



# AC & PULSEMETALLISED POLYPROPYLENE FILM CAPACITORS (DIP/BOX TYPE - PP/MPP SERIES)

**MAIN APPLICATION:** SMPS, motor control circuits, deflection circuit in TV sets (fly back) and monitors, electronic ballast, snubber and SCR commutating circuits and applications with high voltage and high current.

**CONSTRUCTION (DIP/BOX TYPE):** Series constructed, impregnated polypropylene film, aluminum foil and metallised polypropylene film as internal electrodes. Protected by hard, water repellent, solvent resistant epoxy resin (or, encased in flame retardant box).

**CLIMATIC CATEGORY:** 40/100/56

**APPLICABLE SPECIFICATION:** IEC 384-16, 384-17

**CAPACITANCE VALUE, RATED VOLTAGE (DC):** Refer dimension chart.

**CAPACITANCE TOLERANCE:** ±2% , ±5% , ±10%

**VOLTAGE PROOF**

Between terminals: 2 times of rated voltage for 2 seconds.

**INSULATION RESISTANCE**

Between leads > 100000 MΩ

Between interconnected leads and case >100000 MΩ

**TAN δ AT 20 °C (Dip type)**

Frequency (kHz)	$C_R < 0.1 \mu f$	$0.1 \mu f < C_R \leq 1 \mu f$
At 1	0.05%	0.08%
At 10	0.1%	0.1%
At 100	0.3%	0.5%

**TAN δ AT 20 °C (Box type)**

Frequency (kHz)	$C_R < 0.1 \mu f$	$0.1 \mu f < C_R \leq 1 \mu f$
At 1	0.03%	0.03%
At 10	0.04%	0.06%
At 100	0.1%	

**LIFE TEST CONDITIONS - DC (Loading at elevated temperature)**  
Loaded at 1.5 times of rated DC voltage at 85° C for 1000 hours.

**AFTER THE TEST**

$\Delta c/c$ : ≤ 2% of initial value.

Change in Tan δ: ≤ 0.002,

Insulation resistance: ≥ 50% of the value mentioned in IR chart.

**LIFE TEST CONDITIONS - AC (Loading at elevated temperature)**  
Loaded at 1.25 times of rated AC voltage at 70° C for 1000 hours.

