

SN SERIES

FEATURES: MINIATURE RADIAL NONPOLAR
TYPE FOR AUDIO SIGNAL CIRCUITS.

ENDURANCE: +85°C, 2000Hrs

REFERENCE
STANDARDS: IS4317/ IEC 384-4

PRODUCT
MARKING



PROVIDED WITH ORANGE COLOUR
AND BLACK PRINT

■ SPECIFICATIONS

PARAMETERS.	PERFORMANCE CHARACTERISTICS									
Operating Temperature	- 40°C to +85 °C									
Working Voltage	6.3 Vdc to 100 Vdc									
Capacitance Range	0.1µF to 2200µF									
Capacitance Tolerance	±20%									
Leakage Current (After 5mt charging through 1000 Ω resistor) IL in µA	IL ≤ 0.03 CV or 4 µA, whichever is greater Where IL = Leakage current in µA C= Capacitance (µF), V= Working Voltage in Volt									
Dissipation factor (Tan δ) Max (at + 27°C, 100 Hz)	WV Vdc	6.3	10	16	25	40	50	63	100	
	Tan δ %	26	24	22	20	15	14	12	10	
For Capacitor ratings with cap value >1000µF add 2% for every 1000µF increase										
Low Temperature Stability	Impedance Ratio at 100 Hz.									
	Rated Voltage (V)	6.3	10	16	25	40	50	63	100	
	Z - 40°C / Z + 27°C	10	8	6	5	4	4	3	3	
Add 1.0 to the Ratio Z- 40°C Per 1000µF, for Cap>1000µF										
Life Tests	Tests		Endurance DC Life Test				Storage Shelf Life Test			
	Test Condition	Parameters	Capacitor at rated voltage and At +85°C for 2000 Hrs, Polarity reversal after 1000 Hrs Measurements after recovery to +27°C				Capacitor under no voltage At +85°C for 1000 Hrs Measurements after recovery to +27°C			
			Δ Capacitance	Within ± 20% of initial measured Value				Within ± 10% of initial measured Value		
	Tan δ	Within 150% of initial limit				Within 120% of initial limit				
	D.C Leakage Current	Within initial limit				Within 200% of initial limit				
(i). Endurance Test at High Temperature + 85°C at WV.										
(ii). Storage Test at High Temperature + 85°C at 0V.										

■ OTHER INFORMATION

Standard rating size, Ripple current, Temperature multiplier and Frequency multiplier	For details refer to page no. 2 &3.
Capacitor Codification System	For details refer to page no. 3
Dimensional Specification	For details refer to page no. 4
Marking Specification	For details refer to page no. 5
Type of Packing and Lead Configuration	(1) Bulk Packing - Straight Lead / Lead Formed and Cut / Kinking and Cut. (2) Taped Ammo Pack - 5mm pitch / 2.5 mm pitch For details refer to page no.6,7&8

SN SERIES

STANDARD RATING TABLE: -

Provides detailed information regarding applicable case size and the appropriate ripple current handling capability of the defined case size.

WV SV Cap(µF)	6.3		10		16		25		40		50		63		100	
	CC	RC	CC	RC	CC	RC	CC	RC	CC	RC	CC	RC	CC	RC	CC	RC
0.10											HS	5	HS	5	HS	5
0.22											HS	7	HS	7	HS	8
0.33											HS	8	HS	9	HS	10
0.47											HS	10	HS	11	HS	12
1.0											HS	15	HS	15	AS	19
2.2									HS	20	HS	22	HS	23	AS	29
3.3									HS	25	HS	26	AS	32	BB	42
4.7							HS	26	HS	30	AS	35	AS	38	BB	51
10					HS	36	HS AS	40 43	AS	50	AS	52	BB	68	CD	91
22			HS	51	AS	62	AS	64	AS	75	BB	93	CB	115	DG	175
33	HS	60	HS	63	AS	75	AS	79	AS	95	BB	115	CD CG	155 165	DK	225
47	HS	72	AS	86	AS	90	BB	115	BB	135	CB	155	CK DG	220 230	DK	270
100	AS	120	BB	155	BB	160	BB	165	CD	215	CG	270	DG DK	335 360		
220	BB	215	CB	255	CB	265	CD DG	305 385	DG	445	DK	490				
330	BB	265	CD	340	CD	355	DG	470	DK	585	EK	685				
470	CB	355	CD	405	CG	460	DG	560	DK	700						
1000	CG	620	DG	745	DK	835										
2200	DK	1075	EK	1270	ER	1435										

Abbreviations used:

WV: Working voltage of the capacitor in Volts.

