WIMA SMD-PPS

Metallized Polyphenylene-Sulphide (PPS)
SMD Film Capacitors with Box Encapsulation

Special Features

- **Size codes 1812, 2220, 2824, 4030,5040 and 6054 with PPS and encapsulated**
- **Operating temperature up to 140° C**
- **Self-healing**
- **Suitable for lead-free soldering**
- **Low dissipation factor**
- **Low dielectric absorption**
- **Very constant capacitance value versus temperature**
- **According to RoHS 2002/95/EC**

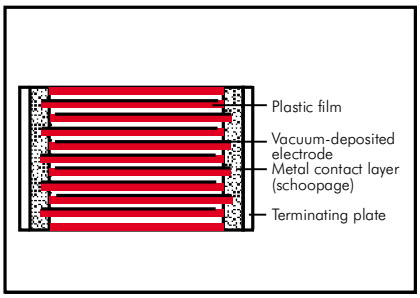
Typical Applications

For general applications in high temperature circuits e.g.

- **By-pass**
- **Blocking**
- **Coupling and decoupling**
- **Timing**
- **Filtering**
- **Oscillating circuits**

Construction

Dielectric:
Polyphenylene-sulphide (PPS) film
Capacitor electrodes:
Vacuum-deposited
Internal construction:



Encapsulation:
Solvent-resistant, flame-retardant plastic case, UL 94 V-0
Terminations:
Tinned plates.
Marking:
Box colour: Black.

Electrical Data

Capacitance range:
0.01 µF to 6.8 µF
Rated voltages:
63 VDC, 100 VDC, 250 VDC, 400 VDC, 630 VDC, 1000 VDC
Capacitance tolerances:
±20%, ±10% (±5% available subject to special enquiry)
Operating temperature range:
–55° C to +140° C
Climatic test category:
55/140/56 in accordance with IEC
Insulation resistance at +20° C:

U_r	U_{test}	C ⩽ 0.33 µF	0.33 µF < C ⩽ 6.8 µF
63 VDC 100 VDC	50 V 100 V	⩾ 1 x 10^4 MΩ (mean value: 3 x 10^4 MΩ)	⩾ 3000 sec (MΩ x µF) (mean value: 6000 sec)
⩾ 250 VDC	100 V	⩾ 3 x 10^4 MΩ (mean value: 6 x 10^4 MΩ)	⩾ 6000 sec (MΩ x µF) (mean value: 12 000 sec)

Measuring time: 1 min.
Dissipation factors at +20° C: tan δ

at f	C ⩽ 0.1 µF	0.1 µF < C ⩽ 1.0 µF	C > 1.0 µF
1 kHz	⩽ 15 x 10^{-4}	⩽ 20 x 10^{-4}	⩽ 20 x 10^{-4}
10 kHz	⩽ 20 x 10^{-4}	⩽ 25 x 10^{-4}	–
100 kHz	⩽ 50 x 10^{-4}	–	–

Maximum pulse rise time: for pulses equal to the rated voltage

Capacitance µF	Pulse rise time V/µsec max. operation/test					
	63 VDC	100 VDC	250 VDC	400 VDC	630 VDC	1000 VDC
0.01 ... 0.022	25/250	25/250	30/300	35/350	40/400	45/450
0.033 ... 0.068	15/150	15/150	20/200	25/250	28/280	32/320
0.1 ... 0.22	10/100	10/100	12/120	15/150	–	–
0.33 ... 0.68	5/50	5/50	6/60	8/80	–	–
1.0 ... 2.2	3/30	3/30	–	–	–	–
3.3 ... 6.8	2/20	–	–	–	–	–

Dip Solder Test/Processing

Resistance to soldering heat:
Test Tb in accordance with DIN IEC 60068-2-58/DIN EN 60384-20.
Soldering bath temperature max. 260° C.
Soldering duration max. 5 sec.
Change in capacitance ΔC/C < 5%.
Soldering process:
Wave soldering and re-flow soldering (see temperature/time graphs page 12).

Packing

Available taped and reeled in 12 mm blister pack.

Detailed taping information and graphs at the end of the catalogue.

For further details and graphs please refer to Technical Information.

