

ZINC OXIDE VARISTOR

FEATURES:

- Widely voltage range 1.8V-1.8kV
- Fast response to the rapidly increase Voltage (Mu sec.)
- Excellent non-linearity voltage
- Symmetric V-I characteristics
- Great withstanding surge current (200 0A/c m²)
- No follow-on current
- Long life



HOW TO ORDER

A NR 05 K 180 T

① ② ③ ④ ⑤ ⑥

①

Ancol Electronics Co.,Ltd

Non-Linear Resistor

③

(mm)	Element Diameter
05	5
40	40

④

Tolerance	
K	±10%
M	±20%

⑤

(V) Varistor Voltage

180=18*10⁰

181=18*10¹

182=18*10²

⑥

Packaging

B	Bulk
T	Tape & Reel

Characteristics

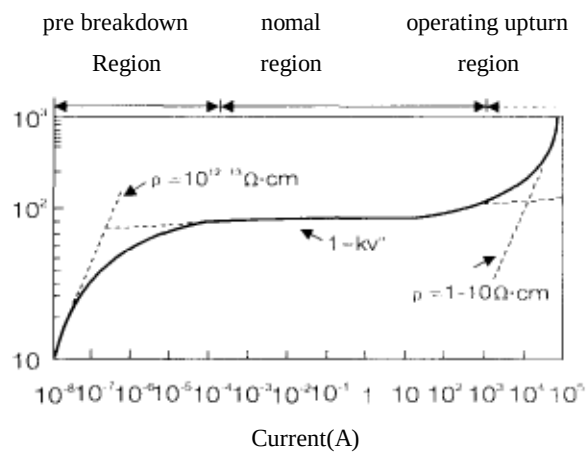


Fig1 Voltage Current Characteristic

TEST CONDITIONS

Item	Test Methods
Operating Temperature Range	-40°C~+85°C
Storage Temperature Range	-40°C~+85°C
Varistor Voltage	Element Diameter ≤ 5mm Test Currentv (DC) 0.1 mA(V0.1 mA) others DC1 mA(V1 mA)
Max Clamping Voltage .	Current Waveshape 8*20μs
Emergv	Current input of Rectangular Wave 2ms or 10/1000 μs
Max Withstanding Surge Current	Current Waveshape 8*20μs

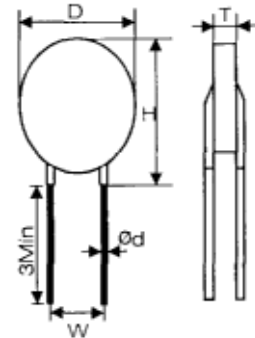
ZINC OXIDE VARISTOR

GENERAL TYPE

General type is widely used in surge protection for IC, diode, triac semiconductor~ thyristor. consumer, military industry telecom - munication measuring & controlling instrumentetc.

GENERAL TYPE DIMENSIONS (mm)

	(V) Varistor Voltage	D Max	d ±0.1	W ±1.0	H Max	T Max
05	18-82	70	06	50	100	35
	100-470	7.5	0.6	5.0	10.0	6.0~
07	18-470	9.0	0.6	5.0	12.0	6.0
10	18-330	13.5	0.8	7.5	16.5	5.4
	360-1100	140	08	75	170	85
14	18-330	17.0	0.8	7.5	20.0	5.4
	360-1100	17.5	0.8	7.5	20.5	8.5
	1800	25.0	0.8	7.5	30.0	12.0
20	18-330	23.0	1.0	10.0	27.0	5.5
	360-1100	24.0	1.0	10.0	28.0	9.0
	1800	25.0	1.0	10.0	30.0	12.0

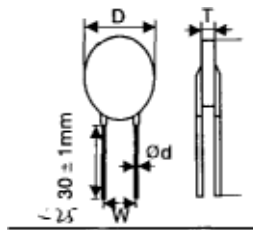


LIGHTNING ARRESTER TYPE

Lightning arrester type is ideal for semiconductor, singnalrelay, telecommunication, calibrating equipment, communication intermedium station, distribution board, surge absorption and lightning-protection of all sorts of electric equipment because of the properties with the Greatwithstanding surge current, wide voltage range, quick responding speed and lowres dual voltage etc.

