

Remark: The lead length (L) is 20 mm minimum unless requested by customers; please refer to lead cutting code in "How to Order"

Dimensions: Millimetres

Dimensions Quick Reference

Series (Maximum)	5D	7D	10D	14D	20D
D	7	9.5	12	16.5	22.5
d*	0.6	0.6	0.8	0.8	1
W**	5	5	7.5	7.5	10
Н	12.5	14.5	19	22.5	29
H1	10	12	17	20.5	28
Т	4.9	4.9	8.5	8.5	9

* ±0.02 ** ±1

Characteristics

High performance transient voltage suppression Short response time to surge voltage Low standby power dissipation Excellent clamping characteristics High performance withstanding surge currents

High reliability
Disk type: Standard
Lead type: Straight

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Definition of Varistor Terms

Rated RMS Voltage, Rated DC Voltage

The maximum designated values of power system voltage that may be applied continuously between the terminals of a device

Varistor Voltage

Test characteristic that is used to classify varistors by type. A test current of 1 mA DC is typically used to determine varistor voltage classification type. Varistor voltage clamping characteristics can be defined at various test levels

Rated Peak Single Pulse Transient Current

Maximum surge current, 8 / 20 µs waveform which a varistor is rated to withstand for a single surge

Rated Single Pulse Transient Energy

Maximum allowable energy for a single impulse (see specified waveforms)

Maximum Clamping Voltage

Measured peak voltage across the device terminals when a current impulse of specified amplitude and waveform is conducted through the varistor

Typical Capacitance

Typical capacitance values are measured at a test frequency of 1 kHz. Capacitance values are only for reference purpose only, not object to outgoing inspection

Applications

Surge protection in

Consumer electronics Industrial electronics Communication electronics Measuring and controlling systems Electronic home appliances

Protection against surges induced by lighting striking incoming power lines Suppression of surges caused by switching inductive loads such as transformers, relays and coils Protection of rectification diodes, SCRs, power transistors, semiconductor devices, etc

General Characteristics

Storage Temperature : -55°C to +125°C

Operating Surface Temperature : 125°C

Operating Ambient Temperature : -55°C to +85°C (without derating)

Epoxy Rating : 94V-0 Current / Energy Derating (>85 °C) : -2.5% / °C

DC Leakage Current : 200 µA maximum (at rated DC working voltage)

Solderability : MIL-STD-202F



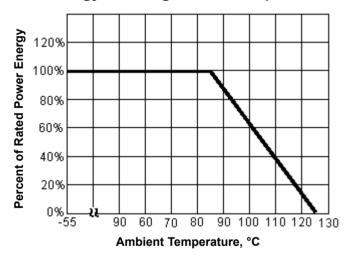




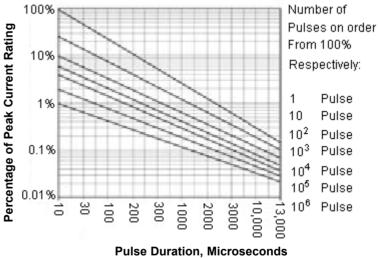
Power Dissipation Ratings (P, in-watts)

Disc Size (mm)	11 V ac to 40 V ac	50 V ac to 680 V ac
5	0.01	0.15
7	0.02	0.25
10	0.05	0.4
14	0.1	0.6
18	-	0.8
20	0.2	1
25	-	1.2
32	-	1.6
34 (Single)	-	2.1
34 (Dual)	-	2.73
40	-	2.1
53	-	2.5