Continuation

General Data

Capacitance	63 VDC/40 VAC*			100 VDC/63 VAC*			250 VDC/160 VAC*		
	Size code	H ± 0.3	Part number	Size code	H ± 0.3	Part number	Size code	H ± 0.3	Part number
0.01 µF	1812	3.0	SMDIC02100X100_ _ _ _	1812	3.0	SMDID02100X100_ _ _ _	2220	3.5	SMDIF02100Y100_ _ _ _
	2220	3.5	SMDIC02100Y100_ _ _ _	2220	3.5	SMDID02100Y100_ _ _ _			
0.015 „	1812	3.0	SMDIC02150X100_ _ _ _	1812	3.0	SMDID02150X100_ _ _ _	2220	3.5	SMDIF02150Y100_ _ _ _
	2220	3.5	SMDIC02150Y100_ _ _ _	2220	3.5	SMDID02150Y100_ _ _ _			
0.022 „	1812	3.0	SMDIC02220X100_ _ _ _	1812	3.0	SMDID02220X100_ _ _ _	2220	3.5	SMDIF02220Y100_ _ _ _
	2220	3.5	SMDIC02220Y100_ _ _ _	2220	3.5	SMDID02220Y100_ _ _ _	2824	3.0	SMDIF02220T100_ _ _ _
0.033 „	1812	3.0	SMDIC02330X100_ _ _ _	1812	3.0	SMDID02330X100_ _ _ _	2824	3.0	SMDIF02330T100_ _ _ _
	2220	3.5	SMDIC02330Y100_ _ _ _	2220	3.5	SMDID02330Y100_ _ _ _	4030	5.0	SMDIF02330K100_ _ _ _
	2824	3.0	SMDIC02330T100_ _ _ _	2824	3.0	SMDID02330T100_ _ _ _			
0.047 „	1812	3.0	SMDIC02470X100_ _ _ _	1812	3.0	SMDID02470X100_ _ _ _	2824	5.0	SMDIF02470T200_ _ _ _
	2220	3.5	SMDIC02470Y100_ _ _ _	2220	3.5	SMDID02470Y100_ _ _ _	4030	5.0	SMDIF02470K100_ _ _ _
	2824	3.0	SMDIC02470T100_ _ _ _	2824	3.0	SMDID02470T100_ _ _ _			
0.068 „	1812	3.0	SMDIC02680X100_ _ _ _	2220	3.5	SMDID02680Y100_ _ _ _	2824	5.0	SMDIF02680T200_ _ _ _
	2220	3.5	SMDIC02680Y100_ _ _ _	2824	3.0	SMDID02680T100_ _ _ _	4030	5.0	SMDIF02680K100_ _ _ _
	2824	3.0	SMDIC02680T100_ _ _ _						
0.1 µF	1812	3.0	SMDIC03100X100_ _ _ _	2220	3.5	SMDID03100Y100_ _ _ _	2824	5.0	SMDIF03100T200_ _ _ _
	2220	3.5	SMDIC03100Y100_ _ _ _	2824	3.0	SMDID03100T100_ _ _ _	4030	5.0	SMDIF03100K100_ _ _ _
	2824	3.0	SMDIC03100T100_ _ _ _				5040	6.0	SMDIF03100V100_ _ _ _
0.15 „	1812	4.0	SMDIC03150X200_ _ _ _	2824	3.0	SMDID03150T100_ _ _ _	4030	5.0	SMDIF03150K100_ _ _ _
	2220	3.5	SMDIC03150Y100_ _ _ _				5040	6.0	SMDIF03150V100_ _ _ _
	2824	3.0	SMDIC03150T100_ _ _ _				6054	7.0	SMDIF03150Q100_ _ _ _
0.22 „	1812	4.0	SMDIC03220X200_ _ _ _	2220	4.5	SMDID03220Y200_ _ _ _	4030	5.0	SMDIF03220K100_ _ _ _
	2220	4.5	SMDIC03220Y200_ _ _ _	2824	5.0	SMDID03220T200_ _ _ _	5040	6.0	SMDIF03220V100_ _ _ _
	2824	5.0	SMDIC03220T200_ _ _ _				6054	7.0	SMDIF03220Q100_ _ _ _
0.33 „	2220	4.5	SMDIC03330Y200_ _ _ _	2824	5.0	SMDID03330T200_ _ _ _	5040	6.0	SMDIF03330V100_ _ _ _
	2824	5.0	SMDIC03330T200_ _ _ _	4030	5.0	SMDID03330K100_ _ _ _	6054	7.0	SMDIF03330Q100_ _ _ _
	4030	5.0	SMDIC03330K100_ _ _ _						
0.47 „	2220	4.5	SMDIC03470Y200_ _ _ _	2824	5.0	SMDID03470T200_ _ _ _	6054	7.0	SMDIF03470Q100_ _ _ _
	2824	5.0	SMDIC03470T200_ _ _ _	4030	5.0	SMDID03470K100_ _ _ _			
	4030	5.0	SMDIC03470K100_ _ _ _						
0.68 „	2824	5.0	SMDIC03680T200_ _ _ _	4030	5.0	SMDID03680K100_ _ _ _			
	4030	5.0	SMDIC03680K100_ _ _ _						
1.0 µF	2824	5.0	SMDIC04100T200_ _ _ _	5040	6.0	SMDID04100V100_ _ _ _			
	4030	5.0	SMDIC04100K100_ _ _ _						
	5040	6.0	SMDIC04100V100_ _ _ _						
1.5 „	4030	5.0	SMDIC04150K100_ _ _ _	6054	7.0	SMDID04150Q100_ _ _ _			
	5040	6.0	SMDIC04150V100_ _ _ _						
2.2 „	5040	6.0	SMDIC04220V100_ _ _ _	6054	7.0	SMDID04220Q100_ _ _ _			
	6054	7.0	SMDIC04220Q100_ _ _ _						
3.3 „	5040	6.0	SMDIC04330V100_ _ _ _						
	6054	7.0	SMDIC04330Q100_ _ _ _						
4.7 „	6054	7.0	SMDIC04470Q100_ _ _ _						
6.8 „	6054	7.0	SMDIC04680Q100_ _ _ _						

