

CGA SERIES | Automotive Grade



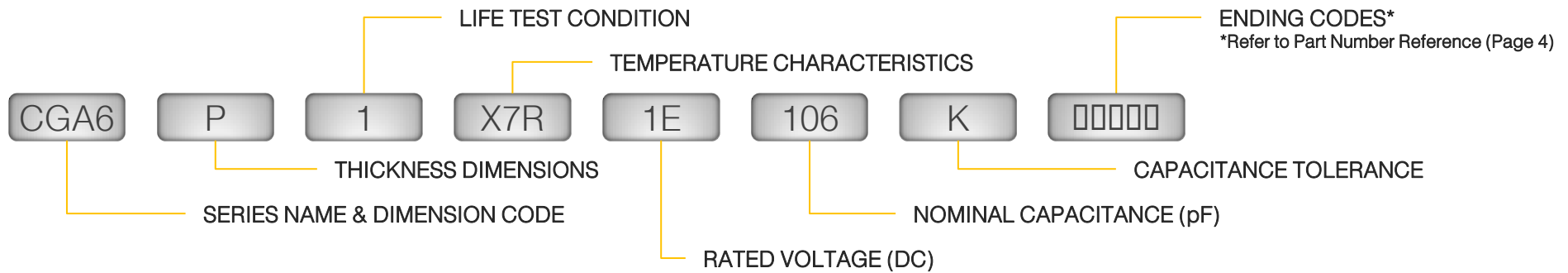
TDK CGA series multilayer ceramic chip capacitors (MLCCs) are qualified to automotive industry's Q200 testing standard. CGA parts are manufactured using TDK's most advanced and stable manufacturing process.

Parts are subjected to increased inspections to offer a higher level of life and reliability. The CGA family is available in general voltages up to 50V, mid voltage up to 630V, and high temperature up to 150C. TDK CGA series is an excellent choice for automotive applications as well as any application that requires a higher level of reliability. CGA is also used in tough environment applications such as product that may sit outdoors for the duration of the product life. This includes but is not limited to smart meter, smart grid, base station, etc.

Case Code	L (mm)	W (mm)	T (mm)
CGA2/0402	1.00	0.50	0.50
CGA3/0603	1.60	0.80	0.80
CGA4/0805	2.00	1.25	1.25
CGA5/1206	3.20	1.60	1.60
CGA6/1210	3.20	2.50	2.50
CGA8/1812	4.50	3.20	3.20
CGA9/2220	5.70	5.00	2.50

L Body Length
 W Body Width
 T Body Height
 B Terminal Width

Part Number Description



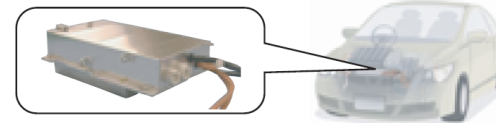
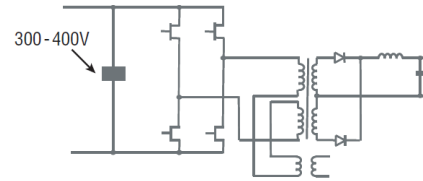
Features:

- ❖ Qualified to Automotive Q-200
- ❖ Product is manufactured using mature processes
- ❖ Available with rated voltage from 4V – 630V
- ❖ Available in temperature rating up to 150C (X8R)
- ❖ Soft termination available for larger case size

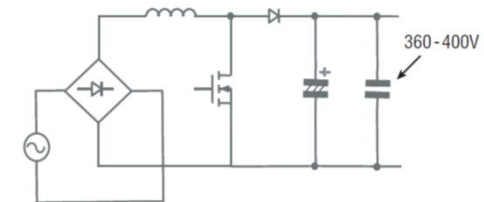
Applications:

- ❖ Automotive engine control units and sensor modules
- ❖ Automotive battery line smoothing
- ❖ Smart Meter/Smart Grid/Solar Inverters
- ❖ Applications requiring higher reliability
- ❖ Switching power supply smoothing

DC-DC Converters for Hybrid Electric Vehicles



PFC Output Filters



CGA SERIES | Automotive Grade / C0G, X5R

Capacitance (pF)	Cap Code	CGA2 0402	CGA3 0603
		1H (50V)	1H (50V)
1.0	010	COG	COG
1.5	1R5	COG	COG
2.0	020	COG	COG
2.2	2R2	COG	COG
3.0	030	COG	COG
4.0	040	COG	COG
4.7	4R7	COG	COG
5.0	050	COG	COG
6.0	060	COG	COG
6.8	6R8	COG	COG
7.0	070	COG	COG
8.0	080	COG	COG
9.0	090	COG	COG
10	100	COG	COG
12	120	COG	COG
15	150	COG	COG
18	180	COG	COG
22	220	COG	COG
27	270	COG	COG
33	330	COG	COG
39	390	COG	COG
47	470	COG	COG
56	560	COG	COG
68	680	COG	COG
82	820	COG	COG
100	101	COG	COG
120	121	COG	COG
150	151	COG	COG
180	181	COG	COG
220	221	COG	COG
270	271	COG	COG
330	331	COG	COG
470	471	COG	COG
560	561	COG	COG
680	681	COG	COG
820	821	COG	COG
1,000	102	COG	COG
1,200	122	COG	COG
1,500	152	COG	COG
1,800	182	COG	COG
2,200	222	COG	COG
2,700	272	COG	COG
3,300	332	COG	COG
3,900	392	COG	COG
4,700	472	COG	COG
5,600	562	COG	COG
6,800	682	COG	COG
8,200	822	COG	COG
10,000	103	COG	COG

