







# DATA SHEET

# Super High Voltage Disc Ceramic Capacitor

Serie: 123004

Range 331= 330pf

**Tolerance** K= ±10%

Voltage 10000 Volt

Material Character. 5P

Body Diam. 11,0mm

Pitch 10mm

Body Thickn. 8,5mm

Super High Voltage Disc Ceramic Capacitor

Serie No.: **I23004** 

DRW: Jason CHKD Wilson MATL: Wilson **TOLERANCE** Mason DATE 30.04.2011 Customer: APPD: Schumi **FINISH** Sheet No. Jamy 1 from 14









#### **Features**

Wide rated Voltage range, wide nominal capacitance range Flame retardent, insulating coating applied

Recomended Application

Filter circuit of high voltage power

High voltage circuit of television set and monitor

High voltage circuit of various electronic equipment

Characteristics	Temp.Char. SL	Temp.Char. Y5P	Temp.Cl	har. Y5U	Temp.C	har. Y5V					
Operating Temperature		30°C ~ +85°C									
Rated Voltage	4KVDC ~ 6KVDC	4KVDC ~ 15KVDC	4KVDC ~	15KVDC	4KVDC ~	15KVDC					
Withstanding Voltage		1,5 times re	lated voltage		-						
Canacitanas	Within the speci	Within the specified tolerance, testing at 25°C, 1Vrms and 1KHz (at 1MHz for SL products)									
Capacitance	10 ~ 330pf	100 ~ 2200pf 470		3300pf 1000 ~ 1		10000pf					
Dissipation Factor	Cr<30pf, Q≥ 400+20Cr Cr≥30pf, Q≥1000	tg ≤ 2,5%		tg≤	3,5%						
Insulation Resistance		Charge at 500VDC for 6	0 seconds, Rj	≥ 1000MΩ							
Tomporatura	Temperatur Cha	Temperatur Chararcteristics Code			Y5U	Y5V					
Temperature Characteristics	Temperatur Coe	peratur Coefficient (10-6 /°C)		. ± 10%	.+22 ~ +56%	.+22 ~ +82%					

### **Rated Capacitance**

The first and second digits identify the first and second significant figures of the capacitance, the third digit identifies the multiplier. The capacitance unit is pf,

**Capacitance Tolerance** 

Letter Symbol	Capacitance Tolerance	Letter Symbol	Capacitance Tolerance
С	±0,25pf	K	±10%
D	±0,5pf	M	±20%
J	±5%	Z	.+80 ~ -20%

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1 1	Customer:

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Standard atmospheric condition

Temperature: 15~35°C Relative Humidity: 45~75%

Atmospheric pressure: 86~106KPa (860~1060mbar

Operating and storage temperature range

Operating Temperature:

Temperature	Lowest Operating	Highest Operating
Characteristics	Temperature	Temperature
SL	25°C	.+85°C
COH	25°C	.+85°C
Y5P	25°C	.+85°C
Y5U	25°C	.+85°C
Y5U	25°C	.+85°C
Y5V	25°C	.+85°C
Z5U	10°C	.+85°C
Z5V	10°C	.+85°C
YR	25°C	.+125°C

Storage Temperature Range: -10 to + 40°C

Characteristics and test methods

Electrical characteristics and test methods

Jamv			Shee	t No.	3 from 14	Customer:		
Wilson	TOLER	RANCE	Mason	DATE	30.04.2011	Cuatamari		
		,	wrapped on env	elope for 1 to 5 s	seconds.		gh Voltage Disc ic Capacitor I23004	
Voltage Pr	oof	540V a 1000V t 3000V shall be voltage 1300	oltage of 300% ind 500V) 200% to 2000V), 175% (), or 150% rated applied between 5 of 250% rated by ( fort 500V, 11 ween leads conn	rated voltage (for protection rated voltage (for protection) and the voltage (for 50).	or rated voltage or rated voltage CG or SBBLC) 5seconds. The capacitors) or all be applied	No breakdown or flashover		
Insulatio Resistand		voltage	ulation resistand (for Vr≤500VDC VDC)within 50±	; 500VDC (for	1000M Ω min Ω min	1000M n (for SBBLC)		
dissipation fa	actor	mea	asured at the s	ame condition	s ab above	3,5% max. 5%max. (for \$	max. (for YR) (for Y5V and Z5U ) SBBLC Y5V and Y5U) . (for SBBLC Y5P)	
Quality factor	or or	The o	quality factor o	r dissipation fa	ctor shall be	Q≥100 Cr-rated cap	20Cr (forCr<30pf) 00 (forCr<30pf) pacitance in unit of pf or Y5P,Y5U and Z5U	
Capacitano tolerance	_	and 1Vi	•	•				

