EMI Suppression Capacitors (MKP)

B3291* Series

Series/Type: **B32911 … B32916**

Date: May 2007
Version: 1

Preliminary data

Recommended applications
- X1 class for interference suppression
- “Across the line” applications.
- For apparatus permanently connected to mains and isolated from direct contact with humidity

Climatic
- Maximum operating temperature 110 ºC
- Climatic category (IEC 60068-1): 40/110/56

Construction
- Dielectric: Polypropylene (MKP)
- Plastic case (UL 94 V-0)
- Epoxy resin sealing (UL 94 V-0)

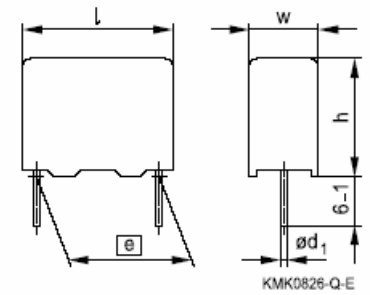
Features
- Very small dimensions
- Good self-healing properties
- High voltage capability

Terminals
- Parallel wire leads, lead-free tinned
- Standard lead lengths: 6 –1 mm
- Special lead lengths are available on request

Marking
- Manufacturer’s logo and lot number, date code, rated capacitance (coded), capacitance tolerance (code letter) and rated ac voltage (IEC)
- Series number, sub-class (X1), dielectric code (MKP), climatic category, passive flammability category, approvals.

Delivery mode
- Bulk (untaped)
- Taped (Ammo pack or Reel)

Dimensional drawing

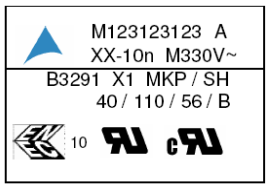


Dimensions in mm

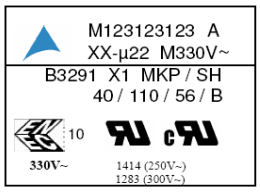
Lead spacing e ±0.4 (mm)	Lead diameter d_1 (mm)	Type
10	0.6	B32911
15 … 27.5	0.8	B32912 ... 14
37.5	1.0	B32916

Marking examples:

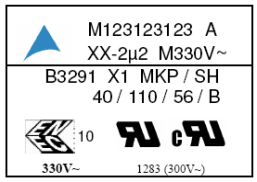
e = 10mm



15 ≤ e ≤ 27.5 mm
(C_R ≤ 1 µF)



22.5 ≤ e ≤ 37.5 mm
(C_R > 1 µF)



Technical data

Rated AC voltage (IEC 60384-14)	330 V (50/60 Hz)		
Maximum continuous DC voltage (V DC)	760 V		
Maximum operating temperature $T_{op,max}$	+110 ºC		
DC test voltage	2500 V, 2 s		
Dissipation factor tan δ (in 10^{-3}) at 20 °C, (upper limit values)		C ≤ 2.2 µF	C > 2.2 µF
	at 1 kHz	1	2
Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$ at 100 V DC, 20 °C, rel. humidity ≤ 65% and for 60 s (minimum “as delivered” values)	C_R ≤ 0.33 µF	C_R > 0.33 µF	
	100,000 MΩ	30,000 s	
Passive flammability category to IEC 40 (CO) 752	B		
Capacitance tolerances (measured at 1 kHz)	±10% (K), ±20% (M)		

Preliminary data

Ordering codes and packing units

ē ±0.4 (mm) mm	C_R	Max dimensions w × h × l mm	Ordering code	Ammo pack pcs/unit	Reel pcs/unit	Untaped pcs/unit
10	10 nF	4.0 × 9.0 × 13.0	B32911A3103+***	1000	1700	1000
	22 nF	5.0 × 11.0 × 13.0	B32911B3223+***	830	1300	1000
	33 nF	6.0 × 12.0 × 13.0	B32911A3333M***	680	1100	1000
15	22 nF	5.0 × 10.5 × 18.0	B32912A3223+***	1170	1300	1000
	33 nF	5.0 × 10.5 × 18.0	B32912A3333+***	1170	1300	1000
	47 nF	5.0 × 10.5 × 18.0	B32912A3473+***	1170	1300	1000
	68 nF	6.0 × 11.0 × 18.0	B32912A3683+***	960	1100	1000
	0.1 µF	7.0 × 12.5 × 18.0	B32912A3104+***	830	900	1000
	0.15 µF	7.0 × 12.5 × 18.0	B32912B3154M***	830	900	1000
	0.15 µF	8.5 × 14.5 × 18.0	B32912A3154+***	680	700	500
	0.22 µF	8.5 × 14.5 × 18.0	B32912B3224M***	680	700	500
	0.22 µF	9.0 × 17.5 × 18.0	B32912A3224+***	640	700	500
	0.33 µF	9.0 × 17.5 × 18.0	B32912B3334M***	640	700	500
22.5	0.15 µF	6.0 × 15.0 × 26.5	B32913A3154+***	680	700	720
	0.22 µF	7.0 × 16.0 × 26.5	B32913A3224+***	580	600	630
	0.33 µF	8.5 × 16.5 × 26.5	B32913A3334M***	480	500	510
	0.47 µF	10.5 × 18.5 × 26.5	B32913A3474M***	390	400	540
27.5	0.47 µF	11.0 × 21.0 × 31.5	B32914A3474+***	-	350	320
	0.68 µF	11.0 × 21.0 × 31.5	B32914B3684+***	-	350	320
	1.0 µF	13.5 × 23.0 × 31.5	B32914A3105+***	-	250	260
	1.5 µF	18.0 × 27.5 × 31.5	B32914A3155+***	-	-	200
	2.2 µF	19.0 × 30.0 × 31.5	B32914A3225M***	-	-	180
37.5	3.3 µF	18.0 × 32.5 × 41.5	B32916A3335+***	-	-	90
	4.7 µF	20.0 × 39.5 × 41.5	B32916A3475M***	-	-	75
	6.8 µF	28.0 × 42.5 × 41.5	B32916A3685M***	-	-	55

Further E series and intermediate capacitance values are available on request.

Composition of ordering code

+ = Capacitance tolerance code
  M = ±20%
  K = ±10%

*** = Packing code
  289 = ammo pack
  189 = reel pack
  000 = untaped (lead length 6 –1 mm)

Approvals

Standards	Certificate	Marks of Conformity
EN 132400 / IEC 60384-14 (330 V AC)	40018909 & 40010694	
UL1414 (250 V AC) UL1283 (330 V AC)	E97863 E157153	
CSA C22.2 No.1 (250 V AC) CSA C22.2 No.8 (330 V AC)	E97863 E157153	(1)

(1) approved by UL

dV/dt and K_0 values

ē ±0.4 (mm)	10	15	22.5	27.5	37.5
dV/dt (V/µs)	550	400	200	150	100
K_0 (V^2/µs)	473,000	344,000	172,000	129,000	86,000

Note: The maximum values of dV/dt and K_0 must not be exceeded in order to avoid overheating of the capacitor.

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