Film Capacitors

EMI Suppression Capacitors (MKP)
Not for new design

Series/Type: **B32921A/B/T ...**
B32926A/B/T

Date: March 2008

The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B32924A2225K189	B32924F3225K*	2008-11-21	2009-09-30	2009-12-31
B32924A2225K000	B32924F3225K*	2008-11-21	2009-09-30	2009-12-31
B32924A2155M289	B32924C3155M*	2008-11-21	2009-09-30	2009-12-31

EPCOS

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B32924A2155M189	B32924C3155M*	2008-11-21	2009-09-30	2009-12-31
B32924A2155M000	B32924C3155M*	2008-11-21	2009-09-30	2009-12-31
B32924A2105M289	B32924C3105*	2008-11-21	2009-09-30	2009-12-31
B32924A2105M189	B32924C3105*	2008-11-21	2009-09-30	2009-12-31
B32924A2105M000	B32924C3105*	2008-11-21	2009-09-30	2009-12-31
B32924A2105K289	B32924C3105*	2008-11-21	2009-09-30	2009-12-31
B32924A2105K189	B32924C3105*	2009-11-21	2009-09-30	2009-12-31
B32924A2105K000	B32924C3105*	2008-11-21	2009-09-30	2009-12-31
B32923B2684M289	B32923C3684*	2008-11-21	2009-09-30	2009-12-31
B32923B2684M189	B32923C3684*	2008-11-21	2009-09-30	2009-12-31
B32923B2684M000	B32923C3684*	2008-11-21	2009-09-30	2009-12-31
B32923B2684K289	B32923C3684*	2008-11-21	2009-09-30	2009-12-31
B32923B2684K189	B32923C3684*	2008-11-21	2009-09-30	2009-12-31
B32923B2684K000	B32923C3684*	2008-11-21	2009-09-30	2009-12-31
B32923B2474M289	B32923C3474*	2008-11-21	2009-09-30	2009-12-31
B32923B2474M189	B32923C3474*	2008-11-21	2009-09-30	2009-12-31
B32923B2474M000	B32923C3474*	2008-11-21	2009-09-30	2009-12-31
B32923B2474K289	B32923C3474*	2008-11-21	2009-09-30	2009-12-31
B32923B2474K189	B32923C3474*	2008-11-21	2009-09-30	2009-12-31
B32923B2474K000	B32923C3474*	2008-11-21	2009-09-30	2009-12-31
B32923A2684M289	B32923C3684*	2008-11-21	2009-09-30	2009-12-31
B32923A2684M189	B32923C3684*	2008-11-21	2009-09-30	2009-12-31
B32923A2684M000	B32923C3684*	2008-11-21	2009-09-30	2009-12-31
B32923A2474M189	B32923C3474*	2008-11-21	2009-09-30	2009-12-31
B32923A2474M000	B32923C3474*	2008-11-21	2009-09-30	2009-12-31
B32923A2334M289	B32923C3334M*	2008-11-21	2009-09-30	2009-12-31
B32923A2334M189	B32923C3334M*	2008-11-21	2009-09-30	2009-12-31
B32923A2334M000	B32923C3334M*	2008-11-21	2009-09-30	2009-12-31
B32923A2334K289	B32923D3334K*	2008-11-21	2009-09-30	2009-12-31
B32923A2334K189	B32923D3334K*	2008-11-21	2009-09-30	2009-12-31
B32923A2334K000	B32923D3334K*	2008-11-21	2009-09-30	2009-12-31
B32923A2105M289	B32923C3105M	2008-11-21	2009-09-30	2009-12-31
B32923A2105M189	B32923C3105M	2008-11-21	2009-09-30	2009-12-31
B32923A2105M000	B32923C3105M	2008-11-21	2009-09-30	2009-12-31
B32922T3224M289	B32922C3224*	2008-11-21	2009-09-30	2009-12-31
B32922T3224M189	B32922C3224*	2008-11-21	2009-09-30	2009-12-31
B32922T3224M000	B32922C3224*	2008-11-21	2009-09-30	2009-12-31
B32922T3224K289	B32922C3224*	2008-11-21	2009-09-30	2009-12-31

