

**Metallized polyester SMD capacitors**

■ A capacitance range from 1000 pF through 2.2 µF in size codes 1812, 2220 and 2824 allows for complete substitution of Ceramic Chip capacitors with corresponding size and capacitance values. ■ As with Ceramic Chip capacitors the entire surface of the end sides being used as soldering surface results in excellent soldering quality. ■ The excellent electrical properties open up applications where quality and reliability are of importance. ■ Available in 12 mm blister pack.

**Technical Data/ General Data**

**Dielectric:** Polyethylene terephthalate film.  
**Capacitor electrodes:** Vacuum-deposited aluminium.  
**Encapsulation:** Flame retardant plastic case, UL 94 V-0. Colour: Black. Marking: Silver.  
**Temperature range:** -55° C to +100° C.  
**Test specifications:** In accordance with IEC 60384-19 and EN 132200 (u. prep.).  
**Test category:** 55/100/21 in accordance with IEC.  
**Insulation resistance at +20° C:**

Ur	Utest	C ≤ 0.33 µF	0.33µF < C ≤ 2.2µF
63 VDC >=100VDC	50 V 100V	>=3.75 x 10 <sup>3</sup> MOhms Mean value: 1x10 <sup>4</sup> MOhms	>= 1250 sec. (MOhms x µF) Mean value: 3000 sec.

In accordance with IEC 60384-19 and EN 132200 (u. prep.). Measuring time: 1 min.  
**Dissipation factors at +20° C:** tan delta

at f	C ≤ 0.1 µF	0.1µF < C ≤ 1.0µF	C > 1.0µF
1 kHz	≤ 8 x 10 <sup>-3</sup>	≤ 8 x 10 <sup>-3</sup>	≤ 10 x 10 <sup>-3</sup>
10 kHz	≤ 15 x 10 <sup>-3</sup>	≤ 15 x 10 <sup>-3</sup>	-
100 kHz	≤ 30 x 10 <sup>-3</sup>	-	-

**Temperature characteristics:**

**Test voltage:** 1.6 Ur, 2 sec.  
**Capacitance tolerances:** +/-20 %, +/-10 %, (+/-5 % available subject to special enquiry).  
**Maximum pulse rise time:**

Capacitance pF/µF	Pulse rise time V/µsec max.operation/test		
	63 VDC	100 VDC	250 VDC
1000 ...6800	20/200	20/200	20/200
0.01 ...0.022	15/150	20/200	20/200
0.033...0.068	10/100	15/150	20/200
0.1...0.15	5/50	10/100	15/150
0.22...1.0	2/20	6/60	10/100
1.5...2.2	2/20	-	-

for pulses equal to the rated voltage.  
**Voltage derating:** A voltage derating factor of 1.25% per K must be applied from +85° C for DC voltages and from +75° C for AC voltages.  
**Vibration:** 6 hours at 10 .2000 Hz and 0.75 mm displacement amplitude or 10 g in accordance with IEC 60068-2-6.  
**Low air density:** 1 kPa = 10 mbar in accordance with IEC 60068-2-13.  
**Bump test:** 4000 bumps at 390 m/sec<sup>2</sup> in accordance with IEC 60068-2-29.  
**Resistance to soldering heat:** Solder bath temperature max. 260°C. Soldering duration max. 5 sec. Change in capacitance Delta C/C < 3%. In accordance with DIN IEC 60068-2-20 (test Tb.)EN 132200 (u. prep )