Capacitance (pF)	Cap Code	CGA4 0805	CGA5 1206	CGA6 1210	CGA8 1812
		1H (50V)	1H (50V)	1H (50V)	1H (50V)
100	101	COG			
1,000	102	COG			
2,200	222	COG			
2,700	272	COG			
3,300	332	COG			
3,900	392	COG			
4,700	472	COG	COG		
5,600	562	COG	COG		
6,800	682	COG	COG		
8,200	822	COG	COG		
10,000	103	COG	COG		
15,000	153	COG	COG		
22,000	223	COG	COG	COG	
33,000	333	COG	COG	COG	
47,000	473	COG	COG	COG	COG
68,000	683	COG	COG	COG	COG
100,000	104	COG	COG	COG	COG
150,000	154	COG	COG	COG	COG
220,000	224	COG	COG	COG	COG

Capacitance (pF)	Cap Code	CGA2 0402	CGA3 0603					CGA4 0805			CGA5 1206	
		1H (50V)	1H (50V)	1C (16V)	1A (10V)	0J (6.3V)	1H (50V)	1C (16V)	1A (10V)	1H (50V)	1V (35V)	
220,000	224	COG										
1,000,000	105		COG									
2,200,000	225			COG			COG					
3,300,000	335				COG		COG					
4,700,000	475					COG	COG					
10,000,000	106						COG	COG	COG	COG	COG	

 X5R

 C0G

CGA SERIES | Automotive Grade / X7R, X7S

Capacitance (pF)	Cap Code	CGA2 0402					CGA3 0603				
		1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	0J (6.3V)
220	221	█					█				
330	331	█					█				
470	471	█					█				
680	681	█					█				
1,000	102	█					█				
1,500	152	█					█				
2,200	222	█					█				
3,300	332	█					█				
4,700	472	█					█				
6,800	682	█					█				
10,000	103	█	█	█			█				
15,000	153	█	█	█			█				
22,000	223	█		█			█				
33,000	333	█		█			█				
47,000	473	█		█	█		█				
68,000	683	█	█	█	█		█				
100,000	104	█	█	█	█		█		█		
150,000	154						█				
220,000	224					█	█			█	
330,000	334						█		█		
470,000	474						█		█		
680,000	684								█	█	
1,000,000	105								█		
1,500,000	155										
2,200,000	225										█

Capacitance (pF)	Cap Code	CGA4 0803					CGA5 1206					CGA6 1210			CGA8 1812			CGA9 2220			
		1H (50V)	1V (35V)	1E (25V)	1C (16V)	0J (6.3V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	0J (6.3V)	1H (50V)	1E (25V)	1C (16V)	1H (50V)	1E (25V)	1C (16V)	1H (50V)	1E (25V)	1C (16V)	
100,000	104	█																			
150,000	154	█																			
220,000	224	█		█																	
330,000	334	█		█	█																
470,000	474	█		█	█		█														
680,000	684	█	█	█	█		█		█	█											
1,000,000	105	█	█	█	█		█		█	█		█									
1,500,000	155						█											█			
2,200,000	225		█				█					█						█			
3,300,000	335			█				█				█									
4,700,000	475			█	█			█				█	█					█			
6,800,000	685																	█		█	
10,000,000	106						█			█				█				█		█	
15,000,000	156																				
22,000,000	226																	█		█	
33,000,000	336																	█		█	
47,000,000	476																				█

█ X7R █ X7S

CGA SERIES | High Temperature / X8R

Capacitance (pF)	Cap Code	CGA2 0402		CGA3 0603			CGA4 0805			CGA5 1206			CGA6 1210
		1H (50V)	1E (25V)	2A (100V)	1H (50V)	1E (25V)	2A (100V)	1H (50V)	1E (25V)	2A (100V)	1H (50V)	1E (25V)	1E (25V)
150	151	■											
220	221	■											
330	331	■											
470	471	■											
680	681	■											
1,000	102	■		■	■								
1,500	152	■		■	■								
2,200	222	■		■	■								
3,300	332	■		■	■								
4,700	472	■		■	■								
6,800	682		■	■	■								
10,000	103		■	■	■								
15,000	153			■	■		■						
22,000	223				■		■						
33,000	333				■								
47,000	473				■								
68,000	683					■		■		■			
100,000	104					■		■		■			
150,000	154									■			
220,000	224								■		■		
330,000	334								■		■		
470,000	474										■		
680,000	684											■	
1,000,000	105												■
1,500,000	155												■
2,200,000	225												■
3,300,000	335												■

