

# Series 1213

## Metallized Polypropylene

**Features:** Flame retardant to UL94, excellent long term stability, self healing, high insulation resistance, low dissipation factor, high frequency operation.

**Applications:** Timing circuits, switch mode power supplies (SMPS).

**Packaging:** Axial wrap and fill (TF, TC), radial lead box (EFR), axial lead epoxy tube (EC).

### Specifications

**1) Temperature Range**

-55°C to +105°C at rated voltage.

**2) Capacitance**

0.001µF to 20µF

**3) Dielectric Strength**

At 25°C, 150% of rated voltage when applied terminal to terminal for one minute through a current limiting resistance.

**4) Insulation Resistance**

At 25°C after 2 minutes charge time at rated voltage or 500 VDC, whichever is less, the minimum IR shall be 80,000 Megohm-Microfarads, but need not exceed 120,000 Megohms.

**5) Humidity Resistance**

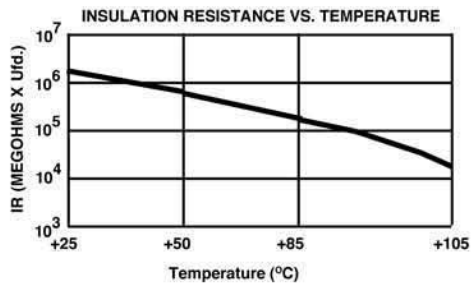
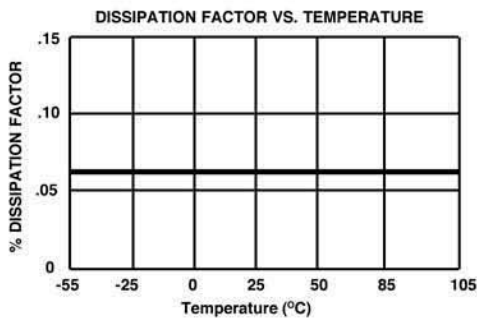
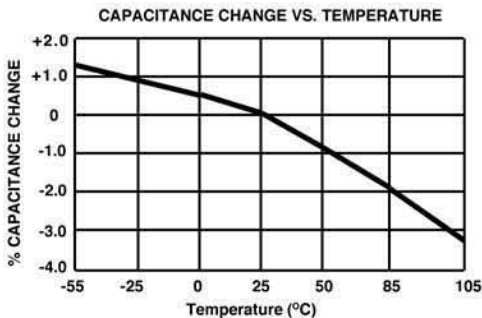
Series 1213 shall meet the requirements of MIL-STD. 202, Method 103B.

**6) Dissipation Factor**

Shall be 0.1% max. when measured at 1 KHz and 25°C.

**7) Life Test**

Will withstand the application of 150% rated voltage at + 85°C for 250 hours with not more than one failure in 12 permitted.



### Typical Temperature Curves Metallized Polypropylene

# Catalog Nomenclature

**\* 1 3 0 6 E F R - 3 - . 0 0 1 - 1 - 5**

**Case Code:**

- TC - Wrap & Fill - Round - Axial
- TF - Wrap & Fill - Flat - Axial
- EC - Epoxy Case - Round - Axial
- EFR - Epoxy Case - Flat - Radial
- DFR - Dipped Construction - Flat - Radial
- HS - Hermetically Sealed

**Dielectric Code:**

- 1206 - Polypropylene/Foil
- 1213 - Metallized Polypropylene
- 1306 - Polyester/Foil
- 1313 - Metallized Polyester
- 1613 - Metallized Polycarbonate
- 1906 - Polystyrene/Foil
- 2113 - Metallized Polyphenylene Sulfide

**Size Code:**

- 3 - Standard
- 2 - Miniature (1313DFR Series Only)
- X - Non-standard
- Or one letter case code

**Capacitance:**

In microfarads ( $\mu\text{F}$ )

**Voltage:**

- .35 - 35 VDC
- 0 - 50 VDC
- 1 - 100 VDC
- 2 - 200 VDC
- 3 - 300 VDC
- 4 - 400 VDC
- 10 - 1000 VDC
- 1.6K - 1600VDC
- Etc.