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B32922T3224K189	B32922C3224*	2008-11-21	2009-09-30	2009-12-31
B32922T3224K000	B32922C3224*	2008-11-21	2009-09-30	2009-12-31
B32922T2334M189	B32922C3334M*	2008-11-21	2009-09-30	2009-12-31
B32922T2334M000	B32922C3334M*	2008-11-21	2009-09-30	2009-12-31
B32922T2334K189	B32922T3334K*	2008-11-21	2009-09-30	2009-12-31
B32922T2334K000	B32922T3334K*	2008-11-21	2009-09-30	2009-12-31
B32922T2224M289	B32922C3224*	2008-11-21	2009-09-30	2009-12-31
B32922T2224M189	B32922C3224*	2008-11-21	2009-09-30	2009-12-31
B32922T2224M000	B32922C3224*	2008-11-21	2009-09-30	2009-12-31
B32922T2224K289	B32922C3224*	2008-11-21	2009-09-30	2009-12-31
B32922T2224K189	B32922C3224*	2008-11-21	2009-09-30	2009-12-31
B32922T2224K000	B32922C3224*	2008-11-21	2009-09-30	2009-12-31
B32921A3103*	B32921C3103*	2008-11-21	2009-09-30	2009-12-31
B32921A2683M289	B32921C3683*	2008-11-21	2009-09-30	2009-12-31
B32921A2683M189	B32921C3683*	2008-11-21	2009-09-30	2009-12-31
B32921A2683M000	B32921C3683*	2008-11-21	2009-09-30	2009-12-31
B32921A2473M289	B32921C3473*	2008-11-21	2009-09-30	2009-12-31
B32921A2473M189	B32921C3473*	2008-11-21	2009-09-30	2009-12-31
B32921A2473M000	B32921C3473*	2008-11-21	2009-09-30	2009-12-31
B32921A2473K289	B32921C3473*	2008-11-21	2009-09-30	2009-12-31
B32921A2473K189	B32921C3473*	2008-11-21	2009-09-30	2009-12-31
B32921A2473K000	B32921C3473*	2008-11-21	2009-09-30	2009-12-31
B32921A2104M289	B32921C3104M*	2008-11-21	2009-09-30	2009-12-31
B32921A2104M189	B32921C3104M*	2008-11-21	2009-09-30	2009-12-31
B32921A2104M000	B32921C3104M*	2008-11-21	2009-09-30	2009-12-31
B32923T3334M289	B32923D3334M*	2009-06-05	2009-12-31	2010-03-31
B32923T3334M189	B32923D3334M*	2009-06-05	2009-12-31	2010-03-31
B32923T3334M000	B32923D3334M*	2009-06-05	2009-12-31	2010-03-31
B32923T3334K289	B32923D3334K*	2009-06-05	2009-12-31	2010-03-31
B32923T3334K189	B32923D3334K*	2009-06-05	2009-12-31	2010-03-31
B32923T3334K000	B32923D3334K*	2009-06-05	2009-12-31	2010-03-31
B32924B2155M289	B32924C3155*	2008-11-21	2009-09-30	2009-12-31
B32924B2155M189	B32924C3155*	2008-11-21	2009-09-30	2009-12-31
B32924B2155M000	B32924C3155*	2008-11-21	2009-09-30	2009-12-31
B32924B2155K289	B32924C3155*	2008-11-21	2009-09-30	2009-12-31
B32924B2155K189	B32924C3155*	2008-11-21	2009-09-30	2009-12-31
B32924B2155K000	B32924C3155*	2008-11-21	2009-09-30	2009-12-31
B32924A2475M289	B32924E3475M*	2008-11-21	2009-09-30	2009-12-31

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B32924A2475M189	B32924E3475M*	2008-11-21	2009-09-30	2009-12-31
B32924A2475M000	B32924E3475M*	2008-11-21	2009-09-30	2009-12-31
B32924A2335M289	B32924E3335M*	2008-11-21	2009-09-30	2009-12-31
B32924A2335M189	B32924E3335M*	2008-11-21	2009-09-30	2009-12-31
B32924A2335M000	B32924E3335M*	2008-11-21	2009-09-30	2009-12-31
B32924A2225M289	B32924E3225M*	2008-11-21	2009-09-30	2009-12-31
B32924A2225M189	B32924E3225M*	2008-11-21	2009-09-30	2009-12-31
B32924A2225M000	B32924E3225M*	2008-11-21	2009-09-30	2009-12-31
B32924A2225K289	B32924F3225K*	2008-11-21	2009-09-30	2009-12-31

For further information please contact your nearest EPCOS sales office, which will also support you in selecting a suitable substitute. The addresses of our worldwide sales network are presented at www.epcos.com/sales.

X2 / 305 VAC

Not for new design

Typical applications
- X2 class for interference suppression
- "Across the line" applications

Climatic
- Max. operating temperature: 110 °C
- Climatic category (IEC 60068-1): 40/105/56

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

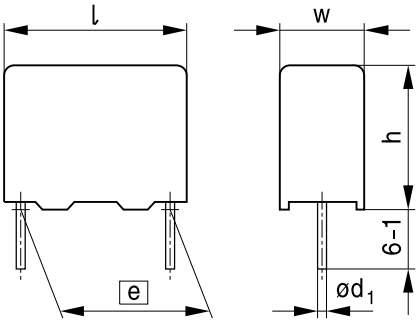
Features
- Very small dimensions
- Self-healing properties

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

Marking
Manufacturer's logo, lot number,
date code, rated capacitance (coded),
cap. tolerance (code letter),
rated AC voltage,
series number, sub-class (X2),
dielectric code (MKP), climatic category,
passive flammability category, approvals.

