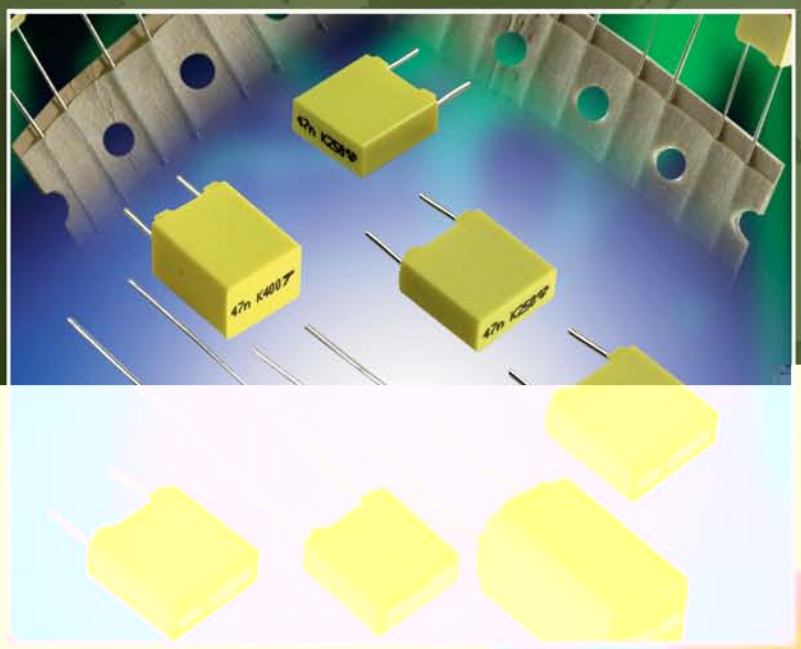
A KYOCERA GROUP COMPANY



AVX Metallized Polyester and Polypropylene Film Dielectric Leaded Capacitors

Contents

As we are anxious that our customers should benefit from the latest developments in the technology and standards, AVX reserves the right to modify the characteristics published in this catalog.

Metallized Polyester and Polypropylene Film Dielectric Capacitors

HOW TO ORDER

Example of an order: how to order a CPM85 100 nF ±10% 100 V.

BN07	4	E	0104	K	– –
Identification Code	Dielectric Class	Voltage Code	Capacitance (EIA code)	Tolerance Code	Suffix

Identification Code

Radial Leads

CPM83	BF 01
CPM83	BF 02
CPM83	BF 04
CPM83	BF 05
CPM83	BF 06
CPM83	BF 07
–	BQ 01
–	BQ 02
–	BQ 04
–	BQ 05
–	BQ 06
–	BQ 07
CPM-N	BH 01
CPM-N	BH 02
CPM-N	BH 05
CPM-N	BH 06
CPM-N	BH 07
CPM85	BN 07
CPM85	BN 10
CPM85	BN 15
CPM85	BN 22
CPM85	BN 27
–	BW 15

Radial Leads Polypropylene

PBS	BL 07
PBS	BL 10
PBS	BL 15
PBS	BL 22
PBS	BL 27
PS	BA 15
PS	BA 22
PS	BA 27

Dielectric Class

Polyester: 4
Polypropylene: 6

Voltage Code

C = 25/40 V
D = 50/63 V
E = 100 V
F = 160/200 V
G = 250 V
H = 275/300 V
I = 400 V
J = 500 V
K = 600/630 V
L = 1000 V
M = 1600 V
N = 2000 V

Capacitance (EIA code)

Capacitance expressed by 2 significant figures

1st digit: 0 (zero)

2nd and 3rd digit: the 2 significant figures of the capacitance value

4th digit:

- for values ≥ 10 pF and ≤ 990 µF: the number of zeros to be added to the capacitance values
- for values ≥ 1 pF and ≤ 9.9 pF: the numerical 9 signifying that the capacitance value is to be multiplied by 0.1
- for values < 1 pF: the numerical 8 signifying that the capacitance value is to be multiplied by 0.01

Example:

1000 pF = 0102
8.2 pF = 0829
0.47 pF = 0478

Capacitance expressed by 3 significant figures

1st, 2nd and 3rd digit: the 3 significant figures of the capacitance value

4th digit:

- for values > 100 pF and ≤ 999 µF: the number of zeros to be added to the capacitance values
- for values > 10 pF and < 100 pF: the numerical 9 signifying that the capacitance value is to be multiplied by 0.1
- for values > 1 pF and < 10 pF: the numerical 8 signifying that the capacitance value is to be multiplied by 0.1

Example:

196 pF = 1960
47.2 pF = 4729
8.28 pF = 8288

Tolerance Code

J = ±5%
K = ±10%
M = ±20%

Suffix

DA - DB - DC - DD: lead spacing 5.08 mm taped on reel or ammopack

EN
Radial types:
lead spacing 7.5/10/15 mm taped on reel H=16.5 mm

Metallized
Polyester
Film Dielectric Capacitors

Metallized Polyester Film Dielectric Capacitors

Characteristics

INTRODUCTION

The intrinsic characteristics of polyester as a dielectric are:

- dielectric permittivity
- dielectric strength
- range of working temperatures (-55°C to +100°C and up to 125°C for high temperature version).

They are particularly intended for use in bonding, chopping and other applications where the AC component is weak in comparison with the continuous nominal voltage.

TECHNOLOGY EMPLOYED

The outstanding characteristic of the metallized film technology is the self-healing by evaporation of the metallized area round a dielectric fault, thus allowing the electrical insulation of the fault in the film.

PLASTIC FILM DIELECTRIC CHARACTERISTICS

Characteristics	Polypropylene	Polycarbonate	Polystyrene	Polyester
Dielectric Constant (25°C / 50 Hz)	2.2	2.8	2.5	3.2
Minimum Thickness (in micron)	4	2	6	1
Maximum Working Temperature (°C)	100	125	85	125
Can Be Metallized	yes	yes	no	yes
Tangent Of Loss Angle (25°C / 1000 Hz)	2	8	2	50
Insulation Resistance (GΩ x µF)	100	50	100	50
Water Absorption % in weight	< 0.01	0.3	0.1	0.2
Temperature Coefficient (ppm / °C)	-300	±100	-120	+1200
Dielectric Strength (kV / mm)	350	180	150	250

Metallized Polyester Film Dielectric Capacitors

Characteristics

GENERAL ELECTRIC CHARACTERISTICS

Applicable specifications:

– General specifications:
CEI 384-1/CECC 30.000/NFC 83.100

– Sectional specifications:
CEI 384-2/CECC 30.400/ NFC 83.151

1 – Nominal capacitance (C_R) and capacitance tolerances

Nominal capacitance values are based on the E6 and E12 series (see tables of standard values on inside back cover) and their multiples and decimals with the associated tolerances are shown in the table below.

Tolerances	
Values	Code
5%	J
10%	K
20%	M

• Capacitance measurement between terminals:

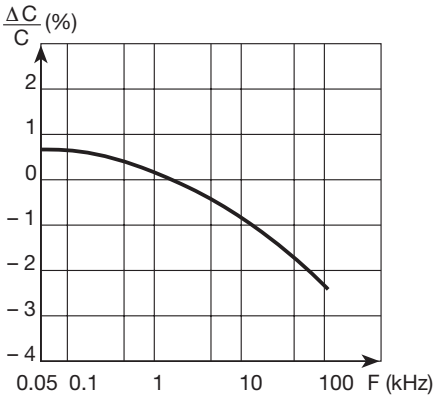
Measurement frequency:

1 kHz (±0.1 kHz) → $C_R \leq 1$ µF
100 Hz (±5 Hz) → $C_R > 1$ µF

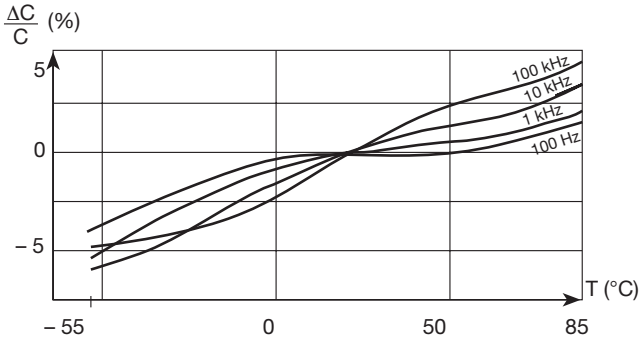
• Measurement voltage

Peak value of applied voltage should not exceed, at 1kHz, 3% of the nominal voltage V_R and at 100 Hz, 20% of the nominal value with a maximum of 100 V (70 V_{RMS}).

TYPICAL CURVES



T: Room Temperature



2 - DC nominal voltage ($V_{R\,-}$)
The nominal voltage is the maximum DC voltage that may be applied to the capacitor at a temperature of 85°C.

Standard values: the standard values of the nominal voltage comply with the R5 basic series standard numbers in the ISO R3 recommendation (25-40-63-100-160) and their multiples and decimals.

3 - AC nominal voltage ($V_{R\sim}$)
The frequency is 50 Hz unless a higher frequency is specified.

4 - Category voltage (V_C)
The voltage category is the voltage that can be applied to a capacitor used at the maximum temperature of its category. This voltage is specified in the data sheet or detailed specification for each product.

5 - Test voltage (V_E)
The test voltage applied between output terminals is a DC voltage equal to:

– 1.4 V_R- for 1 minute for Class 2 capacitors (general use)
– 1.6 V_R- for 1 minute for Class 1 capacitors (long life)

6 - Tangent of loss angle (D.F.)
Measurement conditions:

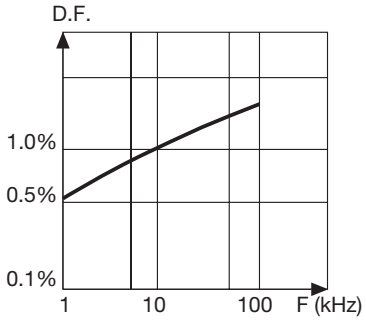
– identical to those for the measurement of capacitance between terminals.

Requirements:

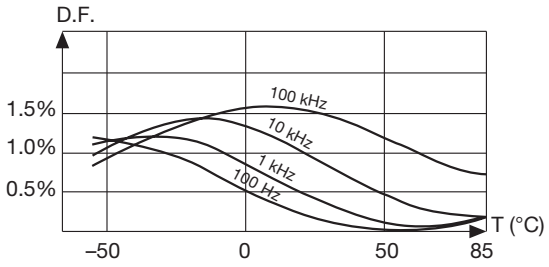
– the tangent of loss angle should not exceed the values shown in the table below.

Measurement frequency	Capacitance	D.F.	
		Performance category 1	Performance category 2
1 kHz	$C_R \leq 1$ µF	≤ 0.8%	≤ 1.0%
100 Hz	$C_R > 1$ µF	≤ 1%	≤ 1.0%

TYPICAL CURVES



T: Room Temperature



7 - Insulation resistance (IR)

Measurement conditions:

- The opposite table gives the measurement voltages in relation to the nominal voltage of the capacitor, unless otherwise specified.

Requirements:

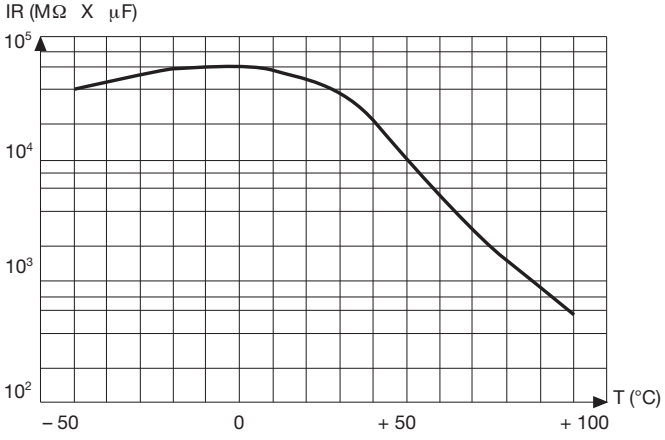
- The insulation resistance should meet the values shown in the table below at 20°C.

Nominal Voltage	Measurement Voltage
$V_{R-} < 10$ V	$V_R \pm 10\%$
10 V ≤ $V_{R-} < 100$ V	10V ± 1 V
100 V ≤ $V_{R-} < 500$ V	100V ± 15 V
500 V ≤ V_{R-}	500V ± 50 V

Measuring Points	$C_R \leq 0.33$ µF				$C_R > 0.33$ µF			
	IR min (GΩ)				IR x C_R min (MΩ x µF)			
	Performance Class 1		Performance Class 2		Performance Class 1		Performance Class 2	
Between Terminals	$V_{R-} \leq 100$ V	$V_{R-} > 100$ V	$V_{R-} \leq 100$ V	$V_{R-} > 100$ V	$V_{R-} \leq 100$ V	$V_{R-} > 100$ V	$V_{R-} \leq 100$ V	$V_{R-} > 100$ V
	15	30	3.75	7.5	5,000	10,000	1,250	2,500
Between Terminals and Ground	≥ 30,000 MΩ							

TYPICAL CURVE

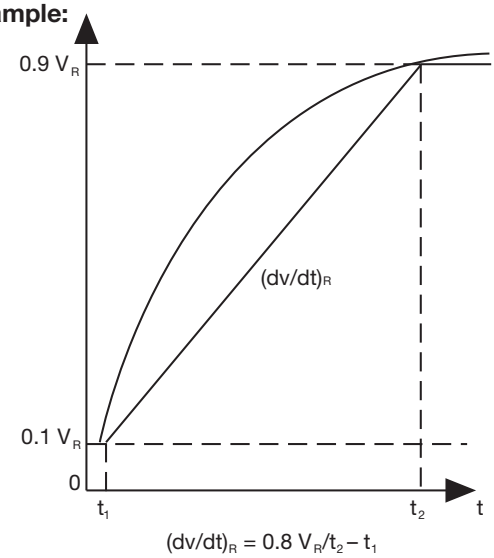
Insulation resistance vs. temperature IR = f (T) °C.



8 - Voltage gradient $(dv/dt)_R$

- Pulses under V_R

Example:



$(dv/dt)_R = 0.8\ V_R/t_2 - t_1$

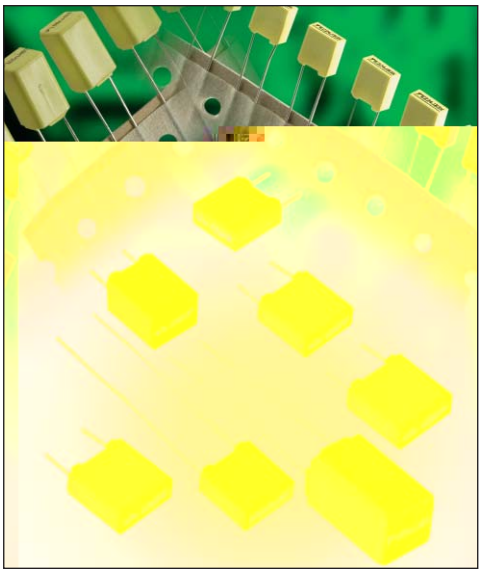
- Pulses under V_A
  maximum voltage gradients of the capacitor under V_A:

$$(dv/dt)_{Amax} = \frac{V_R}{V_A} \times (dv/dt)_{Rmax}$$

BF 01/02/07/06/05/04: Radial Leads

BQ 01/02/07/06/05/04: Lead Free

CPM-83----- pitch = 5.08mm (0.200")



GENERAL DESCRIPTION

Dielectric: Metallized polyester film (Polyethylene teraphtalate)

Stacked-film

Leads: Radial tin - plated wire

Protection: Plastic case (UL 94: V-O) / Epoxy Resin

Marking: Logo
Nominal Capacitance
Tolerance (EIA)
DC Nominal Voltage
Example: **T 100nK 63**

Delivery Mode: Bulk
Taped (reel or ammopack)

STANDARDIZATION

Generic specifications:
CEI 384-1/CECC 30000/UTE 83100

Sectional specifications:
CEI 384-2/CECC 30400/UTE 83151

Complies with special specification:
CECC 30401-063

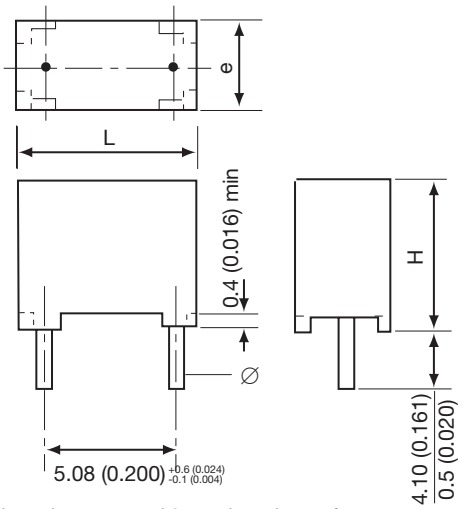
APPLICATIONS

- Commodity Product:
  - Supply decoupling
  - Filter
  - Integrators
  - Treatment of analog signals
  - Rejection of line perturbations, etc.

DIMENSIONS

millimeters (inches)

Case	L max	H max	e max	ø ± 0.02
01	7.5 (0.295)	6.5 (0.256)	2.5 (0.098)	0.5 (0.020)
02	7.5 (0.295)	8.0 (0.315)	3.2 (0.126)	0.5 (0.020)
05	7.5 (0.295)	12.0 (0.472)	6.0 (0.236)	0.5 (0.020)
06	7.5 (0.295)	9.6 (0.378)	6.0 (0.236)	0.5 (0.020)
07	7.5 (0.295)	8.0 (0.315)	5.0 (0.197)	0.5 (0.020)
04	7.5 (0.295)	13.0 (0.512)	7.5 (0.295)	0.5 (0.020)



*L dimension measured 3mm above base of case

HOW TO ORDER

BF01 or BQ01	4	D	0104	K	- -
Type	Class	Voltage	Capacitance	Tolerance	Suffix

BF 01/02/07/06/05/04: Radial Leads

BQ 01/02/07/06/05/04: Lead Free

CPM-83----- pitch = 5.08mm (0.200")

PERFORMANCE CHARACTERISTICS

Climatic Category	55/100/56 Performance Class 2
Capacitance Range	C_R 1nF to 2.2µF (E12)
Tolerance on C_R	±5%; ±10% (other values on request)
Nominal Voltages	VR_ 63/100/250/400/630V VR~ 40/63/160/200/220V
Category Voltage	Vc = 0.8V_{R-} at 100°C
Test Voltage	Ve = 1.6V_{R-}/2s at 25°C

• Tangent of Loss Angle: D.F.