LIGHTNING ARRESER TYPE DIMENSIONS (mm)

Part No.	Dimensions (mm)			
	D Max	T Max	W ±1.0	d ±0.1
ANR-25	30	12	15	1.2
ANR-32	38	13	18	1.5
ANR-40	45	13	20	1.5



GENERAL TYPE PRODUCTS SERIES

Part No	Varistor Voltage	Maximum Operating Voltage		Maximum C'amping Voltage (8 x 20us)		Maximum Withstanding surge Current(8 x 20us)		Maximum Energy (J)	Rated Wattage	Capacitance (Reference) 1KHz
	V(v) DC	AC (v)	DC (v)	VC (v)	IP (A)	2Times (A)	lTimes (A)	2ms	(W)	(PF)
ANR-05K180	18	11	14	40	1	50	100	0.3	0.01	1600
ANR-07K180	18	11	14	36	2.5	125	250	0.8	0.02	3500
ANR-10K180	18	11	14	36	5	250	500	1.7	0.05	7500
ANR-14K180	18	11	14	36	10	500	1000	3.5	0.1	18000
ANR-20K180	18	11	14	36	20	1000	2000	10.0	0.2	37000
ANR-05K220	22	14	18	48	1	50	100	0.4	0.01	1300
ANR-07K220	22	14	18	43	2.5	125	250	0.9	0.02	2800
ANR-10K220	22	14	18	43	5	250	500	2.0	0.05	6000
ANR-14K220	22	14	18	43	10	500	1000	4.0	0.1	15000
ANR-20K220	22	14	18	43	20	1000	2000	13.0	0.2	30000
ANR-05K270	27	17	22	60	1	50	100	0.5	0.01	1050
ANR-07K270	27	17	22	53	2.5	125	250	1.1	0.02	2000
ANR-10K270	27	17	22	53	5	250	500	2.5	0.05	4000
ANR-14K270	27	17	22	53	10	500	1000	5.0	0.1	10000
ANR-20K270	27	17	22	53	20	1000	2000	15.0	0.2	20000
ANR-05K330	33	20	26	73	1	50	100	0.6	0.01	900
ANR-07K330	33	20	26	65	2.5	125	250	1.3	0.02	1500
ANR-10K330	33	20	26	65	5	250	500	3.1	0.05	3000
ANR-14K330	33	20	26	65	10	500	1000	6.0	0.1	7500
ANR-20K330	33	20	26	65	20	1000	2000	20.0	0.2	17000
ANR-05K390	39	25	31	86	1	50	100	0.8	0.01	500
ANR-07K390	39	25	31	77	2.5	125	250	1.6	0.02	1350
ANR-10K390	39	25	31	77	5	250	500	3.7	0.05	2600
ANR-14K390	39	25	31	77	10	500	1000	7.0	0.1	6500
ANR-20K390	39	25	31	77	20	1000	2000	24.0	0.2	15000
ANR-05K470	47	30	38	104	1	50	100	1.0	0.01	450
ANR-07K470	47	30	38	93	2.5	125	250	2.0	0.02	1150
ANR-10K470	47	30	38	93	5	250	500	4.5	0.05	2200
ANR-14K470	47	30	38	93	10	500	1000	9.0	0.1	5500
ANR-20K470	47	30	38	93	20	1000	2000	30.0	0.2	13000
ANR-05K560	56	35	45	123	1	50	100	1.1	0.01	400
ANR-07K560	56	35	45	110	2.5	125	250	2.5	0.02	950
ANR-10K560	56	35	45	110	5	250	500	5.5	0.05	1800
ANR-14K560	56	35	45	110	10	500	1000	10.0	0.1	4500
ANR-20K560	56	35	45	110	20	1000	2000	35.0	0.2	11000
ANR-05K680	68	40	56	150	1	50	100	1.3	0.01	350
ANR-07K680	68	40	56	135	2.5	125	250	3.0	0.02	700
ANR-10K680	68	40	56	135	5	250	500	6.5	0.05	1300
ANR-14K680	68	40	56	135	10	500	1000	13.0	0.1	3300