SV: Surge voltage in volts.

Cap: Capacitance in microfarad.

CC: Case code.

RC: Maximum Ripple current allowed in milli ampere at 100 Hz/ +85°C.

Frequency Multiplier for Ripple Current

Temperature Multiplier for Ripple Current

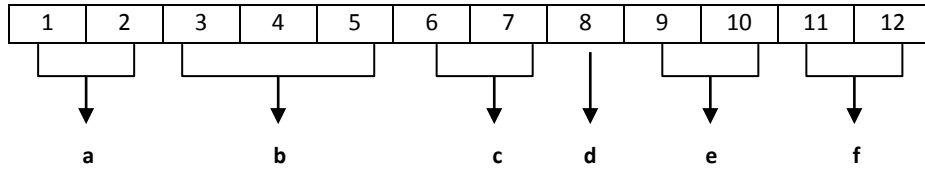
Voltage	Freq. Cap range	50	100	120	300	1K	10K or more
		6.3-100	<47	0.81	1	1.07	1.44
	100-470	0.85	1	1.06	1.30	1.42	1.59
	1000-33000	0.89	1	1.05	1.15	1.18	1.20
160-450	0.47-220	0.85	1	1.06	1.32	1.48	1.70
	330-1000	0.93	1	1.05	1.15	1.18	1.20

Temp (°C)	40	60	70	85
Factor	1.3	1.28	1.15	1

SN SERIES

1. CAPACITOR ORDERING INFORMATION:

Capacitors are identified with the help of 12-digit code. Expansion of Part Nos. for SN series capacitors are detailed below.

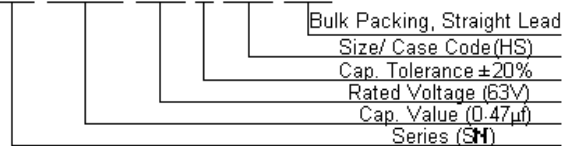


a														
Series Code. Eg: SN														
b														
Capacitance Value Code														
Capacitance (µF)	0.1	1	0.22	2.2	22	220	2200							
Code	R10	010	R22	2R2	220	221	222							
c														
Voltage Code														
Working Voltage (V)	6.3	10	12	16	25	35	40	50	63	100				
Code	0J	1A	1B	1C	1E	1V	1G	1H	1J	2A				
d														
Tolerance Code														
Tolerance	Capacitance Tolerance						Spec. Cap Tolerance	Spec. Tanδ Tolerance						
	±5%	± 10%	± 20%	± 30%	-10% +30%	-10% +50%			A	S				
Code	J	K	M	N	Q	T								
e						f								
Size Code						Capacitor Lead wire Termination Code								
Follow respective Dimensional specification. Eg: HS, AS, BB etc.						Provided by the factory based on customer requirements. Eg:								
						Item	Taped 5mm pitch	Taped 2.5mm pitch	Formed & cut	Kinking & cut	Bulk packing straight lead			
						Code	T0	T2	F0	FD	B0			

Capacitor Codification System: -

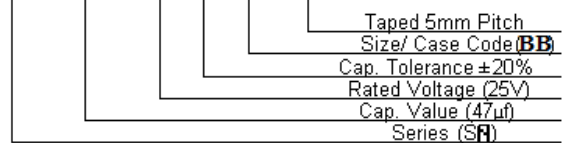
Example (i) 0.47µf / 63V; SN Series
Bulk Packing - Straight Lead

S	H	R	4	7	1	J	M	H	S	B	0
---	---	---	---	---	---	---	---	---	---	---	---



Example (iii) 47µf / 25V; SN Series
Taped 5mm Pitch – Ammo pack

S	H	4	7	0	1	E	M	B	B	T	0
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SN SERIES

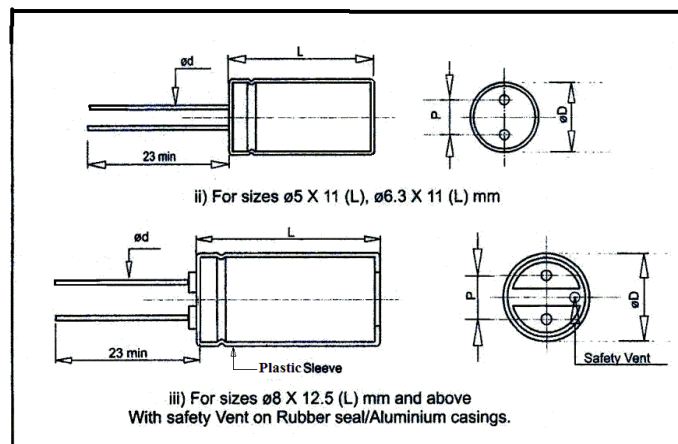
2. DIMENSIONAL SPECIFICATION FOR RADIAL LEAD TYPE CAPACITORS

Dimensions of SN series capacitors are detailed below.

