 40 | 3.90 | 4.49 | 0.030 | 0.027 | ECOS1EA183DA | ECEC1EA183DA |
| | 35 x 35 | 3.90 | 4.49 | 0.030 | 0.027 | ECOS1EA183EA | ECEC1EA183EA |
| 22000 | 30 x 45 | 4.30 | 4.95 | 0.025 | 0.022 | ECOS1EA223DA | ECEC1EA223DA |
| | 35 x 35 | 4.30 | 4.95 | 0.025 | 0.022 | ECOS1EA223EA | ECEC1EA223EA |
| 27000 | 35 x 45 | 4.80 | 5.52 | 0.021 | 0.019 | ECOS1EA273EA | ECEC1EA273EA |
| 33000 | 35 x 50 | 5.50 | 6.33 | 0.018 | 0.016 | ECOS1EA333EA | ECEC1EA333EA |
| 35 VDC Working, 44 VDC Surge | | | | | | | |
| 1500 | 22 x 20 | 1.10 | 1.27 | 0.287 | 0.216 | ECOS1VA152BL | ECEC1VA152BL |
| 2200 | 25 x 20 | 1.40 | 1.61 | 0.196 | 0.147 | ECOS1VA222CL | ECEC1VA222CL |
| 3300 | 22 x 25 | 1.90 | 2.19 | 0.121 | 0.090 | ECOS1VA332BA | ECEC1VA332BA |
| | 30 x 20 | 1.70 | 1.96 | 0.131 | 0.098 | ECOS1VA332DL | ECEC1VA332DL |
| 3900 | 22 x 30 | 2.00 | 2.30 | 0.111 | 0.083 | ECOS1VA392BA | ECEC1VA392BA |
| 4700 | 22 x 35 | 2.20 | 2.53 | 0.088 | 0.066 | ECOS1VA472BA | ECEC1VA472BA |
| | 25 x 25 | 2.20 | 2.53 | 0.088 | 0.066 | ECOS1VA472CA | ECEC1VA472CA |
| | 35 x 20 | 2.00 | 2.30 | 0.095 | 0.071 | ECOS1VA472EL | ECEC1VA472EL |
| 5600 | 22 x 35 | 2.40 | 2.76 | 0.074 | 0.056 | ECOS1VA562BA | ECEC1VA562BA |
| | 25 x 30 | 2.40 | 2.76 | 0.074 | 0.056 | ECOS1VA562CA | ECEC1VA562CA |
| | 30 x 25 | 2.40 | 2.76 | 0.074 | 0.056 | ECOS1VA562DA | ECEC1VA562DA |
| 6800 | 22 x 40 | 2.60 | 2.99 | 0.061 | 0.046 | ECOS1VA682BA | ECEC1VA682BA |
| | 25 x 35 | 2.60 | 2.99 | 0.061 | 0.046 | ECOS1VA682CA | ECEC1VA682CA |
| | 30 x 30 | 2.60 | 2.99 | 0.061 | 0.046 | ECOS1VA682DA | ECEC1VA682DA |
| 8200 | 22 x 50 | 2.90 | 3.34 | 0.051 | 0.038 | ECOS1VA822BA | ECEC1VA822BA |
| | 25 x 40 | 2.90 | 3.34 | 0.051 | 0.038 | ECOS1VA822CA | ECEC1VA822CA |
| | 30 x 30 | 2.90 | 3.34 | 0.051 | 0.038 | ECOS1VA822DA | ECEC1VA822DA |
| | 35 x 25 | 2.90 | 3.34 | 0.051 | 0.038 | ECOS1VA822EA | ECEC1VA822EA |
| 10000 | 25 x 45 | 3.20 | 3.68 | 0.041 | 0.031 | ECOS1VA103CA | ECEC1VA103CA |
| | 30 x 35 | 3.20 | 3.68 | 0.041 | 0.031 | ECOS1VA103DA | ECEC1VA103DA |
| | 35 x 30 | 3.20 | 3.68 | 0.041 | 0.031 | ECOS1VA103EA | ECEC1VA103EA |
| 12000 | 25 x 50 | 3.50 | 4.03 | 0.035 | 0.026 | ECOS1VA123CA | ECEC1VA123CA |
| | 30 x 40 | 3.50 | 4.03 | 0.035 | 0.026 | ECOS1VA123DA | ECEC1VA123DA |
| | 35 x 30 | 3.50 | 4.03 | 0.035 | 0.026 | ECOS1VA123EA | ECEC1VA123EA |
| 15000 | 30 x 45 | 3.90 | 4.49 | 0.030 | 0.022 | ECOS1VA153DA | ECEC1VA153DA |
| | 35 x 35 | 3.90 | 4.49 | 0.030 | 0.022 | ECOS1VA153EA | ECEC1VA153EA |
| 18000 | 35 x 40 | 4.30 | 4.95 | 0.028 | 0.021 | ECOS1VA183EA | ECEC1VA183EA |
| 22000 | 35 x 50 | 5.00 | 5.75 | 0.023 | 0.017 | ECOS1VA223EA | ECEC1VA223EA |
| 50 VDC Working, 63 VDC Surge | | | | | | | |
| 1000 | 22 x 20 | 0.90 | 1.04 | 0.265 | 0.199 | ECOS1HA102BL | ECEC1HA102BL |
| 1500 | 25 x 20 | 1.20 | 1.38 | 0.177 | 0.133 | ECOS1HA152CL | ECEC1HA152CL |
| 1800 | 22 x 25 | 1.50 | 1.73 | 0.129 | 0.097 | ECOS1HA182BA | ECEC1HA182BA |
| 2200 | 22 x 30 | 1.70 | 1.96 | 0.105 | 0.079 | ECOS1HA222BA | ECEC1HA222BA |
| | 30 x 20 | 1.40 | 1.61 | 0.121 | 0.090 | ECOS1HA222DL | ECEC1HA222DL |
| 2700 | 22 x 30 | 1.80 | 2.07 | 0.086 | 0.064 | ECOS1HA272BA | ECEC1HA272BA |
| | 25 x 25 | 1.80 | 2.07 | 0.086 | 0.064 | ECOS1HA272CA | ECEC1HA272CA |
| 3300 | 22 x 35 | 2.00 | 2.30 | 0.070 | 0.053 | ECOS1HA332BA | ECEC1HA332BA |
| | 25 x 30 | 2.00 | 2.30 | 0.070 | 0.053 | ECOS1HA332CA | ECEC1HA332CA |
| | 35 x 20 | 1.70 | 1.96 | 0.085 | 0.064 | ECOS1HA332EL | ECEC1HA332EL |
| 3900 | 22 x 40 | 2.20 | 2.53 | 0.064 | 0.048 | ECOS1HA392BA | ECEC1HA392BA |
| | 25 x 35 | 2.20 | 2.53 | 0.064 | 0.048 | ECOS1HA392CA | ECEC1HA392CA |
| | 30 x 25 | 2.20 | 2.53 | 0.064 | 0.048 | ECOS1HA392DA | ECEC1HA392DA |
| 4700 | 22 x 45 | 2.50 | 2.88 | 0.053 | 0.040 | ECOS1HA472BA | ECEC1HA472BA |
| | 25 x 40 | 2.50 | 2.88 | 0.053 | 0.040 | ECOS1HA472CA | ECEC1HA472CA |

