

- Metallized polyphenylene sulphide (PPS) SMD
- Miniature size naked capacitor
- Low profile
- Wound construction
- According to IEC 60384-20

## TYPICAL APPLICATIONS

Timing, filtering. Memory capacitor. High stability and accuracy. High temperature use.

## CONSTRUCTION

Polyphenylene sulphide (PPS) film capacitor for surface mounting.

## TECHNICAL DATA

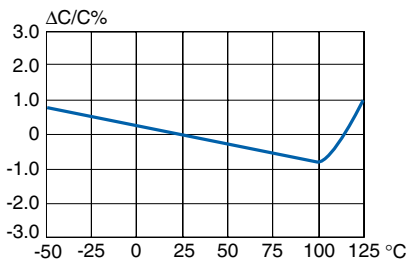
Rated voltage $U_R$ , VDC	50	100	250	400
Rated voltage $U_R$ , VAC	30	63	160	200
Capacitance range, nF	1 - 560	1 - 180	1 - 68	1 - 22

Capacitance tolerance	$\pm 10\%$ , $\pm 5\%$ standard; $\pm 2.5\%$ , $\pm 2\%$ on request.
Category temperature range	-55°C to +125°C. From +125°C to +150°C, the voltage derating is 2%/°C.
Rated temperature	+100°C
Voltage derating	The rated voltage is decreased with 1.25%/°C from +100°C.
Climatic category	55/125/56
Voltage proof	$1.6 \times U_R$ , 60s
Insulation resistance	Minimum value between terminals Measured at +20°C according to IEC 60384-20

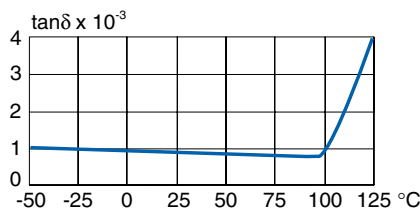
	$C \leq 0.56 \mu\text{F}$
$U_R \leq 100 \text{ V}$	15 000 M $\Omega$
$U_R > 100 \text{ V}$	30 000 M $\Omega$

Dissipation factor	Max values at +23°C	
	$C \leq 100 \text{ nF}$	$100 \text{ nF} < C \leq 560 \text{ nF}$
	1 kHz	0.15 %
	10 kHz	0.25 %
	100 kHz	0.50 %

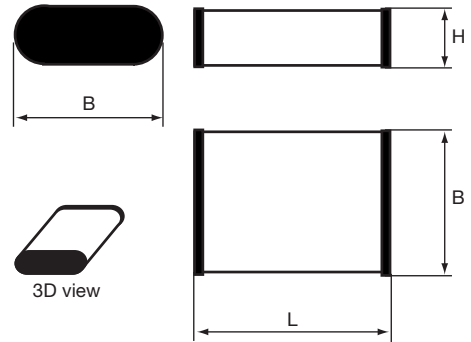
**Pulse rise time**  
The capacitors can withstand an unlimited number of pulses with a  $dU/dt$  according to article table. For voltages (U) lower than the rated voltage ( $U_R$ ), the specified  $dU/dt$  can be multiplied by  $U_R/U$ .



Capacitance vs temperature at 1 kHz

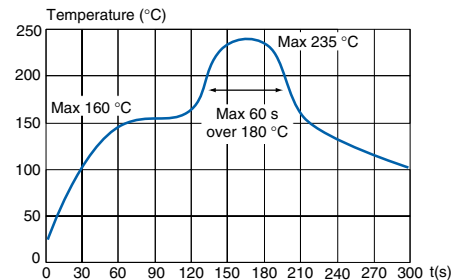


Dissipation factor vs temperature at 1 kHz



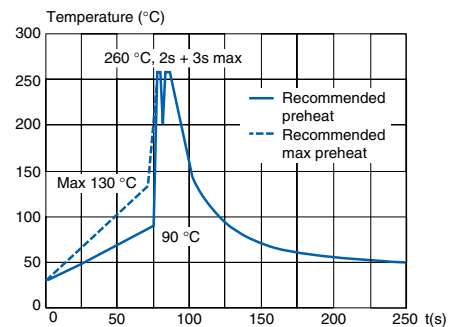
## RECOMMENDED SOLDERING CONDITIONS

**Electrode temperature, Reflow soldering**  
Preheating temperature should be less than 160°C. The time above 180°C should be less than 1 minute. The peak temperature must not exceed 235°C.