**Soldering process:** Wave soldering and re-flow soldering.

**Taping:**

**WIMA SMD 1812 NEW**  
**WIMA SMD 2220-N NEW**  
**WIMA SMD 2824-N NEW**

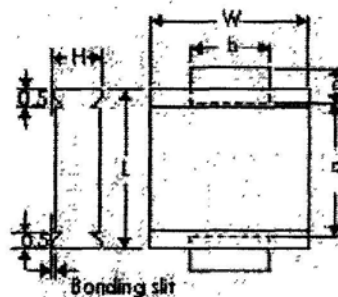
General Data/ Technical Data

Capacitance	SMD 1812									SMD 2220-N									SMD 2824-N								
	63VDC/40VAC*			100VDC/63VAC*			250VDC/160VAC*			63VDC/40VAC*			100VDC/63VAC*			250VDC/160VAC*			63VDC/40VAC*			100VDC/63VAC*			250VDC/160VAC*		
	L ±0.3	W ±0.3	H ±0.3	L ±0.3	W ±0.3	H ±0.3	L ±0.3	W ±0.3	H ±0.3	L ±0.3	W ±0.3	H ±0.3	L ±0.3	W ±0.3	H ±0.3	L ±0.3	W ±0.3	H ±0.3	L ±0.3	W ±0.3	H ±0.3	L ±0.3	W ±0.3	H ±0.3	L ±0.3	W ±0.3	H ±0.3
1000pF	4.8	3.3	2	4.8	3.3	2	4.8	3.3	2																		
1500 "	4.8	3.3	2	4.8	3.3	2	4.8	3.3	2																		
2200 "	4.8	3.3	2	4.8	3.3	2	4.8	3.3	3																		
3300 "	4.8	3.3	2	4.8	3.3	2	4.8	3.3	3																		
4700 "	4.8	3.3	2	4.8	3.3	2	4.8	3.3	3																		
6800 "	4.8	3.3	2	4.8	3.3	2	4.8	3.3	3																		
0.01µF	4.8	3.3	2	4.8	3.3	3	4.8	3.3	4																		
0.015 "	4.8	3.3	2	4.8	3.3	3	4.8	3.3	4																		
0.022 "	4.8	3.3	2	4.8	3.3	3	4.8	3.3	4																		
0.033 "	4.8	3.3	2	4.8	3.3	3																					
0.047 "	4.8	3.3	2	4.8	3.3	3																					
0.068 "	4.8	3.3	2	4.8	3.3	3																					
0.1 µF	4.8	3.3	2	4.8	3.3	3				5.7	5.1	2.5	5.7	5.1	3.5	5.7	5.1	4.5	7.2	6.1	2	7.2	6.1	3			
0.15 "	4.8	3.3	3	4.8	3.3	4				5.7	5.1	2.5	5.7	5.1	3.5	5.7	5.1	4.5	7.2	6.1	2	7.2	6.1	3			
0.22 "	4.8	3.3	3	4.8	3.3	4				5.7	5.1	2.5	5.7	5.1	3.5	5.7	5.1	4.5	7.2	6.1	2	7.2	6.1	3			
0.33 "	4.8	3.3	4							5.7	5.1	3.5	5.7	5.1	4.5				7.2	6.1	2	7.2	6.1	4			
0.47 "	4.8	3.3	4							5.7	5.1	3.5	5.7	5.1	4.5				7.2	6.1	2	7.2	6.1	4			
0.68 "										5.7	5.1	4.5							7.2	6.1	3	7.2	6.1	5			
1.0 µF										5.7	5.1	4.5							7.2	6.1	3	7.2	6.1	5			
1.5 "																			7.2	6.1	4						
2.2 "																			7.2	6.1	5						

\*AC voltage: f = 50 Hz; 1.4 x Urms + UDC <= Ur

Dims. in mm.

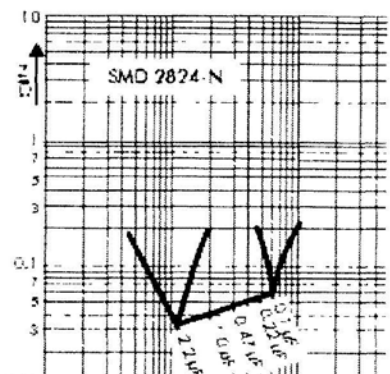
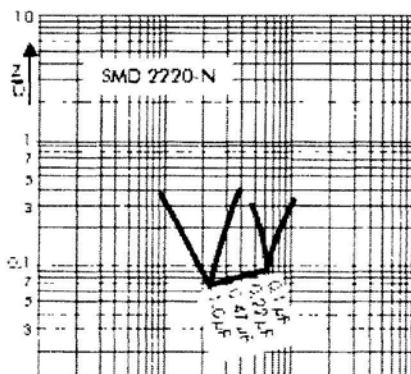
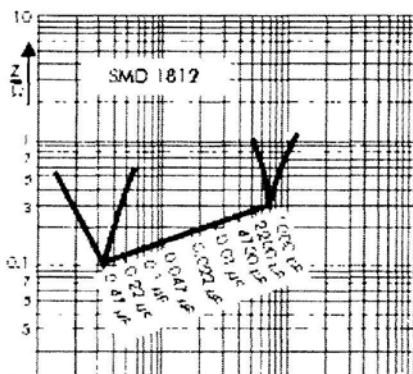
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Solder pad recommendation.

Size Code	a min	b min
1812	1.2	3.5
2220	1.2	4
2824	1.2	4

Impedance change with frequency (general guide).



156-930 to 157-030

# WIMA SMD 2824

## Metalized polyester capacitors

■ A capacitance range from 0.01  $\mu\text{F}$  through 1  $\mu\text{F}$  in size code 2824 allows for complete substitution of other chip capacitors with corresponding size and capacitance values. ■ The entire surface of the end sides being used as soldering surface results in excellent soldering quality. ■ The excellent electrical properties open up applications where quality and reliability are of importance. ■ Available in 12 mm blister pack.