Measurement Frequency	Capacitance	DF: Performance Category 2
1kHz	C_R ≤ 1µF	≤ 1.0%
100 Hz	C_R> 1µF	≤ 1.0%

• Insulation Resistance: IR

Measuring Points	C_R <= 0.33µF		C_R > 0.33µF	
	IR min (GΩ)		IR * C_R min (MΩ * µF)	
	Performance Class 2		Performance Class 2	
Between Terminals	V_{R-} ≤ 100V	V_{R-} > 100V	V_{R-} ≤ 100V	V_{R-} > 100V
	3.75	7.5	1.25	2.5
Between Terminals and Ground	≥ 30,000 Ω			

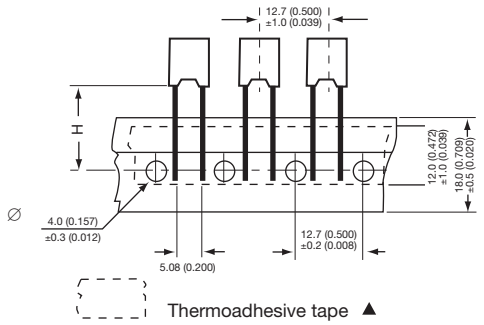
• Max voltage gradient

V_{R-}	63	100	250	400	630
$(dv/dt)_R$ max	38	40	110	270	400

PACKAGING

millimeters (inches)

	Panasert	Avisert
H	16.5 ± 0.30 (0.65 ± 0.012)	19.5 ± 0.50 (0.768 ± 0.020)



(Other sizes according to standard CEI : 286-2)
Dimensions: millimeters (inches)

Case	Quantity					
	Reel		Ammopack		Bulk	
Suffix x	DB panasert	DD avisert	DA panasert	DC avisert	USA Std.	- - Europe / Asia Std.
01	2500		2500		1000	5000
02	1800		2000		1000	3800
07	1200		1250		1000	2500
06	900		1100		1000	1500
05	900		1100		1000	1500
04	750		750		1000	1000

BF 01/02/07/06/05/04: Radial Leads

BQ 01/02/07/06/05/04: Lead Free

CPM-83----- pitch = 5.08mm (0.200")

CAPACITANCE VALUES (C_R) and NOMINAL VOLTAGES (V_R)

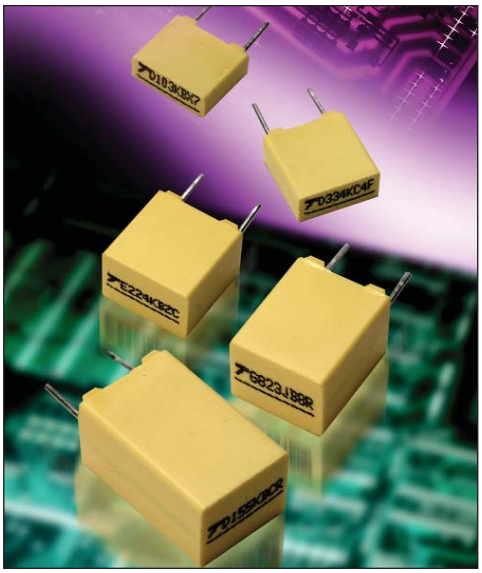
Capacitance Range (C_R)	Reference BF or BQ V_{R-} / $V_{R\sim}$				
	63/40 (voltage code: D)	100/63 (voltage code: E)	250/160 (voltage code: G)	400/200 (voltage code: I)	630/230 (voltage code: K)
1,000 pF	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01
1,200	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	
1,500	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF02 or BQ02
1,800	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	
2,200 pF	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF02 or BQ02
2,700	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	
3,300	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF07 or BQ07
3,900	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	
4,700 pF	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF07 or BQ07
5,600	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	
6,800	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF06 or BQ06
8,200	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	
10,000 pF	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF05 or BQ05
12,000	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF02/****BF01 or BQ02/****BQ01	
15,000	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF02/****BF01 or BQ02/****BQ01	
18,000	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF02/****BF01 or BQ02/****BQ01	
22,000	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF02 or BQ02	
27,000	BF01 or BQ01	BF01 or BQ01	BF01 or BQ01	BF07/****BF02 or BQ07/****BQ02	BF05 or BQ05
33,000	BF01 or BQ01	BF01 or BQ01	BF02 or BQ02	BF07/****BF02 or BQ07/****BQ02	BF05 or BQ05
39,000	BF01 or BQ01	BF01 or BQ01	BF02/****BF01 or BQ02/****BQ01	BF06 or BQ06	
47,000 pF	BF01 or BQ01	BF01 or BQ01	BF02 or BQ02	BF06 or BQ06	
56,000	BF01 or BQ01	BF01 or BQ01	BF07 or BQ07	BF04 or BQ04	
68,000	BF01 or BQ01	BF01 or BQ01	BF07 or BQ07	BF04 or BQ04	
82,000	BF01 or BQ01	BF01 or BQ01	BF07 or BQ07	BF04 or BQ04	
100 nF	BF01 or BQ01	BF01 or BQ01	BF07 or BQ07	BF04 or BQ04	
120	BF01 or BQ01	BF01 or BQ01	BF06/****BF07 or BQ06/****BQ07		
150	BF01 or BQ01	BF01 or BQ01	BF06 or BQ06		
180	BF01 or BQ01	BF02 or BQ02	BF04 or BQ04		
220 nF	BF01 or BQ01	BF02 or BQ02	BF04/****BF05 or BF04/****BF05		
270	BF02 or BQ02	BF07/****BF02 or BQ07/****BQ02			
330	BF02/****BF01 or BQ02/****BQ01	BF07 or BQ07			
390	BF02 or BQ02	BF07 or BQ07			
470 nF	BF02 or BQ02	BF07 or BQ07			
560	BF07 or BQ07	BF05/****BF06 or BQ05/****BQ06			
680	BF07 or BQ07	BF05/****BF06 or BQ05/****BQ06			
820	BF07 or BQ07	BF05/****BF06 or BQ05/****BQ06			
1 µF	BF07 or BQ07	BF05 or BQ05			
1.5 µF	BF05* or BQ05*				
2.2 µF	BF05** or BQ05**				

*Upon request - **no change**

Upon request & only available 50 V (V_R) - **no change

****New Case size reduction: BF02 to BF 01, BF07 to BF02, BF06 to BF07, BF04 to BF05, BF05 to BF06

BH 01/02/07/06/05:
Radial Leads (Lead Free Product)
CPM-N----- pitch = 5.08mm (0.200")



GENERAL DESCRIPTION

Dielectric: Metallized polyester film (Polyethylene teraphtalate)

Stacked-film

Leads: Radial tin - plated wire

Protection: Plastic case (UL 94: V-O) / Epoxy Resin

Marking: Logo
DC Normal Voltage
Nominial Capacitance
Tolerance (EIA)
Batch Code Number
Example: T D474KC8L

Delivery Mode: Bulk
Taped (reel or ammopack)

STANDARDIZATION

Generic specifications:
CEI 384-1/CECC 30000/UTE 83100

Sectional specifications:
CEI 384-2/CECC 30400/UTE 83151

On the LNZ List:
Complies with type CPM-N
RAQ2 production, equivalent AQAP-4 of NATO

APPLICATIONS

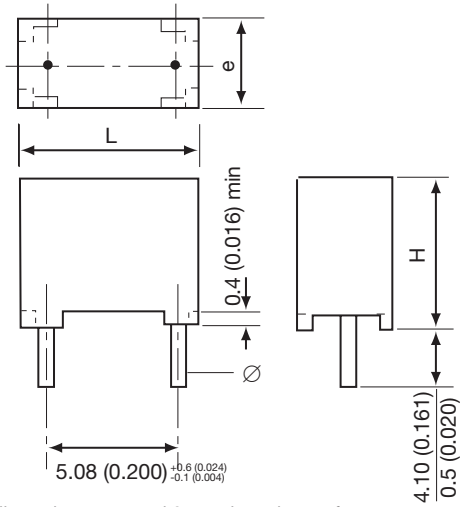
- Supply decoupling
- Filter
- Integrators
- Treatment of analog signals
- Rejection of line perturbations, etc.

Specifically designed of working in severe environmental conditions such as automotive applications: engine control, multiplexing, system, etc.

DIMENSIONS

millimeters (inches)

Case	L max	H max	e max	ø ± 0.02
01	7.5 (0.295)	6.5 (0.256)	2.5 (0.098)	0.5 (0.020)
02	7.5 (0.295)	8.0 (0.315)	3.2 (0.126)	0.5 (0.020)
05	7.5 (0.295)	12.0 (0.472)	6.0 (0.236)	0.5 (0.020)
06	7.5 (0.295)	9.6 (0.378)	6.0 (0.236)	0.5 (0.020)
07	7.5 (0.295)	8.0 (0.315)	5.0 (0.197)	0.5 (0.020)



*L dimension measured 3mm above base of case

HOW TO ORDER

BH01	4	D	0104	K	- -
Type	Class	Voltage	Capacitance	Tolerance	Suffix

BH 01/02/07/06/05:
Radial Leads (Lead Free Product)
CPM-N----- pitch = 5.08mm (0.200")

PERFORMANCE CHARACTERISTICS

Climatic Category	55/125/56 Performance Class 2
Capacitance Range	C_R 1nF to 2.2mF (E12)
Tolerance on C_R	±5%; ±10% (other values on request)
Nominal Voltages	VR_ 63/100/250/400V VR~ 40/63/160/200V
Category Voltage	Vc = 0.8V_{R-} at 100°C & 0.5V_{R-} at 125°C
Test Voltage	Ve = 1.6V_R/2s at 25°C
Life Test	Delta C/C<= 5% after 125ºC/1000h/0.5V_{R-}
Thermal Shock	-55/+125ºC/time cycle 1hr/500 cycles delta C/C <=10% D.F. 1kHz<=1%
Humidity Test	85ºC/85% HR/1000 h delta C/C <=10%

• Tangent of Loss Angle: D.F.

Measurement Frequency	Capacitance	DF: Performance Category 2
1kHz	C_R ≤ 1µF	≤ 1.0%
100 Hz	C_R> 1µF	≤ 1.0%

• Insulation Resistance: IR

Measuring Points	C_R <= 0.33µF		C_R > 0.33µF	
	IR min (GΩ)		IR * C_R min (MΩ * µF)	
	Performance Class 2		Performance Class 2	
Between Terminals	V_{R-} ≤ 100V	V_{R-} > 100V	V_{R-} ≤ 100V	V_{R-} > 100V
	3.75	7.5	1.25	2.5
Between Terminals and Ground	- 30,000 Ω			

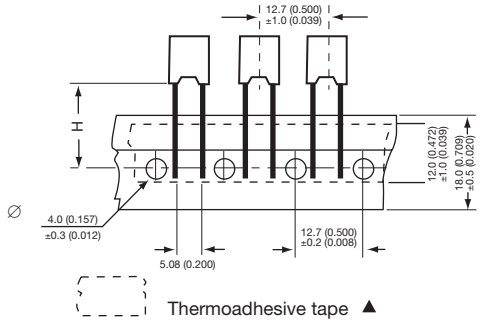
• Max voltage gradient

V_{R-}	63	100	250	400
$(dv/dt)_R$ max	38	40	110	270

PACKAGING

millimeters (inches)

	Panasert	Avisert
H	16.5 ± 0.30 (0.65 ± 0.012)	19.5 ± 0.50 (0.768 ± 0.020)



(Other sizes according to standard CEI : 286-2)
Dimensions: millimeters (inches)

Case	Quantity					
	Reel		Ammopack		Bulk	
Suffix x	DB panasert	DD avisert	DA panasert	DC avisert	USA Std.	- - Europe / Asia Std.
01	2500		2500		1000	5000
02	1800		2000		1000	3800
07	1200		1250		1000	2500
06	900		1100		1000	1500
05	900		1100		1000	1500

BH 01/02/07/06/05:
Radial Leads (Lead Free Product)
CPM-N----- pitch = 5.08mm (0.200")

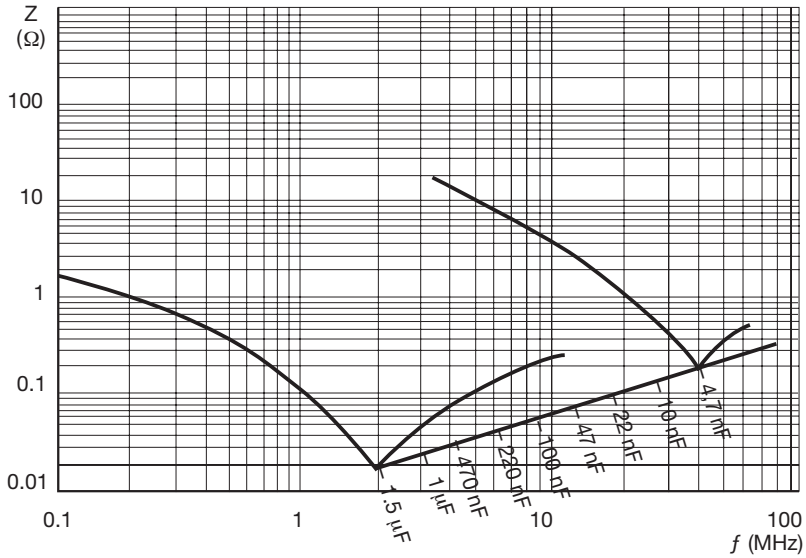
CAPACITANCE VALUES (C_R) and NOMINAL VOLTAGES (V_R)

Capacitance Range (C_R)	Reference BH V_{R-} / $V_{R\sim}$			
	63/40 (voltage code: D)	100/63 (voltage code: E)	250/160 (voltage code: G)	400/200 (voltage code: I)
1,000 pF	BH01	BH01	BH01	BH01
1,200	BH01	BH01	BH01	BH01
1,500	BH01	BH01	BH01	BH01
1,800	BH01	BH01	BH01	BH01
2,200 pF	BH01	BH01	BH01	BH01
2,700	BH01	BH01	BH01	BH01
3,300	BH01	BH01	BH01	BH01
3,900	BH01	BH01	BH01	BH01
4,700 pF	BH01	BH01	BH01	BH01
5,600	BH01	BH01	BH01	BH02
6,800	BH01	BH01	BH01	BH02
8,200	BH01	BH01	BH01	BH07
10,000 pF	BH01	BH01	BH01	BH07
12,000	BH01	BH01	BH01	BH07
15,000	BH01	BH01	BH01	BH07
18,000	BH01	BH01	BH01	BH06
22,000	BH01	BH01	BH02	BH06
27,000	BH01	BH01	BH02	BH06
33,000	BH01	BH01	BH02	BH06
39,000	BH01	BH01	BH07	BH05
47,000 pF	BH01	BH01	BH07	BH05
56,000	BH01	BH01	BH07	
68,000	BH01	BH01	BH07	
82,000	BH01	BH01	BH06	
100 nF	BH01	BH01	BH06	
120	BH01	BH01	BH05	
150	BH01	BH01	BH05	
180	BH01	BH02		
220 nF	BH01	BH02		
270	BH02	BH07		
330	BH02	BH07		
390	BH07	BH07		
470 nF	BH07	BH05		
560	BH07	BH05		
680	BH07	BH05		
820	BH07	BH05		
1 µF	BH07	BH05		
1.5 µF	BH05			
2.2 µF	BH05**			

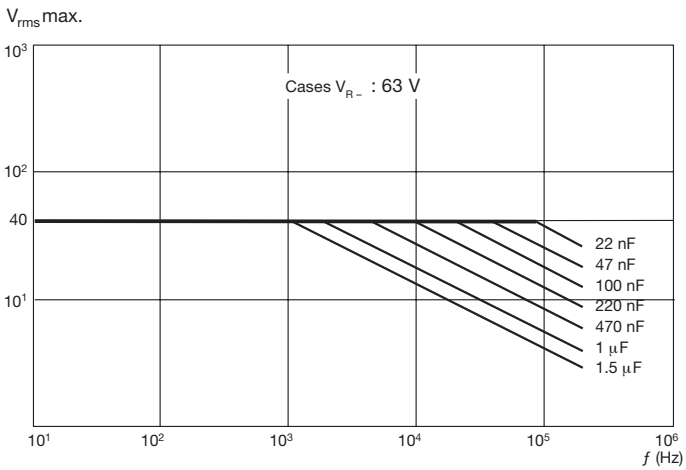
**Upon request & only available 50 V (V_R)

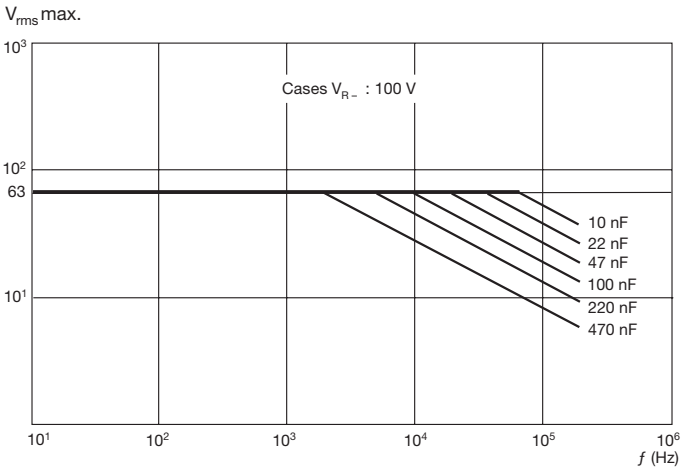
CHARACTERISTICS CURVES

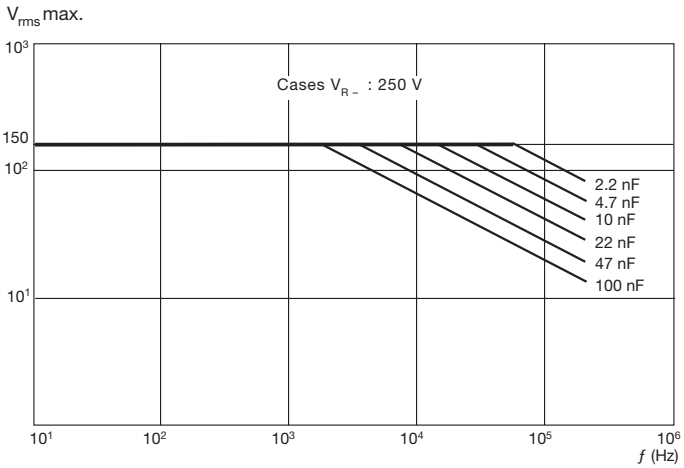
Influence of the frequency on the impedance (room temperature).