Case Code	Diameter $\varnothing D \pm 0.5$ (mm)	Length $L \pm 1.0$ (mm)	Pitch $P \pm 0.5$ (mm)	Lead Dia $\varnothing d \pm 0.05$ (mm)
HS	5	11	2	0.5
AS	6.3	11	2.5	0.5
BB	8	12.5	3.5	0.6
CB	10	12.5	5	0.6
CD	10	16	5	0.6
CG	10	21	5	0.6
CK	10	25	5	0.6
DG	12.5	21	5	0.6
DK	12.5	25	5	0.6
EK	16	25	7.5	0.8
ER	16	31	7.5	0.8
EU	16	36	7.5	0.8
SR	18	31	7.5	0.8
SH	18	37	7.5	0.8
SJ	18	41	7.5	0.8
TH	22	37	10	0.8
TJ	22	41	10	0.8
TM	22	52	10	0.8

(All Dimensions in mm


PHYSICAL OUTLINES



SN SERIES

3. MARKING ON THE CAPACITOR

Marking specifications of SN series capacitors are detailed below. Below mentioned details are printed on orange coloured vinyl sleeve with black print.

- | | |
|---|--|
| a) Manufacturer's name and logo | b) Capacitor series & upper category temperature |
|  | d) Capacitance tolerance code |
| c) Nominal capacitance value in μF | f) Date code (Year-Month) |
| e) Rated working voltage in V | |
| g) Negative terminals are indicated on the sleeve | |

Note: Manufacturer's logo, capacitor series, upper category temperature and date code are marked only for sizes \varnothing 8mm and above.

Date Code:

Date code is provided on the capacitor sleeve in Year – Month format for sizes \varnothing 8mm and above. Year & Month code of SN capacitor of diameter \varnothing 8mm & above are detailed below.

Year code

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Letter Code	M	N	P	R	S	T	U	V	W	X

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Letter Code	A	B	C	D	E	F	H	J	K	L

Year codes repeats after each cycle of 20 years.

Month Code

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sep.	Oct.	Nov	Dec.
Code	1	2	3	4	5	6	7	8	9	O	N	D

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4. LEAD CONFIGURATION AND PRIMARY PACKING STANDARD FOR RADIAL ALUMINIUM ELECTROLYTIC CAPACITORS

LEAD CONFIGURATION

SN capacitors are available in the following lead configuration.

1. STRAIGHT LEAD – Applicable to case code starting from HS (Size $\Phi 5 \times 11$ mm) to ER (Size $\Phi 16 \times 31$ mm).
2. LEAD FORMED AND CUT – Applicable to case code starting from CB (Size $\Phi 10 \times 12.5$ mm) to ER (Size $\Phi 16 \times 31$ mm).
3. LEAD KINKED AND CUT – Applicable to case code starting from CB (Size $\Phi 10 \times 12.5$ mm) to ER (Size $\Phi 16 \times 31$ mm).
4. TAPED FORM (5mm lead pitch) – Applicable to case code HS, AS, BB, CB and CD.
5. TAPED FORM (2.5 mm lead pitch) – Applicable to case code HS and AS.

PRIMARY PACKING STANDARD BULK PACKING

SN series capacitors are generally BULK PACKED in thick polythene bags which are heat sealed to avoid direct atmospheric exposure. Individual primary packing in polythene bag is provided with a LABEL which carries outgoing Inspection Report No, Work Order No, Capacitor Series, Capacitance Value, Working Voltage, Capacitor tolerance, Capacitor size, Capacitor Part No, Temperature, Quantity and Date of packing. **IT IS CUSTOMARY TO RETURN THE PACKING LABEL TO THE FACTORY IN CASE OF QUANTITY/QUALITY NON-CONFORMANCE.**

BULK PACKING QUANTITY DETAILS.