Energy Derating Versus Temperature



Peak Current Per Pulse Versus Pul Seduration





Specifications Table

Maximiim		Iabie	Withstanding		imum										
Allow	vable	Vari: Volt		Surge Current (8 / 20 µs)	Vol	ming Itage 20 µs)		aximum inergy	Typical Capacitance	Varistor Voltage	Tolerance (%)	Disk Size	Part Number		
Acrms	DC	DC \	olts/	1 Time	Vc	lp	2 ms	10 / 100 μs	at1 KHz		(///	(mm)			
Vo	lts	Min.	Max.	Amps	Volts	Amps	J	loules	PF	-					
11	14	16	20		36		0.4	0.6	1,500	18 V			MCFT000215		
14	18	20	24		43		0.6	0.8	1,260	22 V			MCFT000216		
17	22	24	30	100	53		0.7	0.9	1,050	27 V			MCFT000217		
20	26	30	36		65		0.9	1.2	850	33 V			MCFT000218		
25	31	35	43	- <mark>100</mark>	77	1	1.1	1.3	600	39 V			MCFT000219		
30	38	42	52		93		1.4	1.6	500	47 V			MCFT000220		
35	45	50	62		110		1.5	1.9	400	56 V			MCFT000221		
40	56	61	75		135		1.8	2.3	360	68 V			MCFT000222		
50	66	74	90		135		2.4	3	350	82 V		_	MCFT000223		
75	102	108	132		200		3	5	250	120 V		5	MCFT000224		
95	127	135	165		250		3.5	5.5	180	150 V			MCFT000225		
130	175	185	225		340		5	8.5	140	200 V			MCFT000226		
150	200	216	264	400	395	_	6.5	10	115	240 V			MCFT000227		
230	300	324	396	400	595		9	13	80	360 V			MCFT000228		
250	330	351	429		650				10 15	15	75	390 V	•		MCFT000229
275	370	387	473		710		11	16	65	430 V	±10		MCFT000230		
300	385	423	517	7	775		13	19	55	470 V	-	7	MCFT000231		
420	560	612	748		1120		21	30	30	680 V			MCFT000232		
11	14	16	20		36		0.8	1	2,900	18 V			MCFT000233		
14	18	20	24		43		0.9	1.3	2,400	22 V			MCFT000234		
17	22	24	30		53		1	1.4	1,800	27 V		5	MCFT000235		
20	26	30	36	250	65	2.5	1.2	1.7	1,500	33 V			MCFT000236		
25	31	35	43	250	77	2.5	1.5	2.1	1,230	39 V			MCFT000237		
30	38	42	52		93		1.8	2.5	950	47 V			MCFT000238		
35	45	50	62		110		2.2	3.1	890	56 V			MCFT000239		
40	56	61	75		135		2.5	3.8	850	68 V		_	MCFT000240		
50	66	74	90		135		3.5	5.5	830	82 V		7	MCFT000241		
75	102	108	132		200		5	7.8	570	120 V			MCFT000242		
95	127	135	165	1,200	250	10	6.5	9.7	400	150 V			MCFT000243		
130	175	185	225		340		10	13	275	200 V			MCFT000244		
150	200	216	264]	395		11	16	230	240 V			MCFT000245		

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Specifications Table

Maxii Allow Volta	able		istor tage	Withstanding Surge Current (8 / 20 µs)	Clai Vol	imum ming tage 20 µs)		aximum Energy	Typical Capacitance	Varistor Voltage	Tolerance (%)	Disk Size	Part Number					
Acrms	DC	DC	Volts	1 Time	Vc	lp	2ms	10 / 100 μs	at1 KHz	Tomago	(70)	(mm)	Number					
Vo	Its	Min.	Max.	Amps	Volts	Amps		Joules	PF									
230	300	324	396		595		15	25	155	360 V			MCFT000246					
250	330	351	429		650		17	26	145	390 V		7	MCFT000247					
275	370	387	473	1,200	710	10	20	28	130	430 V			MCFT000248					
300	385	423	517		775		21	30	115	470 V			MCFT000249					
420	560	612	748		1120	1120	32	45	78	680 V			MCFT000250					
11	14	16	20		36	36	1.5	2.1	6,000	18 V			MCFT000251					
14	18	20	24		43		2	2.5	5,000	22 V			MCFT000252					
17	22	24	30		53		2.5	3	4,000	27 V			MCFT000253					
20	26	30	36	500	65	_	3	4	3,500	33 V			MCFT000254					
25	31	35	43	500	77	5	3.5	4.6	3,100	39 V			MCFT000255					
30	38	42	52		93		4.5	5.5	2,800	47 V			MCFT000256					
35	45	50	62		110		5.5	7	2,400	56 V			MCFT000257					
40	56	61	75		135	6.5	8.2	2,100	68 V			MCFT000258						
50	66	74	90		135		8	12	1,600	82 V		10	MCFT000259					
75	102	108	132		200 250 340	200	200	200	200	200		12	18	1,200	120 V			MCFT000260
95	127	135	165			25		16	22	1,100	150 V	±10		MCFT000261				
130	175	185	225						20	30	640	200 V			MCFT000262			
150	200	216	264	2,500	395		25	35	560	240 V			MCFT000263					
230	300	324	396		595		35	47	380	360 V			MCFT000264					
250	330	351	429		650		40	60	350	390 V			MCFT000265					
275	370	387	473		710		45	65	310	430 V			MCFT000266					
300	385	423	517		775		46	70	280	470 V			MCFT000267					
11	14	16	20		36		3.5	4	15,000	18 V			MCFT000268					
14	18	20	24		43		4	5	12,000	22 V			MCFT000269					
17	22	24	30		53		5	6	8,500	27 V			MCFT000270					
20	26	30	36	1,000	65	10	6	7.5	7,200	33 V			MCFT000271					
25	31	35	43	1,000	77	10	7	8.6	6,300	39 V		14	MCFT000272					
30	38	42	52		93		8.5	10	5,500	47 V			MCFT000273					
35	45	50	62		110]	10	11	4,800	56 V			MCFT000274					
40	56	61	75		135	1	12	14	4,000	68 V			MCFT000275					
50	66	74	90	4,500	135	50	5	22	3,300	82 V			MCFT000276					

