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Mid-high Voltage Ceramic Capacitors

Disk type with lead

Safety standard approved

CS series

Issue date: October 2011

- All specifications are subject to change without notice.
 - Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.
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Mid-high Voltage Ceramic Capacitors(Disk with Lead) Safety Standard Approved CS Series

Conformity to RoHS Directive

**BASIC INSULATION TYPE/Operating temperature range: -25 to +105°C(UL standard: -25 to +85°C)
CLASS 2 HIGH DIELECTRIC**

FEATURES

- Flame-resistant reinforced outer insulation prevents fires, electrical shock, and other potential hazards.
- Compliant with the safety standards of 11 countries.
- It has a withstand voltage of AC.2600V
- This product is compatible with halogen-free external resin coating (we recommend halogen-free products as standard).

CAPACITANCE TEMPERATURE CHARACTERISTICS AND TOLERANCE

Temperature characteristics	Test temperature range	Capacitance tolerance
B(±10%)	-25 to +85°C	K(±10%)
E(+20, -55%)	-25 to +85°C	M(±20%)
F(+30, -80%)	-25 to +85°C	M(±20%)

PRODUCT IDENTIFICATION

CS	11	-E	2GA	222	M	Y	N	S	A
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

- (1) Type
- (2) Shape
- (3) Capacitance temperature characteristics
- (4) Rated voltage
- (5) Nominal capacitance
- (6) Capacitance tolerance
- (7) Class
- (8) Lead type
- (9) Safety standard
- (10) Halogen-free compatible product

CAPACITANCE AND DIMENSIONS

Part No.		Capacitance temperature characteristics	Capacitance (pF)	Capacitance tolerance	Dimensions(mm)				Taping dimensions
Halogen-free product	Current product				D max.	T max.	F	d	
CS70-B2GA101KY□SA	CS70-B2GA101KY□S	B(±10%)	100	K(±10%)	7.0	7.0	7.5±1.5	0.6±0.05	V2
CS70-B2GA151KY□SA	CS70-B2GA151KY□S		150	K(±10%)	7.0	7.0	7.5±1.5	0.6±0.05	V2
CS70-B2GA221KY□SA	CS70-B2GA221KY□S		220	K(±10%)	7.0	7.0	7.5±1.5	0.6±0.05	V2
CS85-B2GA331KY□SA	CS85-B2GA331KY□S		330	K(±10%)	8.5	7.0	7.5±1.5	0.6±0.05	V2
CS85-B2GA471KY□SA	CS85-B2GA471KY□S	E(+20, -55%)	470	K(±10%)	8.5	7.0	7.5±1.5	0.6±0.05	V2
CS95-B2GA681KY□SA	CS95-B2GA681KY□S		680	K(±10%)	9.5	7.0	7.5±1.5	0.6±0.05	V2
CS10-B2GA102KY□SA	CS10-B2GA102KY□S		1,000	K(±10%)	10.0	7.0	7.5±1.5	0.6±0.05	V2
CS80-E2GA102MY□SA	CS80-E2GA102MY□S		1,000	M(±20%)	8.0	7.0	7.5±1.5	0.6±0.05	V2
CS90-E2GA152MY□SA	CS90-E2GA152MY□S	F(+30, -80%)	1,500	M(±20%)	9.0	7.0	7.5±1.5	0.6±0.05	V2
CS11-E2GA222MY□SA	CS11-E2GA222MY□S		2,200	M(±20%)	10.5	7.0	7.5±1.5	0.6±0.05	V2
CS13-E2GA332MY□SA	CS13-E2GA332MY□S		3,300	M(±20%)	12.5	7.0	7.5±1.5	0.6±0.05	V2
CS14-E2GA392MY□SA	CS14-E2GA392MY□S		3,900	M(±20%)	13.5	7.0	7.5±1.5	0.6±0.05	V2
CS15-E2GA472MY□SA	CS15-E2GA472MY□S	F(+30, -80%)	4,700	M(±20%)	14.5	7.0	7.5±1.5	0.6±0.05	V3
CS12-F2GA472MY□SA	CS12-F2GA472MY□S		4,700	M(±20%)	12.0	7.0	7.5±1.5	0.6±0.05	V2
CS17-F2GA103MY□SA	CS17-F2GA103MY□S		10,000	M(±20%)	16.5	7.0	10±2	0.6±0.05	—

* □ : Lead shape symbol

LIST OF STANDARD LEAD SHAPES

The lead type is indicated by the letter which is the 15th character of the product name.

Example) TDK Product Name: **CS11-E2GA222MYNSA**

└N: Lead type (Vertical kink, Short)

Dimensions in mm

	Long lead Symbol G	Short lead Symbol N	Taping Symbol V
Vertical kink			

- We recommend using a vertical kink type.
- For bulk products, we recommend a short lead type with the symbol N.

• Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

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HALOGEN-FREE PRODUCT

MARKINGS

Item		Marking examples
1. Series	CS	<p>(Marking position is reference.)</p>
2. Nominal capacitance	222(2200pF)	
3. Capacitance tolerance	M(±20%)	
4. Rated voltage Eac	250V ~ (AC.250V)	
5. Sub-class of safety performance	X1Y2	
6. TDK's logogram		
7. Date code	15 (2011.5)*	

* Year and month of production: last digit of year + month denoted by 1, 2, 3, 4, 5, 6, 7, 8, 9, O (October), N (November), or D (December).

* The expression has become simplified due to a revision in the standards.

INTERNATIONALLY CERTIFIED STATUS / IEC60384-14 EN60384-14 Approved

Safety standard	Standard No. of IEC	Standard No.	Temperature characteristics	Insulation sub-class	Rated voltage Eac(V)	Approval report No.		
						Japan	Taiwan	Xiamen
BSI	IEC 60065	BS EN 60065	B, E, F	X1, Y2	250	KM37103	KM37103	KM37103
	IEC 60384-14	BS EN60384-14						
VDE	IEC 60384-14	EN 60384-14	B, E, F	X1, Y2	250	40029781	40029781	40029781
SEV	IEC 60384-14	EN 60384-14	B, E, F	X1, Y2	250	10.0120	10.0120	10.0120
SEMKO	IEC 60384-14	EN 60384-14	B, E, F	X1, Y2	250	912461	912461	912461
NEMKO	IEC 60384-14	EN 60384-14	B, E, F	X1, Y2	250	P09211677	P09211677	P09211677
DEMKO	IEC 60384-14	EN 60384-14	B, E, F	X1, Y2	250	315269-01	315269-01	315269-01
FIMKO	IEC 60384-14	EN 60384-14	B, E, F	X1, Y2	250	FI 25553	FI 25553	FI 25553
IMQ	IEC 60384-14	EN 60384-14	B, E, F	X1, Y2	250	V3692	V3692	V3692
SAA	IEC 60065	AS3250	B, E, F	—	400	CS6268	CS6268	CS6268
UL	—	UL 1414	B, E, F	(X, Y)	250	E37861	E37861	E37861
CSA	IEC 60384-14	CAN/CSA-E60384-14	B, E, F	(X, Y)	250	2278972 (LR 35801)	2278972 (LR 35801)	2278972 (LR 35801)
CQC	IEC 60384-14	GB-T 14472-1998	B, E, F	X1, Y2	250	CQC10001051610	CQC10001051637	CQC03001004815

• Certificate numbers shall be changed owing to the revisions of the related standards.

CURRENT PRODUCT

MARKINGS

Item		Marking examples
1. Series	CS	<p>(Marking position of the monogram is reference.)</p>
2. Nominal capacitance	222(2200pF)	
3. Capacitance tolerance	M(±20%)	
4. Rated voltage Eac	250V ~ (AC.250V)	
5. Withstand voltage Eac	X1Y2	
6. Sub-class of safety performance		
7. TDK's logogram	15 (2011.5)*	
8. Date code		
9. Regulatory body safety standards compliance markings		

BSI (U.K.)	BSI	SEV (Switzerland)		FIMKO (Finland)		NEMKO (Norway)	
SEMKO (Sweden)		UL (U.S.A.)		DEMKO (Denmark)		IMQ (Italy)	
VDE (Germany)		CSA (Canada)					

* Year and month of production: last digit of year + month denoted by 1, 2, 3, 4, 5, 6, 7, 8, 9, O (October), N (November), or D (December).