**Tolerance:**

- 1 - 1%
- 2 - 2%
- 5 - 5%
- Etc.

**\* Options**

The following options are available from EFC by specifying the appropriate prefix.

- A - Aluminum foil electrodes
- T - Tin foil electrodes
- HV - High voltage DC applications
- AC - AC voltage rated applications
- MF - Metallized and foil hybrid for maximum pulse current applications
- M - Dual metallized design for pulse current applications
- SP - Low ESR, high RMS current applications
- PC - Direct mount terminals for high current filter applications
- FT - Feed thru filter applications
- RC - Resistor capacitor suppressors



Please consult factory for special requirements, including non-standard values and sizes

# 1213DFR

Epoxy Dipped (Radial Leads)

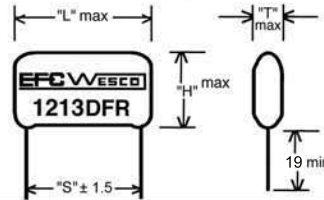
# Metallized Polypropylene Capacitors

Lead Specs - Tinned Copperweld

L	S	DIA
10.0	7.5	0.6
12.5	10.0	0.6
18.0	15.0	0.8
26.0	22.5	0.8
31.0	27.5	0.8
44.0	38.0	1.0

## Dimensions and Ratings

All dimensions in mm



Cap.	160 VDC			
μF	Part #	T	H	L
.001	1213DFR-3-.001-1.6-*	4.0	8.0	10.0
.0012	1213DFR-3-.0012-1.6-*	4.0	8.0	10.0
.0015	1213DFR-3-.0015-1.6-*	4.0	8.0	10.0
.0022	1213DFR-3-.0022-1.6-*	4.0	8.0	10.0
.0027	1213DFR-3-.0027-1.6-*	4.0	8.0	10.0
.0039	1213DFR-3-.0039-1.6-*	4.0	8.0	10.0
.0047	1213DFR-3-.0047-1.6-*	4.0	8.0	10.0
.0056	1213DFR-3-.0056-1.6-*	4.0	8.0	10.0
.0068	1213DFR-3-.0068-1.6-*	4.0	8.0	10.0
.0082	1213DFR-3-.0082-1.6-*	4.0	8.0	10.0
.01	1213DFR-3-.01-1.6-*	4.0	8.0	10.0
.012	1213DFR-3-.012-1.6-*	4.0	8.0	10.0
.015	1213DFR-3-.015-1.6-*	4.0	8.0	10.0
.018	1213DFR-3-.018-1.6-*	4.0	8.0	10.0
.022	1213DFR-3-.022-1.6-*	4.0	8.0	10.0
.027	1213DFR-3-.027-1.6-*	4.0	8.5	10.0
.033	1213DFR-3-.033-1.6-*	4.0	8.5	10.0
.039	1213DFR-3-.039-1.6-*	4.0	9.0	10.0
.047	1213DFR-3-.047-1.6-*	4.0	9.0	10.0
.056	1213DFR-3-.056-1.6-*	4.0	9.0	10.0
.068	1213DFR-3-.068-1.6-*	4.0	9.0	12.5
.082	1213DFR-3-.082-1.6-*	4.5	9.0	12.5
.1	1213DFR-3-.1-1.6-*	4.5	9.5	12.5
.12	1213DFR-3-.12-1.6-*	5.0	10.0	12.5
.15	1213DFR-3-.15-1.6-*	5.5	11.0	12.5
.18	1213DFR-3-.18-1.6-*	6.0	12.0	12.5
.22	1213DFR-3-.22-1.6-*	5.5	11.0	18.0
.27	1213DFR-3-.27-1.6-*	6.0	12.0	18.0
.33	1213DFR-3-.33-1.6-*	6.5	12.5	18.0
.39	1213DFR-3-.39-1.6-*	7.0	13.0	18.0
.47	1213DFR-3-.47-1.6-*	7.5	13.5	18.0
.56	1213DFR-3-.56-1.6-*	8.0	14.5	18.0
.68	1213DFR-3-.68-1.6-*	8.5	16.0	18.0
.82	1213DFR-3-.82-1.6-*	8.0	14.5	26.0
1.0	1213DFR-3-1.0-1.6-*	8.5	16.0	26.0
1.2	1213DFR-3-1.2-1.6-*	9.0	16.5	26.0
1.5	1213DFR-3-1.5-1.6-*	9.5	18.0	26.0
1.8	1213DFR-3-1.8-1.6-*	9.5	18.0	31.0
2.2	1213DFR-3-2.2-1.6-*	10.0	20.0	31.0
2.7	1213DFR-3-2.7-1.6-*	11.5	21.0	31.0
3.3	1213DFR-3-3.3-1.6-*	12.5	23.0	31.0
3.9	1213DFR-3-3.9-1.6-*	13.5	25.0	31.0
4.7	1213DFR-3-4.7-1.6-*	15.0	26.0	31.0
5.6	1213DFR-3-5.6-1.6-*	16.0	28.0	31.0
6.8	1213DFR-3-6.8-1.6-*	17.0	30.0	31.0