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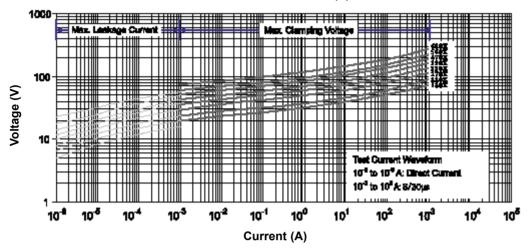
Specifications Table

Maxii Allow Volt	vable		stor age	Withstanding Surge Current (8 / 20 µs)	Clai Vol	imum ming tage 20 µs)		aximum Energy	Typical Capacitance	Varistor Voltage	Tolerance (%)	Disk Size	Part Number		
Acrms	DC	DC	Volts	1 Time	Vc	lp	2ms	10 / 100 μs	at1 KHz		(75)	(mm)			
Vo	Its	Min.	Max.	Amps	Volts	Amps	,	Joules	PF						
75	102	108	132		200		22	34	2,600	120 V			MCFT000277		
95	127	135	165		250		30	45	2,000	150 V			MCFT000278		
130	175	185	225		340		38	60	1,370	200 V			MCFT000279		
150	200	216	264	4,500	395	50	45	66	1,060	240 V		14	MCFT000280		
230	300	324	396	4,500	595	30	70	98	725	360 V		14	MCFT000281		
250	330	351	429		650		72	102	665	390 V			MCFT000282		
275	370	387	473		710		75	115	600	430 V			MCFT000283		
300	385	423	517		775		80	125	570	470 V			MCFT000284		
11	14	16	20		36		10	12	27,000	18 V			MCFT000285		
14	18	20	24		43	53 65 77 93	13	15	20,000	22 V			MCFT000286		
17	22	24	30		53		15	17	15,000	27 V			MCFT000287		
20	26	30	36	2,000	65		20	20	22	22	12,200	33 V			MCFT000288
25	31	35	43	2,000	77				24	26	10,000	39 V	±10		MCFT000289
30	38	42	52		93			30	33	9,350	47 V			MCFT000290	
35	45	50	62		110		35 38 8,000 56 V		MCFT000291						
40	56	61	75		135		40	43	6,800	68 V			MCFT000292		
50	66	74	90		135		37	48	5,600	82 V		20	MCFT000293		
75	102	108	132		200		40	55	4,100	120 V			MCFT000294		
95	127	135	165		250		50	70	3,200	150 V			MCFT000295		
130	175	185	225		340		70	95	2,200	200 V			MCFT000296		
150	200	216	264	6,500	395	100	82	110	1,900	240 V			MCFT000297		
230	300	324	396		595		120	163	1,320	360 V			MCFT000298		
250	330	351	429		650		130	180	1,210	390 V			MCFT000299		
275	370	387	473		710		140	190	1,120	430 V			MCFT000300		
300	385	423	517		775		50	220	1,000	470 V			MCFT000301		

