

HF series

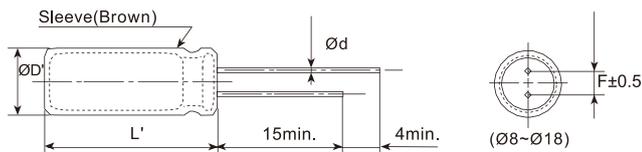
- Long life, high ripple current; For power supply applications
- Endurance: +105°C 5,000~10,000 hours
- RoHS Compliant



SPECIFICATIONS

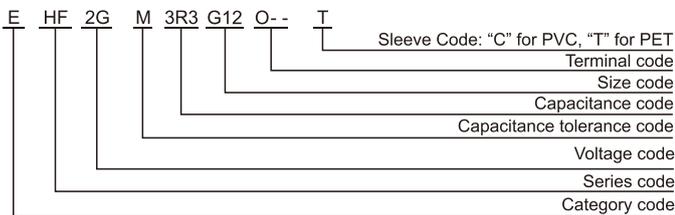
| Items | Characteristics | | | | | | | | | |
|--|--|--|----------------|-----------------|---------|--------------|---------------|---------|----------------|---------------|
| Category Temperature Range | -40~+105°C(160~400V _{dc}) | -25~+105°C(450V _{dc}) | | | | | | | | |
| Rated Voltage Range | 160~450 V _{dc} | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | |
| Leakage Current | | Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C) | | | | | | | | |
| | <table border="1"> <tr> <th></th> <th>After 1 minute</th> <th>After 5 minutes</th> </tr> <tr> <td>CV 1000</td> <td>I 0.1CV+40μA</td> <td>I 0.03CV+15μA</td> </tr> <tr> <td>CV>1000</td> <td>I 0.04CV+100μA</td> <td>I 0.02CV+25μA</td> </tr> </table> | | After 1 minute | After 5 minutes | CV 1000 | I 0.1CV+40μA | I 0.03CV+15μA | CV>1000 | I 0.04CV+100μA | I 0.02CV+25μA |
| | After 1 minute | After 5 minutes | | | | | | | | |
| CV 1000 | I 0.1CV+40μA | I 0.03CV+15μA | | | | | | | | |
| CV>1000 | I 0.04CV+100μA | I 0.02CV+25μA | | | | | | | | |
| Dissipation Factor (tanδ) | Rated Voltage(V _{dc}) | 160 200 250 350 400 450 | | | | | | | | |
| | tanδ (max.) | 0.15 0.15 0.15 0.20 0.20 0.20 (at 20°C, 120Hz) | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 200 250 350 400 450 | | | | | | | | |
| | Z(-25°C)/Z(+20°C) | 3 3 3 6 6 6 (at 120Hz) | | | | | | | | |
| | Z(-40°C)/Z(+20°C) | 8 8 8 10 10 - | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time at 105°C. | | | | | | | | | |
| | Capacitance Change | ≤±20% of the initial value | | | | | | | | |
| | D.F. (tanδ) | ≤200% of the initial specified value | | | | | | | | |
| | Leakage Current | ≤The initial specified value | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | |
| | Capacitance Change | ≤±20% of the initial value | | | | | | | | |
| | D.F. (tanδ) | ≤200% of the initial specified value | | | | | | | | |
| | Leakage Current | ≤200% of the initial specified value | | | | | | | | |

DIMENSIONS[mm]



| ØD | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|------|-----|-----|
| Ød | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | |
| L' | L+2max. | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------------|-----|------|------|------|
| <100 | 1.0 | 1.75 | 2.25 | 2.50 |
| 100 | 1.0 | 1.67 | 2.05 | 2.25 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