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TS-HA Standard Ratings (continued)

Part numbers shown with 2 pins

| Cap. (μ F) | Size (mm) D x L | Max 105°C R.C. (A_{rms}) | | 20°C ESR (Ω , max.) | | Panasonic Part Number (By Terminal Length) | |
|---|--------------------|------------------------------|--------|-----------------------------|-------|--|-----------------------|
| | | 120Hz | 10kHz~ | 120Hz | 20kHz | 6.3mm Length Terminal | 4.0mm Length Terminal |
| 50 VDC Working, 63 VDC Surge (continued) | | | | | | | |
| 4700 | 30 x 30 | 2.50 | 2.88 | 0.053 | 0.040 | ECOS1HA472DA | ECEC1HA472DA |
| | 35 x 25 | 2.50 | 2.88 | 0.053 | 0.040 | ECOS1HA472EA | ECEC1HA472EA |
| 5600 | 22 x 50 | 2.80 | 3.22 | 0.050 | 0.038 | ECOS1HA562BA | ECEC1HA562BA |
| | 25 x 40 | 2.80 | 3.22 | 0.050 | 0.038 | ECOS1HA562CA | ECEC1HA562CA |
| | 30 x 35 | 2.80 | 3.22 | 0.050 | 0.038 | ECOS1HA562DA | ECEC1HA562DA |
| | 35 x 30 | 2.80 | 3.22 | 0.050 | 0.038 | ECOS1HA562EA | ECEC1HA562EA |
| 6800 | 25 x 50 | 3.30 | 3.80 | 0.046 | 0.035 | ECOS1HA682CA | ECEC1HA682CA |
| | 30 x 40 | 3.30 | 3.80 | 0.046 | 0.035 | ECOS1HA682DA | ECEC1HA682DA |
| | 35 x 30 | 3.30 | 3.80 | 0.046 | 0.035 | ECOS1HA682EA | ECEC1HA682EA |
| 8200 | 30 x 45 | 3.60 | 4.14 | 0.038 | 0.029 | ECOS1HA822DA | ECEC1HA822DA |
| | 35 x 35 | 3.60 | 4.14 | 0.038 | 0.029 | ECOS1HA822EA | ECEC1HA822EA |
| 10000 | 30 x 50 | 4.00 | 4.60 | 0.033 | 0.025 | ECOS1HA103DA | ECEC1HA103DA |
| | 35 x 40 | 4.00 | 4.60 | 0.033 | 0.025 | ECOS1HA103EA | ECEC1HA103EA |
| 12000 | 35 x 45 | 4.50 | 5.18 | 0.028 | 0.022 | ECOS1HA123EA | ECEC1HA123EA |
| 15000 | 35 x 50 | 4.80 | 5.52 | 0.022 | 0.018 | ECOS1HA153EA | ECEC1HA153EA |
| 63 VDC Working, 79 VDC Surge | | | | | | | |
| 680 | 22 x 20 | 0.90 | 1.04 | 0.463 | 0.347 | ECOS1JA681BL | ECEC1JA681BL |
| 1000 | 25 x 20 | 1.20 | 1.38 | 0.315 | 0.236 | ECOS1JA102CL | ECEC1JA102CL |
| 1200 | 22 x 25 | 1.40 | 1.61 | 0.235 | 0.176 | ECOS1JA122BA | ECEC1JA122BA |
| 1500 | 22 x 30 | 1.50 | 1.73 | 0.188 | 0.141 | ECOS1JA152BA | ECEC1JA152BA |
| | 30 x 20 | 1.30 | 1.50 | 0.210 | 0.157 | ECOS1JA152DL | ECEC1JA152DL |
| 1800 | 22 x 30 | 1.70 | 1.96 | 0.157 | 0.117 | ECOS1JA182BA | ECEC1JA182BA |
| | 25 x 25 | 1.70 | 1.96 | 0.157 | 0.117 | ECOS1JA182CA | ECEC1JA182CA |
| 2200 | 22 x 35 | 2.00 | 2.30 | 0.128 | 0.096 | ECOS1JA222BA | ECEC1JA222BA |
| | 25 x 30 | 2.00 | 2.30 | 0.128 | 0.096 | ECOS1JA222CA | ECEC1JA222CA |
| | 35 x 20 | 1.50 | 1.73 | 0.143 | 0.107 | ECOS1JA222EL | ECEC1JA222EL |
| 2700 | 22 x 40 | 2.20 | 2.53 | 0.104 | 0.078 | ECOS1JA272BA | ECEC1JA272BA |
| | 25 x 35 | 2.20 | 2.53 | 0.104 | 0.078 | ECOS1JA272CA | ECEC1JA272CA |
| | 30 x 25 | 2.20 | 2.53 | 0.104 | 0.078 | ECOS1JA272DA | ECEC1JA272DA |