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ANR-20K680	68	40	56	135	20	1000	2000	40.0	0.2	7000
ANR-05K820	82	50	65	145	5	200	400	1.8	0.1	250
ANR-07K820	82	50	65	135	10	600	1200	4.2	0.25	550
ANR-10K820	82	50	65	135	25	1250	2500	8.4	0.4	1800
ANR-14K820	82	50	65	135	50	2500	4500	15.0	0.6	2900
ANR-20K820	82	50	65	135	100	4000	6500	27.0	1.0	5500
ANR-05K101	100	60	85	175	5	200	400	2.2	0.1	200
ANR-07K101	100	60	85	165	10	600	1200	4.8	0.25	500
ANR-10K101	100	60	85	165	25	1250	2500	10.0	0.4	1400
ANR-14K101	100	60	85	165	50	2500	4500	18.0	0~5	2400
ANR-20K101	100	60	85	165	100	4000	6500	33.0	1.0	4800

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Part No.	Varistor Voltage	Maximum Operating Voltage		Maximum Clamping Voltage (8 x 20us)		Maximum Withstanding surge Current(8 x 20us)		Maximum Energy (J)	Rated Wattage	Capacitance (Reference) 1 KHz
	V(v) DC	AC (v)	DC (v)	VC (v)	P (A)	2Times (A)	iTimes (A)	2ms	W	(PF)
ANR-05K121	120	75	100	210	5	200	400	2.5	0.1	170
ANR-07K121	120	75	100	200	10	600	1200	5.9	0.25	450
ANR-10K121	120	75	100	200	25	1250	2500	15.0	0.4	1100
ANR-14K121	120	75	100	200	50	2500	4500	26.0	0.6	1900
ANR-20K121	120	75	100	200	100	4000	6500	52.0	1.0	3800
ANR-05K151	150	95	125	260	5	200	400	4.0	0.1	140
ANR-07K151	150	95	125	250	10	600	1200	8.0	0.25	350
ANR-10K151	150	95	125	250	25	1250	2500	20.0	0.4	900
ANR-14K151	150	95	125	250	50	2500	4500	32.0	0.6	1500
ANR-20K151	150	95	125	250	100	4000	6500	65.0	1.0	3000
ANR-05K181	180	115	150	315	5	200	400	4.5	0.1	110
ANR-07K181	180	115	150	300	10	600	1200	10.0	0.25	300
ANR-10K181	180	115	150	300	25	1250	2500	23.0	0.4	700
ANR-14K181	180	115	150	300	50	2500	4500	39.0	0.6	1250
ANR-20K181	180	115	150	300	100	4000	6500	78.0	1.0	2500
ANR-05K201	200	130	170	355	5	200	400	5.0	0.1	80
ANR-07K201	200	130	170	340	10	600	1200	13.0	0.25	250
ANR-10K201	200	130	170	340	25	1250	2500	26.0	0.4	500
ANR-14K201	200	130	170	340	50	2500	4500	45.0	0.6	1000
ANR-20K201	200	130	170	340	100	4000	6500	91.0	1.0	2000
ANR-05K221	220	140	180	380	5	200	400	6.0	0.1	70
ANR-07K221	220	140	180	360	10	600	1200	13.0	0.25	250
ANR-10K221	220	140	180	360	25	1250	2500	30.0	0.4	450
ANR-14K221	220	140	180	360	50	2500	4500	52.0	0.6	1000
ANR-20K221	220	140	180	360	100	4000	6500	97.0	1.0	2000
ANR-05K241	240	150	200	415	5	200	400	6.5	0.1	70

