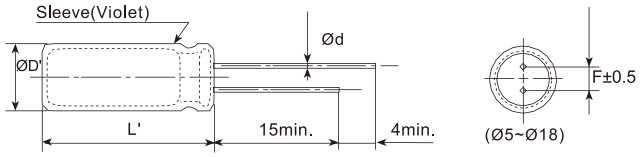
RN series

- Miniaturized,high performance, high reliability
- Low impedance, high ripple current, long life
- Endurance +105°C 5,000~10,000 hours
- **RoHS Compliant**

SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40~+105°C
Rated Voltage Range	25~120 Vdc
Capacitance Tolerance	±20%(M) (at 20°C,120Hz)
Leakage Current	I 0.01 CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes)
Dissipation Factor (tanδ)	Rated Voltage(Vdc): 25, 35, 50, 63, 80, 100, 120 tanδ (max.): 0.14, 0.12, 0.10, 0.09, 0.08, 0.08, 0.12 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C,120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated Voltage(Vdc): 25, 35, 50, 63, 80, 100, 120 Z(-25°C)/Z(+20°C): 2, 2, 2, 2, 2, 2, 3 Z(-40°C)/Z(+20°C): 4, 4, 4, 4, 4, 4, 6 (at 120Hz)
Endurance	The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus 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 Dia.(mm) / Load life (hours): ØD 6.3 / 5,000; ØD=8&10 / 7,000; ØD 12.5 / 10,000
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. 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	5	6.3	8		10	12.5	16	18
Ød	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5		5.0	5.0	7.5	7.5
ØD'	ØD+0.5max.							
L'	L+2max.							

PART NUMBERING SYSTEM

E RN 1H M 101 F09 O- - T

- T: Sleeve Code: "C" for PVC, "T" for PET
- O- -: Terminal code
- F09: Size code
- 101: Capacitance code
- M: Capacitance tolerance code
- 1H: Voltage code
- RN: Series code
- E: Category code

RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

Cap.(μF) \ Freq.(Hz)	120	1k	10k	100k≤
Cap.<47	0.40	0.75	0.90	1.00
47 Cap.<330	0.50	0.85	0.94	1.00
330 Cap.<820	0.75	0.90	0.95	1.00
Cap. 820	0.85	0.95	0.98	1.00