Delivery mode
Bulk (untaped)
Taped (Ammo pack or reel)
For taping details, refer to chapter
"Taping and packing"

Dimensional drawing



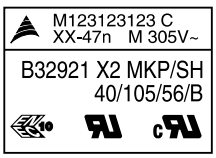
KMK0826-Q-E

Dimensions in mm

Lead spacing e ±0.4	Lead diameter d_1	Type
10	0.6	B32921
15	0.8	B32922
22.5	0.8	B32923
27.5	0.8	B32924
37.5	1.0	B32926

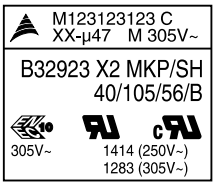
Marking Examples

e = 10 mm



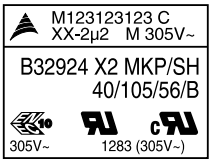
KMK0820-B

e ≥ 15 mm/C_R≤1 µF



KMK0821-J

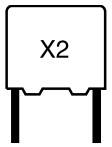
e = 22.5, 27.5,
37 mm/C_R>1 µF



KMK0822-S

Approvals

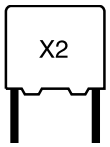
Marks of conformity	Standards	Certificate
	EN 132400, IEC 60384-14	40010694
	UL 1414 / UL 1283	E97863 / E157153
	CSA C22.2 No.1 / No. 8	E97863 / E157153 (approved by UL)
	CQC (GB/T 14472-1998)	CQC001007-14859



Not for new design

Overview of available types

Lead spacing	10 mm	15 mm	22.5 mm	27.5 mm	37.5 mm
Type	B32921	B32922	B32923	B32924	B32926
C_R (µF)					
0.047					
0.068					
0.10					
0.15					
0.22					
0.33					
0.47					
0.68					
1.0					
1.5					
2.2					
3.3					
4.7					
5.6					
6.8					
8.2					



B32921A/B/T ... B32926A/B/T

X2 / 305 VAC

Not for new design

Ordering codes and packing units

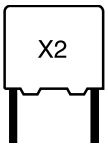
Lead spacing mm	C_R µF	Max. dimensions w × h × l mm	Ordering code (composition see below)	Ammo pack pcs./unit	Reel pcs./unit	Untaped pcs./unit
10	0.047	6.0 × 12.0 × 13.0	B32921A2473+***	680	1100	1000
	0.068	6.0 × 12.0 × 13.0	B32921A2683M***	680	1100	1000
	0.10	6.0 × 12.0 × 13.0	B32921A2104M***	680	1100	1000
15	0.068	6.0 × 11.0 × 18.0	B32922A2683+***	960	1100	1000
	0.10	6.0 × 11.0 × 18.0	B32922A2104+***	960	1100	1000
	0.15	7.0 × 12.5 × 18.0	B32922A2154+***	830	900	1000
	0.22	8.0 × 14.0 × 18.0	B32922T2224+***	730	750	500
	0.22	8.0 × 14.0 × 18.0	B32922T3224+***	730	750	500
	0.22	8.5 × 14.5 × 18.0	B32922A2224+***	680	700	500
	0.33	9.0 × 17.5 × 18.0	B32922A2334+***	640	700	500
	0.33	13.0 × 14.0 × 18.0	B32922T2334+***	–	500	300
	0.33	13.0 × 14.0 × 18.0	B32922T3334+***	–	500	300
22.5	0.33	7.5 × 14.0 × 26.5	B32923T3334+***	550	500	570
	0.33	8.5 × 16.5 × 26.5	B32923A2334+***	480	500	510
	0.47	8.5 × 16.5 × 26.5	B32923A2474M***	480	500	510
	0.47	10.5 × 16.5 × 26.5	B32923B2474+***	390	400	540
	0.68	10.5 × 18.5 × 26.5	B32923A2684M***	390	400	540
	0.68	10.5 × 20.5 × 26.5	B32923B2684+***	390	400	540
	1.0	12.0 × 22.0 × 26.5	B32923A2105M***	–	–	450
27.5	1.0	11.0 × 21.0 × 31.5	B32924A2105+***	–	350	320
	1.5	13.5 × 23.0 × 31.5	B32924A2155M***	–	250	260
	1.5	14.0 × 24.5 × 31.5	B32924B2155+***	–	–	260
	2.2	18.0 × 27.5 × 31.5	B32924A2225+***	–	–	200
	3.3	21.0 × 31.0 × 31.5	B32924A2335M***	–	–	180
	4.7	22.0 × 36.5 × 31.5	B32924A2475M***	–	–	160
37.5	3.3	18.0 × 32.5 × 41.5	B32926A2335+***	–	–	90
	4.7	20.0 × 39.5 × 41.5	B32926A2475M***	–	–	75
	5.6	20.0 × 39.5 × 41.5	B32926A2565M***	–	–	75
	6.8	28.0 × 42.5 × 41.5	B32926A2685M***	–	–	55
	8.2	28.0 × 42.5 × 41.5	B32926A2825M***	–	–	55

For new design, please refer to the B3292xE/F data sheet for $C_R \geq 2.2$ µF and to the B3292xC/D data sheet for $C_R < 2.2$ µF.