**AFTER THE TEST**

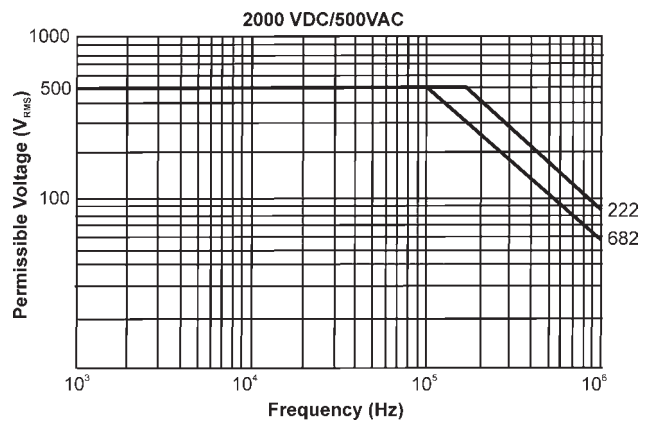
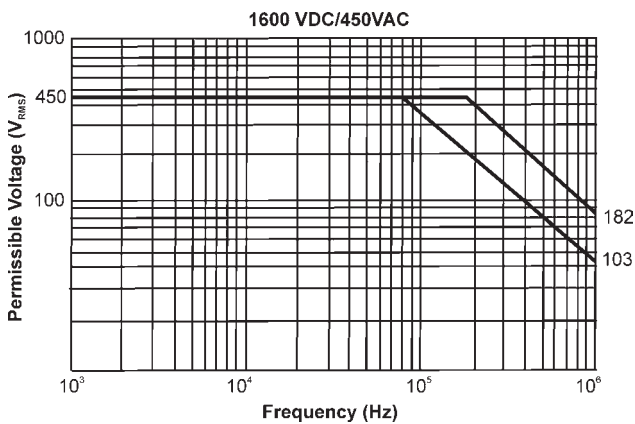
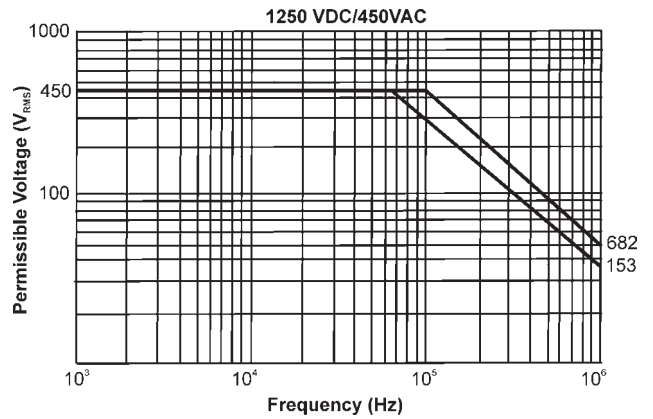
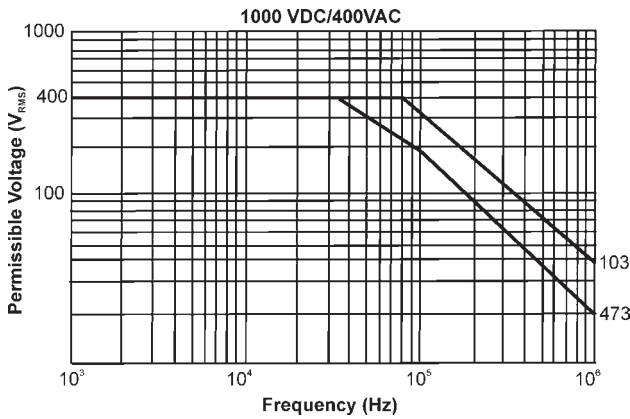
$\Delta c/c$ : ≤ 3% of initial value

Change in Tan d: ≤ 0.002,  $C_R \leq 1 \mu f$

Insulation resistance: ≥ 50% of the value mentioned in IR chart.

**APPROVALS:** Tested as per IEC 384-16, 384-17.

Permissible AC Voltage  $V_{RMS}$  vs. Frequency F at Ambient Temperature 25° C



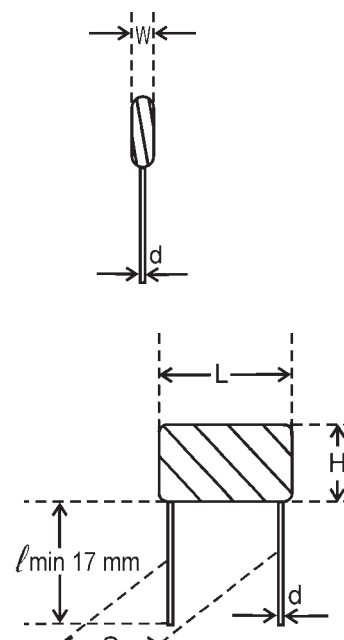
Ordering Code and Packing Units: AC & Pulse Metallised Polypropylene Film Capacitors (PP/MPP Series)