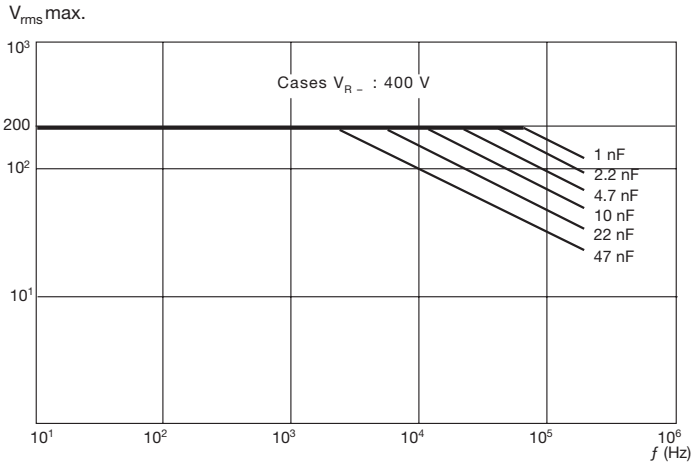


Nominal RMS voltage vs. frequency (room temperature) allowing a 10°C increase of the external temperature of the box.



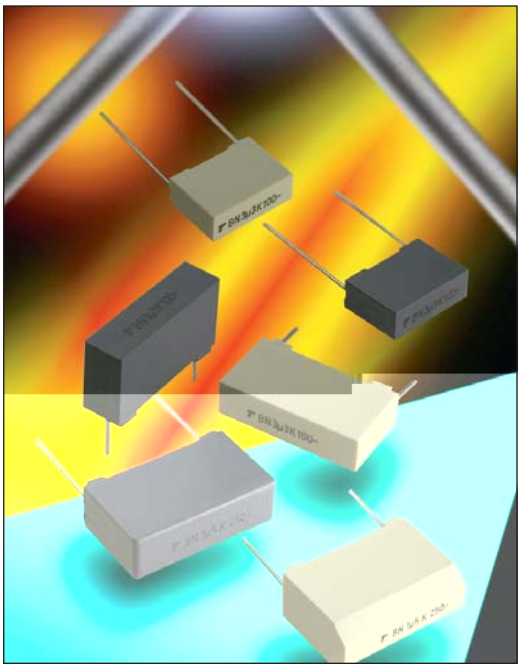




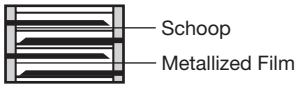


BN 07/10/15/22/27

CPM-85 – 7.5/10/15/22.5/27.5 (BT/BG/BO)



Schematic Cross Section



APPLICATIONS

- Commodity Product:
  - Decoupling with AC or pulse components
  - High current uses (TV deflection coils)
  - Capacitive dividers
  - Energy saving lamps, etc.

TECHNOLOGY

- Dielectric: Polyester film
- Stacked-film for pitch 7.5, 10 & 15mm (63Vdc...400Vdc)
  Wound capacitor for pitch 7.5 & 10 & 15mm (630Vdc/1000Vdc)
  for pitch 22.5 & 27.5mm (63Vdc/1000Vdc)
- Leads: Radial tinned copper wire
- Protection: Plastic case (UL94: V-O) / Polyurethane resin
- Marking: Logo
  Type
  Nominal Capacitance
  Tolerance (EIA)
  DC Nominal Voltage
  Example: **T BN 47n J 400**
- Delivery Mode: Bulk
  Taped (reel)

PERFORMANCE CHARACTERISTICS

Climatic Category:	55/125/56 Performance Class 2
Capacitance Range:	C_R 1 nF to 22 µF (E6)
Tolerances on C_R:	±5%, ±10%, ±20% (other values on request)
Nominal Voltages:	V_{R-} 63/100/250/400/630/1000 V $V_{R\sim}$ 40/63/115/200/220/450 V
Category Voltage:	V_c = Un at 100°C & 0.5 Un at 125°C
Test Voltage:	V_e = 1.6 Undc/2 s at 20°C
Total Self Inductance (L):	For lead length = 2mm

Pitch (mm)	7.5	10	15	22.5	27.5
L (nH)	8	9	10	18	18

Tangent of Loss Angle at 1 kHz:	D.F. ≤ 100.10^{-4} for C >0.1µF ≤ 80.10^{-4} for C ≤0.1µF
Insulation Resistance:	IR ≥ 3.75 GΩ for C ≤0.33µF IR (MΩ) * C(µF) ≥ 1250 s for C >0.33µF measures at 10V for Un=63Vdc and 100V for others

dv/dt: (V/µsec)

V_{R-}	63	100	250	400	630	1000
$(dv/dt)_R$ max pitch: 7.5mm	60	75	120	300	440	
$(dv/dt)_R$ max pitch: 10mm	30	40	50	110	112	800
$(dv/dt)_R$ max pitch: 15mm	23	27	34	79	102	400
$(dv/dt)_R$ max pitch: 22.5mm	8	9	14	25	25	380
$(dv/dt)_R$ max pitch: 27.5mm	5	5	6	8	15	340

Thermal Resistance: R_{th} hot spot/ambient (°C/W)

Pitch (mm)	7.5mm				10mm			15mm			22.5mm			27.5mm					
Case	1	2	C	D	E0	4	5	6	9	10	11	12	13	16	P0	18	19	26	R68
Rth (stacked)	201	147		117	140	124	90	88	61	82									
Rth (wound)	201	147		117	140	124	90	123	86	75	64	53	48	42	40	33	30	27	23

STANDARDIZATION

Generic specifications:
CEI 384-1/CECC 30000/UTE 83100
Sectional specifications:
CEI 384-2/CECC 30400/UTE 83151

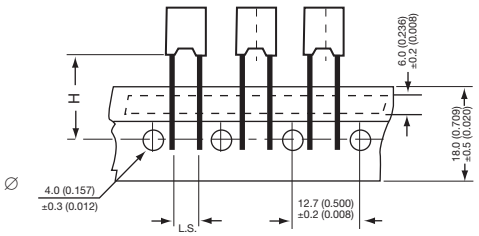
BN 07/10/15/22/27

Pitch = 7.5mm / 10mm /15mm / 22.5mm / 27.5mm

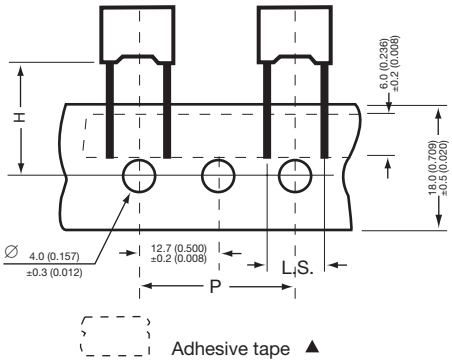
PACKAGING

• Reel

Lead Spacing: 7.5 (0.295)



Lead Spacing: 15 (0.394/0.590)



(Other sizes according to standard CEI : 286-2)
Dimensions: millimeters (inches)

	Taping Suffix EN		
	Lead Spacing Tol ±0.4 (0.016)		
	7.5 (0.295)	10 (0.394)	15 (0.590)
P	12.7 ±1 (0.5 ±0.039)	25.4 ±1 (1.0 .±0.039)	
H	16.5 ±0.3 (0.650 ±0.012)	16 +1.5/–0.5 (0.600 +0.059/–0.020)	

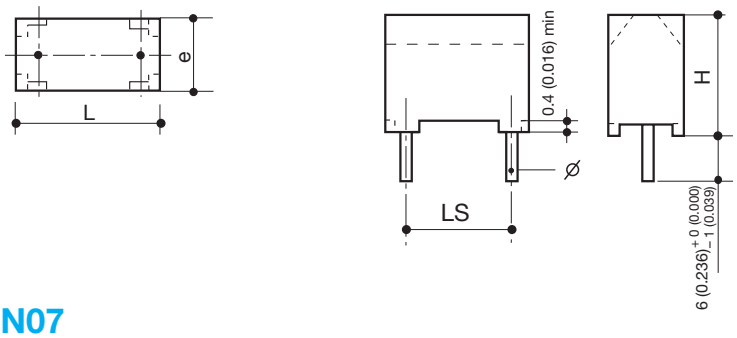
• Bulk

Suffix	- -	LG	KB	KC	KE	KH	KK	K3	K7
Leads Length	6mm +0/–1	3.2mm ±0.4	3.5mm ±0.5	4mm ±0.5	5mm ±0.5	9mm ±0.5	15mm ±0.5	20mm ±1	25mm ±1

Standard Suffix: - -
Special MOQ for these special suffix

BN 07/10/15/22/27

Pitch = 7.5mm



BN07

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Reel	Bulk[1]	∅ +10% -0.5 mm	I²t (A² .sec)	Irms (A)
7.5	BN074D0683+- -	63/40	68nF	1	9.3	8.2	3.3	8000	12,000	0.6	8.33×10^{-4}	0.357
7.5	BN074D0104+- -		100nF	1	9.3	8.2	3.3	8000	12,000	0.6	1.41×10^{-3}	0.48
7.5	BN074D0224+- -		220nF	1	9.3	8.2	3.3	8000	12,000	0.6	2.79×10^{-3}	0.53
7.5	BN074D0334+- -		330nF	1	9.3	8.2	3.3	8000	12,000	0.6	3.63×10^{-3}	0.64
7.5	BN074D0474+- -		470nF	1	9.3	8.2	3.3	8000	12,000	0.6	5.11×10^{-3}	0.84
7.5	BN074D0684+- -		680nF	2	10.1	10.2	5.2	10,000	14,000	0.6	1.54×10^{-2}	1.33
7.5	BN074D0105+- -		1µF	2	10.1	10.2	5.2	10,000	14,000	0.6	2.78×10^{-2}	1.77
7.5	BN074D0225+- -		2.2µF	D	10.1	12.2	6.2	8000	8000	0.6	1.12×10^{-1}	4
7.5	BN074E0333+- -	100/63	33nF	1	9.3	8.2	3.3	8000	12,000	0.6	4.52×10^{-4}	0.21
7.5	BN074E0473+- -		47nF	1	9.3	8.2	3.3	8000	12,000	0.6	6.12×10^{-4}	0.29
7.5	BN074E0104+- -		100nF	1	9.3	8.2	3.3	8000	12,000	0.6	1.41×10^{-3}	0.48
7.5	BN074E0224+- -		220nF	1	9.3	8.2	3.3	8000	12,000	0.6	2.79×10^{-3}	0.53
7.5	BN074E0334+- -		330nF	2	10.1	10.2	5.2	10,000	14,000	0.6	7.85×10^{-3}	1.00
7.5	BN074E0474+- -		470nF	2	10.1	10.2	5.2	10,000	14,000	0.6	1.27×10^{-2}	1.16
7.5	BN074E0684+- -		680nF	C	10.1	11.2	5.2	10,000	12,000	0.6	2.23×10^{-2}	1.48
7.5	BN074E0105+- -		1µF	D	10.1	12.2	6.2	8000	8000	0.6	4.61×10^{-2}	2.18
7.5	BN074G0472+- -	250/115	4.7nF	1	9.3	8.2	3.3	8000	12,000	0.6	6.88×10^{-5}	0.05
7.5	BN074G0682+- -		6.8nF	1	9.3	8.2	3.3	8000	12,000	0.6	9.61×10^{-4}	0.08
7.5	BN074G0103+- -		10nF	1	9.3	8.2	3.3	8000	12,000	0.6	2.45×10^{-4}	0.14
7.5	BN074G0223+- -		22nF	1	9.3	8.2	3.3	8000	12,000	0.6	3.62×10^{-4}	0.19
7.5	BN074G0333+- -		33nF	1	9.3	8.2	3.3	8000	12,000	0.6	4.52×10^{-4}	0.21
7.5	BN074G0473+- -		47nF	1	9.3	8.2	3.3	8000	12,000	0.6	6.11×10^{-4}	0.29
7.5	BN074G0104+- -		100nF	2	10.1	10.2	5.2	10,000	14,000	0.6	1.85×10^{-3}	0.53
7.5	BN074G0224+- -		220nF	D	10.1	12.2	6.2	8000	8000	0.6	8.93×10^{-3}	1.53
7.5	BN074I0102+- -	400/200	1nF	1	9.3	8.2	3.3	8000	12,000	0.6	1.10×10^{-5}	0.02
7.5	BN074I0222+- -		2.2nF	1	9.3	8.2	3.3	8000	12,000	0.6	3.63×10^{-5}	0.03
7.5	BN074I0332+- -		3.3nF	1	9.3	8.2	3.3	8000	12,000	0.6	5.09×10^{-5}	0.04
7.5	BN074I0472+- -		4.7nF	1	9.3	8.2	3.3	8000	12,000	0.6	6.88×10^{-5}	0.05
7.5	BN074I0103+- -		10nF	1	9.3	8.2	3.3	8000	12,000	0.6	2.45×10^{-4}	0.14
7.5	BN074I0223+- -		22nF	1	9.3	8.2	3.3	8000	12,000	0.6	3.62×10^{-4}	0.19
7.5	BN074I0333+- -		33nF	2	10.1	10.2	5.2	10,000	14,000	0.6	1.44×10^{-3}	0.38
7.5	BN074I0473+- -		47nF	2	10.1	10.2	5.2	10,000	14,000	0.6	1.65×10^{-3}	0.40
7.5	BN074I0683+- -		68nF	C	10.1	11.2	5.2	10,000	12,000	0.6	3.46×10^{-3}	0.59
7.5	BN074I0823+- -		82nF	D	10.1	12.2	6.2	8000	8000	0.6	5.03×10^{-3}	0.71
7.5	BN074K0102+- -	630/220	1nF	1	9.3	8.2	3.3	8000	12,000	0.6	9.0×10^{-7}	0.027
7.5	BN074K0152+- -		1.5nF	1	9.3	8.2	3.3	8000	12,000	0.6	2.0×10^{-6}	0.027
7.5	BN074K0222+- -		2.2nF	1	9.3	8.2	3.3	8000	12,000	0.6	2.3×10^{-6}	0.027
7.5	BN074K0332+- -		3.3nF	1	9.3	8.2	3.3	8000	12,000	0.6	2.5×10^{-6}	0.027
7.5	BN074K0472+- -		4.7nF	1	9.3	8.2	3.3	8000	12,000	0.6	5.7×10^{-6}	0.027
7.5	BN074K0682+- -		6.8nF	2	10.1	10.2	5.2	10,000	14,000	0.6	1.2×10^{-5}	0.14
7.5	BN074K0103+- -		10nF	2	10.1	10.2	5.2	10,000	14,000	0.6	2.6×10^{-5}	0.14
7.5	BN074K0153+- -		15nF	C	10.1	11.2	5.2	10,000	12,000	0.6	5.8×10^{-5}	0.22
7.5	BN074K0223+- -		22nF	D	10.1	12.2	6.2	8000	8000	0.6	1.2×10^{-4}	0.34
7.5	BN074K0273+- -		27nF	D	10.1	12.2	6.2	8000	8000	0.6	1.8×10^{-4}	0.34

Replace the + by the tolerance code: J=5% - K=10% - M=20%
Replace the - - by the packaging suffix: - - = standard bulk - EN = taping on reel etc
[1]: MOQ for standard bulk suffix - -