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ANR-07K241	240	150	200	395	10	600	1200	13.0	0.25	2000
ANR-10K241	240	150	200	395	25	1250	2500	32.0	0.4	400
ANR-14K241	240	150	200	395	50	2500	4500	52.0	0.6	900
ANR-20K241	240	150	200	395	100	4000	6500	100.0	1.0	1800
ANR-05K271	270	175	225	475	5	200	400	8.0	0.1	65
ANR-07K271	270	175	225	455	10	600	1200	15.0	0.25	170
ANR-10K271	270	175	225	455	25	1250	2500	40.0	0.4	350
ANR-14K271	270	175	225	455	50	2500	4500	65.0	0.6	750
ANR-20K271	270	175	225	455	100	4000	6500	117.0	1.0	1600
ANR-05K301	300	200	250	525	5	200	400	8.0	0.1	55
ANR-07K301	300	200	250	500	10	600	1200	17.0	0.25	150
ANR-10K301	300	200	250	500	25	1250	2500	35.0	0.4	325
ANR-14K301	300	200	250	500	50	2500	4500	71.0	0.6	650
ANR-20K301	300	200	250	500	100	4000	6500	136.0	1.0	1400
ANR-05K331	330	210	275	580	5	200	400	8.5	0.1	60
ANR-07K331	330	210	275	550	10	600	1200	20.0	0.25	150
ANR-10K331	330	210	275	550	25	1250	2500	39.0	0.4	325
ANR-14K331	330	210	275	550	50	2500	4500	78.0	0.6	650
ANR-20K331	330	210	275	550	100	4000	6500	136.0	1.0	1400
ANR-05K361	360	230	300	620	5	200	400	10.0	0.1	50
ANR-07K361	360	230	300	595	10	600	1200	20.0	0.25	1300
ANR-10K361	360	230	300	595	25	1250	2500	32.0	0.4	300
ANR-14K361	360	230	300	595	50	2500	4500	84.0	0.6	550
ANR-20K361	360	230	300	595	100	4000	6500	156.0	1.0	1200

Part No.	Varistor Voltage	Maximum Operating Voltage		Maximum Clamping Voltage (8 x 20us)		Maximum Withstanding surge Current(8 x 20us)		Maximum Energy (J)	Rated Wattage	Capacitance (Reference) 1 KHz
	V(v) DC	AC (v)	DC (v)	VC (v)	P (A)	2Times (A)	1Times (A)	2ms	(W)	(PF)
ANH-05K39i	390	250	320	675	5	200	400	10.0	0.1	50
ANR-07K301	390	250	320	650	10	600	1200	22.0	0.25	130
ANR-10K391	390	250	320	650	25	1250	2500	52.0	0.4	270
ANR-14K391	390	250	320	650	50	2500	4500	91.0	0.6	500
ANR-20K391	390	250	320	650	100	4000	6500	169.0	1.0	1000
ANR-05K431	430	275	350	745	5	200	400	12.0	0.1	45
ANR-07K431	430	275	350	710	10	600	1200	26.0	0.25	110
ANR-10K431	430	275	350	710	25	1250	2500	58.0	0.4	250
ANR-14K431	430	275	350	710	50	2500	4500	97.0	0.6	450
ANR-20K431	430	275	350	710	100	4000	6500	182.0	1.0	900
ANR-05K471	470	300	385	810	5	200	400	13.0	0.1	40
ANR-07K471	470	300	385	775	10	600	1200	26.0	0.25	100
ANR-10K471	470	300	385	775	25	1250	2500	58.0	0.4	230
ANR-14K471	470	300	385	775	50	2500	4500	104.0	0.6	440
ANR-20K471	470	300	385	775	100	4000	6500	195.0	1.0	900

