

## Metallized Polyethylenaphthalate (PEN) SMD Film Capacitors with Box Encapsulation

### Special Features

- Size codes 1210, 1812, 2220, 2824, 4030, 5040 and 6054 with PEN and encapsulated
- Operating temperature up to 125° C
- Self-healing
- Suitable for lead-free soldering
- According to RoHS 2002/95/EC

### Typical Applications

For general DC-applications e.g.

- By-pass
- Blocking
- Coupling and decoupling
- Timing

### Construction

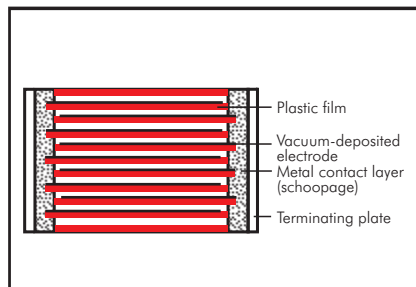
#### Dielectric:

Polyethylenaphthalate (PEN) film

#### Capacitor electrodes:

Vacuum-deposited

#### Internal construction:



#### Encapsulation:

Solvent-resistant, flame-retardent plastic case, UL 94 V-0

#### Terminations:

Tinned plates.

#### Marking:

Colour: Black.

Marking (from size code 4030): Silver.

### Electrical Data

#### Capacitance range:

1000 pF 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 +125° C

#### Climatic test category:

55/125/21 according to IEC

for size codes 1210 to 2824

55/125/56 according to IEC

for size codes 4030 to 6054

#### Insulation resistance at +20° C:

$U_r$	$U_{test}$	$C \leq 0.33 \mu F$	$0.33 \mu F < C \leq 6.8 \mu F$
63 VDC	50 V	$\geq 3.75 \times 10^3 M\Omega$	$\geq 1250 \text{ sec } (M\Omega \times \mu F)$
100 VDC	100 V	(mean value: $1 \times 10^4 M\Omega$ )	(mean value: 3000 sec)
$\geq 250 \text{ VDC}$	100 V	$\geq 1 \times 10^4 M\Omega$	$\geq 3000 \text{ sec } (M\Omega \times \mu F)$
		(mean value: $5 \times 10^4 M\Omega$ )	(mean value: 10000 sec)

Measuring time: 1 min.

#### Dissipation factors at +20° C: $\tan \delta$

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

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

Capacitance pF/µF	Pulse rise time V/µsec max. operation/test					
	63 VDC	100 VDC	250 VDC	400 VDC	630 VDC	1000 VDC
1000 ... 6800	35/350	35/350	40/400	50/500	-	-
0.01 ... 0.022	30/300	35/350	40/400	35/350	40/400	50/500
0.033 ... 0.068	20/200	20/200	40/400	21/210	25/250	32/320
0.1 ... 0.22	10/100	10/100	12/120	14/140	17/170	-
0.33 ... 0.68	8/80	6/60	9/90	10/100	-	-
1.0 ... 2.2	3.5/35	4/40	7/70	-	-	-
3.3 ... 6.8	3/30	3/30	-	-	-	-

### Dip Solder Test/Processing

#### Resistance to soldering heat:

Test Tb in accordance with DIN IEC

60068-2-20/EN 132200.

Soldering bath temperature max. 260° C.

Soldering duration max. 5 sec.

Change in capacitance  $\Delta C/C < 5\%$ .

#### Soldering process:

Wave soldering and re-flow soldering

(see temperature/time graphs page 14).

### 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.