Part number completion:	
Tolerance:	20 % = M
	10 % = K
	5 % = J
Packing:	bulk = S
Lead length:	none = 00

Taped version see page 126.

* AC voltages: f ⩽ 400 Hz; 1.4 x U_{rms} + UDC ⩽ U_r

Dims. in mm.

11.10

Continuation page 21

Continuation

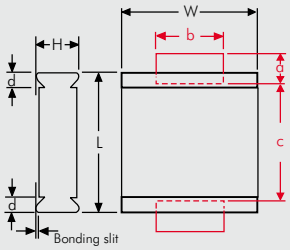
General Data

Capacitance	400 VDC/200 VAC* Size code	H ± 0.3	Part number	630 VDC/300 VAC* Size code	H ± 0.3	Part number	1000 VDC/400 VAC* Size code	H ± 0.3	Part number
0.01 µF				5040	6.0	SMDIJ02100V100_ _ _ _	5040	6.0	SMDIO12100V100_ _ _ _
0.015 „				5040	6.0	SMDIJ02150V100_ _ _ _	5040	6.0	SMDIO12150V100_ _ _ _
0.022 „	4030 5040	5.0 6.0	SMDIG02220K100_ _ _ _ SMDIG02220V100_ _ _ _	5040	6.0	SMDIJ02220V100_ _ _ _	6054	7.0	SMDIO12220Q100_ _ _ _
0.033 „	4030 5040	5.0 6.0	SMDIG02330K100_ _ _ _ SMDIG02330V100_ _ _ _	5040	6.0	SMDIJ02330V100_ _ _ _	6054	7.0	SMDIO12330Q100_ _ _ _
0.047 „	4030 5040	5.0 6.0	SMDIG02470K100_ _ _ _ SMDIG02470V100_ _ _ _	5040	6.0	SMDIJ02470V100_ _ _ _			
0.068 „	4030 5040	5.0 6.0	SMDIG02680K100_ _ _ _ SMDIG02680V100_ _ _ _						
0.1 µF	4030 5040 6054	5.0 6.0 7.0	SMDIG03100K100_ _ _ _ SMDIG03100V100_ _ _ _ SMDIG03100Q100_ _ _ _						
0.15 „	5040 6054	6.0 7.0	SMDIG03150V100_ _ _ _ SMDIG03150Q100_ _ _ _						
0.22 „	6054	7.0	SMDIG03220Q100_ _ _ _						
0.33 „	6054	7.0	SMDIG03330Q100_ _ _ _						

* AC voltages: f ⩽ 400 Hz; 1.4 x U_{rms} + UDC ⩽ U_r

Dims. in mm.