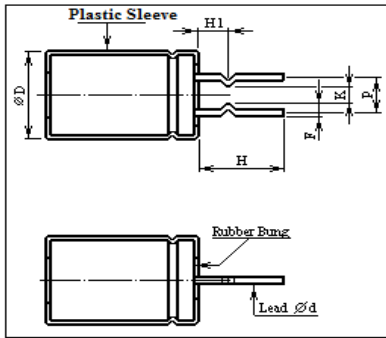
Size (Φ D x Lmm)	5x11	6.3x11	8x12.5	10x12.5	10x16	10x21	10x25	12.5x21	12.5X25	16X25	16X31
Case code	HS	AS	BB	CB	CD	CG	CK	DG	DK	EK	ER
Nos/ Bag	500	500	500	300	300	300	200	200	200	100	100
Nos/ Carton	5000	4000	2500	1800	1500	1200	1000	800	600	400	300
Wt. (Kg) 1000 Nos (Approx)	2.2	2.6	2.6	3.3	3.0	2.9	3.3	3.2	2.8	2.7	2.9

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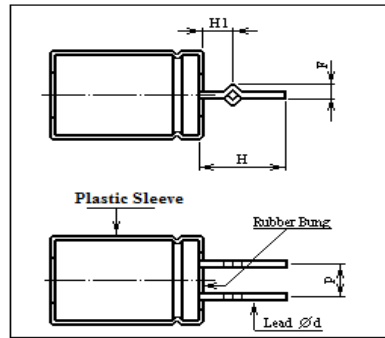
LEAD FORMED & CUT AND KINKING & CUT CAPACITORS.

Radial capacitors of size \varnothing 10mm and above are also available in lead formed and lead kinked and cut configuration for direct insertion in PCB to facilitate wave soldering.

LEAD FORMED & CUT CAPACITORS



KINKING & CUT CAPACITORS



PHYSICAL DIMENSIONS; UNIT (mm)

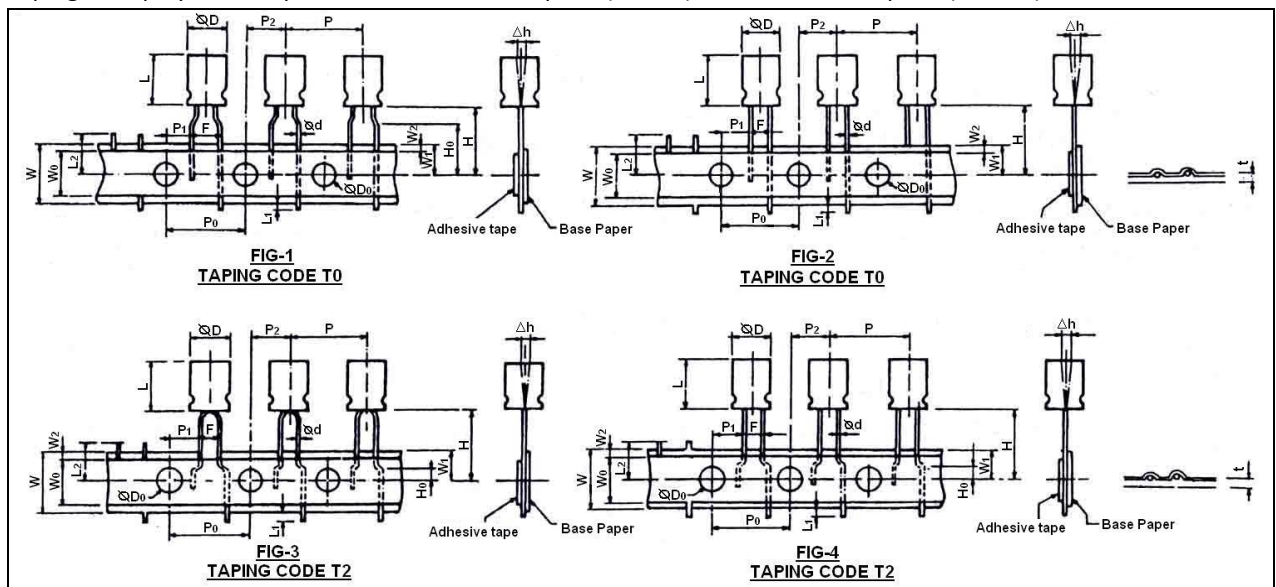
Case Diameter	H ± 0.5	H1	F ± 0.3	P ± 0.5	Ød ± 0.05	K (min)
Ø10	5.0	2.7	1.3	5.0	0.6	2.8
Ø 12.5	5.0	2.7	1.3	5.0	0.6	2.8
Ø 16	5.0	2.7	1.3	7.5	0.8	5.5
Ø 18	5.0	2.7	1.3	7.5	0.8	5.5

Packing Methods of Lead Formed & Cut Capacitors and Kinking & Cut Capacitors

Capacitors are packed in primary cardboard carton using separators and then filled into appropriate Mother & Master carton for despatch.