| 3300 | 22 x 50 | 2.50 | 2.88 | 0.090 | 0.068 | ECOS1JA332BA | ECEC1JA332BA |
| | 25 x 40 | 2.50 | 2.88 | 0.090 | 0.068 | ECOS1JA332CA | ECEC1JA332CA |
| | 30 x 30 | 2.50 | 2.88 | 0.090 | 0.068 | ECOS1JA332DA | ECEC1JA332DA |
| | 35 x 25 | 2.50 | 2.88 | 0.090 | 0.068 | ECOS1JA332EA | ECEC1JA332EA |
| 3900 | 25 x 45 | 2.70 | 3.11 | 0.077 | 0.057 | ECOS1JA392CA | ECEC1JA392CA |
| | 30 x 35 | 2.70 | 3.11 | 0.077 | 0.057 | ECOS1JA392DA | ECEC1JA392DA |
| | 35 x 30 | 2.70 | 3.11 | 0.077 | 0.057 | ECOS1JA392EA | ECEC1JA392EA |
| 4700 | 25 x 50 | 3.00 | 3.45 | 0.063 | 0.048 | ECOS1JA472CA | ECEC1JA472CA |
| | 30 x 40 | 3.00 | 3.45 | 0.063 | 0.048 | ECOS1JA472DA | ECEC1JA472DA |
| | 35 x 30 | 3.00 | 3.45 | 0.063 | 0.048 | ECOS1JA472EA | ECEC1JA472EA |
| 5600 | 30 x 45 | 3.30 | 3.80 | 0.053 | 0.040 | ECOS1JA562DA | ECEC1JA562DA |
| | 35 x 35 | 3.30 | 3.80 | 0.053 | 0.040 | ECOS1JA562EA | ECEC1JA562EA |
| 6800 | 30 x 50 | 3.60 | 4.14 | 0.049 | 0.037 | ECOS1JA682DA | ECEC1JA682DA |
| | 35 x 40 | 3.60 | 4.14 | 0.049 | 0.037 | ECOS1JA682EA | ECEC1JA682EA |
| 8200 | 35 x 45 | 3.90 | 4.49 | 0.040 | 0.030 | ECOS1JA822EA | ECEC1JA822EA |
| 10000 | 35 x 50 | 4.40 | 5.06 | 0.033 | 0.028 | ECOS1JA103EA | ECEC1JA103EA |
| 80 VDC Working, 100 VDC Surge | | | | | | | |
| 470 | 22 x 20 | 0.80 | 0.92 | 0.459 | 0.298 | ECOS1KA471BL | ECEC1KA471BL |
| 560 | 25 x 20 | 1.00 | 1.15 | 0.317 | 0.206 | ECOS1KA681CL | ECEC1KA681CL |
| 820 | 22 x 25 | 1.20 | 1.38 | 0.222 | 0.145 | ECOS1KA821BA | ECEC1KA821BA |
| 1000 | 22 x 30 | 1.30 | 1.50 | 0.182 | 0.119 | ECOS1KA102BA | ECEC1KA102BA |
| | 25 x 25 | 1.30 | 1.50 | 0.182 | 0.119 | ECOS1KA102CA | ECEC1KA102CA |
| | 30 x 20 | 1.20 | 1.38 | 0.216 | 0.140 | ECOS1KA102DL | ECEC1KA102DL |
| 1200 | 22 x 30 | 1.50 | 1.73 | 0.166 | 0.116 | ECOS1KA122BA | ECEC1KA122BA |
| | 25 x 25 | 1.50 | 1.73 | 0.166 | 0.116 | ECOS1KA122CA | ECEC1KA122CA |
| 1500 | 22 x 35 | 1.70 | 1.96 | 0.133 | 0.093 | ECOS1KA152BA | ECEC1KA152BA |
| | 25 x 30 | 1.70 | 1.96 | 0.133 | 0.093 | ECOS1KA152CA | ECEC1KA152CA |
| | 35 x 20 | 1.40 | 1.61 | 0.155 | 0.108 | ECOS1KA152EL | ECEC1KA152EL |
| 1800 | 22 x 40 | 1.80 | 2.07 | 0.111 | 0.077 | ECOS1KA182BA | ECEC1KA182BA |
| | 25 x 35 | 1.80 | 2.07 | 0.111 | 0.077 | ECOS1KA182CA | ECEC1KA182CA |
| | 30 x 25 | 1.80 | 2.07 | 0.111 | 0.077 | ECOS1KA182DA | ECEC1KA182DA |
| 2200 | 22 x 45 | 2.10 | 2.42 | 0.090 | 0.063 | ECOS1KA222BA | ECEC1KA222BA |
| | 25 x 35 | 2.10 | 2.42 | 0.090 | 0.063 | ECOS1KA222CA | ECEC1KA222CA |
| | 30 x 30 | 2.10 | 2.42 | 0.090 | 0.063 | ECOS1KA222DA | ECEC1KA222DA |
| | 35 x 25 | 2.10 | 2.42 | 0.090 | 0.063 | ECOS1KA222EA | ECEC1KA222EA |

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TS-HA/HB Standard Ratings (continued)