Solder pad recommendation



Size code	L ±0.3	W ±0.3	d	a min.	b min.	c max.
1812	4.8	3.3	0.5	1.2	3.5	3.5
2220	5.7	5.1	0.5	1.2	4	4.5
2824	7.2	6.1	0.5	1.2	4	6.5
4030	10.2	7.6	0.5	2.5	6	9
5040	12.7	10.2	0.7	2.5	6	11.5
6054	15.3	13.7	0.7	2.5	6	14

Part number completion:

Tolerance: 20 % = M
10 % = K
5 % = J
Packing: bulk = S
Lead length: none = 00

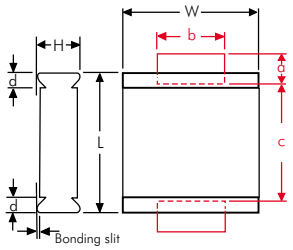
Taped version see page 126.

Recommendation for Processing and Application of SMD Capacitors

Layout Form

The components can generally be positioned on the carrier material as desired. In order to prevent soldering shadows or ensure regular temperature distribution, extreme concentration of the components should be avoided. In practice, it has proven best to keep a minimum distance of the soldering surfaces between two WIMA SMDs of twice the height of the components.

Solder Pad Recommendation



Size code	L ± 0.3	W ± 0.3	d	a min.	b min.	c max.
1812	4.8	3.3	0.5	1.2	3.5	3.5
2220	5.7	5.1	0.5	1.2	4	4.5
2824	7.2	6.1	0.5	1.2	4	6.5
4030	10.2	7.6	0.5	2.5	6	9
5040	12.7	10.2	0.7	2.5	6	11.5
6054	15.3	13.7	0.7	2.5	6	14

The solder pad size recommendations given for each individual series are to be understood as minimum dimensions which can at any time be adjusted to the layout form.

Processing

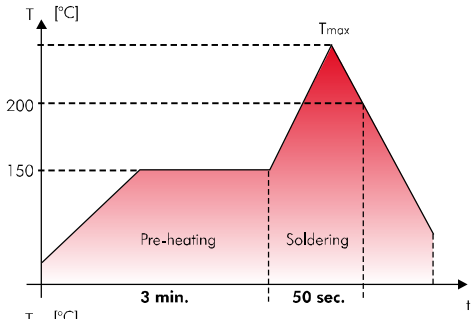
The processing of SMD components

– assembling
– soldering
– washing
– electrical final inspection/ calibrating

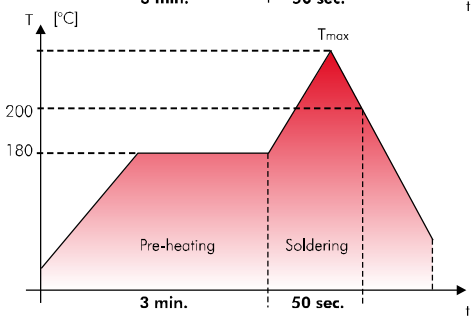
must be regarded as a complete process. The soldering of the printed circuit board, for example, can constitute considerable stress on all the electronic components. The manufacturer's instructions on the processing of the components are mandatory.

Soldering Process

Re-flow soldering



SMD-PET	
Size code	Tmax.
1812	220° C
2220	230° C
2824	230° C
4030	230° C
5040	240° C
6054	250° C



SMD-PPS	
Size code	Tmax.
1812	250° C
2220	250° C
2824	250° C
4030	250° C
5040	250° C
6054	250° C

Temperature/time graph for the permissible processing temperature of the WIMA SMD film capacitor for typical convection soldering processes.

Due to the diverse procedures and the varying heat requirements of the different types of components, an exact processing temperature for re-flow soldering processes cannot be specified. The graph shows the upper limits of temperature and time which must not be exceeded when establishing the solder profile according to your actual requirements.
A max. temperature of T = 210° C inside the component should not be exceeded when processing WIMA SMD capacitors.

SMD Handsoldering

WIMA SMD capacitors with plastic film dielectric are generally suitable for hand-soldering with a soldering iron where, however, similar to automated soldering processes, a certain duration and temperature should not be exceeded. These parameters are dependent on the physical size of the components and the relevant heat absorption involved.

The below data are to be regarded as guideline values and should serve to avoid damage to the dielectric caused by excessive heat during the soldering process. The soldering quality depends on the tool used and on the skill and experience of the person with the soldering iron in hand.