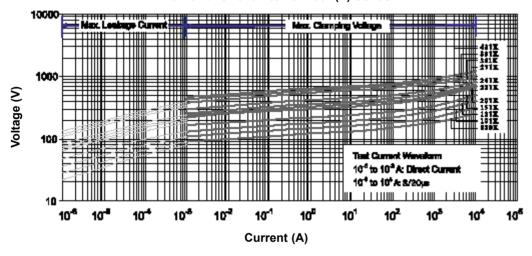




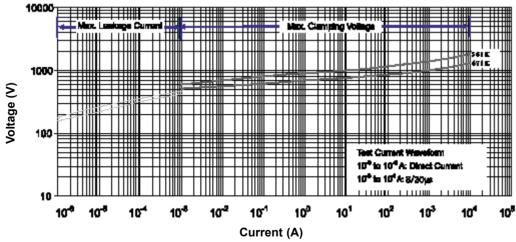




V-I Curve for SR820K to 431K05D(E) Series

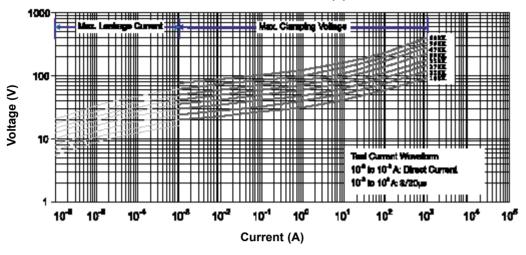


V-I Curve for SR471K to 6811K05D(E) Series

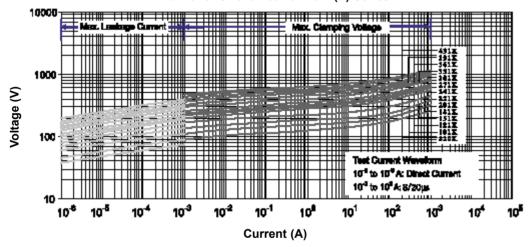




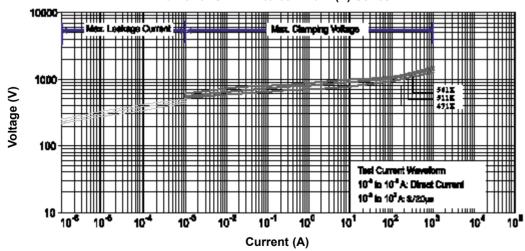




V-I Curve for SR820K to 431K07D(E) Series

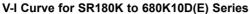


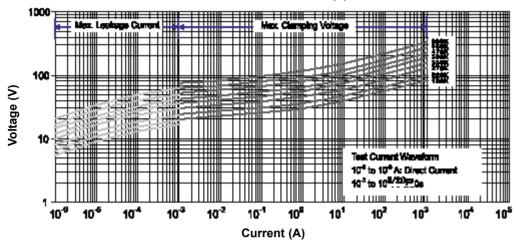
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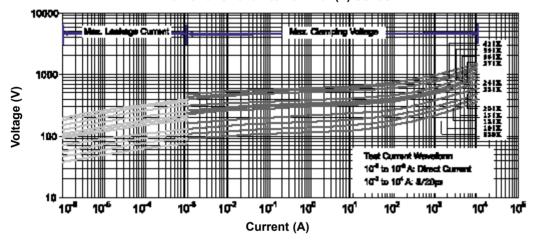




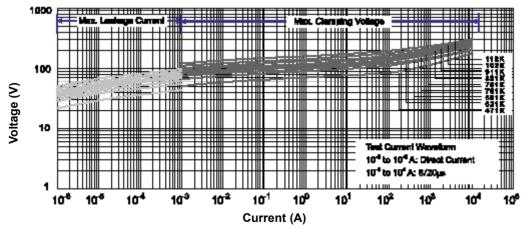




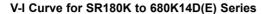
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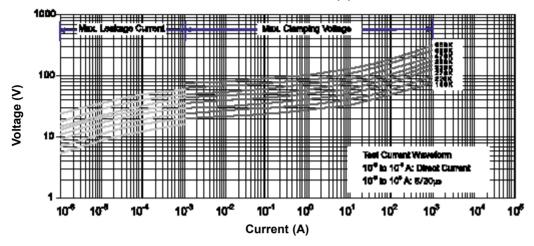


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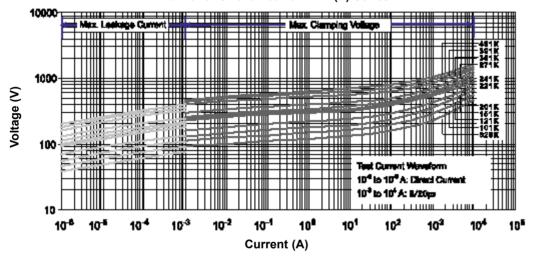