Rated Voltage	Rated Cap. (µf)	Maximum Dimensions (mm)						Dv/Dt V/µs	Wt g	Ordering code	Packing units	
		W	H	L	d	S	F				Ammo	Bulk
		±0.05 ±0.5 +0.8/-0.2										
1000V DC	0.0033	5.5	11.5	19	0.8	15.0	15.0	28000	1.1	05 332 +3A**	1000	1000
400V AC	0.0039	5.5	11.5	19	0.8	15.0	15.0	28000	1.1	05 392 +3A**	1000	1000
	0.0047	5.5	11.5	19	0.8	15.0	15.0	28000	1.1	05 472 +3A**	1000	1000
	0.0056	5.5	11.5	19	0.8	15.0	15.0	28000	1.1	05 562 +3A**	1000	1000
	0.0068	5.5	11.5	19	0.8	15.0	15.0	28000	1.1	05 682 +3A**	1000	1000
	0.0082	5.5	11.5	19	0.8	15.0	15.0	28000	1.5	05 822 +3A**	1000	1000
	0.01	6.5	12.5	19	0.8	15.0	15.0	28000	1.5	05 103 +3A**	1000	1000
	0.012	6.5	12.5	19	0.8	15.0	15.0	28000	1.5	05 123 +3A**	1000	1000
	0.015	8.0	14.0	19	0.8	15.0	15.0	28000	2.6	05 153 +3A**	1000	1000
	0.018	9.0	15.0	19	0.8	15.0	15.0	28000	2.6	05 183 +3A**	1000	1000
	0.022	9.0	15.0	19	0.8	15.0	15.0	28000	3.0	05 223 +3A**	1000	1000
	0.027	10.5	16.5	19	0.8	15.0	15.0	28000	3.5	05 273 +3A**	1000	1000
	0.015	6.5	15.5	27	0.8	22.5	22.5	11000	2.4	05 153 +3A**	-	400
	0.018	6.5	15.5	27	0.8	22.5	22.5	11000	2.5	05 183 +3A**	-	400
	0.022	6.5	15.5	27	0.8	22.5	22.5	11000	2.7	05 223 +3A**	-	400
	0.027	7.5	16.5	27	0.8	22.5	22.5	11000	3.2	05 273 +3A**	-	400
	0.033	7.5	16.5	27	0.8	22.5	22.5	11000	3.5	05 333 +3A**	-	400
	0.039	9.0	17.5	27	0.8	22.5	22.5	11000	3.8	05 393 +3A**	-	400
	0.047	9.0	17.5	27	0.8	22.5	22.5	11000	4.2	05 473 +3A**	-	400
	0.056	10.5	19.0	27	0.8	22.5	22.5	11000	4.7	05 563 +3A**	-	400
	0.068	10.5	19.0	27	0.8	22.5	22.5	11000	5.3	05 683 +3A**	-	400
1250V DC	0.0022	5.5	11.5	19	0.8	15.0	15.0	30000	1.1	05 222 +3B**	1000	1000
450V AC	0.0027	5.5	11.5	19	0.8	15.0	15.0	30000	1.1	05 272 +3B**	1000	1000
	0.0033	6.5	12.5	19	0.8	15.0	15.0	30000	1.1	05 332 +3B**	1000	1000
	0.0039	6.5	12.5	19	0.8	15.0	15.0	30000	1.1	05 392 +3B**	1000	1000
	0.0047	8.0	14.0	19	0.8	15.0	15.0	30000	1.1	05 472 +3B**	1000	1000
	0.0056	8.0	14.0	19	0.8	15.0	15.0	30000	1.5	05 562 +3B**	1000	1000
	0.0068	9.0	15.0	19	0.8	15.0	15.0	30000	1.5	05 682 +3B**	1000	1000
	0.0082	10.5	16.5	19	0.8	15.0	15.0	30000	1.5	05 822 +3B**	1000	1000
	0.0082	6.5	15.5	27	0.8	22.5	22.5	11000	2.2	05 822 +3B**	-	400
	0.01	6.5	15.5	27	0.8	22.5	22.5	11000	2.3	05 103 +3B**	-	400
	0.012	6.5	15.5	27	0.8	22.5	22.5	11000	2.5	05 123 +3B**	-	400
	0.015	7.5	16.5	27	0.8	22.5	22.5	11000	2.9	05 153 +3B**	-	400
	0.018	7.5	16.5	27	0.8	22.5	22.5	11000	3.1	05 183 +3B**	-	400
	0.022	9.0	17.5	27	0.8	22.5	22.5	11000	3.3	05 223 +3B**	-	400
	0.027	10.5	18.5	27	0.8	22.5	22.5	11000	3.7	05 273 +3B**	-	400
	0.033	10.5	18.5	27	0.8	22.5	22.5	11000	4.1	05 333 +3B**	-	400