Size code	Temperature °C / °F	Time duration
1812	225 / 437	2 sec plate 1 / 5 sec off / 2 sec plate 2
2220	225 / 437	3 sec plate 1 / 5 sec off / 3 sec plate 2
2824	250 / 482	3 sec plate 1 / 5 sec off / 3 sec plate 2
4030	260 / 500	5 sec plate 1 / 5 sec off / 5 sec plate 2
5040	260 / 500	5 sec plate 1 / 5 sec off / 5 sec plate 2
6054	260 / 500	5 sec plate 1 / 5 sec off / 5 sec plate 2

Recommendation for Processing and Application of SMD Capacitors (Continuation)

Solder Paste

To obtain the best soldering performance we suggest the use of following solder paste alloy:

Lead free solder paste
Sn - Bi
Sn - Zn (Bi)
Sn - Ag - Cu

Solder paste with lead
Sn - Pb - Ag (Sn60-Pb40-A, Sn63-Pb37-A)

Washing

Basically, all plastic encapsulated components, irrespective of the brand cannot be considered as being hermetically sealed. They are therefore only suitable for industrial washing processes to a limited extent. During the washing process, washing agents can penetrate the interior of the component by capillary action through microcracks which might have occurred. This is dependent on a number of parameters e.g

- **washing agents**
- **viscosity of the washing solvent**
- **temperature/time of the washing process**
- **mechanical washing aids such as ultrasonic**
  water pressure
  rinsing and spraying pressure

The type of washing agent to be used is largely specific to the individual user or is often laid down by the manufacturer of the washing equipment. The aggressiveness of the washing agent to be used can thus only be judged in appropriate test series relating to each individual washing process. By and large, the basic rule is that the washing process should be carried out as gently as possible.

Drying

During the washing process, aqueous solutions can penetrate the component. This can lead to changes of the electrical parameters. Suitable drying measures should ensure that no residual moisture or traces of washing substances are left in the component.

Initial Operation/Calibration

Due to the stress which the components are subjected to during processing, reversible parameter changes occur in almost all electronic components. The capacitance recovery accuracy to be expected with careful processing is within a scope of

$|\Delta C/C| \leqslant 5\ \%$.

For the initial operation of the device a minimum storage time of

$t \geqslant 24$ hours

is to be taken into account. With calibrated devices or when the application is largely dependent on capacitance it is advisable to prolong the storage time to

$t \geqslant 10$ days

In this way ageing effects of the capacitor structure can be anticipated. Parameter changes due to processing are not to be expected after this period of time

Humidity Protection Bags

Taped WIMA SMD capacitors are shipped in humidity protection bags according to JEDEC standard, level 1 (EMI/static-shielding bags conforming to MIL-B 81705, Type 1, Class 1). Under controlled conditions the components can be stored two years and more in the originally sealed bag. Opened packing units should be consumed instantly or resealed for specific storage under controlled conditions.

Reliability

Taking account of the manufacturer's guidelines and compatible processing, the WIMA SMD stand out for the same high quality and reliability as the analogous through-hole WIMA series. The technology of metallized film capacitors used e.g. in WIMA SMD-PET achieves the best values for all fields of application. The expected value is about:

$\lambda_0 \leqslant 2$ fit

Furthermore the production of all WIMA components is subject to the regulations laid down by ISO 9001:2000 as well as the guidelines for component specifications set out by IEC quality assessment system (IECQ-CECC) for electronic components.

Electrical Characteristics and Fields of Application

Basically the WIMA SMD series have the same electrical characteristics as the analogous through-hole WIMA capacitors. Compared to ceramic or tantalum dielectrics WIMA SMD capacitors have a number of other outstanding qualities :

- **favourable pulse rise time**
- **low ESR**
- **low dielectric absorption**
- **available in high voltage series**
- **large capacitance spectrum**
- **stand up to high mechanical stress**
- **good long-term stability**