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WV (Vdc)	Cap (μF)	Size DxL(mm)	tanδ	Impedance (Ωmax/20°C, 100kHz)	Rated ripple current (mArms/105°C, 100kHz)	Part Number
25(1E)	10	5×9	0.14	3.5	80	ERN1EM100D09OT
	15	5×9	0.14	3.5	80	ERN1EM150D09OT
	22	5×9	0.14	3.5	80	ERN1EM220D09OT
	33	5×9	0.14	0.81	150	ERN1EM330D09OT
	47	5×9	0.14	0.65	180	ERN1EM470D09OT
	56	5×11	0.14	0.57	200	ERN1EM560D11OT
	68	5×11	0.14	0.57	200	ERN1EM680D11OT
		6.3×9	0.14	0.74	180	ERN1EM680E09OT
	100	5×11	0.14	0.57	200	ERN1EM101D11OT
	120	6.3×9	0.14	0.74	180	ERN1EM121E09OT
	180	6.3×11	0.14	0.21	350	ERN1EM181E11OT
		8×9	0.14	0.27	310	ERN1EM181F09OT
	220	6.3×11	0.14	0.21	350	ERN1EM221E11OT
		8×9	0.14	0.27	310	ERN1EM221F09OT
	330	8×12	0.14	0.13	660	ERN1EM331F12OT
		10×9	0.14	0.17	590	ERN1EM331G09OT
	390	8×14	0.14	0.15	885	ERN1EM391F14OT
	470	8×16	0.14	0.086	850	ERN1EM471F16OT
		10×12.5	0.14	0.08	870	ERN1EM471G1BOT
	560	8×20	0.14	0.069	1050	ERN1EM561F20OT
		10×12.5	0.14	0.08	870	ERN1EM561G1BOT
	680	8×20	0.14	0.069	1050	ERN1EM681F20OT
		10×16	0.14	0.06	1230	ERN1EM681G16OT
	820	10×16	0.14	0.06	1230	ERN1EM821G16OT
	1000	10×20	0.14	0.046	1400	ERN1EM102G20OT
	1200	10×25	0.14	0.042	1650	ERN1EM122G25OT
	1500	12.5×20	0.14	0.035	1910	ERN1EM152W20OT
35(1V)	10	5×9	0.12	3.5	80	ERN1VM100D09OT
	15	5×9	0.12	3.5	80	ERN1VM150D09OT
	22	5×9	0.12	3.5	80	ERN1VM220D09OT
	33	5×9	0.12	0.81	150	ERN1VM330D09OT
	47	5×11	0.12	0.57	200	ERN1VM470D11OT
	56	5×11	0.12	0.57	200	ERN1VM560D11OT
	68	6.3×9	0.12	0.74	180	ERN1VM680E09OT
	100	6.3×11	0.12	0.21	350	ERN1VM101E11OT
		8×9	0.12	0.27	310	ERN1VM101F09OT
	120	8×9	0.12	0.27	310	ERN1VM121F09OT
	180	8×12	0.12	0.13	660	ERN1VM181F12OT
		10×9	0.12	0.17	590	ERN1VM181G09OT
	220	8×12	0.12	0.13	660	ERN1VM221F12OT
		10×9	0.12	0.17	590	ERN1VM221G09OT
	330	8×16	0.12	0.086	850	ERN1VM331F16OT
		10×12.5	0.12	0.08	870	ERN1VM331G1BOT
	390	8×20	0.12	0.069	1050	ERN1VM391F20OT
		10×12.5	0.12	0.08	870	ERN1VM391G1BOT
	470	8×20	0.12	0.069	1050	ERN1VM471F20OT
		10×16	0.12	0.06	1230	ERN1VM471G16OT
	560	10×16	0.12	0.06	1230	ERN1VM561G16OT
	680	10×20	0.12	0.046	1400	ERN1VM681G20OT
		12.5×16	0.12	0.049	1450	ERN1VM681W16OT
	820	10×20	0.12	0.046	1400	ERN1VM821G20OT
		12.5×16	0.12	0.049	1450	ERN1VM821W16OT
	1000	12.5×20	0.12	0.035	1910	ERN1VM102W20OT
	1200	12.5×20	0.12	0.035	1910	ERN1VM122W20OT

