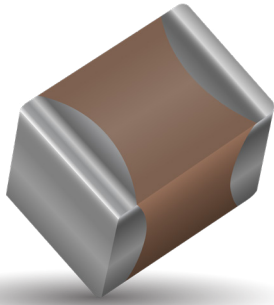


C0G (NP0) Dielectric

General Specifications



C0G (NP0) is the most popular formulation of the “temperature-compensating,” EIA Class I ceramic materials. Modern C0G (NP0) formulations contain neodymium, samarium and other rare earth oxides. C0G (NP0) ceramics offer one of the most stable capacitor dielectrics available. Capacitance change with temperature is $0 \pm 30 \text{ ppm}/^\circ\text{C}$ which is less than $\pm 0.3\%$ C from -55°C to $+125^\circ\text{C}$. Capacitance drift or hysteresis for C0G (NP0) ceramics is negligible at less than $\pm 0.05\%$ versus up to $\pm 2\%$ for films. Typical capacitance change with life is less than $\pm 0.1\%$ for C0G (NP0), one-fifth that shown by most other dielectrics. C0G (NP0) formulations show no aging characteristics.

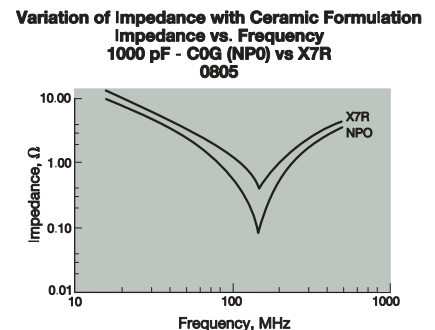
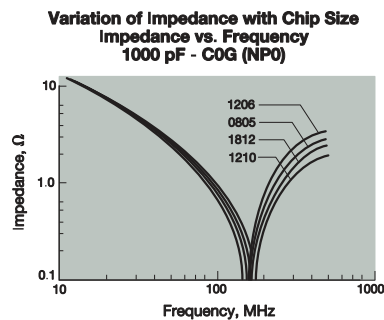
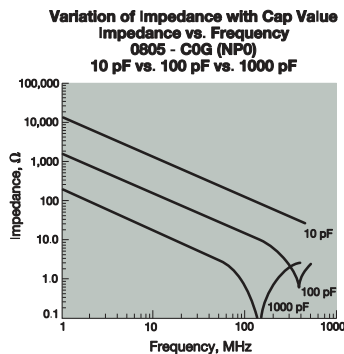
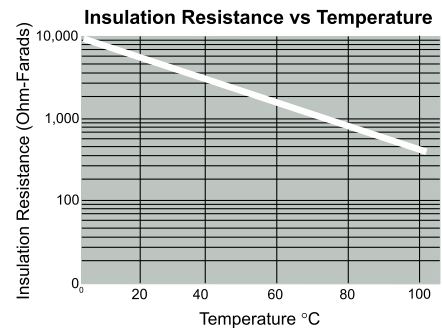
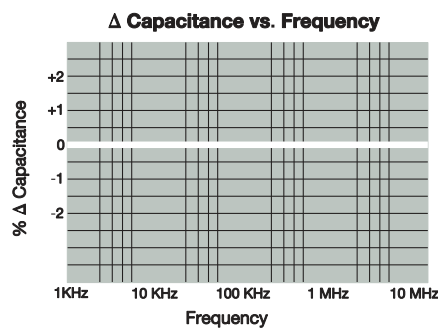
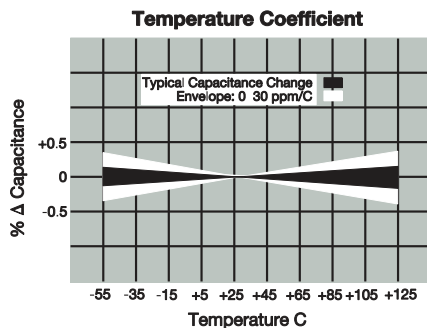
PART NUMBER (see page 4 for complete part number explanation)



0805	5	A	101	J	A	T	2	A
Size (L" x W")	Voltage 6.3V = 6 10V = Z 16V = Y 25V = 3 50V = 5 100V = 1 200V = 2 250V = V 500V = 7	Dielectric C0G (NP0) = A	Capacitance Code (In pF) 2 Sig. Digits + Number of Zeros	Capacitance Tolerance B = $\pm 10 \text{ pF}$ ($< 10 \text{ pF}$) C = $\pm 25 \text{ pF}$ ($< 10 \text{ pF}$) D = $\pm 50 \text{ pF}$ ($< 10 \text{ pF}$) F = $\pm 1\%$ ($\geq 10 \text{ pF}$) G = $\pm 2\%$ ($\geq 10 \text{ pF}$) J = $\pm 5\%$ K = $\pm 10\%$	Failure Rate A = Not Applicable	Terminations T = Plated Ni and Sn Contact Factory For 1 = Pd/Ag Term 7 = Gold Plated NOT RoHS COMPLIANT	Packaging 2 = 7" Reel 4 = 13" Reel U = 4mm TR (01005)	Special Code A = Std. Product

Contact Factory For Multiples

NOTE: Contact factory for availability of Termination and Tolerance Options for Specific Part Numbers. Contact factory for non-specified capacitance values.