Cap.	250 VDC			
μF	Part #	T	H	L
.001	1213DFR-3-.001-2.5-*	4.0	8.0	10.0
.0012	1213DFR-3-.0012-2.5-*	4.0	8.0	10.0
.0015	1213DFR-3-.0015-2.5-*	4.0	8.0	10.0
.0022	1213DFR-3-.0022-2.5-*	4.0	8.0	10.0
.0027	1213DFR-3-.0027-2.5-*	4.0	8.0	10.0
.0039	1213DFR-3-.0039-2.5-*	4.0	8.0	10.0
.0047	1213DFR-3-.0047-2.5-*	4.0	8.0	10.0
.0056	1213DFR-3-.0056-2.5-*	4.0	8.0	10.0
.0068	1213DFR-3-.0068-2.5-*	4.0	8.0	10.0
.0082	1213DFR-3-.0082-2.5-*	4.0	8.0	10.0
.01	1213DFR-3-.01-2.5-*	4.0	8.0	10.0
.012	1213DFR-3-.012-2.5-*	4.0	8.0	10.0
.015	1213DFR-3-.015-2.5-*	4.0	8.5	10.0
.018	1213DFR-3-.018-2.5-*	4.0	8.5	10.0
.022	1213DFR-3-.022-2.5-*	4.0	9.0	10.0
.027	1213DFR-3-.027-2.5-*	4.0	9.0	10.0
.033	1213DFR-3-.033-2.5-*	4.5	9.0	12.5
.039	1213DFR-3-.039-2.5-*	5.0	10.0	12.5
.047	1213DFR-3-.047-2.5-*	5.5	10.5	12.5
.056	1213DFR-3-.056-2.5-*	5.5	11.0	12.5
.068	1213DFR-3-.068-2.5-*	6.0	12.0	12.5
.082	1213DFR-3-.082-2.5-*	5.0	10.0	18.0
.1	1213DFR-3-.1-2.5-*	5.5	11.0	18.0
.12	1213DFR-3-.12-2.5-*	6.0	12.0	18.0
.15	1213DFR-3-.15-2.5-*	6.5	12.5	18.0
.18	1213DFR-3-.18-2.5-*	7.0	13.0	18.0
.22	1213DFR-3-.22-2.5-*	7.5	14.0	18.0
.27	1213DFR-3-.27-2.5-*	8.5	15.5	18.0
.33	1213DFR-3-.33-2.5-*	7.5	14.0	26.0
.39	1213DFR-3-.39-2.5-*	8.0	14.5	26.0
.47	1213DFR-3-.47-2.5-*	8.5	15.0	26.0
.56	1213DFR-3-.56-2.5-*	9.0	16.5	26.0
.68	1213DFR-3-.68-2.5-*	9.5	18.0	26.0
.82	1213DFR-3-.82-2.5-*	9.5	17.0	31.0
1.0	1213DFR-3-1.0-2.5-*	10.0	19.0	31.0
1.2	1213DFR-3-1.2-2.5-*	11.0	20.0	31.0
1.5	1213DFR-3-1.5-2.5-*	12.5	23.0	31.0
1.8	1213DFR-3-1.8-2.5-*	13.0	24.0	31.0
2.2	1213DFR-3-2.2-2.5-*	14.0	26.0	31.0
2.7	1213DFR-3-2.7-2.5-*	15.5	28.0	31.0
3.3	1213DFR-3-3.3-2.5-*	17.5	33.0	31.0
3.9	1213DFR-3-3.9-2.5-*	16.5	28.0	44.0
4.7	1213DFR-3-4.7-2.5-*	17.5	33.0	44.0