Part numbers shown with 2 pins

| Cap. (μ F) | Size (mm) D x L | Max 105°C R.C. (A_{rms}) | | 20°C ESR (Ω , max.) | | Panasonic Part Number (By Terminal Length) | |
|--|--------------------|------------------------------|--------|-----------------------------|-------|--|-----------------------|
| | | 120Hz | 10kHz~ | 120Hz | 20kHz | 6.3mm Length Terminal | 4.0mm Length Terminal |
| 80 VDC Working, 100 VDC Surge (continued) | | | | | | | |
| 2700 | 25 x 45 | 2.40 | 2.76 | 0.074 | 0.055 | ECOS1KA272CA | ECEC1KA272CA |
| | 30 x 35 | 2.40 | 2.76 | 0.074 | 0.055 | ECOS1KA272DA | ECEC1KA272DA |
| | 35 x 30 | 2.40 | 2.76 | 0.074 | 0.055 | ECOS1KA272EA | ECEC1KA272EA |
| 3300 | 25 x 50 | 2.60 | 2.99 | 0.065 | 0.049 | ECOS1KA332CA | ECEC1KA332CA |
| | 30 x 40 | 2.60 | 2.99 | 0.065 | 0.049 | ECOS1KA332DA | ECEC1KA332DA |
| | 35 x 30 | 2.60 | 2.99 | 0.065 | 0.049 | ECOS1KA332EA | ECEC1KA332EA |
| 3900 | 30 x 45 | 3.00 | 3.45 | 0.060 | 0.045 | ECOS1KA392DA | ECEC1KA392DA |
| | 35 x 35 | 3.00 | 3.45 | 0.060 | 0.045 | ECOS1KA392EA | ECEC1KA392EA |
| 4700 | 30 x 50 | 3.30 | 3.80 | 0.049 | 0.037 | ECOS1KA472DA | ECEC1KA472DA |
| | 35 x 40 | 3.30 | 3.80 | 0.049 | 0.037 | ECOS1KA472EA | ECEC1KA472EA |
| 5600 | 35 x 45 | 3.70 | 4.26 | 0.050 | 0.038 | ECOS1KA562EA | ECEC1KA562EA |
| 6800 | 35 x 50 | 3.90 | 4.49 | 0.041 | 0.031 | ECOS1KA682EA | ECEC1KA682EA |
| 100 VDC Working, 125 VDC Surge | | | | | | | |
| 330 | 22 x 20 | 0.80 | 1.20 | 0.653 | 0.392 | ECOS2AA331BL | ECEC2AA331BL |
| 470 | 25 x 20 | 1.00 | 1.50 | 0.459 | 0.275 | ECOS2AA471CL | ECEC2AA471CL |
| 560 | 22 x 25 | 1.10 | 1.65 | 0.296 | 0.178 | ECOS2AA561BA | ECEC2AA561BA |
| 680 | 30 x 20 | 1.10 | 1.65 | 0.317 | 0.190 | ECOS2AA681DL | ECEC2AA681DL |
| 820 | 22 x 30 | 1.40 | 2.10 | 0.202 | 0.121 | ECOS2AA821BA | ECEC2AA821BA |
| | 25 x 25 | 1.40 | 2.10 | 0.202 | 0.121 | ECOS2AA821CA | ECEC2AA821CA |
| 1000 | 22 x 35 | 1.70 | 2.55 | 0.182 | 0.109 | ECOS2AA102BA | ECEC2AA102BA |
| | 25 x 30 | 1.70 | 2.55 | 0.182 | 0.109 | ECOS2AA102CA | ECEC2AA102CA |
| | 35 x 20 | 1.20 | 1.80 | 0.216 | 0.129 | ECOS2AA102EL | ECEC2AA102EL |
| 1200 | 22 x 40 | 1.80 | 2.70 | 0.152 | 0.091 | ECOS2AA122BA | ECEC2AA122BA |
| | 25 x 35 | 1.80 | 2.70 | 0.152 | 0.091 | ECOS2AA122CA | ECEC2AA122CA |
| | 30 x 25 | 1.80 | 2.70 | 0.152 | 0.091 | ECOS2AA122DA | ECEC2AA122DA |
| 1500 | 22 x 45 | 2.10 | 3.15 | 0.122 | 0.073 | ECOS2AA152BA | ECEC2AA152BA |
| | 25 x 40 | 2.10 | 3.15 | 0.122 | 0.079 | ECOS2AA152CA | ECEC2AA152CA |
| | 30 x 30 | 2.10 | 3.15 | 0.122 | 0.079 | ECOS2AA152DA | ECEC2AA152DA |
| | 35 x 25 | 2.10 | 3.15 | 0.122 | 0.079 | ECOS2AA152EA | ECEC2AA152EA |
| 1800 | 25 x 45 | 2.30 | 3.45 | 0.111 | 0.072 | ECOS2AA182CA | ECEC2AA182CA |
| | 30 x 35 | 2.30 | 3.45 | 0.111 | 0.072 | ECOS2AA182DA | ECEC2AA182DA |
| | 35 x 30 | 2.30 | 3.45 | 0.111 | 0.072 | ECOS2AA182EA | ECEC2AA182EA |
| 2200 | 25 x 50 | 2.60 | 3.90 | 0.090 | 0.059 | ECOS2AA222CA | ECEC2AA222CA |
| | 30 x 40 | 2.60 | 3.90 | 0.090 | 0.059 | ECOS2AA222DA | ECEC2AA222DA |
| | 35 x 30 | 2.60 | 3.90 | 0.090 | 0.059 | ECOS2AA222EA | ECEC2AA222EA |
| 2700 | 30 x 45 | 2.90 | 4.35 | 0.080 | 0.052 | ECOS2AA272DA | ECEC2AA272DA |
| | 35 x 35 | 2.90 | 4.35 | 0.080 | 0.052 | ECOS2AA272EA | ECEC2AA272EA |
| 3300 | 30 x 50 | 3.20 | 4.80 | 0.075 | 0.053 | ECOS2AA332DA | ECEC2AA332DA |
| | 35 x 40 | 3.20 | 4.80 | 0.075 | 0.053 | ECOS2AA332EA | ECEC2AA332EA |
| 3900 | 35 x 45 | 3.60 | 5.40 | 0.064 | 0.045 | ECOS2AA392EA | ECEC2AA392EA |
| 4700 | 35 x 50 | 3.80 | 5.70 | 0.053 | 0.040 | ECOS2AA472EA | ECEC2AA472EA |
| 160 VDC Working, 200 VDC Surge | | | | | | | |
| 470 | 22 x 30 | 1.40 | 1.96 | 0.423 | 0.190 | ECOS2CB471BA | ECEC2CB471BA |
| 560 | 22 x 35 | 1.50 | 2.10 | 0.355 | 0.160 | ECOS2CB561BA | ECEC2CB561BA |
| 680 | 22 x 40 | 1.70 | 2.38 | 0.293 | 0.132 | ECOS2CB681BA | ECEC2CB681BA |
| | 25 x 30 | 1.70 | 2.38 | 0.293 | 0.132 | ECOS2CB681CA | ECEC2CB681CA |
| 820 | 22 x 45 | 2.00 | 2.80 | 0.243 | 0.109 | ECOS2CB821BA | ECEC2CB821BA |
| | 25 x 35 | 2.00 | 2.80 | 0.243 | 0.109 | ECOS2CB821CA | ECEC2CB821CA |
| 1000 | 22 x 50 | 2.20 | 3.08 | 0.199 | 0.090 | ECOS2CB102BA | ECEC2CB102BA |
| | 25 x 40 | 2.20 | 3.08 | 0.199 | 0.090 | ECOS2CB102CA | ECEC2CB102CA |
| | 30 x 30 | 2.20 | 3.08 | 0.199 | 0.090 | ECOS2CB102DA | ECEC2CB102DA |
| | 35 x 25 | 2.20 | 3.08 | 0.199 | 0.090 | ECOS2CB102EA | ECEC2CB102EA |
| 1200 | 25 x 45 | 2.30 | 3.22 | 0.180 | 0.090 | ECOS2CB122CA | ECEC2CB122CA |
| | 30 x 35 | 2.30 | 3.22 | 0.180 | 0.090 | ECOS2CB122DA | ECEC2CB122DA |
| | 35 x 30 | 2.30 | 3.22 | 0.180 | 0.090 | ECOS2CB122EA | ECEC2CB122EA |
| 1500 | 30 x 40 | 2.50 | 3.50 | 0.144 | 0.072 | ECOS2CB152DA | ECEC2CB152DA |
| | 35 x 30 | 2.50 | 3.50 | 0.144 | 0.072 | ECOS2CB152EA | ECEC2CB152EA |
| 1800 | 30 x 45 | 2.70 | 3.78 | 0.129 | 0.064 | ECOS2CB182DA | ECEC2CB182DA |
| | 35 x 35 | 2.70 | 3.78 | 0.129 | 0.064 | ECOS2CB182EA | ECEC2CB182EA |
| 2200 | 35 x 45 | 2.90 | 4.06 | 0.105 | 0.063 | ECOS2CB222EA | ECEC2CB222EA |
| 2700 | 35 x 50 | 3.10 | 4.34 | 0.086 | 0.052 | ECOS2CB272EA | ECEC2CB272EA |
| 200 VDC Working, 250 VDC Surge | | | | | | | |
| 390 | 22 x 30 | 1.30 | 1.82 | 0.510 | 0.230 | ECOS2DB391BA | ECEC2DB391BA |
| | 25 x 25 | 1.30 | 1.82 | 0.510 | 0.230 | ECOS2DB391CA | ECEC2DB391CA |
| 470 | 22 x 35 | 1.40 | 1.96 | 0.423 | 0.190 | ECOS2DB471BA | ECEC2DB471BA |