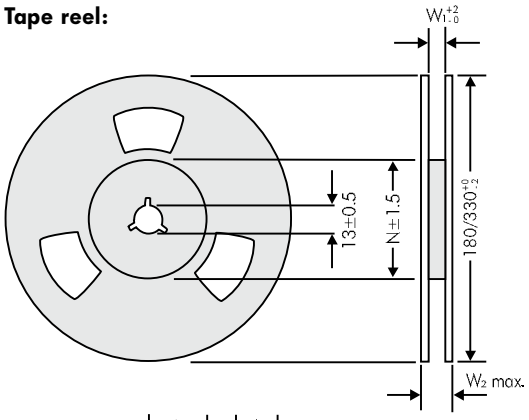
As regards technical performance as well as quality and reliability, the WIMA SMD series offer the possibility to cover nearly all applications of conventionally through-hole film capacitors with SMD components. Furthermore, the WIMA SMD series can now be used for all the demanding capacitor applications for which, in the past, the use of through-hole components was mandatory:

- **measuring techniques**
- **oscillator circuits**
- **differentiating and integrating circuits**
- **A/D or D/A transformers**
- **sample and hold circuits**
- **automotive electronics**

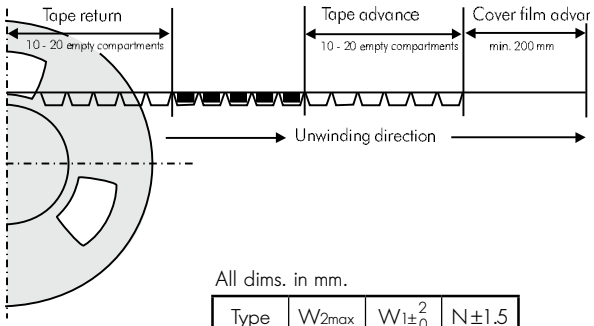
With the WIMA SMD programme available today, the major part of all plastic film capacitors can be replaced by WIMA SMD components. The field of application ranges from standard coupling capacitors to use in switch-mode power supplies as filter or charging capacitors with high voltage and capacitance values, as well as in telecommunications e.g. the well-known telephone capacitor 1µF/250VDC.

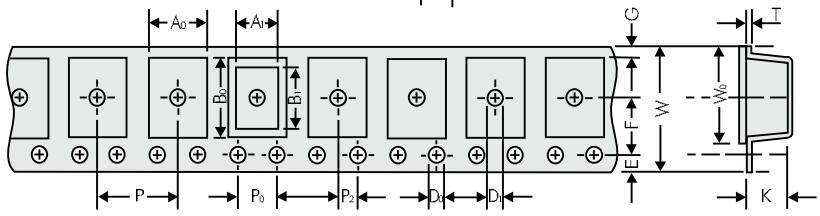
Blister Tape Packaging and Packing Units of the WIMA SMD Capacitors

Tape reel:



Tape advance and return:





All dims. in mm.

Type	W2max	W1±$^{2}_{0}$	N±1.5
1812	19	12.4	62
2220	19	12.4	62
2824	19	12.4	62
4030	22.4	16.4	60
5040	30.4	24.4	90
6054	30.4	24.4	90

Size Code 1812		A0 ±0.1	A1	B0 ±0.1	B1	D0 +0.1 -0	D1 +0.1 -0	P ±0.1	P0* ±0.1	P2 ±0.05	E ±0.1	F ±0.05	G	W ±0.3	W0 ±0.2	K ±0.1	T ±0.1
Box size	Code																
4.8x3.3x3	**X1**	3.55	3.3	5.1	4.8	ø1.5	ø1.5	8	4	2	1.75	5.5	2.2	12	9.5	3.4	0.3
4.8x3.3x4	**X2**	3.55	3.3	5.1	4.8	ø1.5	ø1.5	8	4	2	1.75	5.5	2.2	12	9.5	4.4	0.3

Packing units

taped Reel 180 mm ø	taped Reel 330 mm ø	bulk Mini	bulk Standard
750	2500	1000	3000
500	2000	1000	3000

Size Code 2220		A0 ±0.1	A1	B0 ±0.1	B1	D0 +0.1 -0	D1 +0.1 -0	P ±0.1	P0* ±0.1	P2 ±0.05	E ±0.1	F ±0.05	G	W ±0.3	W0 ±0.2	K ±0.1	T ±0.1
Box size	Code																
5.7x5.1x3.5	**Y1**	6.3	5.7	5.6	5.1	ø1.5	ø1.5	8	4	2	1.75	5.5	1.95	12	9.5	3.7	0.3
5.7x5.1x4.5	**Y2**	6.3	5.7	5.6	5.1	ø1.5	ø1.5	8	4	2	1.75	5.5	1.95	12	9.5	4.7	0.3

taped Reel 180 mm ø	taped Reel 330 mm ø	bulk Mini	bulk Standard
500	1800	1000	3000
400	1500	1000	3000