\* - Please insert appropriate tolerance code



Please consult factory for special requirements, including non-standard values and sizes

# 1213DFR

Epoxy Dipped (Radial Leads)

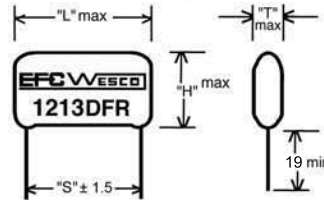
# Metallized Polypropylene Capacitors

Lead Specs -  
Tinned Copperweld

L	S	DIA
10.0	7.5	0.6
12.5	10.0	0.6
18.0	15.0	0.8
26.0	22.5	0.8
31.0	27.5	0.8
44.0	38.0	1.0

## Dimensions and Ratings

All dimensions in mm



Cap.	400 VDC			
μF	Part #	T	H	L
.001	1213DFR-3-.001-4-*	4.0	8.0	10.0
.0012	1213DFR-3-.0012-4-*	4.0	8.0	10.0
.0015	1213DFR-3-.0015-4-*	4.0	8.0	10.0
.0022	1213DFR-3-.0022-4-*	4.0	8.0	10.0
.0027	1213DFR-3-.0027-4-*	4.0	8.0	10.0
.0039	1213DFR-3-.0039-4-*	4.0	8.5	10.0
.0047	1213DFR-3-.0047-4-*	4.0	9.0	10.0
.0056	1213DFR-3-.0056-4-*	4.0	9.0	10.0
.0068	1213DFR-3-.0068-4-*	4.5	9.0	10.0
.0082	1213DFR-3-.0082-4-*	4.5	9.0	10.0
.01	1213DFR-3-.01-4-*	4.5	9.0	10.0
.012	1213DFR-3-.012-4-*	4.5	9.0	12.5
.015	1213DFR-3-.015-4-*	4.5	9.0	12.5
.018	1213DFR-3-.018-4-*	4.5	9.0	12.5
.022	1213DFR-3-.022-4-*	5.0	9.5	12.5
.027	1213DFR-3-.027-4-*	5.0	10.0	12.5
.033	1213DFR-3-.033-4-*	5.5	11.0	12.5
.039	1213DFR-3-.039-4-*	6.0	12.0	12.5
.047	1213DFR-3-.047-4-*	6.5	12.5	12.5
.056	1213DFR-3-.056-4-*	5.5	11.0	18.0
.068	1213DFR-3-.068-4-*	6.5	12.5	18.0
.082	1213DFR-3-.082-4-*	7.0	13.0	18.0
.1	1213DFR-3-.1-4-*	7.5	14.0	18.0
.12	1213DFR-3-.12-4-*	8.0	14.5	18.0
.15	1213DFR-3-.15-4-*	8.5	16.0	18.0
.18	1213DFR-3-.18-4-*	8.0	14.0	26.0
.22	1213DFR-3-.22-4-*	8.5	16.0	26.0
.27	1213DFR-3-.27-4-*	9.0	16.5	26.0
.33	1213DFR-3-.33-4-*	9.5	18.0	26.0
.39	1213DFR-3-.39-4-*	9.5	18.0	31.0
.47	1213DFR-3-.47-4-*	10.0	19.0	31.0
.56	1213DFR-3-.56-4-*	11.0	20.0	31.0
.68	1213DFR-3-.68-4-*	12.0	22.0	31.0
.82	1213DFR-3-.82-4-*	13.0	23.0	31.0
1.0	1213DFR-3-1.0-4-*	14.0	25.0	31.0
1.2	1213DFR-3-1.2-4-*	15.0	27.0	31.0
1.5	1213DFR-3-1.5-4-*	17.0	32.0	31.0
1.8	1213DFR-3-1.8-4-*	15.0	27.0	44.0
2.2	1213DFR-3-2.2-4-*	17.0	32.0	44.0