## Recommended reflow soldering profile

**Electrode temperature, Wave soldering**  
The recommended preheating temperature is 90°C, max 130°C. The peak temperature 260°C may be applied for 2 + 3 s max.



## Recommended wave soldering profile

## MARKING

- Rated capacitance
- Capacitance tolerance code
- Rated voltage code
- Capacitor type S for SMW
- Manufacturing date code according to IEC 60062 (year, month)

## ORDERING INFORMATION

See article table and pages 18 to 23 for options and article code construction.

## ARTICLE TABLE

Capacitance $\mu\text{F}$	Dimensions in mm			Quantity per package		Max $dU/dt$ $\text{V}/\mu\text{s}$	Article code
	B $\pm 0.4$	H max	L $\pm 0.4$	Bulk	Reel		
<b>50 VDC/30 VAC</b>							
<b>CHIP LENGTH 5.7 MM CODE 2220</b>							
0.0010	5.0	2.0	5.7	2000	3100	20	SMW5.7 102K50J91 TR12
0.0012	5.0	2.0	5.7	2000	3100	20	SMW5.7 122K50J91 TR12
0.0015	5.0	2.0	5.7	2000	3100	20	SMW5.7 152K50J91 TR12
0.0018	5.0	2.0	5.7	2000	3100	20	SMW5.7 182K50J91 TR12
0.0022	5.0	2.0	5.7	2000	3100	20	SMW5.7 222K50J91 TR12
0.0027	5.0	2.0	5.7	2000	3100	20	SMW5.7 272K50J91 TR12
0.0033	5.0	2.0	5.7	2000	3100	20	SMW5.7 332K50J91 TR12
0.0039	5.0	2.0	5.7	2000	3100	20	SMW5.7 392K50J91 TR12
0.0047	5.0	2.0	5.7	2000	3100	20	SMW5.7 472K50J91 TR12
0.0056	5.0	2.0	5.7	2000	3100	20	SMW5.7 562K50J91 TR12
0.0068	5.0	2.0	5.7	2000	3100	20	SMW5.7 682K50J91 TR12
0.0082	5.0	2.0	5.7	2000	3100	20	SMW5.7 822K50J91 TR12
0.010	5.0	2.0	5.7	2000	3100	20	SMW5.7 103K50J91 TR12
0.012	5.0	2.0	5.7	2000	3100	20	SMW5.7 123K50J91 TR12
0.015	5.0	2.0	5.7	2000	3100	20	SMW5.7 153K50J91 TR12
0.018	5.0	2.0	5.7	2000	3100	15	SMW5.7 183K50J91 TR12
0.022	5.0	2.0	5.7	2000	3100	15	SMW5.7 223K50J91 TR12
0.027	5.0	2.0	5.7	2000	3100	15	SMW5.7 273K50J91 TR12
0.033	5.0	2.0	5.7	2000	3100	15	SMW5.7 333K50J91 TR12
0.039	5.0	2.0	5.7	2000	3100	15	SMW5.7 393K50J91 TR12
0.047	5.0	2.0	5.7	2000	3100	15	SMW5.7 473K50J91 TR12