BN 07/10/15/22/27

Pitch = 10mm

BN10

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Reel	Bulk[1]	∅ +10% -0.5 mm	I²t (A² .sec)	Irms (A)
10	BN104D0224+- -	63/40	220nF	E0	12.7	9.2	4.2	6800	14,000	0.6	2.20×10^{-3}	0.71
10	BN104D0334+- -		330nF	E0	12.7	9.2	4.2	6800	14,000	0.6	3.54×10^{-3}	0.73
10	BN104D0474+- -		470nF	E0	12.7	9.2	4.2	6800	14,000	0.6	5.74×10^{-3}	0.765
10	BN104D0684+- -		680nF	E0	12.7	9.2	4.2	6800	14,000	0.6	6.84×10^{-3}	0.837
10	BN104D0105+- -		1µF	E0	12.7	9.2	4.2	6800	14,000	0.6	1.11×10^{-2}	1.23
10	BN104D0155+- -		1.5µF	4	12.7	10.2	5.2	5600	10,000	0.6	2.50×10^{-2}	1.83
10	BN104D0225+- -		2.2µF	5	12.7	13.6	5.2	5600	8000	0.6	5.37×10^{-2}	2.685
10	BN104E0683+- -	100/63	68nF	E0	12.7	9.2	4.2	6800	14,000	0.6	8.74×10^{-4}	0.32
10	BN104E0104+- -		100nF	E0	12.7	9.2	4.2	6800	14,000	0.6	1.33×10^{-3}	0.40
10	BN104E0154+- -		150nF	E0	12.7	9.2	4.2	6800	14,000	0.6	1.47×10^{-3}	0.667
10	BN104E0224+- -		220nF	E0	12.7	9.2	4.2	6800	14,000	0.6	2.20×10^{-3}	0.71
10	BN104E0334+- -		330nF	E0	12.7	9.2	4.2	6800	14,000	0.6	3.54×10^{-3}	0.73
10	BN104E0474+- -		470nF	E0	12.7	9.2	4.2	6800	14,000	0.6	5.74×10^{-3}	0.765
10	BN104E0684+- -		680nF	4	12.7	10.2	5.2	5600	10,000	0.6	1.20×10^{-2}	1.107
10	BN104E0105+- -		1000nF	5	12.7	13.6	5.2	5600	8000	0.6	2.60×10^{-2}	1.629
10	BN104G0333+- -	250/115	33nF	E0	12.7	9.2	4.2	6800	14,000	0.6	4.86×10^{-4}	0.21
10	BN104G0473+- -		47nF	E0	12.7	9.2	4.2	6800	14,000	0.6	6.01×10^{-4}	0.26
10	BN104G0683+- -		68nF	E0	12.7	9.2	4.2	6800	14,000	0.6	8.74×10^{-4}	0.32
10	BN104G0104+- -		100nF	E0	12.7	9.2	4.2	6800	14,000	0.6	1.33×10^{-3}	0.4
10	BN104G0154+- -		150nF	E0	12.7	9.2	4.2	6800	14,000	0.6	1.47×10^{-3}	0.5
10	BN104G0224+- -		220nF	4	12.7	10.2	5.2	5600	10,000	0.6	3.16×10^{-3}	0.73
10	BN104G0334+- -		330nF	4	12.7	10.2	5.2	5600	10,000	0.6	7.11×10^{-3}	1.1
10	BN104G0474+- -		470nF	5	12.7	13.6	5.2	5600	8000	0.6	1.44×10^{-2}	1.57
10	BN104I0472+- -	400/200	4.7nF	E0	12.7	9.2	4.2	6800	14,000	0.6	6.03×10^{-5}	0.043
10	BN104I0682+- -		6.8nF	E0	12.7	9.2	4.2	6800	14,000	0.6	9.96×10^{-5}	0.07
10	BN104I0103+- -		10nF	E0	12.7	9.2	4.2	6800	14,000	0.6	1.13×10^{-4}	0.088
10	BN104I0153+- -		15nF	E0	12.7	9.2	4.2	6800	14,000	0.6	1.70×10^{-4}	0.129
10	BN104I0223+- -		22nF	E0	12.7	9.2	4.2	6800	14,000	0.6	3.31×10^{-4}	0.157
10	BN104I0333+- -		33nF	E0	12.7	9.2	4.2	6800	14,000	0.6	4.66×10^{-4}	0.213
10	BN104I0473+- -		47nF	E0	12.7	9.2	4.2	6800	14,000	0.6	6.01×10^{-4}	0.26
10	BN104I0683+- -		68nF	4	12.7	10.2	5.2	5600	10,000	0.6	1.26×10^{-3}	0.35
10	BN104I0104+- -		100nF	5	12.7	13.6	5.2	5600	8000	0.6	2.72×10^{-3}	0.52
10	BN104K0472+- -	630/220	4.7nF	E0	12.7	9.2	4.2	6800	14,000	0.6	2.16×10^{-5}	0.05
10	BN104K0682+- -		6.8nF	E0	12.7	9.2	4.2	6800	14,000	0.6	4.53×10^{-5}	0.07
10	BN104K0103+- -		10nF	E0	12.7	9.2	4.2	6800	14,000	0.6	9.74×10^{-5}	0.08
10	BN104K0153+- -		15nF	E0	12.7	9.2	4.2	6800	14,000	0.6	2.20×10^{-4}	0.10
10	BN104K0223+- -		22nF	4	12.7	10.2	5.2	5600	10,000	0.6	4.74×10^{-4}	0.14
10	BN104K0333+- -		33nF	4	12.7	10.2	5.2	5600	10,000	0.6	7.41×10^{-4}	0.18
10	BN104K0473+- -		47nF	5	12.7	13.6	5.2	5600	8000	0.6	9.16×10^{-4}	0.24
10	BN104L0102+- -	1000/450	1nF	E0	12.7	9.2	4.2	6800	14,000	0.6	1.8×10^{-5}	0.05
10	BN104L0152+- -		1.5nF	E0	12.7	9.2	4.2	6800	14,000	0.6	4.00×10^{-5}	0.05
10	BN104L0222+- -		2.2nF	E0	12.7	9.2	4.2	6800	14,000	0.6	7.00×10^{-5}	0.08
10	BN104L0332+- -		3.3nF	4	12.7	10.2	5.2	5600	10,000	0.6	1.24×10^{-4}	0.14
10	BN104L0472+- -		4.7nF	5	12.7	13.6	5.2	5600	8000	0.6	2.51×10^{-4}	0.22
10	BN104L0682+- -		6.8nF	5	12.7	13.6	5.2	5600	8000	0.6	5.26×10^{-4}	0.26

Replace the + by the tolerance code: J=5% - K=10% - M=20%
Replace the - - by the packaging suffix: - - = standard bulk - EN = taping on reel etc
[1]: MOQ for standard bulk suffix - -

BN 07/10/15/22/27

Pitch = 15mm

BN15

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Reel	Bulk[1]	∅ +10% -0.5 mm	I²t (A².sec)	Irms (A)
15	BN154D0684+- -	63/40	680nF	6	17.7	10.6	5.2	4000	6000	0.8	1.22×10^{-2}	0.83
15	BN154D0105+- -		1µF	6	17.7	10.6	5.2	4000	6000	0.8	2.12×10^{-2}	0.96
15	BN154D0155+- -		1.5µF	6	17.7	10.6	5.2	4000	6000	0.8	3.60×10^{-2}	1.43
15	BN154D0225+- -		2.2µF	6	17.7	10.6	5.2	4000	6000	0.8	4.38×10^{-2}	1.783
15	BN154D0335+- -		3.3µF	I0	17.7	12.2	6.2	4000	6000	0.8	9.86×10^{-2}	2.674
15	BN154D0475+- -		4.7µF	9	17.7	14.6	8.7	2500	8000	0.8	4.19×10^{-1}	3.808
15	BN154D0685+- -		6.8µF	9	17.7	14.6	8.7	2500	8000	0.8	2.00×10^{-1}	5.50
15	BN154D0825+- -		8.2µF	9	17.7	14.6	8.7	2500	8000	0.8	6.09×10^{-1}	6.200
15	BN154E0154+- -	100/63	150nF	6	17.7	10.6	5.2	4000	6000	0.8	4.35×10^{-3}	0.43
15	BN154E0224+- -		220nF	6	17.7	10.6	5.2	4000	6000	0.8	5.53×10^{-3}	0.64
15	BN154E0334+- -		330nF	6	17.7	10.6	5.2	4000	6000	0.8	1.13×10^{-2}	0.72
15	BN154E0474+- -		470nF	6	17.7	10.6	5.2	4000	6000	0.8	1.33×10^{-2}	0.96
15	BN154E0105+- -		1µF	6	17.7	10.6	5.2	4000	6000	0.8	1.71×10^{-2}	0.96
15	BN154E0155+- -		1.5µF	6	17.7	10.6	5.2	4000	6000	0.8	3.60×10^{-2}	1.43
15	BN154E0225+- -		2.2µF	I0	17.7	12.2	6.2	4000	6000	0.8	8.20×10^{-2}	2.111
15	BN154E0335+- -		3.3µF	9	17.7	14.6	8.7	2500	8000	0.8	1.85×10^{-1}	3.168
15	BN154E0475+- -		4.7µF	9	17.7	14.6	8.7	2500	8000	0.8	3.74×10^{-1}	4.51
15	BN154G0104+- -	250/115	100nF	6	17.7	10.6	5.2	4000	6000	0.8	2.58×10^{-3}	0.38
15	BN154G0154+- -		150nF	6	17.7	10.6	5.2	4000	6000	0.8	4.35×10^{-3}	0.43
15	BN154G0224+- -		220nF	6	17.7	10.6	5.2	4000	6000	0.8	5.57×10^{-3}	0.64
15	BN154G0334+- -		330nF	6	17.7	10.6	5.2	4000	6000	0.8	7.51×10^{-3}	0.72
15	BN154G0474+- -		470nF	6	17.7	10.6	5.2	4000	6000	0.8	1.17×10^{-2}	1.024
15	BN154G0684+- -		680nF	I0	17.7	12.2	6.2	4000	6000	0.8	2.44×10^{-2}	1.483
15	BN154G0105+- -		1µF	9	17.7	14.6	8.7	2500	8000	0.8	5.28×10^{-2}	2.178
15	BN154G0155+- -		1.5µF	9	17.7	14.6	8.7	2500	8000	0.8	1.19×10^{-1}	3.267
15	BN154I0473+- -	400/200	47nF	6	17.7	10.6	5.2	4000	6000	0.8	1.19×10^{-3}	0.191
15	BN154I0683+- -		68nF	6	17.7	10.6	5.2	4000	6000	0.8	1.59×10^{-3}	0.28
15	BN154I0104+- -		100nF	6	17.7	10.6	5.2	4000	6000	0.8	2.58×10^{-3}	0.38
15	BN154I0154+- -		150nF	6	17.7	10.6	5.2	4000	6000	0.8	4.35×10^{-3}	0.43
15	BN154I0224+- -		220nF	I0	17.7	12.2	6.2	4000	6000	0.8	9.37×10^{-3}	0.70
15	BN154I0334+- -		330nF	9	17.7	14.6	8.7	2500	8000	0.8	2.11×10^{-2}	1.05
15	BN154I0474+- -		470nF	9	17.7	14.6	8.7	2500	8000	0.8	4.27×10^{-2}	1.50
15	BN154K0333+- -	630/220	33nF	6	17.7	10.6	5.2	4000	6000	0.8	4.90×10^{-4}	0.14
15	BN154K0473+- -		47nF	6	17.7	10.6	5.2	4000	6000	0.8	8.73×10^{-4}	0.20
15	BN154K0683+- -		68nF	I0	17.7	12.2	6.2	4000	6000	0.8	4.11×10^{-3}	0.32
15	BN154K0104+- -		100nF	I0	17.7	12.2	6.2	4000	6000	0.8	4.50×10^{-3}	0.46
15	BN154K0154+- -		150nF	9	17.7	14.6	8.7	2500	8000	0.8	1.00×10^{-2}	0.70
15	BN154L0682+- -	1000/450	6.8nF	6	17.7	10.6	5.2	4000	6000	0.8	1.11×10^{-4}	0.14
15	BN154L0103+- -		10nF	6	17.7	10.6	5.2	4000	6000	0.8	2.41×10^{-4}	0.22
15	BN154L0223+- -		22nF	9	17.7	14.6	8.7	2500	6000	0.8	1.17×10^{-3}	0.60
15	BN154L0333+- -		33nF	9	17.7	14.6	8.7	2500	8000	0.8	2.62×10^{-3}	0.76

Replace the + by the tolerance code: J=5% - K=10% - M=20%
Replace the - - by the packaging suffix: - - = standard bulk - EN = taping on reel etc
[1]: MOQ for standard bulk suffix - -

BN 07/10/15/22/27

Pitch = 22.5mm/27.5mm

BN22

Pitch = 22.5mm

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Reel	Bulk[1]	∅ +10% -0.5 mm	I²t (A².sec)	Irms (A)
22.5	BN224D0685+- -	63/40	6.8µF	11	26.7	15.2	7.7		1600	0.8	1.39×10^{-1}	2.09
22.5	BN224D0106+- -		10µF	12	26.7	17.6	7.7		1600	0.8	3.01×10^{-1}	3.07
22.5	BN224D0156+- -		15µF	13	26.7	19.6	10.2		1200	0.8	6.77×10^{-1}	4.6
22.5	BN224E0225+- -	100/63	2.2µF	11	26.7	15.2	7.7		1600	0.8	2.59×10^{-2}	1.08
22.5	BN224E0335+- -		3.3µF	11	26.7	15.2	7.7		1600	0.8	5.82×10^{-2}	1.60
22.5	BN224E0475+- -		4.7µF	11	26.7	15.2	7.7		1600	0.8	1.18×10^{-1}	2.30
22.5	BN224E0685+- -		6.8µF	13	26.7	19.6	10.2		1200	0.8	2.47×10^{-1}	3.30
22.5	BN224E0825+- -		8.2µF	13	26.7	19.6	10.2		1200	0.8	3.59×10^{-1}	4.00
22.5	BN224G0105+- -	250/115	1µF	11	26.7	15.2	7.7		1600	0.8	1.64×10^{-2}	1.14
22.5	BN224G0155+- -		1.5µF	11	26.7	15.2	7.7		1600	0.8	3.68×10^{-2}	1.71
22.5	BN224G0225+- -		2.2µF	12	26.7	17.6	7.7		1600	0.8	7.92×10^{-1}	2.50
22.5	BN224G0335+- -		3.3µF	13	26.7	19.6	10.2		1200	0.8	1.78×10^{-1}	3.74
22.5	BN224I0334+- -	400/200	330nF	11	26.7	15.2	7.7		1600	0.8	3.64×10^{-3}	0.383
22.5	BN224I0474+- -		470nF	11	26.7	15.2	7.7		1600	0.8	7.38×10^{-3}	0.54
22.5	BN224I0684+- -		680nF	11	26.7	15.2	7.7		1600	0.8	1.54×10^{-2}	0.80
22.5	BN224I0105+- -		1µF	12	26.7	17.6	7.7		1600	0.8	3.34×10^{-2}	1.16
22.5	BN224I0155+- -		1.5µF	13	26.7	19.6	10.2		1200	0.8	7.52×10^{-2}	1.75
22.5	BN224K0154+- -	630/220	150nF	11	26.7	15.2	7.7		1600	0.8	2.17×10^{-3}	0.38
22.5	BN224K0224+- -		220nF	11	26.7	15.2	7.7		1600	0.8	4.66×10^{-3}	0.54
22.5	BN224K0334+- -		330nF	12	26.7	17.6	7.7		1600	0.8	1.05×10^{-2}	0.74
22.5	BN224K0474+- -		470nF	13	26.7	19.6	10.2		1200	0.8	2.13×10^{-2}	1.18
22.5	BN224K0564+- -		560nF	13	26.7	19.6	10.2		1200	0.8	3.02×10^{-2}	1.40
22.5	BN224L0333+- -	1000/450	33nF	11	26.7	15.2	7.7		1600	0.8	2.64×10^{-3}	0.28
22.5	BN224L0473+- -		47nF	11	26.7	15.2	7.7		1600	0.8	5.35×10^{-3}	0.40
22.5	BN224L0683+- -		68nF	12	26.7	17.6	7.7		1600	0.8	1.12×10^{-2}	0.60
22.5	BN224L0104+- -		100nF	13	26.7	19.6	10.2		1200	0.8	2.42×10^{-2}	0.86
22.5	BN224L0124+- -		120nF	13	26.7	19.6	10.2		1200	0.8	3.49×10^{-2}	1.00

Replace the + by the tolerance code : J=5% - K=10% - M=20%
Replace the - - by the packaging suffix : - - = standard bulk - EN = taping on reel etc
[1]: MOQ for standard bulk suffix - -

BN27

Pitch = 27.5mm

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Reel	Bulk[1]	∅ +10% -0.5 mm	I²t (A².sec)	Irms (A)
27.5	BN274D0156+- -	63/40	15µF	16	31.7	19.6	10.2		960	0.8	4.07×10^{-1}	3.57
27.5	BN274D0206+- -		20µF	16	31.7	19.6	10.2		960	0.8	7.24×10^{-1}	4.80
27.5	BN274E0825+- -	100/63	8.2µF	16	31.7	19.6	10.2		960	0.8	2.16×10^{-1}	3.12
27.5	BN274E0106+- -		10µF	16	31.7	19.6	10.2		960	0.8	3.22×10^{-1}	3.80
27.5	BN274E0126+- -		12µF	16	31.7	19.6	10.2		960	0.8	4.63×10^{-1}	4.56
27.5	BN274G0335+- -	250/115	3.3µF	16	31.7	19.6	10.2		960	0.8	1.07×10^{-1}	2.9
27.5	BN274G0395+- -		3.9µF	16	31.7	19.6	10.2		960	0.8	1.50×10^{-1}	3.42
27.5	BN274G0475+- -		4.7µF	P0	31.7	22.6	13.7		1600	0.8	2.18×10^{-1}	4.17
27.5	BN274G0685+- -		6.8µF	P0	31.7	22.6	13.7		1600	0.8	4.56×10^{-1}	6.00
27.5	BN274G0106+- -		10µF	18	31.7	26.2	15.2		1280	0.8	9.85×10^{-1}	6.20
27.5	BN274G0156+- -		15µF	26	31.7	31.6	21.2		448	0.8	2.77	6.20
27.5	BN274G0226+- -		22µF *	R68	32	37	22		384	0.8	5.96	6.20
27.5	BN274I0155+- -	400/200	1.5µF	16	31.7	19.6	10.2		960	0.8	4.52×10^{-2}	1.43
27.5	BN274I0225+- -		2.2µF	P0	31.7	22.6	13.7		1600	0.8	9.73×10^{-2}	1.98
27.5	BN274I0335+- -		3.3µF	P0	31.7	22.6	13.7		1600	0.8	2.19×10^{-1}	2.98
27.5	BN274I0475+- -		4.7µF	18	31.7	26.2	15.2		1280	0.8	4.44×10^{-1}	4.23
27.5	BN274I0685+- -		6.8µF	19	31.7	30.2	17.7		1040	0.8	9.30×10^{-1}	6.10
27.5	BN274I0106+- -		10µF *	R68	32	37	22		384	0.8	2.01	6.20
27.5	BN274K0564+- -	630/220	560nF	16	31.7	19.6	10.2		960	0.8	1.77×10^{-2}	1.61
27.5	BN274K0684+- -		680nF	16	31.7	19.6	10.2		960	0.8	2.61×10^{-2}	1.70
27.5	BN274K0105+- -		1µF	P0	31.7	22.6	13.7		1600	0.8	5.69×10^{-2}	1.90
27.5	BN274K0225+- -		2.2µF	19	31.7	30.2	17.7		1040	0.8	2.73×10^{-1}	4.20
27.5	BN274K0335+- -		3.3µF *	R68	32	37	22		384	0.8	6.14×10^{-1}	6.20
27.5	BN274K0435+- -		4.3µF *	R68	32	37	22		384	0.8	1.04	6.20
27.5	BN274L0124+- -	1000/450	120nF	16	31.7	19.6	10.2		960	0.8	1.82×10^{-2}	0.76
27.5	BN274L0224+- -		220nF	P0	31.7	22.6	13.7		1600	0.8	6.12×10^{-2}	1.38
27.5	BN274L0334+- -		330nF	18	31.7	26.2	15.2		1280	0.8	1.38×10^{-1}	2.08
27.5	BN274L0474+- -		470nF	19	31.7	30.2	17.7		1040	0.8	2.79×10^{-3}	2.96
27.5	BN274L0684+- -		680nF	26	31.7	31.6	21.2		448	0.8	5.85×10^{-3}	4.28
27.5	BN274L0914+- -		910nF *	R68	32	37	22		384	0.8	1.05	5.72

*only available standard bulk: no special lead length
Replace the + by the tolerance code: J=5% - K=10% - M=20%
Replace the - - by the packaging suffix: - - = standard bulk - EN = taping on reel etc
For values biggers -> see FFB range
[1]: MOQ for standard bulk suffix - -

BW 15: Tip & Ring

15 Radial Leads — 250 V-

GENERAL DESCRIPTION

Non inductive, stacked, self healing, metallized polyester film capacitor. Insulated thermoplastic casing, polyurethane resin sealed. Radial connections. Also available in SMD version. (see below)

APPLICATIONS

AVX's « TIP & RING » or « ringer » metallized polyester film capacitors are designed as a standard telecom filter to block –48 Volts DC telephone line voltage and pass subscriber's AC signal pulse (16 to 25 Hz, 70 to 90 Vrms). The typical ringing Signal is shown in the enclosed figure. The ringer film capacitors are ideal for telecom/modem applications. This is a complement range to the AVX's ceramic one.