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TS-HB Standard Ratings (continued)

Part numbers shown with 2 pins

| Cap. (μF) | Size (mm) D x L | Max 105°C R.C. (A_{rms}) | | 20°C ESR (Ω , max.) | | Panasonic Part Number (By Terminal Length) | |
|---|--------------------|-------------------------------------|--------|-----------------------------|-------|--|-----------------------|
| | | 120Hz | 10kHz~ | 120Hz | 20kHz | 6.3mm Length Terminal | 4.0mm Length Terminal |
| 200 VDC Working, 250 VDC Surge (continued) | | | | | | | |
| 470 | 25 x 30 | 1.40 | 1.96 | 0.423 | 0.190 | ECOS2DB471CA | ECEC2DB471CA |
| 560 | 22 x 40 | 1.50 | 2.10 | 0.355 | 0.160 | ECOS2DB561BA | ECEC2DB561BA |
| | 25 x 30 | 1.50 | 2.10 | 0.355 | 0.160 | ECOS2DB561CA | ECEC2DB561CA |
| | 30 x 25 | 1.50 | 2.10 | 0.355 | 0.160 | ECOS2DB561DA | ECEC2DB561DA |
| 680 | 22 x 45 | 1.70 | 2.38 | 0.293 | 0.132 | ECOS2DB681BA | ECEC2DB681BA |
| | 25 x 35 | 1.70 | 2.38 | 0.293 | 0.132 | ECOS2DB681CA | ECEC2DB681CA |
| 820 | 25 x 45 | 2.00 | 2.80 | 0.263 | 0.118 | ECOS2DB821CA | ECEC2DB821CA |
| | 30 x 30 | 2.00 | 2.80 | 0.263 | 0.118 | ECOS2DB821DA | ECEC2DB821DA |
| | 35 x 25 | 2.00 | 2.80 | 0.263 | 0.118 | ECOS2DB821EA | ECEC2DB821EA |
| 1000 | 25 x 50 | 2.20 | 3.08 | 0.216 | 0.108 | ECOS2DB102CA | ECEC2DB102CA |
| | 30 x 35 | 2.20 | 3.08 | 0.216 | 0.108 | ECOS2DB102DA | ECEC2DB102DA |
| | 35 x 30 | 2.20 | 3.08 | 0.216 | 0.108 | ECOS2DB102EA | ECEC2DB102EA |
| 1200 | 30 x 40 | 2.30 | 3.22 | 0.193 | 0.097 | ECOS2DB122DA | ECEC2DB122DA |
| | 35 x 35 | 2.30 | 3.22 | 0.193 | 0.097 | ECOS2DB122EA | ECEC2DB122EA |
| 1500 | 30 x 50 | 2.50 | 3.50 | 0.155 | 0.077 | ECOS2DB152DA | ECEC2DB152DA |
| | 35 x 40 | 2.50 | 3.50 | 0.155 | 0.077 | ECOS2DB152EA | ECEC2DB152EA |
| 1800 | 35 x 45 | 2.70 | 3.78 | 0.129 | 0.077 | ECOS2DB182EA | ECEC2DB182EA |
| 2200 | 35 x 50 | 2.90 | 4.06 | 0.105 | 0.063 | ECOS2DB222EA | ECEC2DB222EA |
| 250 VDC Working, 300 VDC Surge | | | | | | | |
| 180 | 22 x 25 | 0.90 | 1.26 | 0.921 | 0.461 | ECOS2EB181BA | ECEC2EB181BA |
| 220 | 22 x 30 | 1.00 | 1.40 | 0.754 | 0.377 | ECOS2EB221BA | ECEC2EB221BA |
| 270 | 22 x 35 | 1.10 | 1.54 | 0.614 | 0.307 | ECOS2EB271BA | ECEC2EB271BA |
| 330 | 22 x 40 | 1.20 | 1.68 | 0.502 | 0.251 | ECOS2EB331BA | ECEC2EB331BA |
| | 25 x 30 | 1.20 | 1.68 | 0.502 | 0.251 | ECOS2EB331CA | ECEC2EB331CA |
| 390 | 22 x 45 | 1.30 | 1.82 | 0.425 | 0.213 | ECOS2EB391BA | ECEC2EB391BA |
| | 30 x 25 | 1.30 | 1.82 | 0.425 | 0.213 | ECOS2EB391DA | ECEC2EB391DA |
| 470 | 22 x 50 | 1.40 | 1.96 | 0.353 | 0.176 | ECOS2EB471BA | ECEC2EB471BA |
| | 25 x 40 | 1.40 | 1.96 | 0.353 | 0.176 | ECOS2EB471CA | ECEC2EB471CA |
| | 30 x 30 | 1.40 | 1.96 | 0.353 | 0.176 | ECOS2EB471DA | ECEC2EB471DA |