WV (Vdc)	Cap (μF)	Size DxL(mm)	tanδ	Impedance (Ωmax/20°C, 100kHz)	Rated ripple current (mArms/105°C, 100kHz)	Part Number
50(1H)	10	5×9	0.10	2.8	100	ERN1HM100D09OT
	15	5×9	0.10	2.8	100	ERN1HM150D09OT
	22	5×9	0.10	2.8	100	ERN1HM220D09OT
	33	5×11	0.10	0.68	190	ERN1HM330D11OT
	47	6.3×9	0.10	0.89	170	ERN1HM470E09OT
	56	6.3×11	0.10	0.3	300	ERN1HM560E11OT
		8×9	0.10	0.39	270	ERN1HM560F09OT
	68	6.3×11	0.10	0.3	300	ERN1HM680E11OT
		8×9	0.10	0.39	270	ERN1HM680F09OT
	100	8×9	0.10	0.39	270	ERN1HM101F09OT
	120	8×12	0.10	0.17	560	ERN1HM121F12OT
		10×9	0.10	0.22	500	ERN1HM121G09OT
	150	8×12	0.10	0.17	560	ERN1HM151F12OT
		10×9	0.10	0.22	500	ERN1HM151G09OT
	180	8×16	0.10	0.12	740	ERN1HM181F16OT
		10×12.5	0.10	0.12	760	ERN1HM181G1BOT
	220	8×16	0.10	0.12	740	ERN1HM221F16OT
		10×12.5	0.10	0.12	760	ERN1HM221G1BOT
	330	10×16	0.10	0.084	1050	ERN1HM331G16OT
	470	10×20	0.10	0.058	1230	ERN1HM471G20OT
	560	12.5×16	0.10	0.061	1260	ERN1HM561W16OT
	680	12.5×20	0.10	0.045	1660	ERN1HM681W20OT
	820	12.5×25	0.10	0.034	1960	ERN1HM821W25OT
	1000	12.5×30	0.10	0.03	2310	ERN1HM102W30OT
		16×20	0.10	0.034	2210	ERN1HM102L20OT
63(1J)	10	5×9	0.09	3	100	ERN1JM100D09OT
	15	5×9	0.09	3	100	ERN1JM150D09OT
	18	5×9	0.09	3	100	ERN1JM180D09OT
	22	5×11	0.09	2.2	125	ERN1JM220D11OT
	39	6.3×9	0.09	2.8	110	ERN1JM390E09OT
	47	6.3×11	0.09	0.85	200	ERN1JM470E11OT
		8×9	0.09	1.1	175	ERN1JM470F09OT
	68	8×9	0.09	1.1	175	ERN1JM680F09OT
	82	8×12	0.09	0.56	300	ERN1JM820F12OT
	100	8×12	0.09	0.5	375	ERN1JM101F12OT
	150	8×16	0.09	0.32	500	ERN1JM151F16OT
	180	10×12.5	0.09	0.22	520	ERN1JM181G1BOT
	220	10×16	0.09	0.18	650	ERN1JM221G16OT
	270	10×16	0.09	0.16	720	ERN1JM271G16OT
		12.5×13	0.09	0.15	780	ERN1JM271W13OT
	330	10×20	0.09	0.12	860	ERN1JM331G20OT
	390	12.5×16	0.09	0.144	860	ERN1JM391W16OT
	470	12.5×20	0.09	0.082	1120	ERN1JM471W20OT
	560	12.5×25	0.09	0.062	1420	ERN1JM561W25OT
	680	12.5×30	0.09	0.056	1730	ERN1JM681W30OT
		16×20	0.09	0.064	1500	ERN1JM681L20OT
	820	12.5×30	0.09	0.056	1730	ERN1JM821W30OT
		16×20	0.09	0.064	1500	ERN1JM821L20OT

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WV (Vdc)	Cap (μF)	Size DxL(mm)	tanδ	Impedance (Ωmax/20°C, 100kHz)	Rated ripple current (mArms/105°C, 100kHz)	Part Number
80(1B)	27	6.3×11	0.08	0.9	180	ERN1BM270E11OT
		8×9	0.08	1.2	160	ERN1BM270F09OT
	33	6.3×11	0.08	0.9	180	ERN1BM330E11OT
		8×9	0.08	1.2	160	ERN1BM330F09OT
	39	8×9	0.08	1.2	160	ERN1BM390F09OT
	47	8×12	0.08	0.65	260	ERN1BM470F12OT
	56	8×12	0.08	0.65	260	ERN1BM560F12OT
		10×9	0.08	0.85	220	ERN1BM560G09OT
	68	8×12	0.08	0.65	260	ERN1BM680F12OT
		10×9	0.08	0.85	220	ERN1BM680G09OT
	82	8×16	0.08	0.48	350	ERN1BM820F16OT
		10×12.5	0.08	0.34	380	ERN1BM820G1BOT
	100	8×16	0.08	0.48	350	ERN1BM101F16OT
		10×12.5	0.08	0.34	380	ERN1BM101G1BOT
	150	10×14	0.08	0.34	380	ERN1BM151G14OT
	180	10×16	0.08	0.22	480	ERN1BM181G16OT
	220	10×20	0.08	0.18	640	ERN1BM221G20OT
		12.5×16	0.08	0.22	600	ERN1BM221W16OT
	330	12.5×20	0.08	0.13	880	ERN1BM331W20OT
	390	12.5×25	0.08	0.094	1000	ERN1BM391W25OT
	470	13×25	0.08	0.094	1000	ERN1BM471K25OT
		16×20	0.08	0.096	1080	ERN1BM471L20OT
	560	12.5×30	0.08	0.084	1200	ERN1BM561W30OT
		16×25	0.08	0.076	1360	ERN1BM561L25OT
	680	12.5×35	0.08	0.072	1320	ERN1BM681W35OT
		16×25	0.08	0.076	1360	ERN1BM681L25OT
100(1K)	2.7	5×9	0.08	4.5	80	ERN1KM2R7D09OT
	3.3	5×9	0.08	3	80	ERN1KM3R3D09OT
	4.7	5×9	0.08	3	80	ERN1KM4R7D09OT
	5.6	5×11	0.08	3	80	ERN1KM5R6D11OT
	6.8	5×11	0.08	3	80	ERN1KM6R8D11OT
	10	5×11	0.08	3	80	ERN1KM100D11OT
	15	6.3×9	0.08	2	70	ERN1KM150E09OT
	22	6.3×12	0.08	0.9	180	ERN1KM220E12OT
		8×9	0.08	1.2	160	ERN1KM220F09OT
	33	8×9	0.08	1.2	160	ERN1KM330F09OT
	47	8×12	0.08	0.65	260	ERN1KM470F12OT
		10×9	0.08	0.85	220	ERN1KM470G09OT
	56	8×16	0.08	0.48	350	ERN1KM560F16OT
		10×12.5	0.08	0.34	380	ERN1KM560G1BOT
	68	8×20	0.08	0.36	430	ERN1KM680F20OT
	82	8×20	0.08	0.36	430	ERN1KM820F20OT
		10×12.5	0.08	0.34	380	ERN1KM820G1BOT
	100	10×16	0.08	0.22	480	ERN1KM101G16OT
	120	10×16	0.08	0.22	480	ERN1KM121G16OT
	150	10×20	0.08	0.18	640	ERN1KM151G20OT
		12.5×16	0.08	0.22	600	ERN1KM151W16OT
	220	12.5×20	0.08	0.13	880	ERN1KM221W20OT
	270	12.5×25	0.08	0.094	1000	ERN1KM271W25OT
	330	12.5×30	0.08	0.084	1200	ERN1KM331W30OT
		16×20	0.08	0.096	1080	ERN1KM331L20OT
	390	12.5×35	0.08	0.072	1320	ERN1KM391W35OT
		16×25	0.08	0.076	1360	ERN1KM391L25OT
	470	16×25	0.08	0.076	1360	ERN1KM471L25OT