1600VDC	0.001	5.5	11.5	19	0.8	15.0	15.0	34000	1.1	05 102 +3C**	1000	1000
450VAC	0.0012	5.5	11.5	19	0.8	15.0	15.0	34000	1.1	05 122 +3C**	1000	1000
	0.0015	5.5	11.5	19	0.8	15.0	15.0	34000	1.1	05 152 +3C**	1000	1000
	0.0018	5.5	11.5	19	0.8	15.0	15.0	34000	1.1	05 182 +3C**	1000	1000
	0.0022	6.5	12.5	19	0.8	15.0	15.0	34000	1.5	05 222 +3C**	1000	1000
	0.0027	6.5	12.5	19	0.8	15.0	15.0	34000	1.5	05 272 +3C**	1000	1000
	0.0033	8.0	14.0	19	0.8	15.0	15.0	34000	1.5	05 332 +3C**	1000	1000
	0.0039	8.0	14.0	19	0.8	15.0	15.0	34000	2.3	05 392 +3C**	1000	1000
	0.0047	9.0	15.0	19	0.8	15.0	15.0	34000	2.4	05 472 +3C**	1000	1000
	0.0056	10.5	16.5	19	0.8	15.0	15.0	34000	2.6	05 562 +3C**	1000	1000
	0.0068	10.5	16.5	19	0.8	15.0	15.0	34000	3.0	05 682 +3C**	1000	1000
	0.0056	6.5	26.5	27	0.8	22.5	22.5	11000	2.4	05 562 +3C**	-	400
	0.0068	6.5	26.5	27	0.8	22.5	22.5	11000	2.5	05 682 +3C**	-	400
	0.0082	6.5	26.5	27	0.8	22.5	22.5	11000	2.7	05 822 +3C**	-	400
	0.01	6.5	26.5	27	0.8	22.5	22.5	11000	2.9	05 103 +3C**	-	400
	0.012	7.5	16.5	27	0.8	22.5	22.5	11000	3.2	05 123 +3C**	-	400
	0.015	9.0	17.5	27	0.8	22.5	22.5	11000	3.8	05 153 +3C**	-	400
	0.018	9.0	17.5	27	0.8	22.5	22.5	11000	4.2	05 183 +3C**	-	400
	0.022	10.5	18.5	27	0.8	22.5	22.5	11000	4.7	05 223 +3C**	-	400
2000VDC	0.0001	5.0	10.0	19	0.8	15.0	15.0	54000	1.1	05 101 +3D**	1000	1000
500VAC	0.00015	5.0	10.0	19	0.8	15.0	15.0	54000	1.1	05 151 +3D**	1000	1000
	0.00022	5.0	10.0	19	0.8	15.0	15.0	54000	1.1	05 221 +3D**	1000	1000
	0.00033	5.0	10.0	19	0.8	15.0	15.0	54000	1.1	05 331 +3D**	1000	1000
	0.00047	5.0	10.0	19	0.8	15.0	15.0	54000	1.1	05 471 +3D**	1000	1000
	0.00068	5.5	11.5	19	0.8	15.0	15.0	54000	1.1	05 681 +3D**	1000	1000
	0.001	6.5	12.5	19	0.8	15.0	15.0	54000	1.5	05 102 +3D**	1000	1000
	0.0012	6.5	12.5	19	0.8	15.0	15.0	54000	1.5	05 122 +3D**	1000	1000
	0.0015	8.0	14.0	19	0.8	15.0	15.0	54000	1.5	05 152 +3D**	1000	1000
	0.0018	8.0	14.0	19	0.8	15.0	15.0	54000	1.5	05 182 +3D**	1000	1000
	0.0022	9.0	15.0	19	0.8	15.0	15.0	54000	2.2	05 222 +3D**	1000	1000
	0.0027	10.5	16.5	19	0.8	15.0	15.0	54000	2.4	05 272 +3D**	1000	1000
	0.0027	6.5	15.5	27	0.8	22.5	22.5	11000	2.2	05 272 +3D**	-	400
	0.0033	6.5	15.5	27	0.8	22.5	22.5	11000	2.3	05 332 +3D**	-	400
	0.0039	6.5	15.5	27	0.8	22.5	22.5	11000	2.4	05 392 +3D**	-	400
	0.0047	7.5	16.5	27	0.8	22.5	22.5	11000	2.7	05 472 +3D**	-	400
	0.0056	7.5	16.5	27	0.8	22.5	22.5	11000	2.9	05 562 +3D**	-	400
	0.0068	9.0	17.5	27	0.8	22.5	22.5	11000	3.1	05 682 +3D**	-	400
	0.0082	9.0	17.5	27	0.8	22.5	22.5	11000	3.3	05 822 +3D**	-	400
	0.01	10.5	19.0	27	0.8	22.5	22.5	11000	3.7	05 103 +3D**	-	400
	0.012	10.5	19.0	27	0.8	22.5	22.5	11000	4.0	05 123 +3D**	-	400