Cap.	630 VDC			
μF	Part #	T	H	L
.001	1213DFR-3-.001-6.3-*	4.0	8.0	10.0
.0012	1213DFR-3-.0012-6.3-*	4.0	8.5	10.0
.0015	1213DFR-3-.0015-6.3-*	4.0	8.5	10.0
.0022	1213DFR-3-.0022-6.3-*	4.0	9.0	10.0
.0027	1213DFR-3-.0027-6.3-*	4.0	9.0	10.0
.0039	1213DFR-3-.0039-6.3-*	4.0	9.0	10.0
.0047	1213DFR-3-.0047-6.3-*	4.0	9.0	12.5
.0056	1213DFR-3-.0056-6.3-*	4.0	9.0	12.5
.0068	1213DFR-3-.0068-6.3-*	4.5	9.0	12.5
.0082	1213DFR-3-.0082-6.3-*	5.0	9.5	12.5
.01	1213DFR-3-.01-6.3-*	5.0	10.0	12.5
.012	1213DFR-3-.012-6.3-*	5.5	11.0	12.5
.015	1213DFR-3-.015-6.3-*	6.0	12.0	12.5
.018	1213DFR-3-.018-6.3-*	5.5	11.0	18.0
.022	1213DFR-3-.022-6.3-*	6.0	12.0	18.0
.027	1213DFR-3-.027-6.3-*	6.5	12.0	18.0
.033	1213DFR-3-.033-6.3-*	6.5	12.5	18.0
.039	1213DFR-3-.039-6.3-*	7.0	13.0	18.0
.047	1213DFR-3-.047-6.3-*	7.5	13.5	18.0
.056	1213DFR-3-.056-6.3-*	8.0	14.0	18.0
.068	1213DFR-3-.068-6.3-*	8.5	16.0	18.0
.082	1213DFR-3-.082-6.3-*	8.0	14.0	26.0
.1	1213DFR-3-.1-6.3-*	8.5	16.0	26.0
.12	1213DFR-3-.12-6.3-*	9.0	16.5	26.0
.15	1213DFR-3-.15-6.3-*	9.5	18.0	26.0
.18	1213DFR-3-.18-6.3-*	9.5	17.0	31.0
.22	1213DFR-3-.22-6.3-*	10.0	19.0	31.0
.27	1213DFR-3-.27-6.3-*	10.5	20.0	31.0
.33	1213DFR-3-.33-6.3-*	12.0	22.0	31.0
.39	1213DFR-3-.39-6.3-*	13.0	23.0	31.0
.47	1213DFR-3-.47-6.3-*	14.0	25.0	31.0
.56	1213DFR-3-.56-6.3-*	15.0	27.0	31.0
.68	1213DFR-3-.68-6.3-*	17.0	32.0	31.0
.82	1213DFR-3-.82-6.3-*	15.0	27.0	44.0
1.0	1213DFR-3-1.0-6.3-*	17.0	32.0	44.0

\* - Please insert appropriate tolerance code