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	The consister shall be kent for anough time to reach thermal equilibrium at anotical temperature of each star in the fall suits a table	<del>-</del>
	The capacitor shall be kept for enough time to reach thermal equilibrium at special temperature of each step in the following table.  The capacitance measurement shall be made only at the thermal equilibrium of each step.	Class I
	Step Temperature Step Temperature	Temperature coefficient:
	1 20 ± 2°C 4 85 ±2°C (125±2°C for YR)	Refer to specification sheet
	225 ± 2°C 5 20 ± 2°C	Capacitance drift:
	3 20 ± 2°C	Within ±1% or ± 0,05pf
	For temperature characteristics SL the steps 1 and step 2 may be omitted.	(Whichever is greater)
	The temperature coeffizient and the capacitance drift shall be calculated by the following formulas.	(vviilariever le greater)
	(Cm - Co)	
	=	Class II & III
<b>-</b>	Co (T- To) x10 <sup>6</sup> (ppm/°C)	Temperature Permitting
Temperature	$C_0 - C_1$ $C_5 - C_0$ $C_5 - C_1$	Characteris capacitano
Characteristics	= or	tics change
	Co Co Co	Y5P ± 10%
	Where	YR ± 15% to -30%
	Co Capacitance at step 3	Y5U ± 22% to -56%
	Cm Capacitance at step 2 and/or step 4	Z5U ± 22% to -56%
	C1,C5 Capacitance at step 1 and step 5	Y5V ± 22% to -82%
	To Measuring temperature at Step 3	Z5V ± 22% to -82%
	T Measuring temperature at Step 2 and /or step 4	
	Pre-tratement:	
	The capacitor shall be stored at a temperature of 55 ±2°C and a relative humidity of 20% or less for 16 to 24 hours.	
	And then the capacitor shall be allowed immediately to cool in container using appropriate dryer such as activated carbon, silica gel	
Robustness of	The capacitor body shall be held in such a manner so that axis of the lead is vertical. The tensile force of 10N (for Ø 0,6mm lead	
Termination	ot 5N (for Ø 0,5mm lead) shall be applied to the lead in a direction of ist axis and acting in a direction away from the body of the	
	capacitor for 10 ±1 seconds.	no looseneed or cut off.

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Bending	The capacitor is held in such a manner so that axis of the lead is vertical. As mass applying a force of 5N (for Ø 0,6mm lead) or 2,5N (for Ø 0,5mm lead) is then suspended from the end of the lead. The body of the capacitor is then inclined within a period of 2 to 3 seconds, through an angle of approximately 90° in the vertical plane and then returned to its initial position over the same period of time. This operation constitutes one bend. The lead shall be subjected to a total of 2 alternating bends in to opposite directions.	The lea	ad shall be no broken.
Endurance characte	ristics and test methods.		
Solderability	Himmersion time. $\lambda + 11 \neq c + c + 11 \neq c + 11 $	A new uniform coating of the surface being imr	of solder shall cover a minimum of 95% mersed.
	Frequency range: 10~55Hz.	Apperance	No visible damage
Vibration	Amplitutde (total excursion); 1,5mm	Capacitance change	Within specified tolerance
Vibration	Total duration: 6hours. This motion shall be aplied for 2 hours in aech of three mutually perpendicular directions.	Quality factor or dissipation factor	Refer to clause 5.1.2
	Solder temperature and immersion time: 260 ± 5°C, 10 ± 0,5 seconds.	Apperance	No visible damage
Resistance to Soldering Heat	The immersing depth shall be a position 1,27mm from the seating plane.	Capacitance change	± 2,5% or ± 0,25pf (whichever is greater, for class I). ± 5% (for Y5P and YR). ±15% (for Y5U and Z5U). ±20% (for Y5V and Z5V).
	Post treatment: The capacitor shall be preversed at the standard atmospheric condition for 24 ±	Voltage Proof ( for	
	2hours.	between leads only)	
Solvent resistance	The capacitor shall be immersed into isopropylalcohol. For 30 ± seconds.	Apperance	No visible damage legible marking