STANDARDIZATION

Generic specifications:
CEI 384-1/CECC 30000/UTE 83100

Sectional specifications:
CEI 384-2/CECC 30400/UTE 83151

NOMINAL VOLTAGE (V_R) AND CAPACITANCE VALUES (C_R) DEPENDING ON THE DIMENSIONS

Size	Case	DIMENSIONS: millimeters (inches)					DV/DT (V/µsec)	Ft (A^2.sec)	Ur-/Ur~ 250/100
		L Max	H Max	e Max	LS ± 0.4	Ø +10%-0.05			Capacitance
15	6	17.5 (0.689)	10.5 (0.413)	5 (0.197)	15 (0.591)	0.80 (0.031)	430	0.166	470 nF
	7	17.5 (0.689)	13.5 (0.531)	5 (0.197)	15 (0.591)	0.80 (0.031)	300	0.183	680 nF
	7	17.5 (0.689)	13.5 (0.531)	5 (0.197)	15 (0.591)	0.80 (0.031)	300	0.276	820 nF
	8	17.5 (0.689)	13.5 (0.531)	6.25 (0.246)	15 (0.591)	0.80 (0.031)	300	0.405	1µF
	9	17.5 (0.689)	14.5 (0.571)	8.50 (0.335)	15 (0.591)	0.80 (0.031)	50	0.159	1.5µF
	9	17.5 (0.689)	14.5 (0.571)	8.50 (0.335)	15 (0.591)	0.80 (0.031)	50	0.336	2.2µF

HOW TO ORDER

BW 15	4	G	0105	K	– –
Type	**Class** PET	**Voltage** 250V	**Capacitance Value** EIA Code	**Tolerance** ±10%	**Suffix Tape and Reel**

BW 15: Tip & Ring

15 Radial Leads — 250 V-

PERFORMANCE CHARACTERISTICS

Climatic category:	55/100/56
Capacitance (Cr):	See table
Tolerance:	±5%, ±10%
Nominal voltage:	250 V-
Test voltage (1.4Ur-2sec):	350 V-
Category voltage:	Ur at 100°C
Tangent of loss angle at 1 KHz (DF):	<90. 10^{-4}
Insulation resistance between terminals under 100V-:	IR * C> 1 Gohm µF
Insulation resistance between terminals and case:	>30 Gohms

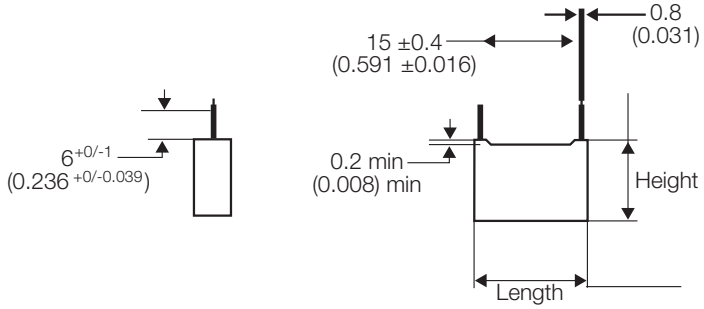
MARKING

Logo
Type T BW 1 µ0 K
Nominal Capacitance 250V-
Tolerance (EIA code)
DC nominal voltage

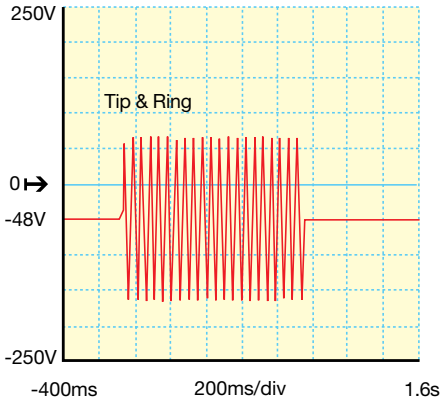
millimeters (inches)

Suffix	- -	EN	LG	KB	KC	KE	KH	K7
Description	Connections bulk length= 6mm±0.5 (0.236±0.020)	Tape & Reel	Connections bulk length= 3.2mm±0.4 (0.126±0.016)	Connections bulk length= 3.5mm±0.5 (0.138±0.020)	Connections bulk length= 4mm±0.5 (0.157±0.020)	Connections bulk length= 5mm±0.5 (0.197±0.020)	Connections bulk length= 9mm±0.5 (0.354±0.020)	Connections bulk length= 25mm±1 (0.984±0.039)

SCHEMATIC DRAWING



"TIP & RING" GRAPH



MOQ = PRIMARY PACKAGING

Size	Case	Reel (EN) Minimum	Bulk (—) Quantity
15	6	3000	3000
	7	3000	3000
	8	2499	3000
	9	2500	2000

FILM CHIP CAPACITORS

"Tip & Ring" film chip capacitors are designed also as a standard telecom filter.

		Size Code		H max	
		Standard Range	Extended Range	Standard Range	Extended Range
470 nF	0474	5040	4030	4.6	5.5
680 nF	0684	6054	5040	4.4	4.6
820 nF	0824	6054	5040	5	5.7
1 µF	0105	6054	5040	5.7	6.6
1.5 µF	0155		6054		5.9

PART NUMBER

CF	18	2	G	0105	K	– –
Type	**Size Equivalent**	**Class** 2=PET HT	**Voltage** 250 V = G	**Capacitance Value** 10% = K Code EIA	**Tolerance**	**Suffix**

Metallized Polypropylene Film Dielectric Capacitors

Polypropylene Film Dielectric Capacitors

Characteristics

INTRODUCTION

The intrinsic qualities of polypropylene as a dielectric are essentially very low dielectric loss resistance to damp, low temperature coefficient and high dielectric strength. LCC is amongst the leaders in Europe in developing polypropylene capacitors, and the types in this catalog are the fruit of constant research and improvement.

TECHNOLOGY

Polypropylene film with foil armatures capacitors

The use of thick metal foils (5 to 7µm) means that these capacitors can be used in conditions requiring high rms current and with extended frequencies fields.

- **Metallized polypropylene film capacitors**

The outstanding characteristic of this technology is the self healing by vaporizing of the metallized area round a fault.

Volumetric energy is high, as the thickness of the metallization (0.02µm) is minute compared to the dielectric (from 0 to several tens of µm). However, this technology is not suitable for high current. See technical data.

- **Metallized polypropylene film with foil armatures capacitors**

This mixed technology combines the advantages of the two preceding types, self healing and high current and for certain types also covers high voltage ranges.

GENERAL ELECTRICAL CHARACTERISTICS

Applicable specifications: NF C 83100 (CECC 30000) and IEC 394-1

- **Polypropylene film with foil armatures capacitors (UTE C 93157)**

1. Nominal capacitance (C_R) and C_R tolerances

Nominal capacitance values are based on the E6, E12, E48 and E96 series (see tables of standard values).

Their multiples and decimals, with the associated tolerances as shown in the table below. The nominal capacitance limits and the values available are shown for each individual type.

Tolerances		Series
Values	Code	
1%	F	E96
2%	G	E48
5%	J	E24
10%	K	E12
20%	M	E6

Capacitance measurement between terminals: Measuring frequency

1 MHz ± 20% $C_R \leq 1000$ pF
1 kHz ± 20% $C_R > 1000$ pF

Measurement voltage:

Peak value of applied voltage should be at the most 3% of nominal dc voltage whichever is the lowest.

Accuracy of measurement: Errors should not exceed:

a) For absolute capacitance:
10% of the tolerance on nominal capacitance, or 2%, whichever is the smaller.

b) For measurement of capacitance variation, 10% of the maximum variation of specified capacitance.

2. Stability classes

These are defined by the tolerance on the temperature coefficient according to the preferred values shown in the table below.

Temperature coefficient (ppm/°C)	Tolerances on temperature coefficient (ppm/°C)		
	Stability Class		
	1	2	3
-0	±40	±40	
-40	±40	±40	
-80	±40	±40	
-100	±50	±100	
-125	±60	±125	
-160	±80	±160	±160
-250	±120	±250	±250
-315	±120	±250	±250
$\frac{\Delta C}{C}$ (1)	(±0.5% + 0.5pF)	(±1% + 1pF)	(±2% + 2pF)

(1) Permissible capacitance change after the initial climatic and mechanical tests.

3. Temperature coefficient (CT)

Definition: The temperature coefficient of the capacitance is the relationship between the capacitance variation, measured at the extremes of a specified temperature range, and the temperature variation itself. It is normally expressed in millionths per degree Celsius (ppm/°C).

4. DC nominal voltage (U_R-)

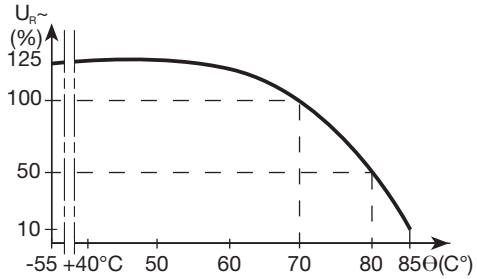
The nominal voltage is the maximum DC voltage which may be applied to the capacitor terminals in a temperature of 85°C, or the maximum temperature specified for the particular category. Standard values: the standard values of nominal voltage conform to the series based on R5 in the ISO R3 recommendation, i.e.: 25 - 40 - 63 - 100 - 160, and their decimal multipliers and dividers.

5. AC nominal voltage (U_R ~)
(specified for some types)

The frequency is 50 Hz unless if a higher frequency is specified.

6. Nominal temperature with AC voltage

The permissible ambient temperature under nominal AC voltage is equal to 70ºC for capacitors whose maximum category temperature is more than or equal to 85ºC. For ambient temperature difference of 70ºC refer to curve below.



NB: Sum of DC and AC voltages applied to the capacitor should not exceed the nominal voltage.

7. Category voltage (U_C)

The DC category voltage is equal to U_R when the maximum category temperature is equal to 85ºC.

For higher temperature, the category voltage is given in the individual specification. The AC category voltage is specified in the individual data sheet.

8. Test voltage (U_e)

The following table gives the DC voltage values to be applied between terminals and terminals/earth.

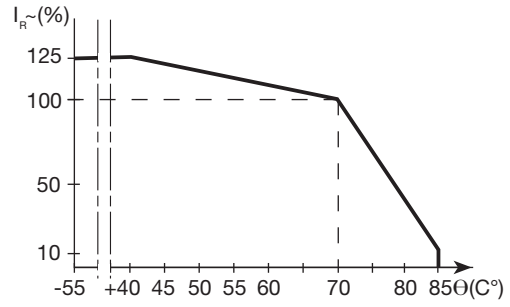
Application Points	Test Voltage
Between terminals	2 U_R-
Between terminals and earth	2 U_R- with a minimum of 400 V

NB: Measuring voltage is applied for 1 minute, the initial value of the charging current should be less than or equal to 1A.

9. AC nominal current (I_R~)

(specified for some types)

The individual specification should indicate the nominal rms voltage of the permissible rms currents which can be permently applicable at the ambient temperature of 70ºC. (For different ambient temperatures refer to the curve below.)



NB: Sum of DC and AC voltages applied to the capacitor should not exceed the nominal voltage.

The nominal currents values are selected from the R10 or R20 series.

See examples of current definition from type oscillograms on page 29.

10. Tangent of loss angle (Tgδ)

Measurement conditions: Identical to those for the measurement of capacitance between terminals.

Requirements: The tangent of loss angle should not exceed the values indicated in the table below.

F Measurement	Capacitance	Tgδ (10^{-4})
1 MHz	C_R < 1000pF	≤ 10
1 kHz	1000 pF ≤ C_R ≤ 0.1µF	≤ 5
	C_R > 0.1µF	≤ 10

NB: In fact, the dielectric losses of the polypropylene are constants (Tgδ ≤ 2 x 10^{-4}) whatever operating temperature (up to 100ºC) and frequency (up to several MHz) are.

The dissipation factor of capacitor is the sum of the two terms: the first one corresponds to the dielectric losses (2 x 10^{-4}), the second one to losses by Joule effect from leads and plates.

11. Insulation resistance (Ri)

Measurement conditions: The table below gives measurement voltages as a function of the nominal voltage of the capacitor.

Requirements: Insulation resistance should meet the values in the table below.

Nominal Voltage (V)	Measurement Voltage (V)
10 ≤ U_R- < 100	10 ± 1
100 ≤ U_R- < 500	100 ± 15
500 ≤ U_R-	500 ± 50

Measuring Points	C_R ≤ 0.33µF Ri min.	C_R > 0.33µF Ri x C_R min.
Between terminals	100 GΩ	30 000 s.
Between terminals and earth	100 GΩ	

NB: Before carrying out this measurement, the capacitors should be completely discharged.

12. Thermal resistance (Rth)

Multiplied by active losses, gives the temperature of the warmest point of the capacitor body. Indicated only for some types.

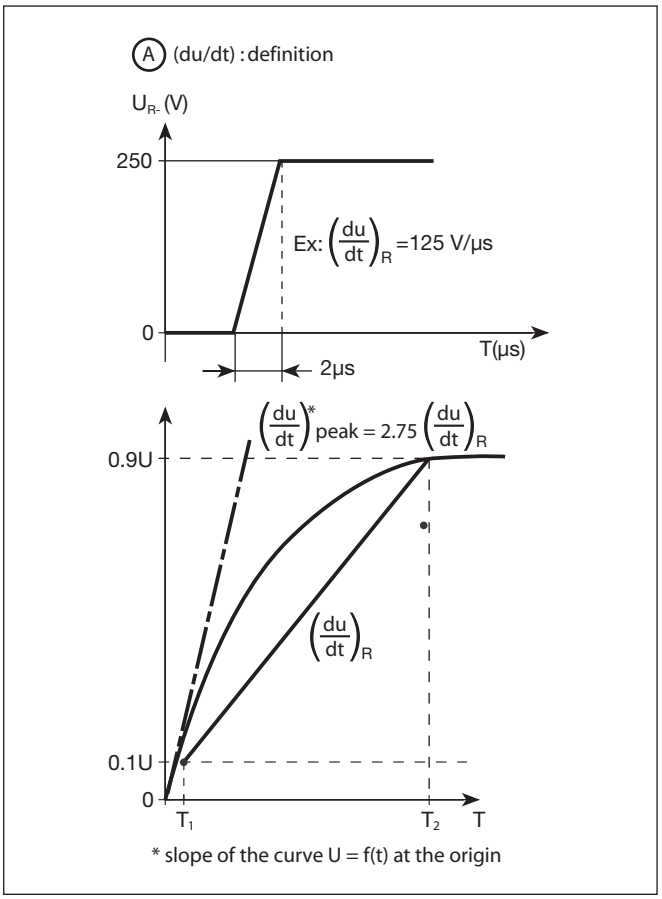
13. Voltage gradient $(du/dt)_R$

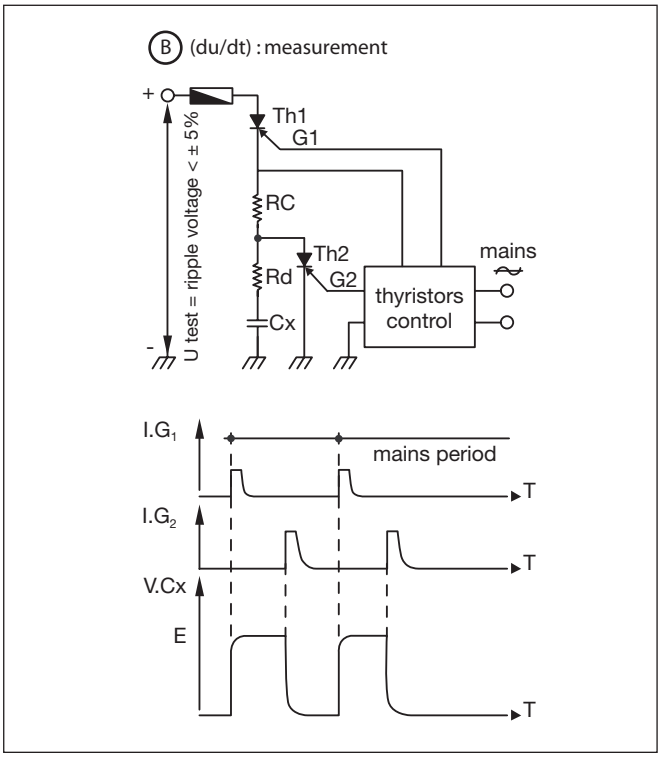
It is the value of slope of the curve U = f (t) expressed in Volt/second. See curves on next page.