0.056	5.0	2.0	5.7	2000	3100	15	SMW5.7 563K50J91 TR12
0.068	5.0	2.0	5.7	2000	3100	15	SMW5.7 683K50J91 TR12
0.082	5.0	2.0	5.7	2000	3100	10	SMW5.7 823K50J91 TR12
0.10	5.0	2.0	5.7	2000	3100	10	SMW5.7 104K50J91 TR12
0.12	5.0	2.0	5.7	2000	3100	10	SMW5.7 124K50J91 TR12
0.15	5.0	2.0	5.7	2000	3100	10	SMW5.7 154K50J91 TR12
0.18	5.0	3.0	5.7	2000	2400	10	SMW5.7 184K50J93 TR12
0.22	5.0	3.0	5.7	2000	2400	10	SMW5.7 224K50J93 TR12
0.27	5.0	3.0	5.7	2000	2400	10	SMW5.7 274K50J93 TR12
0.33	5.0	4.0	5.7	2000	2100	10	SMW5.7 334K50J95 TR12
<b>CHIP LENGTH 7.3 MM CODE 2824</b>							
0.0022	6.0	2.0	7.3	2000	3100	20	SMW7.3 222K50K91 TR12
0.0027	6.0	2.0	7.3	2000	3100	20	SMW7.3 272K50K91 TR12
0.0033	6.0	2.0	7.3	2000	3100	20	SMW7.3 332K50K91 TR12
0.0039	6.0	2.0	7.3	2000	3100	20	SMW7.3 392K50K91 TR12
0.0047	6.0	2.0	7.3	2000	3100	20	SMW7.3 472K50K91 TR12
0.0056	6.0	2.0	7.3	2000	3100	20	SMW7.3 562K50K91 TR12
0.0068	6.0	2.0	7.3	2000	3100	20	SMW7.3 682K50K91 TR12
0.0082	6.0	2.0	7.3	2000	3100	20	SMW7.3 822K50K91 TR12
0.010	6.0	2.0	7.3	2000	3100	20	SMW7.3 103K50K91 TR12
0.012	6.0	2.0	7.3	2000	3100	20	SMW7.3 123K50K91 TR12
0.015	6.0	2.0	7.3	2000	3100	20	SMW7.3 153K50K91 TR12
0.018	6.0	2.0	7.3	2000	3100	20	SMW7.3 183K50K91 TR12
0.022	6.0	2.0	7.3	2000	3100	20	SMW7.3 223K50K91 TR12
0.027	6.0	2.0	7.3	2000	3100	15	SMW7.3 273K50K91 TR12
0.033	6.0	2.0	7.3	2000	3100	15	SMW7.3 333K50K91 TR12
0.039	6.0	2.0	7.3	2000	3100	15	SMW7.3 393K50K91 TR12
0.047	6.0	2.0	7.3	2000	3100	15	SMW7.3 473K50K91 TR12
0.056	6.0	2.0	7.3	2000	3100	15	SMW7.3 563K50K91 TR12
0.068	6.0	2.0	7.3	2000	3100	15	SMW7.3 683K50K91 TR12
0.082	6.0	2.0	7.3	2000	3100	8	SMW7.3 823K50K91 TR12
0.10	6.0	2.0	7.3	2000	3100	8	SMW7.3 104K50K91 TR12
0.12	6.0	2.0	7.3	2000	3100	8	SMW7.3 124K50K91 TR12
0.15	6.0	2.0	7.3	2000	3100	8	SMW7.3 154K50K91 TR12
0.18	6.0	2.0	7.3	2000	3100	8	SMW7.3 184K50K91 TR12
0.22	6.0	2.0	7.3	2000	3100	8	SMW7.3 224K50K91 TR12
0.27	6.0	2.0	7.3	2000	3100	8	SMW7.3 274K50K91 TR12