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							Apperance			ble damage l			
		The capacitor shall be placed in the test chamber at temperature of -25 $\pm$ 2°C for							± 5% o	or ± 0,5pf (whi	icheve	er is the greater for	r class 1)
								Canacitance Change I		(Y5P and YR	?)		
								riarige	± 20%	(Y5U and Z5	JU)		
	The								± 30% (Y5V and Z5V)				
			be placed in the om temperature i						Q ≥ 20	0 + 10Cr ( for	r Cr <1	10pf	
Temperature Cycle			temperature for						Q ≥ 27	5 + 5/2Cr (fo	or 10pf	<sup>1</sup> ≤ CR<30pf	
Tomporatare eyele			e subjected to a				Quality facto		Q ≥ 35	0 (for Cr ≥ 30	0pf)		
		•	ed at the standar	•		•	dissipation fa	actor	5% ma	x. (Y5V & Z5	SV)		
		·		•						ax. (Y5P, YR,		& Z5U)	
										nax. (SBBLC)	)		
							Insulation Resis	istance		l Ω min.			
										$\Omega$ min. (SBBL			
							Voltage pro			tween leads o	only.		
							Apperance			ble damage			
							Capacitance C			s the same			
			pe stored for 500				Q or DF		As the				
Damp Heat	relative	elative humidity of 90 to 95%. Post treatment: The capacitor shall be preseved for 1 to 2 hours at the standard atmospheric condition.  Insulation Resista						I Ω min (Class	•				
					1000M Ω min (Class II )								
							\		500M $\Omega$ min (Class III ) For between leads only.				
							Voltage pro		For bei	tween leads of	oniy.		
							Apperance						
	The	voltage that is	equal to 200% ra	ted voltage (for	50V and 500V ca	apacitors), or	Capacitance C Quality facto	_					
Endurance			or 1KV~3KV cap				dissipation fa				The	same us before	
Endurance	SBBL	C) shall be appli	ed continuously t	•	•	f 85 ± 3°C (125	dissipation la	actor					
			± 3°C for YF	R) for 1000 <sup>+48</sup> ho	ours.		Insulation Resis	istance					
	Voltage proof						oof				Company I I i arb.	Valtara Dias	
						<u> </u>						Voltage Disc	
											Ceramic	Capacitor	
												Part No.:	123004
	son	CHKD	Wilson	MATL:	Wilson	TOLERANCE	Mason		TE	30.04.20		ustomer:	
APPD: Sc	humi			FINISH	Jamy		Sheet	t No.		6 from 1	4		









#### **Structure and ROHs Materail request**

The marking of class I temperature characteristics is the color block on top of the capacitor

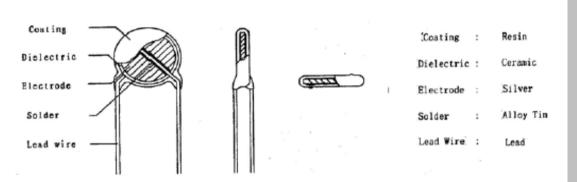
Temperature	C	Ο Δ	SL			
Characteristics	Bla	ack	None			
The marking of class II & III temperature characteristics is symbols specified in following table:						
Temperature         Y5P         Y5U / Z5U         Y5V / Z5V         YR						
Characteristics	Black	E	F	HRR&R		

#### Capacitance

When rated capacitcance is under 1ßßpf the capacitance marking is value being rated capacitance in unit pf. When rated capacitance is 100pf or over the capacitance marking is made in third digit method.

#### Tolerance:

The tolerance											
table.											
Tolerance:	Tolerance: ± 0,25pf ±0,5pf ±5% ±10% ±20%										
Symbol	Symbol C D J K M										
The tolerance											
following table.											
Tolerance: ± 10% ± 20% .+50%, -20% .+100%, 0% .+80%, -20%											
Symbol	Symbol K M SL P Z										
5 · 11/1/16											



Components Material		ROHS request	Remark		
Coating	Resin	Cd <100ppm;			
Dielectric	Ceramic	Pb <100ppm;	Appendix 1; SGS report (Availbale as customer request or See Appendix 1		
Electrode	Silver	LIC Ctr DDD DDDC			
Solder	Alloy tin	HG, Ctr PBBs, PBDEs, N.D			
Lead Wire	Lead	11,0			

#### Rated Voltage

When rated voltage is 50V the voltage marking is symbol "\_\_\_\_" under capcitance marking.

When rated voltage is 500V the voltage marking is symbol "\_\_" over capcitance marking.

When rated voltage is 1000Vor over, the voltage marking is symbols 1KV, 2KV, 3KV, 6KV..... over capacitance marking.