Dip type

NOTE

- Replace the + by the code letter for the required tolerance.  
F:±1%, G:±2%, H:±2.5%, J:±5%, K:±10%, M:±20%
- Replace \* by the code letter for packing type.  
1 : Bulk Packing  
2 : Bulk Packing (After forming & cutting)  
3 : Ammo Packing (F&T)  
4 : Bulk Packing (forming in original pitch)  
5 : Bulk Packing (formed & without cut)  
6 : Ammo Packing (Straight Lead)  
7 : Bulk Packing (Straight Lead cut)
- Replace ^ by the code letter indicated drawing reference.  
A : As per the catalogue  
B-Z : customer drawing reference
- These are the most popular values. Other values in the range are available on request.  
For dimensions, please refer to the closest higher value.



The dv/dt test is carried out for 2 times above value

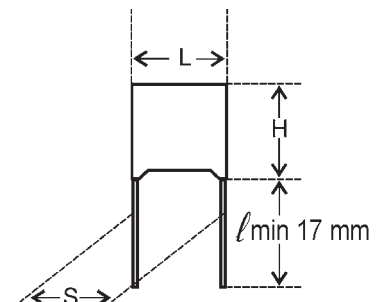
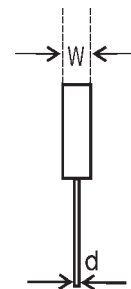
## Ordering Code and Packing Units: AC & Pulse Metallised Polypropylene Film Capacitors (PP/MPP Series)