## ARTICLE TABLE

Capacitance $\mu\text{F}$	Dimensions in mm			Quantity per package		Max $dU/dt$ $\text{V}/\mu\text{s}$	Article code
	B $\pm 0.4$	H max	L $\pm 0.4$	Bulk	Reel		
<b>50 VDC/30 VAC</b>							
<b>CHIP LENGTH 7.3 MM CODE 2824</b>							
0.33	6.0	2.7	7.3	2000	2500	8	SMW7.3 334K50K93 TR12
0.39	6.0	3.2	7.3	2000	2300	8	SMW7.3 394K50K95 TR12
0.47	6.0	3.2	7.3	2000	2300	8	SMW7.3 474K50K95 TR12
0.56	6.0	4.2	7.3	2000	1700	8	SMW7.3 564K50K97 TR12
<b>100 VDC/63 VAC</b>							
<b>CHIP LENGTH 5.7 MM CODE 2220</b>							
0.0010	5.0	2.0	5.7	2000	3100	20	SMW5.7 102K100J91 TR12
0.0012	5.0	2.0	5.7	2000	3100	20	SMW5.7 122K100J91 TR12
0.0015	5.0	2.0	5.7	2000	3100	20	SMW5.7 152K100J91 TR12
0.0018	5.0	2.0	5.7	2000	3100	20	SMW5.7 182K100J91 TR12
0.0022	5.0	2.0	5.7	2000	3100	20	SMW5.7 222K100J91 TR12
0.0027	5.0	2.0	5.7	2000	3100	20	SMW5.7 272K100J91 TR12
0.0033	5.0	2.0	5.7	2000	3100	20	SMW5.7 332K100J91 TR12
0.0039	5.0	2.0	5.7	2000	3100	20	SMW5.7 392K100J91 TR12
0.0047	5.0	2.0	5.7	2000	3100	20	SMW5.7 472K100J91 TR12
0.0056	5.0	2.0	5.7	2000	3100	20	SMW5.7 562K100J91 TR12
0.0068	5.0	2.0	5.7	2000	3100	20	SMW5.7 682K100J91 TR12
0.0082	5.0	2.0	5.7	2000	3100	20	SMW5.7 822K100J91 TR12
0.010	5.0	2.0	5.7	2000	3100	20	SMW5.7 103K100J91 TR12
0.012	5.0	2.0	5.7	2000	3100	20	SMW5.7 123K100J91 TR12
0.015	5.0	2.0	5.7	2000	3100	20	SMW5.7 153K100J91 TR12
0.018	5.0	2.0	5.7	2000	3100	15	SMW5.7 183K100J91 TR12
0.022	5.0	2.0	5.7	2000	3100	15	SMW5.7 223K100J91 TR12
0.027	5.0	2.0	5.7	2000	3100	15	SMW5.7 273K100J91 TR12
0.033	5.0	2.0	5.7	2000	3100	15	SMW5.7 333K100J91 TR12
0.039	5.0	2.0	5.7	2000	3100	15	SMW5.7 393K100J91 TR12
0.047	5.0	2.0	5.7	2000	3100	15	SMW5.7 473K100J91 TR12
0.056	5.0	2.0	5.7	2000	3100	15	SMW5.7 563K100J91 TR12
0.068	5.0	2.0	5.7	2000	3100	15	SMW5.7 683K100J91 TR12
0.082	5.0	3.0	5.7	2000	2400	15	SMW5.7 823K100J93 TR12
0.10	5.0	3.0	5.7	2000	2400	15	SMW5.7 104K100J93 TR12
0.12	5.0	4.0	5.7	2000	2100	15	SMW5.7 124K100J95 TR12
0.15	5.0	4.0	5.7	2000	2100	15	SMW5.7 154K100J95 TR12
<b>CHIP LENGTH 7.3 MM CODE 2824</b>							
0.0022	6.0	2.0	7.3	2000	3100	20	SMW7.3 222K100K91 TR12
0.0027	6.0	2.0	7.3	2000	3100	20	SMW7.3 272K100K91 TR12
0.0033	6.0	2.0	7.3	2000	3100	20	SMW7.3 332K100K91 TR12
0.0039	6.0	2.0	7.3	2000	3100	20	SMW7.3 392K100K91 TR12
0.0047	6.0	2.0	7.3	2000	3100	20	SMW7.3 472K100K91 TR12
0.0056	6.0	2.0	7.3	2000	3100	20	SMW7.3 562K100K91 TR12
0.0068	6.0	2.0	7.3	2000	3100	20	SMW7.3 682K100K91 TR12
0.0082	6.0	2.0	7.3	2000	3100	20	SMW7.3 822K100K91 TR12
0.010	6.0	2.0	7.3	2000	3100	20	SMW7.3 103K100K91 TR12
0.012	6.0	2.0	7.3	2000	3100	20	SMW7.3 123K100K91 TR12
0.015	6.0	2.0	7.3	2000	3100	20	SMW7.3 153K100K91 TR12
0.018	6.0	2.0	7.3	2000	3100	20	SMW7.3 183K100K91 TR12
0.022	6.0	2.0	7.3	2000	3100	20	SMW7.3 223K100K91 TR12
0.027	6.0	2.0	7.3	2000	3100	15	SMW7.3 273K100K91 TR12
0.033	6.0	2.0	7.3	2000	3100	15	SMW7.3 333K100K91 TR12
0.039	6.0	2.0	7.3	2000	3100	15	SMW7.3 393K100K91 TR12
0.047	6.0	2.0	7.3	2000	3100	15	SMW7.3 473K100K91 TR12
0.056	6.0	2.0	7.3	2000	3100	15	SMW7.3 563K100K91 TR12