NB: The $(du/dt)_R$ values shown in each technical data for some types give the maximum rise time from 0 to nominal voltage U_R of the capacitor. These $(du/dt)_R$ are given for a linear growth from 10 to 90% of the nominal voltage U_R (see curve on next page). If the applied voltage (Ua) are less than the nominal voltage U_R-, the $(du/dt)_R$ should be increased in the ratio U_R-/Ua.

Polypropylene Film Dielectric Capacitors

Characteristics





Measurement of voltage gradient value

Case of discharges through a resistor (Rd). See device on left.

$$\left(\frac{du}{dt}\right)_R = \frac{E}{2.75\ Rd.Cx}$$

- **Metallized polypropylene dielectric capacitors (NFC 83156-CECC 31200)**

1. **Nominal capacitance (C_R),** tolerances - measurements. See paragraph 1 page 25.
2. **Classes of performance and stability**

   Performance class 1: capacitors designed for long life applications with severe requirement for all electrical parameters.

   Performance class 2: general purpose capacitors for which the severe requirements of class 1 are not necessary.

   Stability class: this is defined by the variation of capacitance after the climatic and mechanical tests. The classes of performance and stability should be indicated in the individual specifications.

   Combination of classes of performance and stability: the following table shows, for preferred values, the combination of performance class and stability class.

Performance Class	Stability
1	1 2
2	–

3. **Nominal voltage (U_R-)**

   See page 25
4. **Category voltage (U_C)**

   See page 26
5. **Nominal AC current (I_R~)**

   See page 26
6. **Test voltage (U_e)**

   The following table gives the voltages to be applied between terminals, and between terminals and earth.

Measurement Points	Test Voltage	
	Classes 1-1 and 1-2	Performance Class 2
Between Terminals	1.6 U_R-	1.4 U_R-
Between Terminals and Earth	2 U_R with a minimum of 200V	

– Measurement voltage is applied for 1 minute.

– Discharge current should be limited by a resistor with a value ≤ 50 mA.

For types to be used with AC voltage, see page 25.

NB: Self healing is permitted during application of voltage.

Polypropylene Film Dielectric Capacitors

Characteristics

7. Tangent of loss angle (Tgδ)

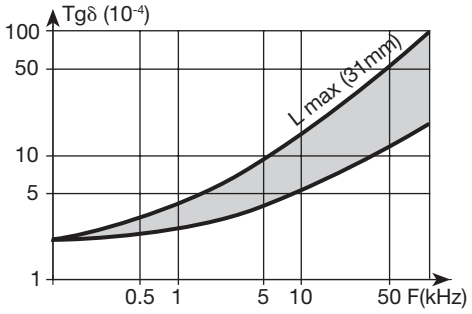
Measurement conditions identical to those for measurement of capacitance between terminals (see page 26).

Requirements: The tangent of loss angle should not exceed the values indicated on the table below.

F Measurement	C_R*	Tgδ (10^{-4})	
		Performance Class 1	Performance Class 2
1 kHz	≤ 10µF	≤ 10.10^{-4}	≤ 20.10^{-4}

*C_R > 10µF please consult us.

Example of results: See curve below.



8. Insulation resistance (Ri)

Measurement conditions: see page 26.

Requirements: The insulation resistance should satisfy the requirements shown in the table below.

Measurement Points	C_R > 0.33µF		C_R ≤ 0.33µF	
	Ri x C_R min.(s)		Ri min (GΩ)	
	Performance Class 1	Performance Class 2	Performance Class 1	Performance Class 2
Between Terminals	30,000	6,000	100	20
Between Terminals and Earth	≥ 100 GΩ			

9. Voltage gradient $(du/dt)_R$

See page 26

10. Radial lead types

Lead spacing.

Tolerance on lead spacing is given from the bottom of stand-offs.

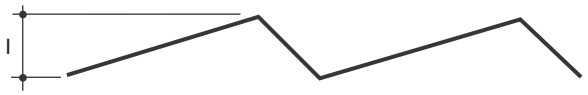
Polypropylene Film Dielectric Capacitors

Characteristics

- **Nominal AC current I_R~**

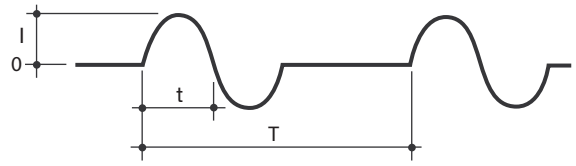
  Examples of rms currents defined from typical oscillograms.

1



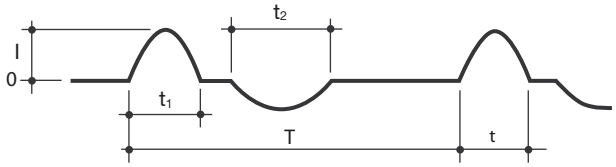
$$I\ eff/rms = \sqrt{\frac{I^2}{3}}$$

2



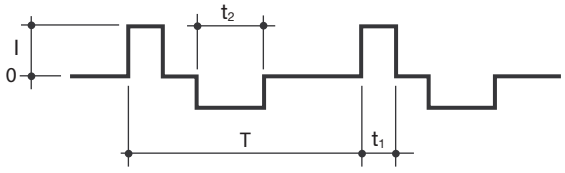
$$I\ eff/rms = \sqrt{\frac{I^2 t}{T}}$$

3



$$I\ eff/rms = \sqrt{\frac{I^2}{T}\left(\frac{t_1}{2} + \frac{t_1^2}{2t_2}\right)}$$

4

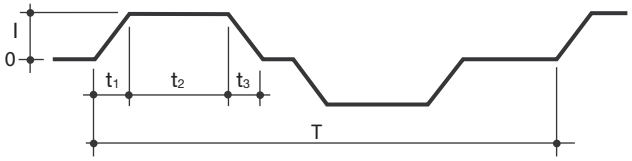


$$I\ eff/rms = \sqrt{\frac{I^2}{T}\left(t_1 + \frac{t_1^2}{t_2}\right)} \quad \text{if } I^1 t_2 = I t_1$$

5

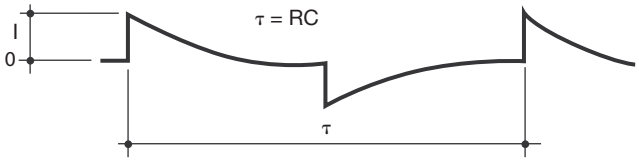
$$I\ eff/rms = \sqrt{\frac{I^2.t}{T}}$$

6



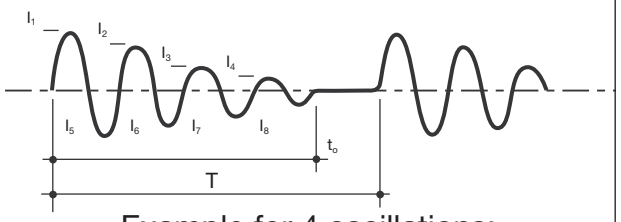
$$I\ eff/rms = \frac{\sqrt{2.I^2\left(\frac{t_1}{3} + t_2 + \frac{t_3}{3}\right)}}{T}$$

7



$$I\ eff/rms = \sqrt{\frac{I^2.RC}{T}} \quad \text{if } T >> RC$$

8



Example for 4 oscillations:

$$I\ eff/rms = \sqrt{\sum_{i}^{8} \frac{I^2 i}{2} \frac{t_o}{8T}}$$

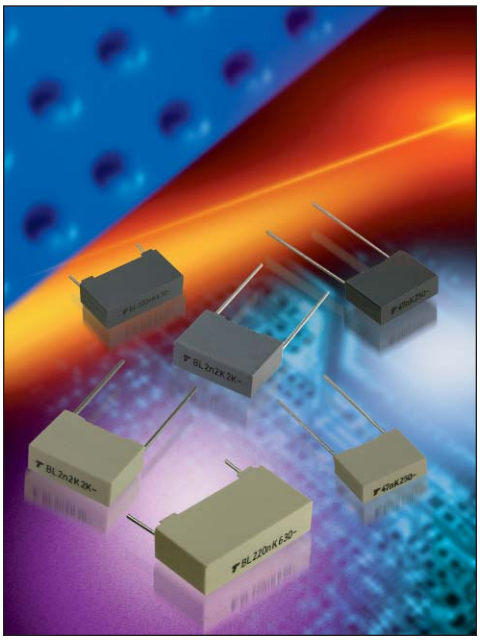
Polypropylene Film Dielectric Capacitors

Type Selection Guide

Voltage Gradient Capacitors $(du/dt)_R$						
Presentation	**Models LCC**	**Types UTE**	**Nominal Voltages**		**Capacitance Range C_R**	**Tolerances Sur/on C_R**
			U_R- (V)	**U_R~ (V)**		
Radial Leads	**BL** (PBS)	**PPM6** C93-156	160 ... 2000	100 ... 500	1nF ... 6.8µF	± 5% (E12) ± 10% (E6)
	BA (PS)		630 ... 2000	300 ... 600	1nF ... 390nF	± 5% (E12) ± 10% (E6)

BL 07/10/15/22/27

PPM6 (BB/PBS)



Schematic Cross Section

APPLICATIONS

- Commodity Product:
  - Decoupling with AC or pulse components
  - High current uses (TV deflection coils)
  - Capacitive dividers
  - Energy saving lamps, etc.

TECHNOLOGY

- Dielectric: Polypropylene film
- Wound capacitor
- Leads: Radial tinned wire
- Protection: Plastic case (UL94: V-O) / Polyurethane resin
- Marking: Logo
  Type
  Nominal Capacitance
  Tolerance (EIA)
  DC Nominal Voltage
  Example: **T BL 100n J 250**
- Delivery Mode: Bulk
  Taped (reel) for pitch = 7.5-10 & 15mm

PERFORMANCE CHARACTERISTICS

Climatic Category:	55/100/56
Capacitance Range:	C_R 1 nF to 6.8 µF (E24)
Tolerances on C_R:	±5%, ±10%
Nominal Voltages:	V_{r-} 160/250/400/630/1000/1600/2000 V $V_{r\sim}$ 100/160/200/250/350/400/500 V
Category Voltage:	$V_c = 0.7\ V_R$ at 100°C
Test Voltage:	$V_e = 1.6\ V_R$ / 2s at 25°C
Total Self Inductance (L):	For lead length = 2mm

Pitch (mm)	7.5	10	15	22.5	27.5
L (nH)	8	9	10	18	18

Tangent of Loss Angle:	D.F. ≤ 10 * 10^{-4} at 1 kHz 25°C
Insulation Resistance:	IR > 100 GΩ for C ≤0.33µF IR > 30000s for C >0.33µF
Condition of Measurement:	100V (±15) at 25°C

dv/dt:

V_{R-}	160	250	400	630	1000	1600	2000
$(dv/dt)_R$ max pitch: 7.5mm	1200	1310	1620	2750			
$(dv/dt)_R$ max pitch: 10mm	850	1000	1250	2500			
$(dv/dt)_R$ max pitch: 15mm	107	154	247	280	400	460	690
$(dv/dt)_R$ max pitch: 22.5mm	85	120	130	150	280	390	485
$(dv/dt)_R$ max pitch: 27.5mm	56	65	80	90	144	203	253

Thermal Resistance: R_{th} hot spot/ambient (°C/W)

Pitch (mm)	7.5mm	10mm		15mm				22.5mm					27.5mm			
Case	2	4	5	6	8	9	10	11	12	13	23	24	16	P0	18	19
Rth	120	94	82	127	103	94	82	71	58	53	49	39	47	45	37	33

STANDARDIZATION

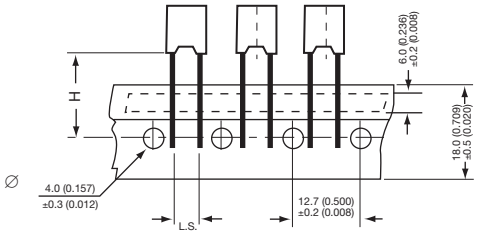
CEI 384-16 & CEI 384-17
Performance Class 1-1

PACKAGING

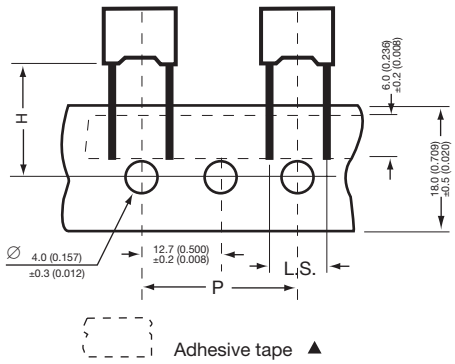
- **Reel**

	Taping Suffix EN		
	Lead Spacing Tol ±0.4 (0.016)		
	Pitch 7.5 (0.295)	Pitch 10 (0.394)	Pitch: 15 (0.590)
P	12.7 ±1 (0.500 ±0.039)	25.4 ±1 (1.0 ±0.039)	25.4 ±1 (1.0 ±0.039)
H	16.5 ±0.3 (0.650 ±0.012)	16 +1.5/–0.5 (0.600 +0.059/–0.020)	16 +1.5/–0.5 (0.600 +0.059/–0.020)

Lead Spacing: 7.5 (0.295)



Lead Spacing: 15 (0.394/0.590)



(Other sizes according to standard CEI : 286-2)
Dimensions: millimeters (inches)

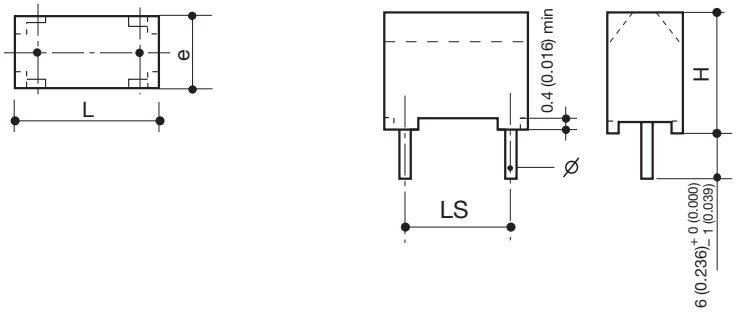
- **Bulk**

Suffix	- -	LG	KB	KC	KE	KH	KK	K3	K7
Leads Length	6mm +0/–1	3.2mm ±0.4	3.5mm ±0.5	4mm ±0.5	5mm ±0.5	9mm ±0.5	15mm ±0.5	20mm ±1	25mm ±1

Standard Suffix: - -
Special MOQ for these special suffix

BL 07/10/15/22/27

Pitch = 7.5mm & 10mm



BL07

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Reel	Bulk[1]	∅ +10% -0.5 mm	I²t (A².sec)	Irms (A)
07	BL076F0163+- -	160/100	16nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076F0223+- -		22nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076F0333+- -		33nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076G0912+- -	250/160	9.1nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076G0103+- -		10nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076G0153+- -		15nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076I0562+- -	400/200	5.6nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076I0682+- -		6.8nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076I0822+- -		8.2nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076K0102+- -	630/250	1nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076K0222+- -		2.2nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076K0332+- -		3.3nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076K0472+- -		4.7nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*
07	BL076K0512+- -		5.1nF	2	10.1	10.2	5.2	10,000	14,000	0.6	*	*

BL10

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Reel	Bulk[1]	∅ +10% -0.5 mm	I²t (A².sec)	Irms (A)
10	BL106F0363+- -	160/100	36nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106F0473+- -		47nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106F0683+- -		68nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106F0104+- -		104nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106F0124+- -		124nF	5	12.7	13.6	5.2	5600	8000	0.6	*	*
10	BL106F0134+- -		134nF	5	12.7	13.6	5.2	5600	8000	0.6	*	*
10	BL106G0163+- -	250/160	16nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106G0223+- -		22nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106G0333+- -		33nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106G0473+- -		47nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106G0563+- -		56nF	5	12.7	13.6	5.2	5600	8000	0.6	*	*
10	BL106I0912+- -	400/200	9.1nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106I0103+- -		10nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106I0223+- -		22nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106I0333+- -		33nF	5	12.7	13.6	5.2	5600	8000	0.6	*	*
10	BL106K0562+- -	630/250	5.6nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106K0682+- -		6.8nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106K0103+- -		10nF	4	12.7	10.2	5.2	5600	10,000	0.6	*	*
10	BL106K0203+- -		20nF	5	12.7	13.6	5.2	5600	8000	0.6	*	*

Replace the + by the tolerance code: J=5% - K=10%
Replace the - - by the packaging suffix: - - = standard bulk - EN = taping on reel etc
[1]: MOQ for standard bulk suffix - -
*: upon request