HF series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tanδ | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 160(2C) | 10 | 10×16 | 0.15 | 128 | EHF2CM100G16OT |
| | 12 | 10×16 | 0.15 | 145 | EHF2CM120G16OT |
| | 15 | 10×20 | 0.15 | 175 | EHF2CM150G20OT |
| | 22 | 10×20 | 0.15 | 205 | EHF2CM220G20OT |
| | 33 | 10×20 | 0.15 | 250 | EHF2CM330G20OT |
| | 39 | 10×20 | 0.15 | 275 | EHF2CM390G20OT |
| | 47 | 10×20 | 0.15 | 300 | EHF2CM470G20OT |
| | | 12.5×20 | 0.15 | 310 | EHF2CM470W20OT |
| | 56 | 12.5×20 | 0.15 | 350 | EHF2CM560W20OT |
| | 68 | 12.5×20 | 0.15 | 478 | EHF2CM680W20OT |
| | 82 | 12.5×20 | 0.15 | 510 | EHF2CM820W20OT |
| | | 16×20 | 0.15 | 525 | EHF2CM820L20OT |
| | 100 | 12.5×25 | 0.15 | 630 | EHF2CM101W25OT |
| | | 16×20 | 0.15 | 635 | EHF2CM101L20OT |
| | 150 | 16×20 | 0.15 | 770 | EHF2CM151L20OT |
| | | 16×25 | 0.15 | 790 | EHF2CM151L25OT |
| 220 | 16×25 | 0.15 | 1020 | EHF2CM221L25OT | |
| | 18×25 | 0.15 | 1045 | EHF2CM221M25OT | |
| 330 | 18×30 | 0.15 | 1402 | EHF2CM331M30OT | |
| 200(2D) | 10 | 10×16 | 0.15 | 126 | EHF2DM100G16OT |
| | 12 | 10×16 | 0.15 | 140 | EHF2DM120G16OT |
| | 15 | 10×20 | 0.15 | 170 | EHF2DM150G20OT |
| | 22 | 10×20 | 0.15 | 205 | EHF2DM220G20OT |
| | 33 | 10×20 | 0.15 | 255 | EHF2DM330G20OT |
| | | 12.5×20 | 0.15 | 265 | EHF2DM330W20OT |
| | 39 | 12.5×20 | 0.15 | 310 | EHF2DM390W20OT |
| | 47 | 12.5×20 | 0.15 | 392 | EHF2DM470W20OT |
| | 68 | 12.5×20 | 0.15 | 470 | EHF2DM680W20OT |
| | | 12.5×25 | 0.15 | 485 | EHF2DM680W25OT |
| | 82 | 16×20 | 0.15 | 554 | EHF2DM820L20OT |
| | 100 | 16×20 | 0.15 | 632 | EHF2DM101L20OT |
| | | 16×25 | 0.15 | 655 | EHF2DM101L25OT |
| | 150 | 16×25 | 0.15 | 840 | EHF2DM151L25OT |
| | | 16×30 | 0.15 | 865 | EHF2DM151L30OT |
| | 220 | 18×25 | 0.15 | 870 | EHF2DM151M25OT |
| 18×25 | | 0.15 | 1050 | EHF2DM221M25OT | |
| 330 | 18×30 | 0.15 | 1080 | EHF2DM221M30OT | |
| | 18×35 | 0.15 | 1430 | EHF2DM331M35OT | |
| 470 | 18×40 | 0.15 | 1460 | EHF2DM331M40OT | |
| 250(2E) | 4.7 | 8×12 | 0.15 | 70 | EHF2EM4R7F12OT |
| | 5.6 | 10×12 | 0.15 | 85 | EHF2EM5R6G12OT |
| | 6.8 | 10×12 | 0.15 | 110 | EHF2EM6R8G12OT |
| | 10 | 10×20 | 0.15 | 140 | EHF2EM100G20OT |
| | 22 | 10×20 | 0.15 | 205 | EHF2EM220G20OT |
| | 33 | 12.5×20 | 0.15 | 325 | EHF2EM330W20OT |
| | 39 | 12.5×20 | 0.15 | 345 | EHF2EM390W20OT |
| | 47 | 12.5×20 | 0.15 | 390 | EHF2EM470W20OT |
| | | 12.5×25 | 0.15 | 405 | EHF2EM470W25OT |
| | 68 | 16×20 | 0.15 | 528 | EHF2EM680L20OT |
| | | 16×20 | 0.15 | 550 | EHF2EM820L20OT |
| | 82 | 16×30 | 0.15 | 570 | EHF2EM820L30OT |
| | | 16×25 | 0.15 | 680 | EHF2EM101L25OT |
| | 100 | 18×25 | 0.15 | 700 | EHF2EM101M25OT |
| | | 18×25 | 0.15 | 866 | EHF2EM151M25OT |
| | 220 | 18×31 | 0.15 | 1130 | EHF2EM221M31OT |