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ANR-10K511	510	318	415	840	25	1250	2500	58.0	0.4	200
ANR-14K511	510	318	415	840	50	2500	4500	104.0	0.6	380
ANR-20K511	510	318	415	840	100	4000	6500	195.0	1.0	800
ANR-10K561	560	350	455	925	25	1250	2500	58.0	0.4	180
ANR-14K561	560	350	455	925	50	2500	4500	104.0	0.6	345
ANR-20K561	560	350	455	925	100	4000	6500	195.0	1.0	700
ANR-10K621	620	380	505	1025	25	1250	2500	58.0	0.4	130
ANR-14K621	620	380	505	1025	50	2500	4500	110.0	0.6	250
ANR-20K621	620	380	505	1025	100	4000	6500	195.0	1.0	500
ANR-10K681	680	420	560	1120	25	1250	2500	60.0	0.4	130
ANR-14K681	680	420	560	1120	50	2500	4500	117.0	0.6	250
ANR-20K681	680	420	560	1120	100	4000	6500	208.0	1.0	460
ANR-10K751	750	460	615	1240	25	1250	2500	65.0	0.4	120
ANR-14K751	750	460	615	1240	50	2500	4500	130.0	0.6	230
ANR-20K751	750	460	615	1240	100	4000	6500	227.0	1.0	420
ANR-10K781	780	485	640	1290	25	1250	2500	65.0	0.4	120
ANR-14K781	780	485	640	1290	50	2500	4500	136.0	0.6	230
ANR-20K781	780	485	640	1290	100	4000	6500	234.0	1.0	420
ANR-10K821	820	510	670	1355	25	1250	2500	71.0	0.4	110
ANR-14K821	820	510	670	1355	50	2500	4500	143.0	0.6	200
ANR-20K821	820	510	670	1355	100	4000	6500	247.0	1.0	400
ANR-10K911	910	550	745	1500	25	1250	2500	78.0	0.4	100
ANR-14K911	910	550	755	1500	50	2500	4500	156.0	0.6	180
ANR-20K911	910	550	755	1500	100	4000	6500	280.0	1.0	350
ANR-10K102	1000	625	825	1650	25	1250	2500	84.0	0.4	90
ANR-14K102	1000	625	825	1650	50	2500	4500	169.0	0.6	150
ANR-20K102	1000	625	825	1650	100	4000	6500	299.0	1.0	320
ANR-10K112	1100	680	895	1815	25	1250	2500	91.0	0.4	80
ANR-14K112	1100	680	895	1815	50	2500	4500	182.0	0.6	150
ANR-20K112	1100	680	895	1815	100	4000	6500	325.0	1.0	300
ANR-14K182	1800	1000	1465	2970	50	2500	4500	312.0	0.6	100
ANR-20K182	1800	1000	1465	2970	100	4000	6500	400.0	1.0	200

ZINC OXIDE VARISTOR

Part No.	Vanstor Voltage	Maximum Operating Voltage		Maximum Clamping Voltage (8 x 20us)		Maximum Withstanding surge Current(8'' 20us)	Maximum Energy (J)	Rated Wattage	Capacitance (Reference) 1 KHz
	V(v) DC	AC (v)	DC (v)	VC (v)	IP (A)	2Times (A)	2ms	(W)	(PF)
ANR-25K470	47	30	38	89	40	1250	15	1.0	10000
ANR-32K470	47	30	38	89	40	2500	25	1.2	11000
ANR-40K470	47	30	38	89	40	5000	40	1.4	15000
ANR-25K560	56	35	45	106	40	1250	18	1.0	8000
ANR-32K560	56	35	45	106	40	2500	30	1.2	10000
ANR-40K560	56	35	45	106	40	5000	45	1.4	14000