BL 07/10/15/22/27

Pitch = 15mm

BL15

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Reel	Bulk[1]	∅ +10% -0.5 mm	I^2t (A^2.sec)	Irms (A)
15	BL156F0154+- -	160/100	150nF	6	17.7	10.6	5.2	4000	6000	0.8	2.38×10^{-3}	0.673
15	BL156F0224+- -		220nF	8	17.7	13.6	6.7	3332	6000	0.8	3.43×10^{-3}	0.95
15	BL156F0334+- -		330nF	8	17.7	13.6	6.7	3332	6000	0.8	1.15×10^{-2}	1.465
15	BL156F0474+- -		470nF	9	17.7	14.6	8.7	2500	8000	0.8	2.34×10^{-2}	2.059
15	BL156F0684+- -		680nF	10	17.7	16.6	10.2		3600	0.8	4.89×10^{-2}	3.009
15	BL156F0754+- -		750nF	10	17.7	16.6	10.2		3600	0.8	5.95×10^{-2}	3.287
15	BL156G0623+- -	250/160	62nF	6	17.7	10.6	5.2	4000	6000	0.8	1.11×10^{-3}	0.485
15	BL156G0683+- -		68nF	6	17.7	10.6	5.2	4000	6000	0.8	1.33×10^{-3}	0.485
15	BL156G0104+- -		100nF	8	17.7	13.6	6.7	3332	6000	0.8	2.38×10^{-3}	0.727
15	BL156G0154+- -		150nF	8	17.7	13.6	6.7	3332	6000	0.8	5.36×10^{-3}	1.067
15	BL156G0224+- -		220nF	9	17.7	14.6	8.7	2500	8000	0.8	1.51×10^{-2}	1.552
15	BL156G0334+- -		330nF	10	17.7	16.6	10.2		3600	0.8	2.59×10^{-2}	2.376
15	BL156G0434+- -		430nF	10	17.7	16.6	10.2		3600	0.8	4.40×10^{-2}	3.055
15	BL156I0513+- -	400/200	51nF	6	17.7	10.6	5.2	4000	6000	0.8	1.59×10^{-3}	0.388
15	BL156I0683+- -		68nF	6	17.7	10.6	5.2	4000	6000	0.8	2.83×10^{-3}	0.533
15	BL156I0104+- -		100nF	8	17.7	13.6	6.7	3332	6000	0.8	6.12×10^{-3}	0.824
15	BL156I0154+- -		150nF	8	17.7	13.6	6.7	3332	6000	0.8	1.38×10^{-2}	1.212
15	BL156I0224+- -		220nF	9	17.7	14.6	8.7	2500	8000	0.8	2.96×10^{-2}	1.794
15	BL156I0334+- -		330nF	10	17.7	16.6	10.2		3600	0.8	6.66×10^{-2}	2.667
15	BL156I0394+- -		390nF	10	17.7	16.6	10.2		3600	0.8	9.31×10^{-2}	3.152
15	BL156K0303+- -	630/250	30nF	6	17.7	10.6	5.2	4000	6000	0.8	9.79×10^{-4}	0.392
15	BL156K0333+- -		33nF	6	17.7	10.6	5.2	4000	6000	0.8	1.18×10^{-3}	0.392
15	BL156K0473+- -		47nF	8	17.7	13.6	6.7	3332	6000	0.8	2.40×10^{-3}	0.56
15	BL156K0683+- -		68nF	8	17.7	13.6	6.7	3332	6000	0.8	5.03×10^{-3}	0.84
15	BL156K0104+- -		100nF	9	17.7	14.6	8.7	2500	8000	0.8	1.09×10^{-2}	1.232
15	BL156K0154+- -		150nF	9	17.7	14.6	8.7	2500	8000	0.8	2.45×10^{-2}	1.848
15	BL156K0224+- -		220nF	10	17.7	16.6	10.2		3600	0.8	5.27×10^{-2}	2.744
15	BL156L0102+- -	1000/350	1nF	6	17.7	10.6	5.2	4000	6000	0.8	8.47×10^{-6}	0.23
15	BL156L0222+- -		2.2nF	6	17.7	10.6	5.2	4000	6000	0.8	2.62×10^{-5}	0.343
15	BL156L0332+- -		3.3nF	8	17.7	13.6	6.7	3332	6000	0.8	4.10×10^{-5}	0.376
15	BL156L0472+- -		4.7nF	8	17.7	13.6	6.7	3332	6000	0.8	8.31×10^{-5}	0.501
15	BL156L0682+- -		6.8nF	8	17.7	13.6	6.7	3332	6000	0.8	1.74×10^{-4}	0.751
15	BL156L0103+- -		10nF	8	17.7	13.6	6.7	3332	6000	0.8	3.76×10^{-4}	1.064
15	BL156L0153+- -		15nF	9	17.7	14.6	8.7	2500	8000	0.8	5.42×10^{-4}	1.12
15	BL156L0223+- -		22nF	9	17.7	14.6	8.7	2500	8000	0.8	1.17×10^{-3}	1.68
15	BL156L0333+- -		33nF	10	17.7	16.6	10.2		3600	0.8	2.62×10^{-3}	2.52
15	BL156M0102+- -	1600/400	1nF	6	17.7	10.6	5.2	4000	6000	0.8	8.47×10^{-6}	0.153
15	BL156M0222+- -		2.2nF	6	17.7	10.6	5.2	4000	6000	0.8	2.62×10^{-5}	0.374
15	BL156M0332+- -		3.3nF	8	17.7	13.6	6.7	3332	6000	0.8	4.92×10^{-5}	0.413
15	BL156M0472+- -		4.7nF	8	17.7	13.6	6.7	3332	6000	0.8	9.98×10^{-5}	0.551
15	BL156M0682+- -		6.8nF	8	17.7	13.6	6.7	3332	6000	0.8	2.09×10^{-4}	0.826
15	BL156M0103+- -		10nF	9	17.7	14.6	8.7	2500	8000	0.8	4.52×10^{-4}	1.24
15	BL156M0153+- -		15nF	10	17.7	16.6	10.2		3600	0.8	1.02×10^{-3}	1.86
15	BL156M0183+- -		18nF	10	17.7	16.6	10.2		3600	0.8	1.46×10^{-3}	2.204
15	BL156N0102+- -	2000/500	1nF	6	17.7	10.6	5.2	4000	6000	0.8	8.47×10^{-6}	0.153
15	BL156N0222+- -		2.2nF	8	17.7	13.6	6.7	3332	6000	0.8	4.10×10^{-5}	0.383
15	BL156N0332+- -		3.3nF	8	17.7	13.6	6.7	3332	6000	0.8	9.22×10^{-5}	0.613
15	BL156N0472+- -		4.7nF	8	17.7	13.6	6.7	3332	6000	0.8	1.87×10^{-4}	0.92
15	BL156N0682+- -		6.8nF	9	17.7	14.6	8.7	2500	8000	0.8	3.92×10^{-4}	1.304
15	BL156N0912+- -		9.1nF	10	17.7	16.6	10.2		3600	0.8	7.01×10^{-4}	1.764

Replace the + by the tolerance code: J=5% - K=10%
Replace the - - by the packaging suffix: - - = standard bulk - EN = taping on reel etc
[1]: MOQ for standard bulk suffix - -

BL 07/10/15/22/27

Pitch = 22.5mm

BL22

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Bulk	∅ +10% -0.5 mm	I²t (A².sec)	Irms (A)
22.5	BL226F0824+- -	160/100	820nF	12	26.7	17.6	7.7	1600	0.8	5.64×10^{-2}	2.019
22.5	BL226F0105+- -		1µF	12	26.7	17.6	7.7	1600	0.8	8.40×10^{-2}	2.455
22.5	BL226F0155+- -		1.5µF	13	26.7	19.6	10.2	1200	0.8	1.89×10^{-1}	3.722
22.5	BL226F0225+- -		2.2µF	23	26.7	21.6	12.7	960	0.8	4.06×10^{-1}	5.425
22.5	BL226F0335+- -		3.3µF	24	26.7	25.6	15.2	1600	0.8	9.14×10^{-1}	8.157
22.5	BL226F0365+- -		3.6µF	24	26.7	25.6	15.2	1600	0.8	1.09 x 100	8.91
22.5	BL226G0474+- -	250/160	470nF	12	26.7	17.6	7.7	1600	0.8	4.04×10^{-2}	2.037
22.5	BL226G0684+- -		680nF	13	26.7	19.6	10.2	1200	0.8	8.45×10^{-2}	2.91
22.5	BL226G0105+- -		1µF	23	26.7	21.6	12.7	960	0.8	1.83×10^{-1}	4.316
22.5	BL226G0155+- -		1.5µF	24	26.7	25.6	15.2	1600	0.8	4.11×10^{-1}	6.45
22.5	BL226G0185+- -		1.8µF	24	26.7	25.6	15.2	1600	0.8	5.92×10^{-1}	7.711
22.5	BL226I0434+- -	400/200	430nF	12	26.7	17.6	7.7	1600	0.8	6.00×10^{-2}	1.94
22.5	BL226I0474+- -		470nF	12	26.7	17.6	7.7	1600	0.8	7.17×10^{-2}	2.134
22.5	BL226I0684+- -		680nF	13	26.7	19.6	10.2	1200	0.8	1.50×10^{-1}	3.104
22.5	BL226I0105+- -		1µF	23	26.7	21.6	12.7	960	0.8	3.25×10^{-1}	4.559
22.5	BL226I0155+- -		1.5µF	24	26.7	25.6	15.2	1600	0.8	7.31×10^{-1}	6.79
22.5	BL226I0165+- -		1.6µF	24	26.7	25.6	15.2	1600	0.8	8.31×10^{-1}	7.275
22.5	BL226K0244+- -	630/250	240nF	12	26.7	17.6	7.7	1600	0.8	3.33×10^{-2}	1.68
22.5	BL226K0334+- -		330nF	13	26.7	19.6	10.2	1200	0.8	6.29×10^{-2}	2.296
22.5	BL226K0474+- -		470nF	23	26.7	21.6	12.7	960	0.8	1.28×10^{-1}	3.304
22.5	BL226K0684+- -		680nF	24	26.7	25.6	15.2	1600	0.8	2.67×10^{-1}	4.76
22.5	BL226K0105+- -		1µF	24	26.7	25.6	15.2	1600	0.8	5.77×10^{-1}	7
22.5	BL226L0822+- -	1000/350	8.2nF	11	26.7	15.2	7.7	1600	0.8	2.14×10^{-4}	0.482
22.5	BL226L0103+- -		10nF	11	26.7	15.2	7.7	1600	0.8	3.18×10^{-4}	0.62
22.5	BL226L0223+- -		22nF	11	26.7	15.2	7.7	1600	0.8	1.28×10^{-3}	1.127
22.5	BL226L0333+- -		33nF	11	26.7	15.2	7.7	1600	0.8	1.84×10^{-3}	1.232
22.5	BL226L0473+- -		47nF	13	26.7	19.6	10.2	1200	0.8	3.74×10^{-3}	1.736
22.5	BL226L0683+- -		68nF	13	26.7	19.6	10.2	1200	0.8	7.82×10^{-3}	2.52
22.5	BL226L0104+- -		100nF	23	26.7	21.6	12.7	960	0.8	1.69×10^{-2}	3.696
22.5	BL226L0124+- -		120nF	23	26.7	21.6	12.7	960	0.8	2.44×10^{-2}	4.424
22.5	BL226M0103+- -	1600/400	10nF	11	26.7	15.2	7.7	1600	0.8	3.82×10^{-4}	0.686
22.5	BL226M0223+- -		22nF	11	26.7	15.2	7.7	1600	0.8	1.54×10^{-3}	1.377
22.5	BL226M0333+- -		33nF	13	26.7	19.6	10.2	1200	0.8	3.46×10^{-3}	2.066
22.5	BL226M0473+- -		47nF	23	26.7	21.6	12.7	960	0.8	7.03×10^{-3}	2.893
22.5	BL226M0623+- -		62nF	23	26.7	21.6	12.7	960	0.8	1.22×10^{-2}	3.857
22.5	BL226N0302+- -	2000/500	3nF	11	26.7	15.2	7.7	1600	0.8	5.37×10^{-5}	0.307
22.5	BL226N0332+- -		3.3nF	11	26.7	15.2	7.7	1600	0.8	6.50×10^{-5}	0.307
22.5	BL226N0472+- -		4.7nF	11	26.7	15.2	7.7	1600	0.8	1.32×10^{-4}	0.46
22.5	BL226N0682+- -		6.8nF	11	26.7	15.2	7.7	1600	0.8	2.76×10^{-4}	0.613
22.5	BL226N0103+- -		10nF	11	26.7	15.2	7.7	1600	0.8	5.96×10^{-4}	0.92
22.5	BL226N0223+- -		22nF	13	26.7	19.6	10.2	1200	0.8	2.89×10^{-3}	2.07
22.5	BL226N0333+- -		33nF	23	26.7	21.6	12.7	960	0.8	6.50×10^{-3}	3.144
22.5	BL226N0363+- -		36nF	23	26.7	21.6	12.7	960	0.8	7.73×10^{-3}	3.451

Replace the + by the tolerance code: J=5% - K=10%
Replace the - - by the packaging suffix: - - = standard bulk - EN = taping on reel etc

BL 07/10/15/22/27

Pitch = 27.5mm

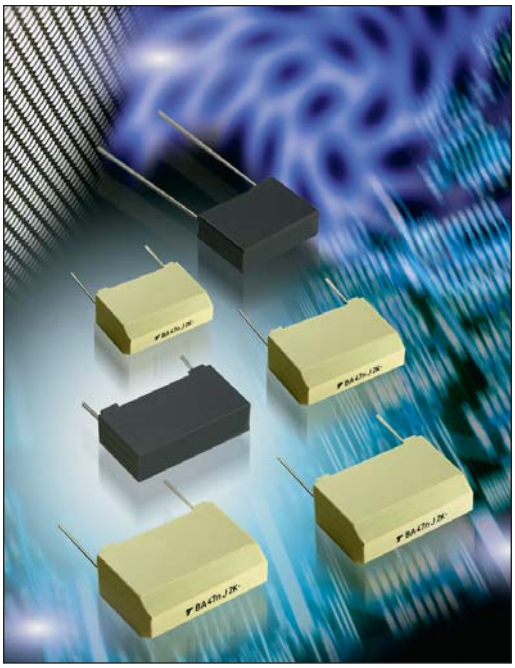
BL27

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Bulk	∅ +10% -0.5 mm	I^2t (A^2.sec)	Irms (A)
27.5	BL276F0165+- -	160/100	1.6µF	16	31.7	19.6	10.2	960	0.8	1.40×10^{-1}	2.93
27.5	BL276F0225+- -		2.2µF	P0	31.7	22.6	13.7	1600	0.8	2.65×10^{-1}	4.039
27.5	BL276F0335+- -		3.3µF	18	31.7	26.2	15.2	1280	0.8	5.96×10^{-1}	6.058
27.5	BL276F0475+- -		4.7µF	18	31.7	26.2	15.2	1280	0.8	1.21×10^{-3}	8.593
27.5	BL276F0685+- -		6.8µF	19	31.7	30.2	17.7	1040	0.8	2.53×10^{-3}	12.473
27.5	BL276G0914+- -	250/160	910nF	16	31.7	19.6	10.2	960	0.8	9.34×10^{-3}	3.055
27.5	BL276G0105+- -		1µF	16	31.7	19.6	10.2	960	0.8	1.13×10^{-2}	3.395
27.5	BL276G0225+- -		2.2µF	P0	31.7	22.6	13.7	1600	0.8	4.14×10^{-2}	7.084
27.5	BL276G0335+- -		3.3µF	18	31.7	26.2	15.2	1280	0.8	9.31×10^{-2}	10.625
27.5	BL276G0475+- -		4.7µF	19	31.7	30.2	17.7	1040	0.8	1.89×10^{-0}	12.485
27.5	BL276I0754+- -	400/200	750nF	16	31.7	19.6	10.2	960	0.8	1.10×10^{-1}	2.522
27.5	BL276I0105+- -		1µF	16	31.7	19.6	10.2	960	0.8	1.95×10^{-1}	3.346
27.5	BL276I0225+- -		2.2µF	18	31.7	26.2	15.2	1280	0.8	9.46×10^{-1}	7.42
27.5	BL276I0305+- -		3µF	19	31.7	30.2	17.7	1040	0.8	1.76×10^{-0}	10.087
27.5	BL276K0434+- -	630/250	430nF	16	31.7	19.6	10.2	960	0.8	6.42×10^{-2}	2.352
27.5	BL276K0474+- -		470nF	16	31.7	19.6	10.2	960	0.8	7.68×10^{-2}	2.52
27.5	BL276K0684+- -		680nF	P0	31.7	22.6	13.7	1600	0.8	1.61×10^{-1}	3.696
27.5	BL276K0105+- -		1µF	18	31.7	26.2	15.2	1280	0.8	3.47×10^{-1}	5.432
27.5	BL276K0185+- -		1.8µF	19	31.7	30.2	17.7	1040	0.8	1.13×10^{-0}	9.744
27.5	BL276L0563+- -	1000/350	56nF	16	31.7	19.6	10.2	960	0.8	4.30×10^{-3}	2.00
27.5	BL276L0104+- -		100nF	16	31.7	19.6	10.2	960	0.8	8.85×10^{-3}	2.688
27.5	BL276L0224+- -		220nF	18	31.7	26.2	15.2	1280	0.8	4.28×10^{-2}	5.88
27.5	BL276L0334+- -		330nF	19	31.7	30.2	17.7	1040	0.8	9.64×10^{-2}	8.848
27.5	BL276L0364+- -		360nF	19	31.7	30.2	17.7	1040	0.8	1.15×10^{-1}	9.632
27.5	BL276M0303+- -	1600/400	30nF	16	31.7	19.6	10.2	960	0.8	1.79×10^{-3}	1.44
27.5	BL276M0333+- -		33nF	16	31.7	19.6	10.2	960	0.8	2.17×10^{-3}	1.646
27.5	BL276M0473+- -		47nF	16	31.7	19.6	10.2	960	0.8	4.40×10^{-3}	2.332
27.5	BL276M0683+- -		68nF	18	31.7	26.2	15.2	1280	0.8	9.21×10^{-3}	3.361
27.5	BL276M0104+- -		100nF	18	31.7	26.2	15.2	1280	0.8	1.99×10^{-2}	4.938
27.5	BL276M0154+- -		150nF	19	31.7	30.2	17.7	1040	0.8	4.48×10^{-2}	7.339
27.5	BL276N0153+- -	2000/500	15nF	16	31.7	19.6	10.2	960	0.8	7.00×10^{-4}	0.997
27.5	BL276N0223+- -		22nF	16	31.7	19.6	10.2	960	0.8	1.51×10^{-3}	1.534
27.5	BL276N0333+- -		33nF	16	31.7	19.6	10.2	960	0.8	3.39×10^{-3}	2.3
27.5	BL276N0473+- -		47nF	18	31.7	26.2	15.2	1280	0.8	6.87×10^{-3}	3.221
27.5	BL276N0683+- -		68nF	18	31.7	26.2	15.2	1280	0.8	1.44×10^{-2}	4.678
27.5	BL276N0104+- -		100nF	19	31.7	30.2	17.7	1040	0.8	3.11×10^{-2}	6.904

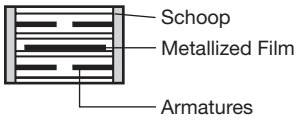
Replace the + by the tolerance code: J=5% - K=10%
Replace the - - by the packaging suffix: - - = standard bulk - EN = taping on reel etc

BA 15/22/27

BP or PS



Schematic Cross Section



APPLICATIONS

- Commodity Product:
  - Decoupling with AC or pulse components
  - High current uses (TV deflection coils)
  - Capacitive dividers
  - Energy saving lamps, etc.