Rated Voltage	Rated Cap. (µf)	Dimensions (mm)						Dv/Dt V/µs	Wt g	Ordering code	Packing units	
		W ±0.2	H ±0.2	L ±0.2	d ±0.05	S ±0.5	F +0.8/-0.2				Ammo	Bulk
1000V DC	0.0033	5.0	10.8	18.0	0.8	15.0	15.0	28000	1.1	29 332 +3A**	1000	500
400V AC	0.0039	5.0	10.8	18.0	0.8	15.0	15.0	28000	1.1	29 392 +3A**	1000	500
	0.0047	5.0	10.8	18.0	0.8	15.0	15.0	28000	1.1	29 472 +3A**	1000	500
	0.0056	5.0	10.8	18.0	0.8	15.0	15.0	28000	1.1	29 562 +3A**	1000	500
	0.0068	5.0	10.8	18.0	0.8	15.0	15.0	28000	1.1	29 682 +3A**	1000	500
	0.0082	5.0	10.8	18.0	0.8	15.0	15.0	28000	1.1	29 822 +3A**	1000	500
	0.01	6.0	11.0	18.0	0.8	15.0	15.0	28000	1.5	29 103 +3A**	1000	500
	0.012	6.0	11.5	18.0	0.8	15.0	15.0	28000	1.5	29 123 +3A**	1000	500
	0.015	7.5	13.5	18.0	0.8	15.0	15.0	28000	2.0	29 153 +3A**	1000	500
	0.018	8.5	14.5	18.0	0.8	15.0	15.0	28000	2.6	29 183 +3A**	1000	500
	0.022	8.5	14.5	18.0	0.8	15.0	15.0	28000	3.0	29 223 +3A**	1000	500
	0.027	10.0	16.0	18.0	0.8	15.0	15.0	28000	3.5	29 273 +3A**	1000	500
	0.015	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.4	29 153 +3A**	-	400
	0.018	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.5	29 183 +3A**	-	400
	0.022	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.7	29 223 +3A**	-	400
	0.027	7.0	16.0	26.5	0.8	22.5	22.5	11000	3.2	29 273 +3A**	-	400
	0.033	7.0	16.0	26.5	0.8	22.5	22.5	11000	3.5	29 333 +3A**	-	400
	0.039	8.5	17.0	26.5	0.8	22.5	22.5	11000	3.8	29 393 +3A**	-	400
	0.047	8.5	17.0	26.5	0.8	22.5	22.5	11000	4.2	29 473 +3A**	-	400
	0.056	10.0	18.5	26.5	0.8	22.5	22.5	11000	4.7	29 563 +3A**	-	400
1250V DC	0.0022	5.0	10.8	18.0	0.8	22.5	22.5	11000	1.1	29 222 +3B**	1000	400
450V AC	0.0027	5.0	10.8	18.0	0.8	15.0	15.0	30000	1.1	29 272 +3B**	1000	500
	0.0033	6.0	11.9	18.0	0.8	15.0	15.0	30000	1.5	29 332 +3B**	1000	500
	0.0039	6.0	11.9	18.0	0.8	15.0	15.0	30000	1.5	29 392 +3B**	1000	500
	0.0047	7.5	13.5	18.0	0.8	15.0	15.0	30000	1.9	29 472 +3B**	1000	500
	0.0056	7.5	13.5	18.0	0.8	15.0	15.0	30000	1.9	29 562 +3B**	1000	500
	0.0068	8.5	14.5	18.0	0.8	15.0	15.0	30000	2.0	29 682 +3B**	1000	500
	0.0082	10.0	16.0	18.0	0.8	15.0	15.0	30000	2.2	29 822 +3B**	1000	500
	0.0082	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.2	29 822 +3B**	-	400
	0.01	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.3	29 103 +3B**	-	400
	0.012	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.5	29 123 +3B**	-	400
	0.015	7.0	16.0	26.5	0.8	22.5	22.5	11000	2.9	29 153 +3B**	-	400
	0.018	7.0	16.0	26.5	0.8	22.5	22.5	11000	3.1	29 183 +3B**	-	400
	0.022	8.5	17.0	26.5	0.8	22.5	22.5	11000	3.3	29 223 +3B**	-	400
	0.027	10.0	18.5	26.5	0.8	22.5	22.5	11000	3.7	29 273 +3B**	-	400
	0.033	10.0	18.5	26.5	0.8	22.5	22.5	11000	4.1	29 333 +3B**	-	400
1600V DC	0.001	5.0	10.8	18.0	0.8	15.0	15.0	34000	1.1	29 102 +3C**	1000	500
450V AC	0.0012	5.0	10.8	18.0	0.8	15.0	15.0	34000	1.1	29 122 +3C**	1000	500
	0.0015	5.0	10.8	18.0	0.8	15.0	15.0	34000	1.1	29 152 +3C**	1000	500
	0.0018	5.0	10.8	18.0	0.8	15.0	15.0	34000	1.1	29 182 +3C**	1000	500
	0.0022	6.0	11.9	18.0	0.8	15.0	15.0	34000	1.5	29 222 +3C**	1000	500
	0.0027	6.0	11.9	18.0	0.8	15.0	15.0	34000	1.5	29 272 +3C**	1000	500