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Part No.: **I23004** 

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<u>1</u>C





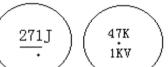


# Example of marking (Class I)

33J

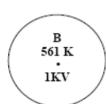


SL 101K 1KV



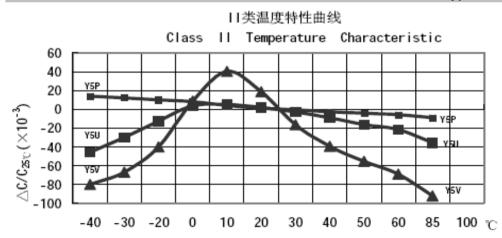


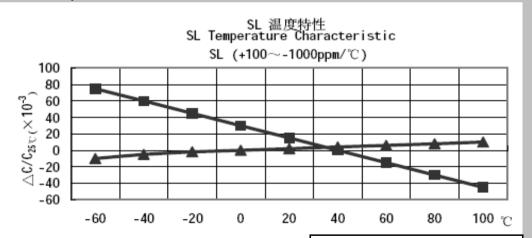
### Example of marking (Class II & III) over 1000 Volt





#### **Typical Characteristics Graph**





#### **Super High Voltage Disc Ceramic Capacitor** Part No.: 123004

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Jason

Schumi

DRW:

APPD:

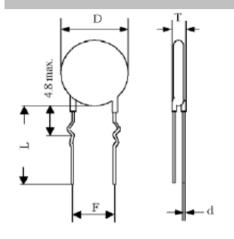


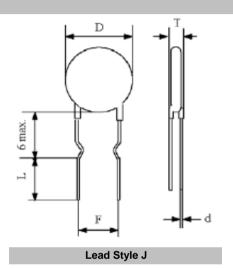


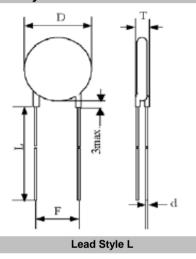


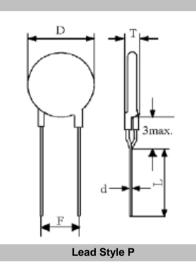


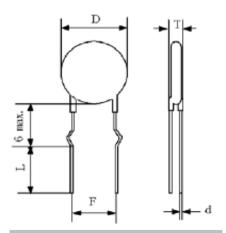












Lead Style W

 Voltage Disc Capacitor

Part No.: **123004** 

Customer:

Lead Style K

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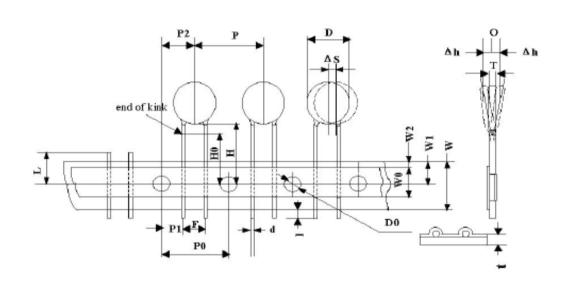


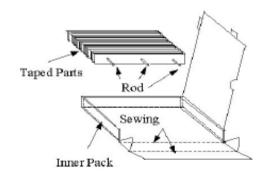




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# Packing Style F





Cumple of	Dimension (mm)
Symbol	Dimension (mm)
P0	12,7 ±0,2
P0	12,7 ±1,0
F	5,0 +0,5/-0,2
P1	3,85 ±0,4
P2	6,35 ±0,4
H0	16,0 ±0,5
Н	20,0 ±0,5
W	18,0 ±0,5
W0	8,0 min
W1	9,0 ±0,3
W2	3,0max.
t	0,7 ±0,2
D	To comply with individual sheet
D0	4,0 ±0,2
d	To comply with individual sheet
I	2,0 max.
L	11 max.
Т	To comply with individual sheet
ΔS	0,5 max
ΔΗ	0,5 max

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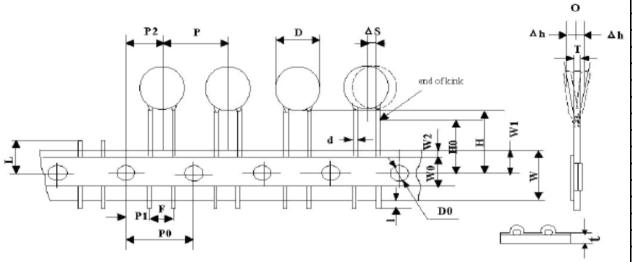