TECHNOLOGY

- Dielectric: Polypropylene film foil
- Wound capacitor
- Leads: Radial tinned wire
- Protection: Plastic case (UL94: V-O) / Polyurethane resin
- Marking: Logo
  Type
  Nominal Capacitance
  Tolerance (EIA)
  DC Nominal Voltage
  Example: **T BA 4.7n J 630**
- Delivery Mode: Bulk
  Taped (reel) for pitch = 15mm only

PERFORMANCE CHARACTERISTICS

Climatic Category:	55/100/56
Capacitance Range:	C_R 1 nF to 390 nF (E24)
Tolerances on C_R:	±5%, ±10%
Nominal Voltages:	$V_{r\_}$ 630/1000/1600/20005791CHAR1.294 317.47403 mAR1.294 317.47403 ISBT/618(V)TJ0.0278 Tw 9

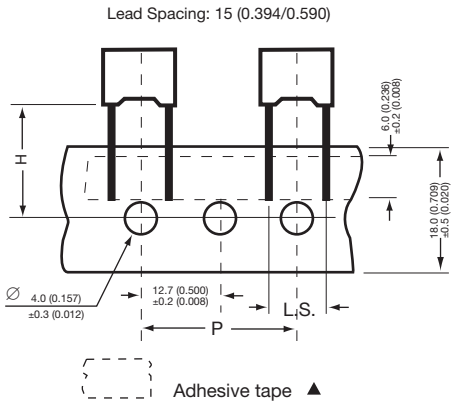
BA 15/22/27

Pitch = 15mm / 22.5mm / 27.5mm

PACKAGING

• Reel

	Taping Suffix EN
	Lead Spacing Tol ±0.4 (0.016)
	Pitch: 15 (0.590)
P	25.4 ±1 (1.0 ±0.039)
H	16 +1.5/–0.5 (0.600 +0.059/–0.020)



(Other sizes according to standard CEI : 286-2)
Dimensions: millimeters (inches)

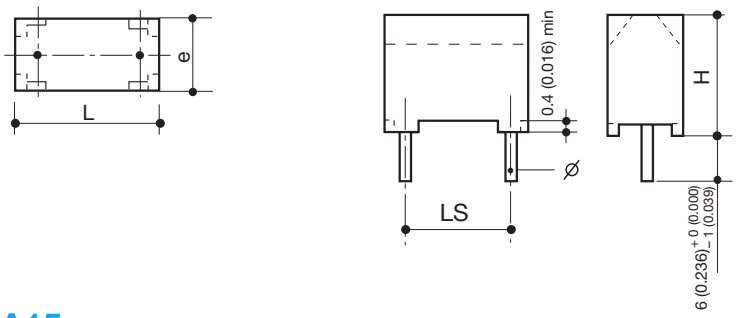
• Bulk

Suffix	- -	LG	KB	KC	KE	KH	KK	K3	K7
Leads Length	6mm +0/–1	3.2mm ±0.4	3.5mm ±0.5	4mm ±0.5	5mm ±0.5	9mm ±0.5	15mm ±0.5	20mm ±1	25mm ±1

Standard Suffix: - -
Special MOQ for these special suffix

BA 15/22/27

Pitch = 15mm



BA15

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Reel	Bulk[1]	∅ +10% -0.5 mm	I²t (A².sec)	Irms (A)
15	BA156K0332+- -	630/350	3.3nF	6	17.7	10.6	5.2	4000	6000	0.8	5.81×10^{-4}	0.30
15	BA156K0472+- -		4.7nF	6	17.7	10.6	5.2	4000	6000	0.8	9.43×10^{-4}	0.39
15	BA156K0682+- -		6.8nF	8	17.7	13.6	6.7	3332	6000	0.8	1.09×10^{-3}	0.48
15	BA156K0103+- -		10nF	8	17.7	13.6	6.7	3332	6000	0.8	2.35×10^{-3}	0.71
15	BA156K0223+- -		22nF	9	17.7	14.6	8.7	2500	8000	0.8	1.14×10^{-2}	1.55
15	BA156K0333+- -		33nF	10	17.7	16.6	10.2		3600	0.8	2.56×10^{-2}	2.33
15	BA156K0393+- -		39nF	10	17.7	16.6	10.2		3600	0.8	3.58×10^{-2}	2.74
15	BA156L0102+- -	1000/450	1nF	6	17.7	10.6	5.2	4000	6000	0.8	1.07×10^{-4}	0.21
15	BA156L0152+- -		1.5nF	6	17.7	10.6	5.2	4000	6000	0.8	2.40×10^{-4}	0.33
15	BA156L0222+- -		2.2nF	6	17.7	10.6	5.2	4000	6000	0.8	4.30×10^{-4}	0.40
15	BA156L0332+- -		3.3nF	6	17.7	10.6	5.2	4000	6000	0.8	5.81×10^{-4}	0.40
15	BA156L0472+- -		4.7nF	6	17.7	10.6	5.2	4000	6000	0.8	9.43×10^{-4}	0.50
15	BA156L0682+- -		6.8nF	8	17.7	13.6	6.7	3332	6000	0.8	1.97×10^{-3}	0.63
15	BA156L0103+- -		10nF	8	17.7	13.6	6.7	3332	6000	0.8	4.27×10^{-3}	0.92
15	BA156L0153+- -		15nF	9	17.7	14.6	8.7	2500	8000	0.8	9.60×10^{-3}	1.38
15	BA156L0223+- -		22nF	10	17.7	16.6	10.2		3600	0.8	2.07×10^{-2}	2.03
15	BA156L0273+- -		27nF	10	17.7	16.6	10.2		3600	0.8	3.11×10^{-2}	2.50
15	BA156M0102+- -	1600/550	1nF	6	17.7	10.6	5.2	4000	6000	0.8	1.07×10^{-4}	0.21
15	BA156M0152+- -		1.5nF	6	17.7	10.6	5.2	4000	6000	0.8	2.41×10^{-4}	0.33
15	BA156M0222+- -		2.2nF	6	17.7	10.6	5.2	4000	6000	0.8	5.18×10^{-4}	0.45
15	BA156M0332+- -		3.3nF	8	17.7	13.6	6.7	3332	6000	0.8	1.17×10^{-3}	0.62
15	BA156M0472+- -		4.7nF	8	17.7	13.6	6.7	3332	6000	0.8	2.36×10^{-3}	0.88
15	BA156M0682+- -		6.8nF	9	17.7	14.6	8.7	2500	8000	0.8	4.95×10^{-3}	1.28
15	BA156M0103+- -		10nF	10	17.7	16.6	10.2		3600	0.8	1.07×10^{-2}	1.89
15	BA156M0123+- -		12nF	10	17.7	16.6	10.2		3600	0.8	1.54×10^{-2}	2.25
15	BA156N0102+- -	2000/650	1nF	6	17.7	10.6	5.2	4000	6000	0.8	1.81×10^{-4}	0.26
15	BA156N0152+- -		1.5nF	6	17.7	10.6	5.2	4000	6000	0.8	4.14×10^{-4}	0.38
15	BA156N0222+- -		2.2nF	8	17.7	13.6	6.7	3332	6000	0.8	8.92×10^{-4}	0.58
15	BA156N0332+- -		3.3nF	8	17.7	13.6	6.7	3332	6000	0.8	2.00×10^{-3}	0.86
15	BA156N0472+- -		4.7nF	9	17.7	14.6	8.7	2500	8000	0.8	4.07×10^{-3}	1.22
15	BA156N0682+- -		6.8nF	10	17.7	16.6	10.2		3600	0.8	8.52×10^{-3}	1.77
15	BA156N0822+- -		8.2nF	10	17.7	16.6	10.2		3600	0.8	1.24×10^{-2}	2.14

Replace the + by the tolerance code: J=5% - K=10%
Replace the - - by the packaging suffix: - - = standard bulk - EN = taping on reel etc
[1]: MOQ for standard bulk suffix - -

BA 15/22/27

Pitch = 22.5mm/27.5mm

BA22

Pitch = 22.5mm

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Reel	Bulk[1]	∅ +10% -0.5 mm	I^2t (A^2.sec)	Irms (A)
22.5	BA226K0363+- -	630/350	36nF	12	26.7	17.6	7.7		1600	0.8	2.29×10^{-2}	1.39
22.5	BA226K0473+- -		47nF	12	26.7	17.6	7.7		1600	0.8	3.90×10^{-2}	1.81
22.5	BA226K0683+- -		68nF	13	26.7	19.6	10.2		1200	0..8	8.15×10^{-2}	2.63
22.5	BA226K0104+- -		100nF	23	26.7	21.6	12.7		960	0.8	1.76×10^{-1}	3.86
22.5	BA226K0204+- -		200nF	24	26.7	25.6	15.2		1600	0.8	7.05×10^{-1}	7.72
22.5	BA226L0243+- -	1000/450	24nF	12	26.7	17.6	7.7		1600	0.8	1.57×10^{-2}	1.15
22.5	BA226L0333+- -		33nF	12	26.7	17.6	7.7		1600	0.8	2.97×10^{-2}	1.57
22.5	BA226L0473+- -		47nF	13	26.7	19.6	10.2		1200	0.8	6.02×10^{-2}	2.24
22.5	BA226L0683+- -		68nF	23	26.7	21.6	12.7		960	0.8	1.26×10^{-1}	3.24
22.5	BA226L0104+- -		100nF	24	26.7	25.6	15.2		1600	0.8	2.73×10^{-1}	3.98
22.5	BA226L0154+- -		150nF	24	26.7	25.6	15.2		1600	0.8	3.15×10^{-1}	7.14
22.5	BA226M0103+- -	1600/550	10nF	12	26.7	17.6	7.7		1600	0.8	6.82×10^{-3}	0.97
22.5	BA226M0223+- -		22nF	13	26.7	19.6	10.2		1200	0.8	3.30×10^{-2}	2.14
22.5	BA226M0333+- -		33nF	23	26.7	21.6	12.7		960	0.8	7.42×10^{-2}	3.21
22.5	BA226M0473+- -		47nF	23	26.7	21.6	12.7		960	0.8	1.51×10^{-1}	4.58
22.5	BA226M0683+- -		68nF	24	26.7	25.6	15.2		1600	0.8	3.15×10^{-1}	6.61
22.5	BA226N0562+- -	2000/650	5.6nF	12	26.7	17.6	7.7		1600	0.8.	3.01×10^{-3}	0.70
22.5	BA226N0682+- -		6.8nF	12	26.7	17.6	7.7		1600	0.8	4.44×10^{-3}	0.85
22.5	BA226N0103+- -		10nF	12	26.7	17.6	7.7		1600	0.8	9.60×10^{-3}	1.25
22.5	BA226N0223+- -		22nF	13	26.7	19.6	10.2		1200	0.8	4.65×10^{-2}	2.76
22.5	BA226N0333+- -		33nF	23	26.7	21.6	12.7		960	0.8	1.05×10^{-1}	4.14
22.5	BA226N0473+- -		47nF	24	26.7	25.6	15.2		1600	0.8	2.12×10^{-1}	5.90
22.5	BA226N0563+- -		56nF	24	26.7	25.6	15.2		1600	0.8	3.01×10^{-1}	7.02

Replace the + by the tolerance code: J=5% - K=10%
Replace the - - by the packaging suffix: - - = standard bulk - EN = taping on reel etc
[1]: MOQ for standard bulk suffix - -

BA27

Pitch = 27.5mm

Pitch mm	Ordering Code	Vr-/Vr~	Cr	Case	Dimensions (mm) L max	H max	e max	MOQ Reel	Bulk[1]	∅ +10% -0.5 mm	I^2t (A^2.sec)	Irms (A)
27.5	BA276K0683+- -	630/350	68nF	16	31.7	19.6	10.2		960	0.8	2.53×10^{-2}	1.99
27.5	BA276K0104+- -		100nF	16	31.7	19.6	10.2		960	0.8	5.47×10^{-2}	2.92
27.5	BA276K0224+- -		220nF	18	31.7	26.2	15.2		1280	0.8	2.65×10^{-1}	6.42
27.5	BA276K0334+- -		330nF	19	31.7	30.2	17.7		1040	0.8	5.96×10^{-1}	9.63
27.5	BA276K0394+- -		390nF	19	31.7	30.2	17.7		1040	0.8	8.32×10^{-1}	11.39
27.5	BA276L0473+- -	1000/450	47nF	16	31.7	19.6	10.2		960	0.8	2.67×10^{-2}	1.67
27.5	BA276L0683+- -		68nF	16	31.7	19.6	10.2		960	0.8	5.59×10^{-2}	2.41
27.5	BA276L0104+- -		100nF	P0	31.7	22.6	13.7		1600	0.8	1.21×10^{-1}	3.55
27.5	BA276L0224+- -		220nF	18	31.7	26.2	15.2		1280	0.8	5.85×10^{-1}	7.79
27.5	BA276L0304+- -		300nF	19	31.7	30.2	17.7		1040	0.8	1.09×10^{-0}	10.63
27.5	BA276M0303+- -	1600/550	30nF	16	31.7	19.6	10.2		960	0.8	2.72×10^{-2}	2.18
27.5	BA276M0333+- -		33nF	16	31.7	19.6	10.2		960	0.8	3.29×10^{-2}	2.39
27.5	BA276M0473+- -		47nF	16	31.7	19.6	10.2		960	0.8	6.68×10^{-2}	3.39
27.5	BA276M0683+- -		68nF	P0	31.7	22.6	13.7		1600	0.8	1.40×10^{-1}	4.92
27.5	BA276M0104+- -		100nF	18	31.7	26.2	15.2		1280	0.8	3.02×10^{-1}	7.23
27.5	BA276M0154+- -		150nF	19	31.7	30.2	17.7		1040	0.8	6.80×10^{-1}	10.85
27.5	BA276N0153+- -	2000/650	15nF	16	31.7	19.6	10.2		960	0.8	9.07×10^{-3}	1.00
27.5	BA276N0223+- -		22nF	16	31.7	19.6	10.2		960	0.8	1.95×10^{-2}	2.02
27.5	BA276N0333+- -		33nF	16	31.7	19.6	10.2		960	0.8	4.39×10^{-2}	3.70
27.5	BA276N0473+- -		47nF	P0	31.7	22.6	13.7		1600	0.8	8.90×10^{-2}	4.35
27.5	BA276N0683+- -		68nF	18	31.7	26.2	15.2		1280	0.8	1.86×10^{-1}	5.90
27.5	BA276N0104+- -		100nF	19	31.7	30.2	17.7		1040	0.8	4.03×10^{-1}	8.68
27.5	BA276N0124+- -		120nF	19	31.7	30.2	17.7		1040	0.8	5.80×10^{-1}	10.41

Replace the + by the tolerance code: J=5% - K=10%
Replace the - - by the packaging suffix: - - = standard bulk - EN = taping on reel etc
[1]: MOQ for standard bulk suffix - -

PRESENTATION

– Required shape
(rectangular or cylindrical case - molded unit, etc.)

_____
_____
_____
_____

– Max. dimensions

_____
_____
_____

– Required output terminals type

_____
_____

– One plate connected or not to the case

_____
_____
_____

– Environment

_____
_____
_____

– Drawing (if necessary)

_____

Marking

Standard _____ ☐
Other _____ ☐

_____

Packaging

Bulk _____ ☐
One tape on reel _____ ☐

_____

ELECTRICAL CHARACTERISTICS

Max. and min. operating temperatures	from _____ to _____°C
Max. and min. storage temperatures	from _____ to _____°C
Capacitance/Tolerance	C_____ µF _____%
Max. operating voltages (DC and AC)	V_R DC_____ V_R RMS _____ V (F _____Hz)
Max. overvoltages – Duration – Quantity – Frequency	V_S _____ V t_____ ms N_____ F _____ Hz
Test voltage between terminals	V_e DC_____V V_e RMS _____ V (F _____Hz)
Test voltage between shorted terminals and case	V_i DC _____ V V_i RMS_____ V (F = 50 Hz)
Max. currents – Peak – RMS – Frequency	 Icr _____ A I/RMS_____ A F _____ Hz
Voltage gradient	$(dv/dt)_R$_____ V/µs

Application: Diagram of the circuit

Other information
(resistive (or) inductive coupling, ...
Waveforms, etc.)

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Normalized Series and Associated Values

E 6 ±20%	E 12 ±10%	E 24 ±5%	E 48 ±2%	E 96 ±1%
100	100	100	100	100
				102
			105	105
				107
		110	110	110
				113
			115	115
				118
	120	120	121	121
				124
			127	127
		130		130
			133	133
				137
			140	140
				143
			147	147
150	150	150		150
			154	154
				158
		160	162	162
				165

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