Size Code 2824		A0 ±0.1	A1	B0 ±0.1	B1	D0 +0.1 -0	D1 +0.1 -0	P ±0.1	P0* ±0.1	P2 ±0.05	E ±0.1	F ±0.05	G	W ±0.3	W0 ±0.2	K ±0.1	T ±0.1
Box size	Code																
7.2x6.1x3	**T1**	6.6	6.1	7.7	7.2	ø1.5	ø1.5	12	4	2	1.75	5.5	0.9	12	9.5	3.4	0.3
7.2x6.1x5	**T2**	6.6	6.1	7.7	7.2	ø1.5	ø1.5	12	4	2	1.75	5.5	0.9	12	9.5	5.4	0.4

taped Reel 330 mm ø	bulk Mini	bulk Standard
1500	500	2000
750	500	2000

	Code	A0 ±0.1	A1	B0 ±0.1	B1	D0 +0.1 -0	D1 +0.1 -0	P ±0.1	P0* ±0.1	P2 ±0.05	E ±0.1	F ±0.05	G	W ±0.3	W0 ±0.2	K ±0.1	T ±0.1
Size Code 4030	**K1**	10.7	10.2	9.7	9.1	ø1.5	ø1.5	16	4	2	1.75	7.5	1.9	16	13.3	5.9	0.3
Size Code 5040	**V1**	13.2	12.7	12.1	11.5	ø1.5	ø1.5	16	4	2	1.75	11.5	4.7	24	21.3	7.0	0.3
Size Code 6054	**Q1**	17.0	16.5	15.6	15.0	ø1.5	ø1.5	20	4	2	1.75	11.5	2.95	24	21.3	7.5	0.3

taped Reel 330 mm ø	bulk Mini	bulk Standard
775	500	2000
600	200	1000
450	100	500

* cumulative after 10 steps ± 0.2 mm max.
Samples and pre-production needs on request or 1 Reel minimum.

Part number codes for SMD packing

W (Blister)	ø in mm	Code
12	180	**P**
12	330	**Q**
16	330	**R**
24	330	**T**

Bulk Mini	**M**
Bulk Standard	**S**

11.10

WIMA Part Number System

A WIMA part number consists of 18 digits and is composed as follows:

Field 1 - 4: Type description
Field 5 - 6: Rated voltage
Field 7 - 10: Capacitance
Field 11 - 12: Size and PCM
Field 13 - 14: Special features (e.g. Snubber versions)
Field 15: Capacitance tolerance
Field 16: Packing
Field 17 - 18: Lead length (untaped)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	**K**	**S**	**2**	**C**	**0**	**2**	**1**	**0**	**0**	**1**	**A**	**0**	**0**	**M**	**S**	**S**	**D**
MKS 2				63 VDC		0.01 µF				2.5 x 6.5 x 7.2		-		20%	bulk	6 -2	

Type description:

SMD-PET	= SMDT
SMD-PPS	= SMDI
FKP 02	= FKP0
MKS 02	= MKS0
FKS 2	= FKS2
FKP 2	= FKP2
MKS 2	= MKS2
MKP 2	= MKP2
FKS 3	= FKS3
FKP 3	= FKP3
MKS 4	= MKS4
MKP 4	= MKP4
MKP 10	= MKP1
FKP 4	= FKP4
FKP 1	= FKP1
MKP-X2	= MKX2
MKP-X2 R	= MKXR
MKP-Y2	= MKY2
MP 3-X2	= MPX2
MP 3-X1	= MPX1
MP 3-Y2	= MPY2
MP 3R-Y2	= MPRY
Snubber MKP	= SNMP
Snubber FKP	= SNFP
GTO MKP	= GTOM
DC-LINK MKP 4	= DCP4
DC-LINK MKP C	= DCPC
DC-LINK HC	= DCH_
SuperCap C	= SCSC
SuperCap MC	= SCMC
SuperCap R	= SCSR
SuperCap MR	= SCMR

Rated voltage:

2.5 VDC	= A1
4 VDC	= A2
14 VDC	= A3
28 VDC	= A4
40 VDC	= A5
5 VDC	= A6
50 VDC	= B0
63 VDC	= C0
100 VDC	= D0
160 VDC	= E0
250 VDC	= F0
400 VDC	= G0
450 VDC	= H0
600 VDC	= I0
630 VDC	= J0
700 VDC	= K0
800 VDC	= L0
850 VDC	= M0
900 VDC	= N0
1000 VDC	= O1
1100 VDC	= P0
1200 VDC	= Q0
1250 VDC	= R0
1500 VDC	= S0
1600 VDC	= T0
2000 VDC	= U0
2500 VDC	= V0
3000 VDC	= W0
4000 VDC	= X0
6000 VDC	= Y0
250 VAC	= 0W
275 VAC	= 1W
300 VAC	= 2W
400 VAC	= 3W
440 VAC	= 4W
500 VAC	= 5W
...	