## ARTICLE TABLE

Capacitance $\mu\text{F}$	Dimensions in mm			Quantity per package		Max $dU/dt$ $\text{V}/\mu\text{s}$	Article code
	B $\pm 0.4$	H max	L $\pm 0.4$	Bulk	Reel		
<b>100 VDC/63 VAC</b>							
<b>CHIP LENGTH 7.3 MM CODE 2824</b>							
0.068	6.0	2.0	7.3	2000	3100	15	SMW7.3 683K100K91 TR12
0.082	6.0	2.0	7.3	2000	3100	15	SMW7.3 823K100K91 TR12
0.10	6.0	2.7	7.3	2000	2500	15	SMW7.3 104K100K93 TR12
0.12	6.0	2.7	7.3	2000	2500	15	SMW7.3 124K100K93 TR12
0.15	6.0	3.2	7.3	2000	2300	15	SMW7.3 154K100K95 TR12
0.18	6.0	4.2	7.3	2000	1700	15	SMW7.3 184K100K97 TR12
<b>250 VDC/160 VAC</b>							
<b>CHIP LENGTH 5.7 MM CODE 2220</b>							
0.0010	5.0	2.0	5.7	2000	3100	20	SMW5.7 102K250J91 TR12
0.0012	5.0	2.0	5.7	2000	3100	20	SMW5.7 122K250J91 TR12
0.0015	5.0	2.0	5.7	2000	3100	20	SMW5.7 152K250J91 TR12
0.0018	5.0	2.0	5.7	2000	3100	20	SMW5.7 182K250J91 TR12
0.0022	5.0	2.0	5.7	2000	3100	20	SMW5.7 222K250J91 TR12
0.0027	5.0	2.0	5.7	2000	3100	20	SMW5.7 272K250J91 TR12
0.0033	5.0	2.0	5.7	2000	3100	20	SMW5.7 332K250J91 TR12
0.0039	5.0	2.0	5.7	2000	3100	20	SMW5.7 392K250J91 TR12
0.0047	5.0	2.0	5.7	2000	3100	20	SMW5.7 472K250J91 TR12
0.0056	5.0	2.0	5.7	2000	3100	20	SMW5.7 562K250J91 TR12
0.0068	5.0	2.0	5.7	2000	3100	20	SMW5.7 682K250J91 TR12
0.0082	5.0	2.0	5.7	2000	3100	20	SMW5.7 822K250J91 TR12
0.010	5.0	2.0	5.7	2000	3100	20	SMW5.7 103K250J91 TR12
0.012	5.0	2.0	5.7	2000	3100	20	SMW5.7 123K250J91 TR12
0.015	5.0	2.0	5.7	2000	3100	20	SMW5.7 153K250J91 TR12
0.018	5.0	3.0	5.7	2000	2400	20	SMW5.7 183K250J93 TR12
0.022	5.0	3.0	5.7	2000	2400	20	SMW5.7 223K250J93 TR12
0.027	5.0	3.0	5.7	2000	2400	20	SMW5.7 273K250J93 TR12
0.033	5.0	4.0	5.7	2000	2100	20	SMW5.7 333K250J95 TR12
<b>CHIP LENGTH 7.3 MM CODE 2824</b>							
0.0022	6.0	2.0	7.3	2000	3100	20	SMW7.3 222K250K91 TR12
0.0027	6.0	2.0	7.3	2000	3100	20	SMW7.3 272K250K91 TR12
0.0033	6.0	2.0	7.3	2000	3100	20	SMW7.3 332K250K91 TR12
0.0039	6.0	2.0	7.3	2000	3100	20	SMW7.3 392K250K91 TR12
0.0047	6.0	2.0	7.3	2000	3100	20	SMW7.3 472K250K91 TR12
0.0056	6.0	2.0	7.3	2000	3100	20	SMW7.3 562K250K91 TR12
0.0068	6.0	2.0	7.3	2000	3100	20	SMW7.3 682K250K91 TR12
0.0082	6.0	2.0	7.3	2000	3100	20	SMW7.3 822K250K91 TR12
0.010	6.0	2.0	7.3	2000	3100	20	SMW7.3 103K250K91 TR12
0.012	6.0	2.0	7.3	2000	3100	20	SMW7.3 123K250K91 TR12
0.015	6.0	2.0	7.3	2000	3100	20	SMW7.3 153K250K91 TR12
0.018	6.0	2.0	7.3	2000	3100	20	SMW7.3 183K250K91 TR12
0.022	6.0	2.0	7.3	2000	3100	20	SMW7.3 223K250K91 TR12
0.027	6.0	2.0	7.3	2000	3100	15	SMW7.3 273K250K91 TR12
0.033	6.0	2.7	7.3	2000	2500	15	SMW7.3 333K250K93 TR12
0.039	6.0	2.7	7.3	2000	2500	15	SMW7.3 393K250K93 TR12
0.047	6.0	3.2	7.3	2000	2300	15	SMW7.3 473K250K95 TR12
0.056	6.0	4.2	7.3	2000	1700	15	SMW7.3 563K250K97 TR12
0.068	6.0	4.2	7.3	2000	1700	15	SMW7.3 683K250K97 TR12