INTERNATIONALLY CERTIFIED STATUS / IEC60384-14 EN60384-14 Approved

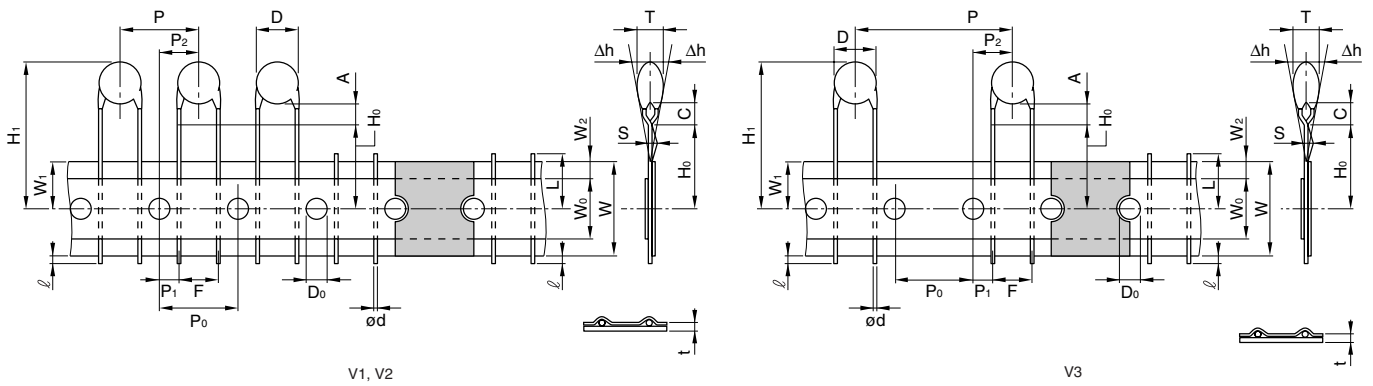
Safety standard	Standard No. of IEC	Standard No.	Temperature characteristics	Insulation sub-class	Rated voltage Eac(V)	Approval report No.		
						Japan	Taiwan	Xiamen
BSI	IEC 60065	BS EN 60065	B, E, F	X1, Y2	250	226494	226494	226494
	IEC 60384-14	BS EN60384-14						
VDE	IEC 60384-14	EN60384-14	B, E, F	X1, Y2	250	138559	138560	122006
SEV	IEC 60384-14	EN60384-14	B, E, F	X1, Y2	250	09.0962	09.0962	09.0962
SEMKO	IEC 60384-14	EN60384-14	B, E, F	X1, Y2	250	915556	915556	915394
NEMKO	IEC 60384-14	EN60384-14	B, E, F	X1, Y2	250	P09211507	P09211507	P08209309
DEMKO	IEC 60384-14	EN60384-14	B, E, F	X1, Y2	250	315179-01	315179-01	314664-02
FIMKO	IEC 60384-14	EN60384-14	B, E, F	X1, Y2	250	FI 25453	FI 25453	FI 24306A1
IMQ	IEC 60384-14	EN60384-14	B, E, F	X1, Y2	250	V3692	V3692	V3692
SAA	IEC 60065	AS3250	B, E, F	—	400	6268	6268	6268
UL	—	UL 1414	B, E, F	(X, Y)	250	E37861	E37861	E37861
CSA	—	CSA C22.2 No.0 & No.1	B, E, F	(X, Y)	250	LR35801	LR65972	LR65972

• Certificate numbers shall be changed owing to the revisions of the related standards.

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TAPING DIMENSIONS

VERTICAL KINK LEAD TYPE



Item	Symbol	Dimensions(mm)			Remarks
		V1	V2	V3	
Body diameter	D	Depends on the specification of each product.			
Body thickness	T	Depends on the specification of each product.			
Lead-wire diameter	ød	0.6±0.05	0.6±0.05	0.6±0.05	
Pitch of component	P	12.7±1.0	15.0±1.0	30.0±1.0	Including the slant of body
Feed hole pitch	P ₀	12.7±0.3	15.0±0.3	15.0±0.3	Excepting the tape splicing part
Feed hole center to lead	P ₁	3.85±0.7	3.75±0.7	3.75±0.7	
Feed hole center to component center	P ₂	6.35±1.3	7.5±1.3	7.5±1.3	
Lead-to lead distance	F	5+0.8, -0.2	7.5±0.8	7.5±0.8	Measuring point is bottom kink
Component alignment	Δh	0±2.0	0±2.0	0±2.0	Including the slanting body due to bending lead-wire
Tape width	W	18.0+1.0, -0.5	18.0+1.0, -0.5	18.0+1.0, -0.5	
Adhesive tape width	W ₀	11.5min.	11.5min.	11.5min.	
Hole position	W ₁	9.0±0.5	9.0±0.5	9.0±0.5	
Adhesive tape position	W ₂	3.0max.	3.0max.	3.0max.	Adhesive tape do not stick out the tape
Bottom of kink from tape center	H ₀	16.0+1.5, -0.5	16.0+1.5, -0.5	16.0+1.5, -0.5	
Height of body from tape center	H ₁	46.0max.	46.0max.	46.0max.	
Lead-wire protrusion	ℓ	1.0max.	1.0max.	1.0max.	
Feed hole diameter	D ₀	4.0±0.2	4.0±0.2	4.0±0.2	
Total tape thickness	t	0.6±0.3	0.6±0.3	0.6±0.3	Do not including adhesive tape
Length of snapped lead	L	11.0max.	11.0max.	11.0max.	
Coating on lead	C	4.0max.	4.0max.	4.0max.	
Height of kink	A	4.0max.	4.0max.	4.0max.	Measuring point is bottom kink
Spring action	S	2.0max.	2.0max.	2.0max.	

• For more information about products with other capacitance or other data, please contact us.

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