Capacitance:

22 pF	= 0022
47 pF	= 0047
100 pF	= 0100
150 pF	= 0150
220 pF	= 0220
330 pF	= 0330
470 pF	= 0470
680 pF	= 0680
1000 pF	= 1100
1500 pF	= 1150
2200 pF	= 1220
3300 pF	= 1330
4700 pF	= 1470
6800 pF	= 1680
0.01 µF	= 2100
0.022 µF	= 2220
0.047 µF	= 2470
0.1 µF	= 3100
0.22 µF	= 3220
0.47 µF	= 3470
1 µF	= 4100
2.2 µF	= 4220
4.7 µF	= 4470
10 µF	= 5100
22 µF	= 5220
47 µF	= 5470
100 µF	= 6100
220 µF	= 6220
1 F	= A010
2.5 F	= A025
50 F	= A500
100 F	= B100
110 F	= B110
600 F	= B600
1200 F	= C120
...	

Size:

4.8 x 3.3 x 3 Size 1812	= X1
4.8 x 3.3 x 4 Size 1812	= X2
5.7 x 5.1 x 3.5 Size 2220	= Y1
5.7 x 5.1 x 4.5 Size 2220	= Y2
7.2 x 6.1 x 3 Size 2824	= T1
7.2 x 6.1 x 5 Size 2824	= T2
10.2 x 7.6 x 5 Size 4030	= K1
12.7 x 10.2 x 6 Size 5040	= V1
15.3 x 13.7 x 7 Size 6054	= Q1
2.5 x 7 x 4.6 PCM 2.5	= 0B
3 x 7.5 x 4.6 PCM 2.5	= 0C
2.5 x 6.5 x 7.2 PCM 5	= 1A
3 x 7.5 x 7.2 PCM 5	= 1B
2.5 x 7 x 10 PCM 7.5	= 2A
3 x 8.5 x 10 PCM 7.5	= 2B
3 x 9 x 13 PCM 10	= 3A
4 x 9 x 13 PCM 10	= 3C
5 x 11 x 18 PCM 15	= 4B
6 x 12.5 x 18 PCM 15	= 4C
5 x 14 x 26.5 PCM 22.5	= 5A
6 x 15 x 26.5 PCM 22.5	= 5B
9 x 19 x 31.5 PCM 27.5	= 6A
11 x 21 x 31.5 PCM 27.5	= 6B
9 x 19 x 41.5 PCM 37.5	= 7A
11 x 22 x 41.5 PCM 37.5	= 7B
94 x 49 x 182 DCH_	= H0
94 x 77 x 182 DCH_	= H1
...	

Special features:

Standard	= 00
Version A1	= 1A
Version A1.1.1	= 1B
Version A1.2	= 1C
...	

Tolerance:

20%	= M
10%	= K
5%	= J
2.5%	= H
1%	= E
...	

Packing:

AMMO H16.5 340 x 340	= A
AMMO H16.5 490 x 370	= B
AMMO H18.5 340 x 340	= C
AMMO H18.5 490 x 370	= D
REEL H16.5 360	= F
REEL H16.5 500	= H
REEL H18.5 360	= I
REEL H18.5 500	= J
ROLL H16.5	= N
ROLL H18.5	= O
BLISTER W12 180	= P
BLISTER W12 330	= Q
BLISTER W16 330	= R
BLISTER W24 330	= T
Bulk Mini	= M
Bulk Standard	= S
Bulk Maxi	= G
TPS Mini	= X
TPS Standard	= Y
...	

Lead length (untaped)

3.5 ±0.5	= C9
6 -2	= SD
16 ±1	= P1
...	

The data on this page is not complete and serves only to explain the part number system. Part number information is listed on the pages of the respective WIMA range.