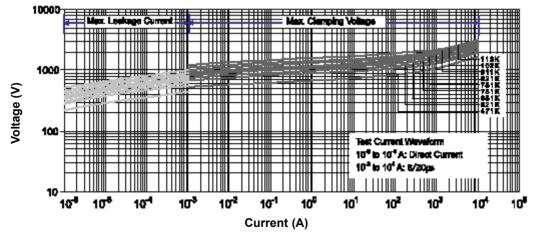




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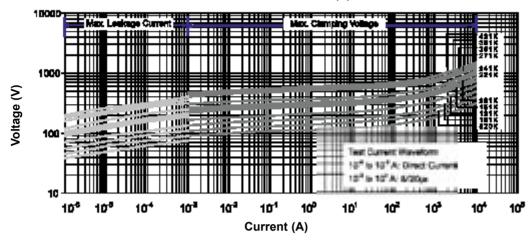
V-I Curve for SR471K to 112K14D(E) Series



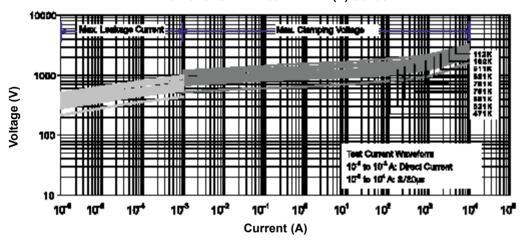


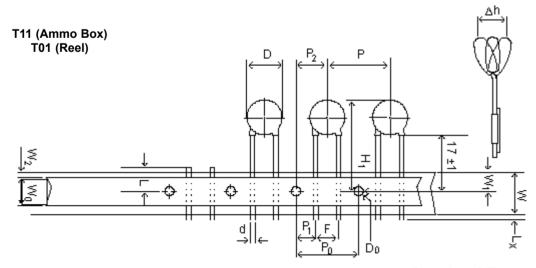






V-I Curve for SR471K to 112K14D(E) Series



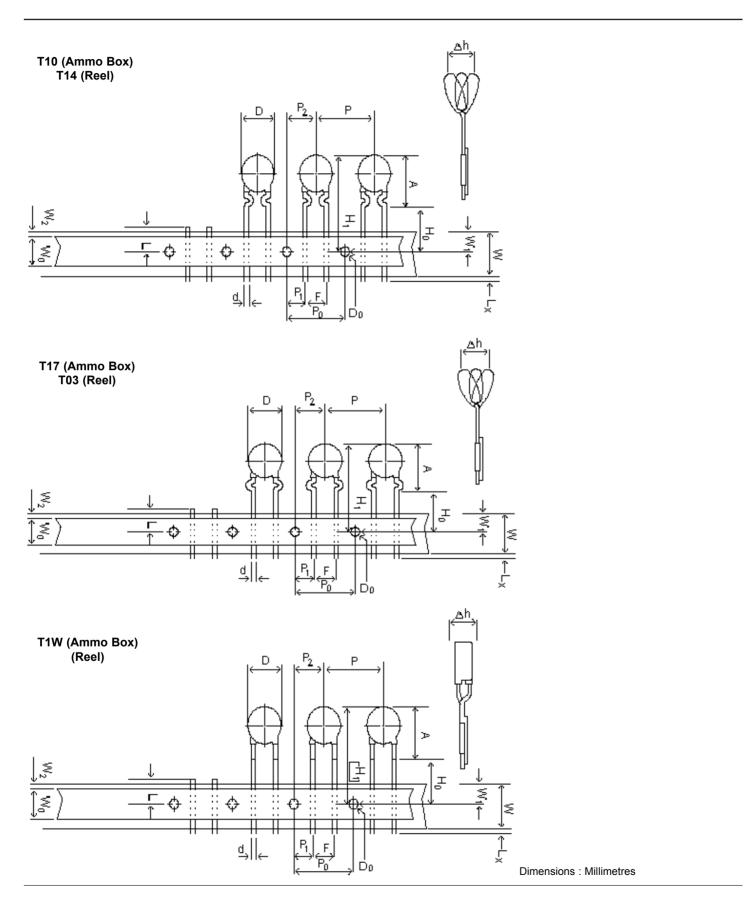


Dimensions : Millimetres









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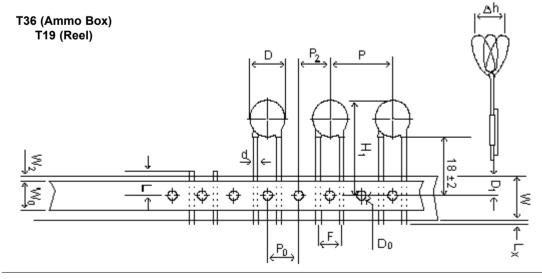