| 560 | 25 x 45 | 1.50 | 2.10 | 0.296 | 0.148 | ECOS2EB561CA | ECEC2EB561CA |
| | 35 x 25 | 1.50 | 2.10 | 0.296 | 0.148 | ECOS2EB561EA | ECEC2EB561EA |
| 680 | 25 x 50 | 1.70 | 2.38 | 0.244 | 0.134 | ECOS2EB681CA | ECEC2EB681CA |
| | 30 x 40 | 1.70 | 2.38 | 0.244 | 0.134 | ECOS2EB681DA | ECEC2EB681DA |
| | 35 x 30 | 1.70 | 2.38 | 0.244 | 0.134 | ECOS2EB681EA | ECEC2EB681EA |
| 820 | 30 x 45 | 2.00 | 2.80 | 0.202 | 0.111 | ECOS2EB821DA | ECEC2EB821DA |
| | 35 x 35 | 2.00 | 2.80 | 0.202 | 0.111 | ECOS2EB821EA | ECEC2EB821EA |
| 1000 | 30 x 50 | 2.20 | 3.08 | 0.199 | 0.109 | ECOS2EB102DA | ECEC2EB102DA |
| | 35 x 40 | 2.20 | 3.08 | 0.199 | 0.109 | ECOS2EB102EA | ECEC2EB102EA |
| 1200 | 35 x 45 | 2.30 | 3.22 | 0.166 | 0.099 | ECOS2EB122EA | ECEC2EB122EA |
| 1500 | 35 x 50 | 2.50 | 3.50 | 0.144 | 0.093 | ECOS2EB152EA | ECEC2EB152EA |
| 385 VDC Working, 425 VDC Surge | | | | | | | |
| 82 | 22 x 30 | 0.64 | 0.90 | 2.022 | 0.809 | ECOS2TB820BA | ECEC2TB820BA |
| 100 | 22 x 30 | 0.69 | 0.97 | 1.658 | 0.663 | ECOS2TB101BA | ECEC2TB101BA |
| | 25 x 25 | 0.69 | 0.97 | 1.658 | 0.663 | ECOS2TB101CA | ECEC2TB101CA |
| 120 | 22 x 35 | 0.75 | 1.05 | 1.382 | 0.553 | ECOS2TB121BA | ECEC2TB121BA |
| | 25 x 30 | 0.75 | 1.05 | 1.382 | 0.553 | ECOS2TB121CA | ECEC2TB121CA |
| 150 | 22 x 40 | 0.82 | 1.15 | 1.105 | 0.442 | ECOS2TB151BA | ECEC2TB151BA |
| | 25 x 30 | 0.82 | 1.15 | 1.105 | 0.442 | ECOS2TB151CA | ECEC2TB151CA |
| | 30 x 25 | 0.82 | 1.15 | 1.105 | 0.442 | ECOS2TB151DA | ECEC2TB151DA |
| 180 | 22 x 45 | 0.95 | 1.33 | 0.921 | 0.368 | ECOS2TB181BA | ECEC2TB181BA |
| | 25 x 35 | 0.95 | 1.33 | 0.921 | 0.368 | ECOS2TB181CA | ECEC2TB181CA |
| | 30 x 30 | 0.95 | 1.33 | 0.921 | 0.368 | ECOS2TB181DA | ECEC2TB181DA |
| 220 | 25 x 45 | 1.10 | 1.54 | 0.754 | 0.301 | ECOS2TB221CA | ECEC2TB221CA |
| | 30 x 30 | 1.10 | 1.54 | 0.829 | 0.332 | ECOS2TB221DA | ECEC2TB221DA |
| | 35 x 25 | 1.10 | 1.54 | 0.829 | 0.332 | ECOS2TB221EA | ECEC2TB221EA |
| 270 | 25 x 50 | 1.20 | 1.68 | 0.675 | 0.270 | ECOS2TB271CA | ECEC2TB271CA |
| | 35 x 30 | 1.20 | 1.68 | 0.675 | 0.270 | ECOS2TB271EA | ECEC2TB271EA |
| 330 | 30 x 45 | 1.35 | 1.89 | 0.553 | 0.221 | ECOS2TB331DA | ECEC2TB331DA |
| | 35 x 35 | 1.35 | 1.89 | 0.553 | 0.221 | ECOS2TB331EA | ECEC2TB331EA |
| 390 | 30 x 50 | 1.55 | 2.17 | 0.510 | 0.204 | ECOS2TB391DA | ECEC2TB391DA |
| 470 | 35 x 45 | 1.75 | 2.45 | 0.423 | 0.212 | ECOS2TB471EA | ECEC2TB471EA |
| 560 | 35 x 50 | 1.80 | 2.52 | 0.355 | 0.178 | ECOS2TB561EA | ECEC2TB561EA |
| 400 VDC Working, 450 VDC Surge | | | | | | | |
| 82 | 22 x 30 | 0.64 | 0.90 | 2.022 | 0.708 | ECOS2GB820BA | ECEC2GB820BA |
| 100 | 22 x 30 | 0.69 | 0.97 | 1.658 | 0.580 | ECOS2GB101BA | ECEC2GB101BA |