### Technical Data

**Dielectric:** Polyethylene terephthalate film.  
**Capacitor electrodes:** Vacuum-deposited aluminium.  
**Encapsulation:** Flame-retardant plastic case, UL 94 V-O, with epoxy resin seal. Colour: White or Black. Marking: Silver.  
**Temperature range:**  $-55^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$ .  
**Test specifications:** In accordance with IEC 384-19 and CECC 32 200.  
**Test category:** 55/100/56 in accordance with IEC.  
**Insulation resistance at  $+20^{\circ}\text{C}$ :**

$V_r$	$V_{\text{test}}$	$C \leq 0.33 \mu\text{F}$	$0.33 \mu\text{F} < C \leq 1.0 \mu\text{F}$
40 VDC	10 V	$\geq 3.75 \times 10^3 \text{ M}\Omega$	$\geq 1250 \text{ sec (M}\Omega \times \mu\text{F)}$
63 VDC	50 V	Mean value:	Mean value:
100 VDC	100 V	$1 \times 10^4 \text{ M}\Omega$	3000 sec

In accordance with IEC 384-19 and CECC 32 200.

Measuring time: 1 min.

**Dissipation factors at  $+20^{\circ}\text{C}$ :**  $\tan \delta$

at f	$C \leq 0.1 \mu\text{F}$	$0.1 \mu\text{F} < C \leq 1.0 \mu\text{F}$
1 kHz	$\leq 8 \times 10^{-3}$	$\leq 8 \times 10^{-3}$
10 kHz	$\leq 15 \times 10^{-3}$	$\leq 15 \times 10^{-3}$
100 kHz	$\leq 30 \times 10^{-3}$	-

**Capacitance tolerances:**  $\pm 20\%$  (closer tolerances are available subject to special enquiry).

**Temperature characteristics:** See graph page 18.

**Maximum pulse rise time:**

Capacitance $\mu\text{F}$	Pulse rise time V/ $\mu\text{sec}$	
	max. operation	test
0.01 ... 0.022	30	300
0.033 ... 0.068	20	200
0.1 ... 0.22	10	100
0.33 ... 0.68	8	80
1.0	5	50

for pulses equal to the rated voltage.

**Test voltage:**  $1.6 V_r$ , 2 sec.

**Vibration:** 6 hours at 10 ... 2000 Hz and 0.75 mm displacement amplitude or 10 g in accordance with IEC 68-2-6.

**Low air density:** 1 kPa = 10 mbar in accordance with IEC 68-2-13.

**Bump test:** 4000 bumps at 390 m/sec<sup>2</sup> in accordance with IEC 68-2-29.

**Resistance to soldering heat:**

Solder bath temperature max.  $260^{\circ}\text{C}$ .

Soldering duration max. 5 sec.  $\left| \frac{\Delta C}{C} \right| < 3\%$ .

Change in capacitance

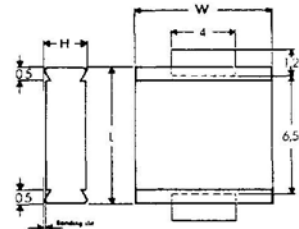
In accordance with DIN IEC 68-2-20 (test Tb.)/CECC 32 200.

**Soldering process:** Wave soldering and re-flow soldering (see temperature/time graphs page 17).

### General Data

Capacitance	40 VDC / 25 VAC*			63 VDC / 40 VAC*			100 VDC / 63 VAC*		
	L	W	H	L	W	H	L	W	H
0.01 $\mu\text{F}$	$\pm 0.2$	$\pm 0.2$	$\pm 0.2$	7.3	6	2.5	7.3	6	2.5
0.015				7.3	6	2.5	7.3	6	2.5
0.022				7.3	6	2.5	7.3	6	2.5
0.033				7.3	6	2.5	7.3	6	2.5
0.047				7.3	6	2.5	7.3	6	2.5
0.068				7.3	6	2.5	7.3	6	2.5
0.1 $\mu\text{F}$				7.3	6	2.5	7.3	6	2.5
0.15				7.3	6	2.5			
0.22				7.3	6	3			
0.33				7.3	6	3.5			
0.47				7.3	6	3.5			
0.68	7.3	6	4.5						
1.0 $\mu\text{F}$	7.3	6	4.5						

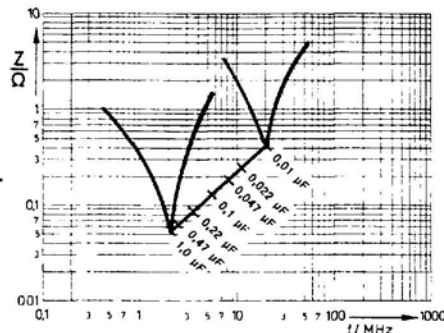
\* AC voltage:  $f = 50 \text{ Hz}$ ;  
 $1.4 \times V_{\text{rms}} + \text{VDC} \leq \text{VDC (rated)}$



Dims. in mm.

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Solder pad recommendation



Impedance change with frequency (general guide)