Specification Table

14	Disk Size								
Item			5D		7D				
Taping Code		T11, T1	T17, T03, T14, T1D	T32, T1W	T11, T01	T17, T03, T14, T1D	T32, T1W		
Body Diameter	D		9 Maximum						
Lead Wire Diameter	d			0	.6				
Pitch of Component	Р			12.7	7 ±1				
Feed Hole Pitch	P ₀			12.7	±0.3				
Feed Hole Centre to Lead	P ₁			3.85	±0.7				
Lead to Lead Distance (Centre to Centre)	F			5 ±	8.0				
Component Alignment	Δh			2 Max	kimum				
Base paper Tape Width	W			1	8*				
Adhesive Tape Width	W ₀			10 Mii	nimum				
Hole Position	W_1			9 ±	:0.5				
Adhesive Tape Border	W ₂			1.5 Ma	ximum				
Component Height	H ₁		30 Maximum			32 Maximum			
Lead-Wire Clinch Height	H ₀	-	16 ±0.5		-	16 ±0.5			
Lead-Wire Protrusion	L _x			1 Max	kimum				
Feed Hole Diameter	D ₀			4 ±	:0.2				
Total Tape Thickness	t	< 0.7							
Length of Clipped Lead	L	11 Maximum							
Component Height from Seating Plane	Α	- 13 Maximum - 15 Maximum							
Hole Centre to Component Centre	P ₂			6.35	±0.7				

^{*} Tolerances are +1 and -0.5

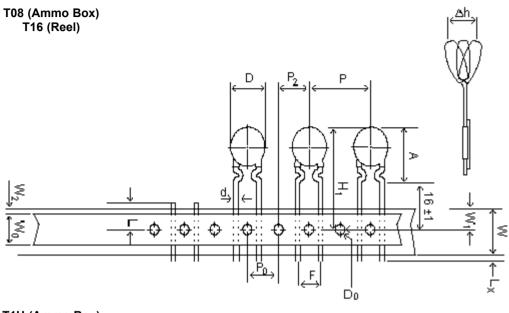


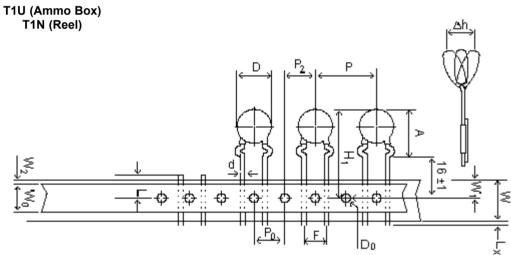
Dimensions: Millimetres

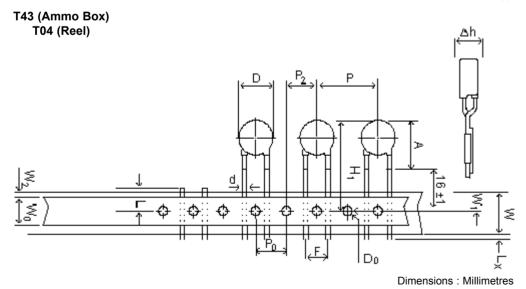












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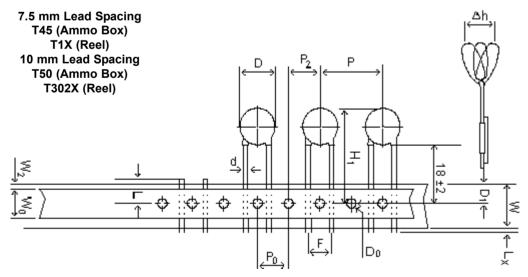