WV (Vdc)	Cap (μF)	Size DxL(mm)	tanδ	Impedance (Ωmax/20°C, 100kHz)	Rated ripple current (mArms/105°C, 100kHz)	Part Number
100(1K)	470	18×20	0.08	0.096	1080	ERN1KM471M20OT
	560	16×30	0.08	0.064	1480	ERN1KM561L30OT
		18×25	0.08	0.072	1400	ERN1KM561M25OT
120(2B)	10	6.3×11	0.12	5.5	94	ERN2BM100E11OT
	15	6.3×12	0.12	4.5	120	ERN2BM150E12OT
	18	8×9	0.12	4.0	140	ERN2BM180F09OT
	22	8×12	0.12	3.5	154	ERN2BM220F12OT
	33	8×16	0.12	3.0	266	ERN2BM330F16OT
		10×12.5	0.12	3.0	266	ERN2BM330G1BOT
	47	8×20	0.12	2.5	320	ERN2BM470F20OT
		10×16	0.12	2.5	338	ERN2BM470G16OT
	56	10×16	0.12	2.2	338	ERN2BM560G16OT
	68	10×16	0.12	2.0	338	ERN2BM680G16OT
	82	10×20	0.12	1.8	360	ERN2BM820G20OT
	100	10×25	0.12	1.5	450	ERN2BM101G25OT
	120	12.5×20	0.12	1.3	620	ERN2BM121W20OT
	150	12.5×25	0.12	1.0	675	ERN2BM151W25OT
	220	13×30	0.12	0.75	825	ERN2BM221K30OT
		16×20	0.12	0.75	825	ERN2BM221L20OT
	270	16×25	0.12	0.55	938	ERN2BM271L25OT
		18×20	0.12	0.55	938	ERN2BM271M20OT
	330	16×30	0.12	0.42	1013	ERN2BM331L30OT
		18×25	0.12	0.42	1013	ERN2BM331M25OT
	470	16×40	0.12	0.30	1125	ERN2BM471L40OT
		18×30	0.12	0.30	1125	ERN2BM471M30OT