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TS-HB Standard Ratings (continued)

Part numbers shown with 2 pins

| Cap. (μ F) | Size (mm) D x L | Max 105°C R.C. (A_{rms}) | | 20°C ESR (Ω , max.) | | Panasonic Part Number (By Terminal Length) | |
|---|--------------------|------------------------------|--------|-----------------------------|-------|--|-----------------------|
| | | 120Hz | 10kHz~ | 120Hz | 20kHz | 6.3mm Length Terminal | 4.0mm Length Terminal |
| 400 VDC Working, 450 VDC Surge (continued) | | | | | | | |
| 100 | 25 x 25 | 0.69 | 0.97 | 1.658 | 0.580 | ECOS2GB101CA | ECEC2GB101CA |
| 120 | 22 x 35 | 0.75 | 1.05 | 1.382 | 0.484 | ECOS2GB121BA | ECEC2GB121BA |
| | 25 x 30 | 0.75 | 1.05 | 1.382 | 0.484 | ECOS2GB121CA | ECEC2GB121CA |
| 150 | 22 x 40 | 0.82 | 1.15 | 1.105 | 0.387 | ECOS2GB151BA | ECEC2GB151BA |
| | 25 x 30 | 0.82 | 1.15 | 1.105 | 0.387 | ECOS2GB151CA | ECEC2GB151CA |
| | 30 x 25 | 0.82 | 1.15 | 1.105 | 0.387 | ECOS2GB151DA | ECEC2GB151DA |
| 180 | 22 x 45 | 0.95 | 1.33 | 0.921 | 0.322 | ECOS2GB181BA | ECEC2GB181BA |
| | 25 x 35 | 0.95 | 1.33 | 0.921 | 0.322 | ECOS2GB181CA | ECEC2GB181CA |
| | 30 x 30 | 0.95 | 1.33 | 0.921 | 0.322 | ECOS2GB181DA | ECEC2GB181DA |
| 220 | 25 x 45 | 1.10 | 1.54 | 0.754 | 0.264 | ECOS2GB221CA | ECEC2GB221CA |
| | 30 x 30 | 1.10 | 1.54 | 0.754 | 0.264 | ECOS2GB221DA | ECEC2GB221DA |
| | 35 x 25 | 1.10 | 1.54 | 0.754 | 0.264 | ECOS2GB221EA | ECEC2GB221EA |
| 270 | 25 x 50 | 1.20 | 1.68 | 0.614 | 0.215 | ECOS2GB271CA | ECEC2GB271CA |
| | 30 x 35 | 1.20 | 1.68 | 0.614 | 0.215 | ECOS2GB271DA | ECEC2GB271DA |
| | 35 x 30 | 1.20 | 1.68 | 0.614 | 0.215 | ECOS2GB271EA | ECEC2GB271EA |
| 330 | 30 x 45 | 1.35 | 1.89 | 0.502 | 0.201 | ECOS2GB331DA | ECEC2GB331DA |
| | 35 x 35 | 1.35 | 1.89 | 0.502 | 0.201 | ECOS2GB331EA | ECEC2GB331EA |
| 390 | 30 x 50 | 1.55 | 2.17 | 0.425 | 0.170 | ECOS2GB391DA | ECEC2GB391DA |
| | 35 x 40 | 1.55 | 2.17 | 0.425 | 0.170 | ECOS2GB391EA | ECEC2GB391EA |
| 470 | 35 x 45 | 1.75 | 2.45 | 0.353 | 0.141 | ECOS2GB471EA | ECEC2GB471EA |
| 560 | 35 x 50 | 1.80 | 2.52 | 0.296 | 0.118 | ECOS2GB561EA | ECEC2GB561EA |
| 420 VDC Working, 470 VDC Surge | | | | | | | |
| 100 | 22 x 30 | 0.64 | 0.90 | 1.824 | 0.821 | ECOS2SB101BA | ECEC2SB101BA |
| | 25 x 25 | 0.64 | 0.90 | 1.824 | 0.821 | ECOS2SB101CA | ECEC2SB101CA |
| 120 | 22 x 35 | 0.72 | 1.01 | 1.520 | 0.684 | ECOS2SB121BA | ECEC2SB121BA |
| | 25 x 30 | 0.72 | 1.01 | 1.520 | 0.684 | ECOS2SB121CA | ECEC2SB121CA |
| 150 | 22 x 40 | 0.79 | 1.11 | 1.216 | 0.547 | ECOS2SB151BA | ECEC2SB151BA |
| | 25 x 30 | 0.79 | 1.11 | 1.216 | 0.547 | ECOS2SB151CA | ECEC2SB151CA |
| | 30 x 25 | 0.79 | 1.11 | 1.216 | 0.547 | ECOS2SB151DA | ECEC2SB151DA |
| 180 | 22 x 45 | 0.87 | 1.22 | 1.013 | 0.456 | ECOS2SB181BA | ECEC2SB181BA |
| | 25 x 40 | 0.87 | 1.22 | 1.013 | 0.456 | ECOS2SB181CA | ECEC2SB181CA |
| | 30 x 30 | 0.87 | 1.22 | 1.013 | 0.456 | ECOS2SB181DA | ECEC2SB181DA |