■ X8R

CGA SERIES | Mid Voltage / COG

Capacitance (pF)	Cap Code	CGA3 0603		CGA4 0805		CGA5 1206			CGA6 1210			CGA8 1812		
		2E (250V)	2A (100V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)
100	101	COG	COG		COG	COG								
120	121													
150	151													
180	181													
220	221				COG									
270	271													
330	331													
390	391													
470	471				COG									
560	561													
680	681	COG												
820	821			COG	COG									
1,000	102		COG	COG	COG									
1,200	122		COG											
1,500	152			COG	COG									
1,800	182													
2,200	222			COG	COG									
2,700	272			COG	COG	COG								
3,300	332					COG	COG	COG						
3,900	392						COG	COG						
4,700	472				COG		COG	COG						
5,600	562					COG	COG	COG						
6,800	682													
8,200	822											COG		
10,000	103								COG			COG		
15,000	153									COG				
22,000	223										COG	COG		
33,000	333												COG	
47,000	473													COG
68,000	683													COG
100,000	104													COG

 COG

CGA SERIES | Mid Voltage / X7R, X7S, X7T

Capacitance (pF)	Cap Code	CGA2 0402	CGA3 0603	CGA4 0805			CGA5 1206				
		2A (100V)	2A (100V)	2W (450V)	2E (250V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)	
1,000	102	X7R	X7R				X7R				
1,500	152	X7R	X7R				X7R				
2,200	222	X7R	X7R				X7R				
3,300	332	X7R	X7R				X7R				
4,700	472	X7R	X7R				X7R				
6,800	682	X7R	X7R			X7R					
10,000	103	X7R	X7R			X7R					
15,000	153		X7R	X7R	X7R	X7R	X7R		X7R		
22,000	223		X7R	X7R	X7R	X7R	X7R		X7R		
33,000	333		X7S	X7R	X7R	X7R	X7R	X7R	X7R	X7R	
47,000	473		X7S	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
68,000	683		X7S	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
100,000	104		X7S	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
150,000	154										X7R
220,000	224								X7R		X7R
330,000	334										X7R
470,000	474					X7S					X7R
1,000,000	105					X7S					X7R
2,200,000	225					X7S					X7S

Capacitance (pF)	Cap Code	CGA6 1210				CGA8 1812				CGA9 2220			
		2J (630V)	2W (450V)	2E (250V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)
47,000	473	X7R				X7R							
68,000	683	X7R				X7R							
100,000	104	X7R		X7R		X7R				X7R			
150,000	154		X7R	X7R		X7R		X7R		X7R			
220,000	224		X7R	X7R		X7R	X7R	X7R		X7R		X7R	
330,000	334				X7R		X7R	X7R		X7R		X7R	X7R
470,000	474				X7R		X7R	X7R		X7R	X7R	X7R	X7R
680,000	684				X7R		X7R	X7R		X7R	X7R	X7R	X7R
1,000,000	105				X7R		X7R	X7R		X7R	X7R	X7R	X7R
1,500,000	155				X7R		X7R	X7R		X7R	X7R	X7R	X7R
2,200,000	225				X7R		X7R	X7R		X7R	X7R	X7R	X7R
3,300,000	335				X7R		X7R	X7R		X7R	X7R	X7R	X7R
4,700,000	475				X7S		X7R	X7R		X7S	X7R	X7R	X7R
10,000,000	106				X7S		X7R	X7R		X7S	X7R	X7R	X7S
15,000,000	156				X7S		X7R	X7R		X7S	X7R	X7R	X7S

■ X7R
 ■ X7S
 ■ X7T

CGA SERIES | Soft Termination / X7R, X7S, X7T

Capacitance (pF)	Cap Code	CGA4 0805						CGA5 1206						
		2W (450V)	2E (250V)	2A (100V)	1H (50V)	1V (35V)	1C (16V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)	1H (50V)	1V (35V)	1E (25V)
10,000	103	X7R	X7T					X7R						
22,000	223	X7R	X7T					X7R						
47,000	473	X7R	X7T					X7R	X7T	X7R				
100,000	104		X7T						X7T	X7R				
220,000	224			X7R						X7R				
470,000	474			X7R	X7R						X7R			
1,000,000	105			X7R	X7R						X7R	X7R		
2,200,000	225					X7R						X7R	X7R	
4,700,000	475						X7R					X7R	X7R	X7R
10,000,000	106													X7R

Capacitance (pF)	Cap Code	CGA6 1210					CGA8 1812			CGA9 2220			
		2J (630V)	2W (450V)	2E (250V)	2A (100V)	1H (50V)	2J (630V)	2W (450V)	2E (250V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)
47,000	473	X7R											
100,000	104	X7R		X7R									
220,000	224		X7T	X7R			X7T						
470,000	474						X7T	X7R	X7T				
1,000,000	105									X7T	X7R		
2,200,000	225				X7R						X7R	X7R	
4,700,000	475				X7R	X7R							X7R
10,000,000	106					X7R							X7R
22,000,000	226												
100,000,000	107												

■ X7R
 ■ X7S
 ■ X7T