TAPING SPECIFICATIONS FOR RADIAL LEAD TYPE CAPACITORS

Taping is employed for capacitors with 5mm lead pitch (Table I) and 2.5 mm lead pitch (Table II)



All Dimensions are in mm
not to scale

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TABLE I - 5mm LEAD PITCH (Taping Code T0)

CASE SIZE ØDXL			LEAD WIRE PITCH 2.5mm		
			5 x 11 6.3x11	8x12.5	10x12.5 10 x 16
ITEM	DESCRIPTION	TOLERANCE			
	Figure. no. Ref		1	1	2
Ød	Lead wire dia.	± 0.02	0.5	0.6	0.6
F	Lead to lead Center	+ 0.8 - 0.2	5	5	5
P	Pitch of Components	± 1.0	12.7	12.7	12.7
P ₀	Feed hole Pitch*	± 0.3	12.7	12.7	12.7
P ₁	Feed hole Centre to lead	± 0.7	3.85	3.85	3.85
P ₂	Feedhole Centre to Comp. Centre	± 1.3	6.35	6.35	6.35
Δh	Component alignment deviation	± 2.0	0	0	0
W	Base Paper Width	± 0.2	18	18	18
W ₀	Adhesive Tape Width	+2.0 -0.0	13	13	13
W ₁	Feed hole Position	+0.75 -0.50	9	9	9
W ₂	Adhesive Tape Position	Max	3	3	3
H	Comp. Base height from Centre	± 0.75	18.5	20	20
H ₀	Lead Wire Clinch height	± 0.5	16	16	0
L ₁	Lead Wire Protrusion	Max	0	0	0
ØD ₀	Feed hole diameters	± 0.3	4	4	4
t	Total Tape thickness	± 0.2	0.7	0.7	0.7
L ₂	Length of Snapped Lead	Max	11	11	11

TABLE II - 2.5mm LEAD PITCH (Taping Code T2)

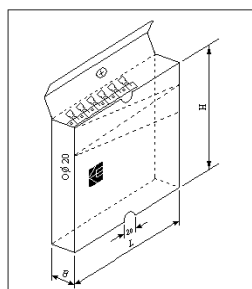
CASE SIZE ØDXL			LEAD WIRE PITCH 2.5mm	
			5x11	6.3x11
ITEM	DESCRIPTION	TOLERANCE		
	Figure. no. Ref		3	4
Ød	Lead wire dia.	± 0.02	0.5	0.5
F	Lead to lead Center	+ 0.8 - 0.2	2.5	2.5
P	Pitch of Components	± 1.0	12.7	12.7
P ₀	Feed hole Pitch*	± 0.3	12.7	12.7
P ₁	Feed hole Centre to lead	± 0.7	5.1	5.1
P ₂	Feedhole Centre to Comp. Centre	± 1.3	6.35	6.35
Δh	Component alignment deviation	± 2.0	0	0
W	Base Paper Width	± 0.2	18	18
W ₀	Adhesive Tape Width	+2.0 -0.0	13	13
W ₁	Feed hole Position	+0.75 -0.50	9	9
W ₂	Adhesive Tape Position	Max	3	3
H	Comp. Base height from Centre	± 0.75	18.5	18.5
H ₀	Lead Wire Clinch height	Approx	6.0	6.0
L ₁	Lead Wire Protrusion	Max	0	0
ØD ₀	Feed hole diameters	± 0.3	4	4
t	Total Tape thickness	± 0.2	0.7	0.7
L ₂	Length of Snapped Lead	Max	11	11

TAPED AMMO PACKING

Radial capacitors are available in Taped Ammo Pack for auto insertion in printed circuit boards.

Taped Ammo Packing Quantity Details: -

CAPACITOR SIZE (ØD x L mm)	5x11	6.3x11	8x12.5	10x12.5	10x16
Case Code	HS	AS	BB	CB	CD
Nos/ Carton	2000	1500	1000	600	600



All Dimensions in mm

Taped Ammo Box Spec:		
Applicable case code	HS, AS, BB, CB	CD
Box Dimensions		
L ± 2 (mm)	335	335
B ± 1 ₀ (mm)	46	50
H ± 2 (mm)	230	230