| 220 | 25 x 45 | 1.00 | 1.40 | 0.829 | 0.373 | ECOS2SB221CA | ECEC2SB221CA |
| | 30 x 30 | 1.00 | 1.40 | 0.829 | 0.373 | ECOS2SB221DA | ECEC2SB221DA |
| | 35 x 25 | 1.00 | 1.40 | 0.829 | 0.373 | ECOS2SB221EA | ECEC2SB221EA |
| 270 | 25 x 50 | 1.19 | 1.67 | 0.675 | 0.304 | ECOS2SB271CA | ECEC2SB271CA |
| | 30 x 40 | 1.19 | 1.67 | 0.675 | 0.304 | ECOS2SB271DA | ECEC2SB271DA |
| | 35 x 30 | 1.19 | 1.67 | 0.675 | 0.304 | ECOS2SB271EA | ECEC2SB271EA |
| 330 | 30 x 45 | 1.38 | 1.93 | 0.553 | 0.249 | ECOS2SB331DA | ECEC2SB331DA |
| | 35 x 35 | 1.38 | 1.93 | 0.553 | 0.249 | ECOS2SB331EA | ECEC2SB331EA |
| 390 | 30 x 50 | 1.55 | 2.17 | 0.468 | 0.210 | ECOS2SB391DA | ECEC2SB391DA |
| | 35 x 40 | 1.55 | 2.17 | 0.468 | 0.210 | ECOS2SB391EA | ECEC2SB391EA |
| 470 | 35 x 45 | 1.74 | 2.44 | 0.388 | 0.175 | ECOS2SB471EA | ECEC2SB471EA |
| 560 | 35 x 50 | 1.90 | 2.66 | 0.326 | 0.147 | ECOS2SB561EA | ECEC2SB561EA |
| 450 VDC Working, 500 VDC Surge | | | | | | | |
| 82 | 22 x 30 | 0.56 | 0.78 | 2.022 | 0.708 | ECOS2WB820BA | ECEC2WB820BA |
| | 25 x 25 | 0.56 | 0.78 | 2.022 | 0.708 | ECOS2WB820CA | ECEC2WB820CA |
| 100 | 22 x 35 | 0.64 | 0.90 | 1.658 | 0.580 | ECOS2WB101BA | ECEC2WB101BA |
| | 25 x 30 | 0.64 | 0.90 | 1.658 | 0.580 | ECOS2WB101CA | ECEC2WB101CA |
| 120 | 22 x 40 | 0.72 | 1.01 | 1.382 | 0.484 | ECOS2WB121BA | ECEC2WB121BA |
| | 25 x 35 | 0.72 | 1.01 | 1.382 | 0.484 | ECOS2WB121CA | ECEC2WB121CA |
| | 30 x 25 | 0.72 | 1.01 | 1.382 | 0.484 | ECOS2WB121DA | ECEC2WB121DA |
| 150 | 22 x 50 | 0.79 | 1.11 | 1.105 | 0.387 | ECOS2WB151BA | ECEC2WB151BA |
| | 25 x 40 | 0.79 | 1.11 | 1.105 | 0.387 | ECOS2WB151CA | ECEC2WB151CA |
| | 30 x 30 | 0.79 | 1.11 | 1.105 | 0.387 | ECOS2WB151DA | ECEC2WB151DA |
| | 35 x 25 | 0.79 | 1.11 | 1.105 | 0.387 | ECOS2WB151EA | ECEC2WB151EA |
| 180 | 25 x 45 | 0.87 | 1.22 | 0.921 | 0.322 | ECOS2WB181CA | ECEC2WB181CA |
| | 30 x 35 | 0.87 | 1.22 | 0.921 | 0.322 | ECOS2WB181DA | ECEC2WB181DA |
| 220 | 25 x 50 | 1.00 | 1.40 | 0.754 | 0.264 | ECOS2WB221CA | ECEC2WB221CA |
| | 30 x 40 | 1.00 | 1.40 | 0.754 | 0.264 | ECOS2WB221DA | ECEC2WB221DA |
| | 35 x 30 | 1.00 | 1.40 | 0.754 | 0.264 | ECOS2WB221EA | ECEC2WB221EA |
| 270 | 30 x 45 | 1.19 | 1.67 | 0.614 | 0.215 | ECOS2WB271DA | ECEC2WB271DA |
| | 35 x 35 | 1.19 | 1.67 | 0.614 | 0.215 | ECOS2WB271EA | ECEC2WB271EA |
| 330 | 30 x 50 | 1.38 | 1.93 | 0.502 | 0.176 | ECOS2WB331DA | ECEC2WB331DA |
| | 35 x 40 | 1.38 | 1.93 | 0.502 | 0.176 | ECOS2WB331EA | ECEC2WB331EA |
| 390 | 35 x 45 | 1.55 | 2.17 | 0.425 | 0.149 | ECOS2WB391EA | ECEC2WB391EA |
| 470 | 35 x 50 | 1.74 | 2.44 | 0.353 | 0.123 | ECOS2WB471EA | ECEC2WB471EA |

Design and specifications are subject to change without notice.

Contact the factory or your sales representative for technical specifications before purchase and/or use.

When safety concerns arise, please contact Panasonic immediately for technical consultation.