	0.0033	7.5	13.5	18.0	0.8	15.0	15.0	34000	2.1	29 332 +3C**	1000	500
	0.0039	7.5	13.5	18.0	0.8	15.0	15.0	34000	2.3	29 392 +3C**	1000	500
	0.0047	8.5	14.5	18.0	0.8	15.0	15.0	34000	2.4	29 472 +3C**	1000	500
	0.0056	10.0	16.0	18.0	0.8	15.0	15.0	11000	2.6	29 562 +3C**	1000	500
	0.0068	10.0	16.0	18.0	0.8	15.0	15.0	34000	3.0	29 682 +3C**	1000	500
	0.0056	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.4	29 562 +3C**	-	400
	0.0068	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.5	29 682 +3C**	-	400
	0.0082	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.7	29 822 +3C**	-	400
	0.01	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.9	29 103 +3C**	-	400
	0.012	7.0	16.0	26.5	0.8	22.5	22.5	11000	3.2	29 123 +3C**	-	400
	0.015	8.5	17.0	26.5	0.8	22.5	22.5	11000	3.8	29 153 +3C**	-	400
	0.018	8.5	17.0	26.5	0.8	22.5	22.5	11000	4.2	29 183 +3C**	-	400
	0.022	10.0	18.5	26.5	0.8	22.5	22.5	11000	4.7	29 223 +3C**	-	400
2000V DC	0.0001	5.0	10.8	18.0	0.8	15.0	15.0	11000	1.1	29 101 +3D**	1000	500
500V AC	0.00015	5.0	10.8	18.0	0.8	15.0	15.0	54000	1.1	29 151 +3D**	1000	500
	0.00022	5.0	10.8	18.0	0.8	15.0	15.0	54000	1.1	29 221 +3D**	1000	500
	0.00033	5.0	10.8	18.0	0.8	15.0	15.0	54000	1.1	29 331 +3D**	1000	500
	0.00047	5.0	10.8	18.0	0.8	15.0	15.0	54000	1.1	29 471 +3D**	1000	500
	0.00068	5.0	10.8	18.0	0.8	15.0	15.0	54000	1.1	29 681 +3D**	1000	500
	0.001	6.0	11.9	19.0	0.8	15.0	15.0	54000	1.5	29 102 +3D**	1000	500
	0.0012	6.0	11.9	19.0	0.8	15.0	15.0	54000	1.5	29 122 +3D**	1000	500
	0.0015	7.5	13.5	19.0	0.8	15.0	15.0	54000	1.9	29 152 +3D**	1000	500
	0.0018	7.5	13.5	19.0	0.8	15.0	15.0	54000	2.0	29 182 +3D**	1000	500
	0.0022	8.5	14.5	19.0	0.8	15.0	15.0	54000	2.2	29 222 +3D**	1000	500
	0.0027	10.0	16.0	19.0	0.8	15.0	15.0	54000	2.4	29 272 +3D**	1000	500
	0.0027	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.2	29 272 +3D**	-	400
	0.0033	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.3	29 332 +3D**	-	400
	0.0039	6.0	15.0	26.5	0.8	22.5	22.5	11000	2.4	29 392 +3D**	-	400
	0.0047	7.0	16.0	26.5	0.8	22.5	22.5	11000	2.7	29 472 +3D**	-	400
	0.0056	7.0	16.0	26.5	0.8	22.5	22.5	11000	2.9	29 562 +3D**	-	400
	0.0068	8.5	17.0	26.5	0.8	22.5	22.5	11000	3.1	29 682 +3D**	-	400
	0.0082	8.5	17.0	26.5	0.8	22.5	22.5	11000	3.3	29 822 +3D**	-	400
	0.01	10.0	18.5	26.5	0.8	22.5	22.5	11000	3.7	29 103 +3D**	-	400

### Box type

#### NOTE

- Replace the + by the code letter for the required tolerance.  
F:±1%, G:±2%, H:±2.5%, J:±5%, K:±10%, M:±20%
- Replace \* by the code letter for packing type.  
1 : Bulk Packing  
2 : Bulk Packing (After forming & cutting)  
3 : Ammo Packing (F&T)  
4 : Bulk Packing (forming in original pitch)  
5 : Bulk Packing (formed & without cut)  
6 : Ammo Packing (Straight Lead)  
7 : Bulk Packing (Straight Lead cut)
- Replace ^ by the code letter indicated drawing reference.  
A : As per the catalogue  
B-Z : customer drawing reference
- These are the most popular values. Other values in the range are available on request.  
For dimensions, please refer to the closest higher value.



The dv/dt test is carried out for 2 times above value