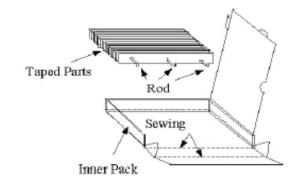




# Packing Style V



Symbol	Dimension (mm)
P0	15,0 ±0,2
P0	15,0 ±1,0
F	7,5 +0,5/-0,2
P1	3,75 ±0,4
P2	7,5 ±0,4
H0	16,0 ±0,5
Н	20,0 ±0,5
W	18,0 ±0,5
W0	11,5 min
W1	9,0 ±0,3
W2	3,0max.
t	0,7 ±0,2
D	To comply with individual sheet
D0	4,0 ±0,2
d	To comply with individual sheet
I	2,0 max.
L	11 max.
Т	To comply with individual sheet
ΔS	0,5 max
ΔΗ	0,5 max



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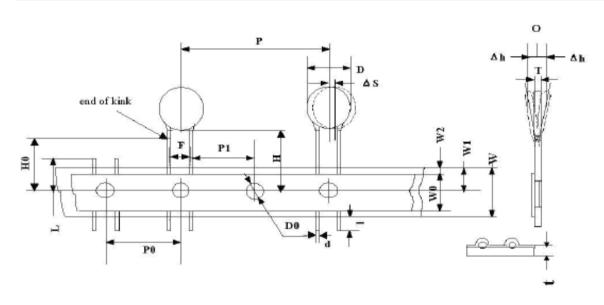


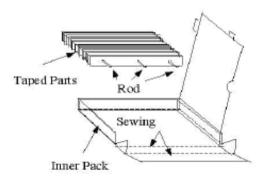






# Packing Style U





Symbol	Dimension (mm)
P0	12,7 ±0,2
P0	25,4 ±1,0
F	10,0 +0,5/-0,2
P1	7,7 ±0,4
P2	
H0	16,0 ±0,5
Н	20,0 ±0,5
W	18,0 ±0,5
W0	11,5 min
W1	9,0 ±0,3
W2	3,0max.
t	0,7 ±0,2
D	To comply with individual sheet
D0	4,0 ±0,2
d	To comply with individual sheet
I	2,0 max.
L	11 max.
Т	To comply with individual sheet
ΔS	0,5 max
ΔΗ	0,5 max

# Super High Voltage Disc Ceramic Capacitor

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K= Style K





#### **Ordering Informations**

Serie		Range	Tolerance Code	Material Code	Voltage Code	Lead Length	Lead Style	Lead Pitch	Lead Diameter	ROHS	Packing Code
123004	-	331	K	5P	С	11	L	D	7	R	BU
	•										
		<b>331=</b> 330pf	<b>K=</b> ±10%	<b>5P=</b> Y5P	<b>C=</b> 10KV	<b>11</b> = 11mm	L= Style L	<b>D=</b> Pitch	<b>7=</b> 0,65mm	R= ROHS	<b>BU=</b> Bulk
		<b>331–</b> 330pi	<b>K=</b> ±1070	<b>31 =</b> 131	<b>0=</b> 1010	11- 11111111	L= Otyle L	10mm	7 = 0,00111111	Conform	Ware
						<b>25=</b> 25mm	P= Style P			<b>N=</b> NON ROHS	<b>TF=</b> Tape Style F
					•		W= Style W			Conform	TV= Tape
											Style U
							<b>J=</b> Style J				<b>TU=</b> Tape Style U

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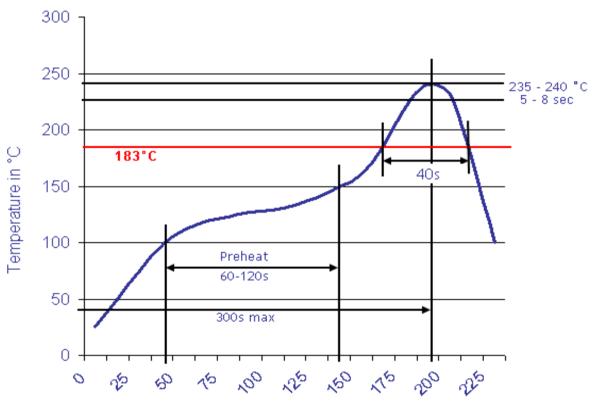






### **Soldering Profile Curve**

# Classification Reflow Profile (JEDEC J-STD-020C)



Time in (sec)

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