| 18×40 | | 0.15 | 1160 | EHF2EM221M40OT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tanδ | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 350(2V) | 4.7 | 10×12 | 0.20 | 70 | EHF2VM4R7G12OT |
| | 5.6 | 10×12 | 0.20 | 90 | EHF2VM5R6G12OT |
| | 6.8 | 10×16 | 0.20 | 112 | EHF2VM6R8G16OT |
| | 10 | 10×20 | 0.20 | 140 | EHF2VM100G20OT |
| | 22 | 12.5×20 | 0.20 | 265 | EHF2VM220W20OT |
| | 33 | 16×20 | 0.20 | 364 | EHF2VM330L20OT |
| | 39 | 16×20 | 0.20 | 385 | EHF2VM390L20OT |
| | 47 | 16×20 | 0.20 | 430 | EHF2VM470L20OT |
| | | 16×25 | 0.20 | 445 | EHF2VM470L25OT |
| | 68 | 16×25 | 0.20 | 560 | EHF2VM680L25OT |
| | | 18×20 | 0.20 | 550 | EHF2VM680M20OT |
| | 82 | 18×25 | 0.20 | 570 | EHF2VM680M25OT |
| | | 18×25 | 0.20 | 618 | EHF2VM820M25OT |
| | 100 | 18×25 | 0.20 | 700 | EHF2VM101M25OT |
| | | 18×30 | 0.20 | 725 | EHF2VM101M30OT |
| | 120 | 18×30 | 0.20 | 836 | EHF2VM121M30OT |
| 150 | 18×35 | 0.20 | 970 | EHF2VM151M35OT | |
| 400(2G) | 1 | 8×12 | 0.20 | 30 | EHF2GM010F12OT |
| | 2.2 | 8×12 | 0.20 | 45 | EHF2GM2R2F12OT |
| | 3.3 | 10×12 | 0.20 | 80 | EHF2GM3R3G12OT |
| | 4.7 | 10×16 | 0.20 | 100 | EHF2GM4R7G16OT |
| | 6.8 | 10×16 | 0.20 | 112 | EHF2GM6R8G16OT |
| | 10 | 10×20 | 0.20 | 144 | EHF2GM100G20OT |
| | 15 | 12.5×20 | 0.20 | 222 | EHF2GM150W20OT |
| | 22 | 12.5×20 | 0.20 | 260 | EHF2GM220W20OT |
| | | 12.5×25 | 0.20 | 275 | EHF2GM220W25OT |
| | 33 | 16×20 | 0.20 | 368 | EHF2GM330L20OT |
| | 39 | 16×25 | 0.20 | 410 | EHF2GM390L25OT |
| | | 16×25 | 0.20 | 470 | EHF2GM470L25OT |
| | 47 | 18×20 | 0.20 | 455 | EHF2GM470M20OT |
| | | 16×30 | 0.20 | 480 | EHF2GM470L30OT |
| | 56 | 10×50 | 0.20 | 520 | EHF2GM560G50OT |
| | | 12.5×40 | 0.20 | 600 | EHF2GM680W40OT |
| 68 | 18×25 | 0.20 | 590 | EHF2GM680M25OT | |
| | 12.5×45 | 0.20 | 625 | EHF2GM820W45OT | |
| 82 | 18×25 | 0.20 | 610 | EHF2GM820M25OT | |
| | 18×30 | 0.20 | 630 | EHF2GM820M30OT | |
| 100 | 12.5×50 | 0.20 | 790 | EHF2GM101W50OT | |
| | 18×31 | 0.20 | 765 | EHF2GM101M31OT | |
| 120 | 18×35 | 0.20 | 785 | EHF2GM101M35OT | |
| | 18×35 | 0.20 | 870 | EHF2GM121M35OT | |
| 150 | 18×40 | 0.20 | 985 | EHF2GM151M40OT | |
| 450(2W) | 6.8 | 10×20 | 0.20 | 112 | EHF2WM6R8G20OT |
| | 10 | 12.5×20 | 0.20 | 185 | EHF2WM100W20OT |
| | 15 | 12.5×25 | 0.20 | 248 | EHF2WM150W25OT |
| | 22 | 16×20 | 0.20 | 295 | EHF2WM220L20OT |
| | | 10×40 | 0.20 | 405 | EHF2WM330G40OT |
| | 33 | 16×25 | 0.20 | 398 | EHF2WM330L25OT |
| | | 18×20 | 0.20 | 385 | EHF2WM330M20OT |
| | 39 | 10×45 | 0.20 | 425 | EHF2WM390G45OT |
| | | 18×25 | 0.20 | 415 | EHF2WM390M25OT |
| | 47 | 12.5×40 | 0.20 | 505 | EHF2WM470W40OT |
| | | 18×25 | 0.20 | 496 | EHF2WM470M25OT |
| | 56 | 12.5×40 | 0.20 | 550 | EHF2WM560W40OT |
| | 68 | 18×30 | 0.20 | 640 | EHF2WM680M30OT |
| | 82 | 12.5×50 | 0.20 | 730 | EHF2WM820W50OT |
| | | 18×35 | 0.20 | 720 | EHF2WM820M35OT |
| | 100 | 18×40 | 0.20 | 808 | EHF2WM101M40OT |

Radial Type