Composition of ordering code

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

*** = Packaging code:
- 289 = Ammo pack
- 189 = Reel
- 000 = Untaped (lead length 6 −1 mm)



Not for new design

Technical data

Max. operating temperature $T_{op,max}$	+125 °C (for $C_R \leq 1$ µF) +110 °C (for $C_R > 1$ µF)			
Dissipation factor tan δ (in 10^{-3}) at 20 °C (upper limit values)		$C_R \leq 0.1$ µF	0.1µF$< C_R \leq$2.2 µF	$C_R >$2.2 µF
	at 1 kHz	1.0	1.0	2.0
	100 kHz	5.0	–	–
Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$ at 20 °C, rel. humidity ≤ 65% (minimum as-delivered values)	$C_R \leq 0.33$ µF	$C_R > 0.33$ µF		
	100 000 MΩ	30 000 s		
DC test voltage	2121 V, 2 s			
Passive flammability category to IEC 40 (CO) 752	B			
Maximum continuous AC voltage V_{AC}	310 V (50/60 Hz)			
Rated AC voltage (IEC 60384-14)	305 V (50/60 Hz)			
Maximum continuous DC voltage V_{DC}	760 V			
Operating AC voltage V_{op} at high temperature	$T_A \leq 110$ °C	$V_{op} = V_{AC}$	(continuously)	
	$T_A \leq 110$ °C	$V_{op} = 1.25 \cdot V_{AC}$	(1000 h)	
	110 °C $< T_A \leq 125$ °C	$V_{op} = V_{AC}$	(1000 h)	
Damp heat test Limit values after damp heat test	56 days / 40 °C / 93% relative humidity			
	Capacitance change $\lvert\Delta C/C\rvert$	≤ 5%		
	Dissipation factor change Δ tan δ	$\leq 0.5 \cdot 10^{-3}$ (at 1 kHz)		
	Insulation resistance R_{ins}	$\leq 1.0 \cdot 10^{-3}$ (at 10 kHz)		
	or time constant $\tau = C_R \cdot R_{ins}$	≥ 50% of minimum as-delivered values		

Pulse handling capability

"dV/dt" represents the maximum permissible voltage change per unit of time for non-sinusoidal voltages, expressed in V/µs.

"k_0" represents the maximum permissible pulse characteristic of the waveform applied to the capacitor, expressed in $V^2/\mu s$.

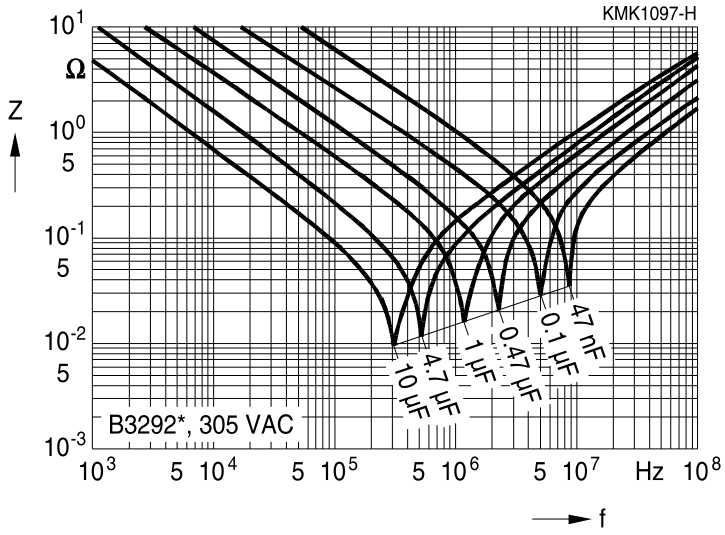
Note:
The values of dV/dt and k_0 provided below must not be exceeded in order to avoid damaging the capacitor.

dV/dt and k_0 values

Lead spacing	10 mm	15 mm	22.5 mm	27.5 mm	37.5 mm
dV/dt in V/µs	550	400	200	150	100
k_0 in $V^2/\mu s$	473000	344000	172000	129000	86000

Impedance Z versus frequency f

(typical values)



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