## ARTICLE TABLE

Capacitance $\mu\text{F}$	Dimensions in mm			Quantity per package		Max $dU/dt$ $\text{V}/\mu\text{s}$	Article code
	B $\pm 0.4$	H max	L $\pm 0.4$	Bulk	Reel		
<b>400 VDC/200 VAC</b>							
<b>CHIP LENGTH 5.7 MM CODE 2220</b>							
0.0010	5.0	2.0	5.7	2000	3100	20	SMW5.7 102K400J91 TR12
0.0012	5.0	2.0	5.7	2000	3100	20	SMW5.7 122K400J91 TR12
0.0015	5.0	2.0	5.7	2000	3100	20	SMW5.7 152K400J91 TR12
0.0018	5.0	2.0	5.7	2000	3100	20	SMW5.7 182K400J91 TR12
0.0022	5.0	2.0	5.7	2000	3100	20	SMW5.7 222K400J91 TR12
0.0027	5.0	2.0	5.7	2000	3100	20	SMW5.7 272K400J91 TR12
0.0033	5.0	2.0	5.7	2000	3100	20	SMW5.7 332K400J91 TR12
0.0039	5.0	2.0	5.7	2000	3100	20	SMW5.7 392K400J91 TR12
0.0047	5.0	2.0	5.7	2000	3100	20	SMW5.7 472K400J91 TR12
0.0056	5.0	3.0	5.7	2000	2400	20	SMW5.7 562K400J93 TR12
0.0068	5.0	3.0	5.7	2000	2400	20	SMW5.7 682K400J93 TR12
0.0082	5.0	3.0	5.7	2000	2400	20	SMW5.7 822K400J93 TR12
0.010	5.0	3.0	5.7	2000	2400	20	SMW5.7 103K400J93 TR12
0.012	5.0	4.0	5.7	2000	2100	20	SMW5.7 123K400J95 TR12
0.015	5.0	4.0	5.7	2000	2100	20	SMW5.7 153K400J95 TR12
<b>CHIP LENGTH 7.3 MM CODE 2824</b>							
0.0022	6.0	2.0	7.3	2000	3100	20	SMW7.3 222K400K91 TR12
0.0027	6.0	2.0	7.3	2000	3100	20	SMW7.3 272K400K91 TR12
0.0033	6.0	2.0	7.3	2000	3100	20	SMW7.3 332K400K91 TR12
0.0039	6.0	2.0	7.3	2000	3100	20	SMW7.3 392K400K91 TR12
0.0047	6.0	2.0	7.3	2000	3100	20	SMW7.3 472K400K91 TR12
0.0056	6.0	2.0	7.3	2000	3100	20	SMW7.3 562K400K91 TR12
0.0068	6.0	2.0	7.3	2000	3100	20	SMW7.3 682K400K91 TR12
0.0082	6.0	2.0	7.3	2000	3100	20	SMW7.3 822K400K91 TR12
0.010	6.0	2.0	7.3	2000	3100	20	SMW7.3 103K400K91 TR12
0.012	6.0	2.7	7.3	2000	2500	20	SMW7.3 123K400K93 TR12
0.015	6.0	2.7	7.3	2000	2500	20	SMW7.3 153K400K93 TR12
0.018	6.0	3.2	7.3	2000	2300	20	SMW7.3 183K400K95 TR12
0.022	6.0	3.2	7.3	2000	2300	20	SMW7.3 223K400K95 TR12