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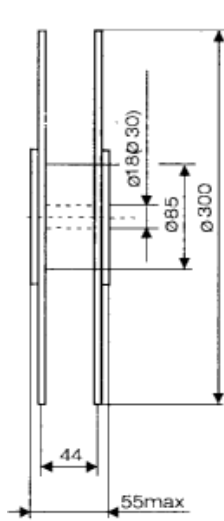
ANR-25K680	68	40	56	129	40	1250	21	1.0	7000
ANR-32K680	68	40	56	129	40	2500	32	1.2	9000
ANR-40K680	68	40	56	129	40	5000	50	1.4	13000
ANR-25K820	82	50	65	156	200	5000	23	1.0	6000
ANR-32K820	82	50	65	156	200	10000	35	1.2	8000
ANR-40K820	82	50	65	156	200	20000	60	1.4	12000
ANR-25K101	100	60	85	190	200	5000	32	1.0	5000
ANR-32K101	100	60	85	190	200	10000	49	1.2	7000
ANR-40K101	100	60	85	190	200	20000	90	1.4	11500
ANR-25K121	120	75	100	216	200	5000	36	1.0	4000
ANR32K121	120	75	100	216	200	10000	54	1.2	6000
ANR-40K121	120	75	100	216	200	20000	117	1.4	11000
ANR-25K151	150	95	125	270	200	5000	39	1.0	3000
ANR-32K151	150	95	125	270	200	10000	65	1.2	5000
ANR-40K151	150	95	125	270	200	20000	156	1.4	10500
ANR-25K201	200	130	170	360	200	5000	45	1.0	2400
ANR-32K201	200	130	170	360	200	10000	91	1.2	470C)
ANR-40K201	200	130	170	360	200	20000	208	1.4	10000
ANR-25K221	220	140	180	385	200	5000	52	1.0	2200
ANR-32K221	220	140	180	385	200	10000	117	1.2	4300
ANR-40K221	220	140	180	385	200	20000	234	1.4	9500
ANR-25K241	240	150	200	420	200	5000	78	1.0	2000
ANR-32K241	240	150	200	420	200	10000	156	1.2	4000
ANR-40K241	240	150	200	420	200	20000	286	1.4	9000
ANR-25K271	270	175	225	473	200	5000	117	1.0	1700
ANR-32K271	270	175	225	473	200	10000	195	1.2	3500
ANR-40K271	270	175	225	473	200	20000	308	1.4	750
ANR-25K361	360	230	300	612	200	5000	156	1.0	1400
ANR-32K361	360	230	300	612	200	10000	234	1.2	3000
ANR-40K361	360	230	300	612	200	20000	390	1.4	6000
ANR-25K391	390	250	320	663	200	5000	195	1.0	1200
ANR-32K391	390	250	320	663	200	10000	286	1.2	2500
ANR-40K391	390	250	320	663	200	20000	442	1.4	5000

Part No.	Varistor Voltage	Maximum Operating Voltage		Maximum Clamping Voltage (8 ~ 20us)		Maximum Withstanding surge Current(8 20us)	Maximum Energy (J)	Rated Wattage	Capacitance Reference 1 KHz
		V(v) DC	AC (v)	VC (v)	P (A)	2Times (A)	2ms	(W)	(PF)
ANR-25K431	430	275	350	731	200	5000	234	1.0	1100
ANR-32K431	430	275	350	731	200	10000	338	1.2	2250
ANR-40K431	430	275	350	731	200	20000	494	1.4	4500
ANR-25K471	470	300	380	799	200	5000	286	1.0	1000
ANR-32K471	470	300	380	799	200	10000	390	1.2	1900
ANR-40K471	470	300	380	799	200	20000	546	1.4	3600