Specification Table

14			Disk	Size				
Item			10D		14D			
Taping Code		T19, T36	T1N, T1U, T08, T16	T43, T04	T19, T36	T1N, T1U, T08, T16	T43, T04	
Body Diameter	D		14 Maximum			7.5 Maximum		
Lead Wire Diameter	d			0.8 ±	£0.05			
Pitch of Component	Р			25.4	4 ±1			
Hole Centre to Component Centre	P ₂			10.7	.0.2			
Feed Hole Pitch	P ₀			12.7	±0.3			
Lead to Lead Distance (Centre to Centre)	F	7.5 ± 0.8						
Component Alignment	Δh			2 Max	ximum			
Base paper Tape Width	W			1	8*			
Adhesive Tape Width	W_0			10 Mir	nimum			
Hole Position	W ₁			9 ±	:0.5			
Adhesive Tape Border	W ₂			1.5 Ma	aximum			
Component Height	H ₁	33 Maximum	38.5 Maximum	35.5 Maximum	37 Maximum	40 Maximum		
Lead-Wire Protrusion	L _x			1 Max	kimum			
Feed Hole Diameter	D ₀	4 ±0.2						
Total Tape Thickness	t	< 0.7						
Length of Clipped Lead	L	11 Maximum						
Component Height from Seating Plane	Α	-	19.5 Maximu	ım	-	22.5 Maximu	ım	

^{*} Tolerances are +1 and -0.5

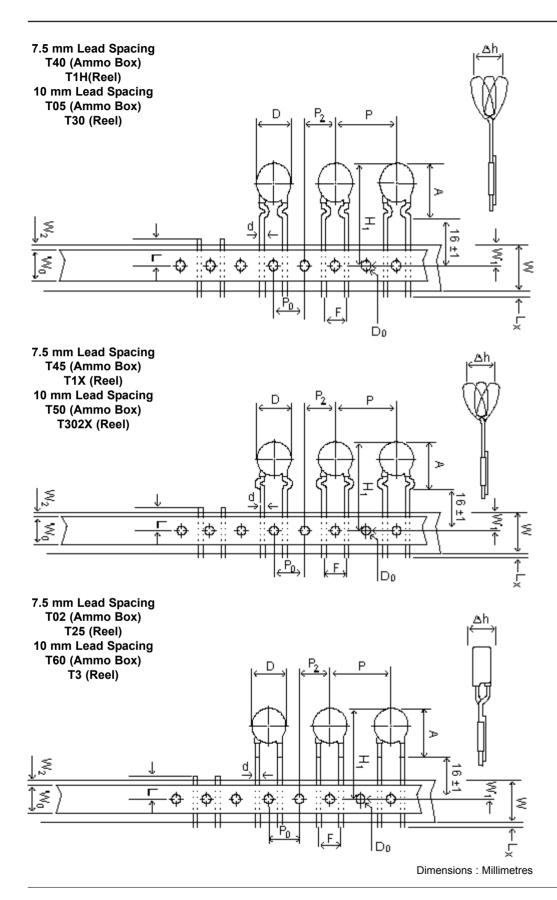


Dimensions : Millimetres















Specification Table

		Disk Size									
Item		20D									
	L	ead Spacing 7.5 mr	n	Spacing 10 mm							
Taping Code		T44, T1H	T44, T1H T45, T1X, T40, T4X T02, T25 T05, T30 T50, T2X, T35,				T60, T3X				
Body Diameter	D		24 Maximum** 24 Maximum								
Lead Wire Diameter	d			0.8	±0.1						
Pitch of Component	Р			25.4	4 ±1						
Hole Centre to Component Centre	P ₂			40.7	.0.0						
Feed Hole Pitch	P ₀	12.7 ±0.3									
Lead to Lead Distance (Centre to Centre)	F	7.5 ± 0.8 10 ±1									
Component Alignment	h			2 Max	kimum						
Base paper Tape Width	W			18	8*						
Adhesive Tape Width	W ₀			10 Mir	nimum						
Hole Position	W ₁			9 ±	:0.5						
Adhesive Tape Border	W ₂			1.5 Ma	ıximum						
Component Height	H ₁		48 Maximum**			48 Maximum					
Lead-Wire Protrusion	L _x			1 Max	kimum						
Feed Hole Diameter	D ₀			4 ±	:0.2						
Total Tape Thickness	t	< 0.7									
Length of Clipped Lead	L	11 Maximum									
Component Height from Seating Plane	Α	_ 29 28 _ 29					28 Maximum				

^{*} Tolerances are +1 and -0.5

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^{**} For 18Ø, D = 22, H1 = 46 and A = 26 Maximum