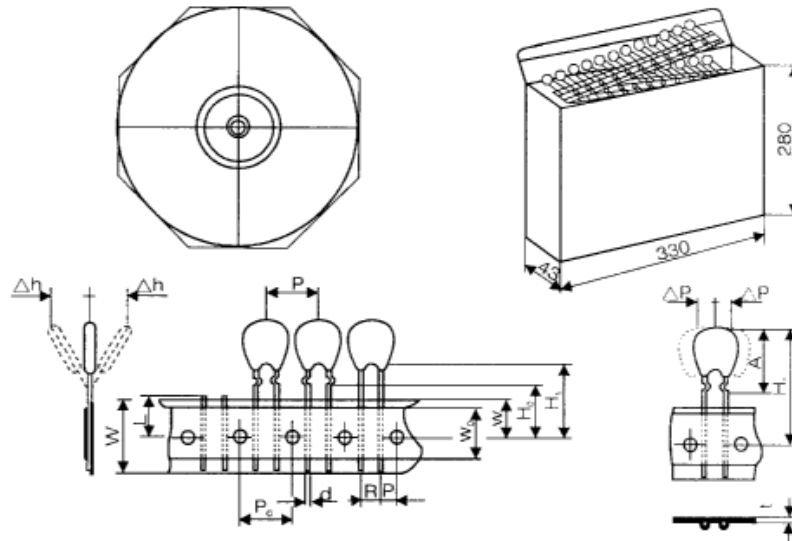
Ancol

ANR-25K621	620	385	505	1054	200	5000	338	1.0	1500
ANR-32K621	620	385	505	1054	200	10000	442	1.2	3200
ANR-40K621	620	385	505	1054	200	20000	585	1.4	3300
ANR-25K681	680	420	560	1160	200	5000	390	1.0	1200
ANR-32K681	680	420	560	1160	200	10000	494	1.2	3000
ANR-40K681	680	420	560	1160	200	20000	650	1.4	3000
ANR-25K751	750	460	615	1275	200	5000	455	1.0	1100
ANR-32K751	750	460	615	1275	200	10000	559	1.2	2700
ANR-40K751	750	460	615	1275	200	20000	715	1.4	2500
ANR-25K781	780	485	640	1326	200	5000	481	1.0	1050
ANR-32K781	780	485	640	1326	200	10000	624	1.2	2600
ANR-40K781	780	485	640	1326	200	20000	780	1.4	2450
ANR-25K821	820	510	670	1400	200	5000	520	1.0	1000
ANR-32K821	820	510	670	1400	200	10000	689	1.2	2400
ANR-40K821	820	510	670	1400	200	20000	832	1.4	2400
ANR-25K911	910	550	745	1550	200	5000	546	1.0	900
ANR-32K911	910	550	745	1550	200	10000	754	1.2	2200
ANR-40K911	910	550	745	1550	200	20000	910	1.4	2200
ANR-25K102	1000	625	825	1700	200	5000	585	1.0	800
ANR-32K102	1000	625	825	1700	200	10000	819	1.2	1900
ANR-40K102	1000	625	825	1700	200	20000	1040	1.4	2000
ANR-25K112	1100	680	895	1870	200	5000	650	1.0	700
ANR-32K112	1100	680	895	1870	200	10000	910	1.2	1700
ANR-40K112	1100	680	895	1870	200	20000	1105	1.4	1800
ANR-32K182	1800	1000	1465	3060	200	10000	975	1.2	1600
ANR-40K182	1800	1000	1465	3060	200	20000	1300	1.4	1600

REEL DIMENSIONS



Ammo Packaging



Item	Code	Dimension(mm)			
Element Diameter	Φ	5	7	10	14
Body Diameter	D	7.5Max	9.0Max	13.5Max	16.5Max
Lead Wire Diameter	D	0.6 ± 0.1		0.8 ± 0.1	
Pitch of Component	P	12.7 ± 1		25.4 ± 1	
Feed Hole Pitch	P ₀	12.7±3		12.7±0.3	
Feed Hole Center to Lead	P ₁	3.85 ± 0.7		7.5± 0.8	
Lead to Lead Pitch	R	5± 0.8		7.5± 0.8	
Component Alignment	Δh	2.0Max.		2.0Max.	
Basepaper Tape Width	W	18		18	
Adhesive Tape Width	W ₀	13Min.		13Min.	
Hole Position	W ₁	9± 0.5		9± 0.5	
Component Height	H ₁	30Max.		40Max.	
Lead-Wire Clinch Height	H ₀	16± 0.5		1.0Max	
Feed Hole Diameter	D ₀	4 ± 0.2		4 ± 0.2	
Total Tape Thickness	t	0.9Max.		0.9Max	
Length of Clipped Lead	L	11 Max.		11 Max.	
Component Height from Seating Plane	A	13Max.	15Max	19.5Max	22.5Max
Component Position Tolerance	ΔP	+1.3 Max.		2.0Max	

AMMO AND REEL PACKING QUANTITY

Element Diameter	Quantity(pcs)	
	18-270(V)	300-470(V)
05	2500	2000
07	1500	1500
10	1500	1500
14	1500	1000