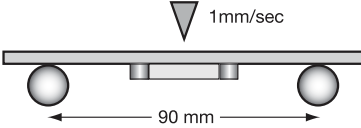


The Important Information/Disclaimer is incorporated in these specifications by reference and should be reviewed in full before placing any order.

COG (NP0) Dielectric

Specifications and Test Methods



Parameter/Test		NP0 Specification Limits	Measuring Conditions	
Operating Temperature Range		-55°C to +125°C	Temperature Cycle Chamber	
Capacitance		Within specified tolerance	Freq.: 1.0 MHz $\pm$ 10% for cap $\leq$ 1000 pF 1.0 kHz $\pm$ 10% for cap $>$ 1000 pF Voltage: 1.0Vrms $\pm$.2V	
Q		<30 pF: $Q \geq 400+20 \times \text{Cap Value}$ ≥ 30 pF: $Q \geq 1000$		
Insulation Resistance		100,000M Ω or 1000M Ω - μ F, whichever is less	Charge device with rated voltage for 60 $\pm$ 5 secs @ room temp/humidity	
Dielectric Strength		No breakdown or visual defects	Charge device with 250% of rated voltage for 1-5 seconds, w/charge and discharge current limited to 50 mA (max) Note: Charge device with 150% of rated voltage for 500V devices.	
Resistance to Flexure Stresses	Appearance	No defects	Deflection: 2mm Test Time: 30 seconds 	
	Capacitance Variation	$\pm 5\%$ or ± 5 pF, whichever is greater		
	Q	Meets Initial Values (As Above)		
	Insulation Resistance	$\geq$ Initial Value $\times$ 0.3		
Solderability		$\geq 95\%$ of each terminal should be covered with fresh solder	Dip device in eutectic solder at 230 $\pm$ 5°C for 5.0 $\pm$ 0.5 seconds	
Resistance to Solder Heat	Appearance	No defects, $<25\%$ leaching of either end terminal	Dip device in eutectic solder at 260°C for 60sec- onds. Store at room temperature for 24 $\pm$ 2 hours before measuring electrical properties.	
	Capacitance Variation	$\leq \pm 2.5\%$ or $\pm .25$ pF, whichever is greater		
	Q	Meets Initial Values (As Above)		
	Insulation Resistance	Meets Initial Values (As Above)		
	Dielectric Strength	Meets Initial Values (As Above)		
Thermal Shock	Appearance	No visual defects	Step 1: -55°C $\pm$ 2°	30 $\pm$ 3 minutes
	Capacitance Variation	$\leq \pm 2.5\%$ or $\pm .25$ pF, whichever is greater	Step 2: Room Temp	≤ 3 minutes
	Q	Meets Initial Values (As Above)	Step 3: +125°C $\pm$ 2°	30 $\pm$ 3 minutes
	Insulation Resistance	Meets Initial Values (As Above)	Step 4: Room Temp	≤ 3 minutes
	Dielectric Strength	Meets Initial Values (As Above)	Repeat for 5 cycles and measure after 24 hours at room temperature	
Load Life	Appearance	No visual defects	Charge device with twice rated voltage in test chamber set at 125°C $\pm$ 2°C for 1000 hours (+48, -0). Remove from test chamber and stabilize at room temperature for 24 hours before measuring.	
	Capacitance Variation	$\leq \pm 3.0\%$ or $\pm .3$ pF, whichever is greater		
	Q (C=Nominal Cap)	≥ 30 pF: $Q \geq 350$ ≥ 10 pF, <30 pF: $Q \geq 275 + 5C/2$ <10 pF: $Q \geq 200 + 10C$		
	Insulation Resistance	$\geq$ Initial Value $\times$ 0.3 (See Above)		
	Dielectric Strength	Meets Initial Values (As Above)		
Load Humidity	Appearance	No visual defects	Store in a test chamber set at 85°C $\pm$ 2°C/ 85% $\pm$ 5% relative humidity for 1000 hours (+48, -0) with rated voltage applied. Remove from chamber and stabilize at room temperature for 24 $\pm$ 2 hours before measuring.	
	Capacitance Variation	$\leq \pm 5.0\%$ or $\pm .5$ pF, whichever is greater		
	Q	≥ 30 pF: $Q \geq 350$ ≥ 10 pF, <30 pF: $Q \geq 275 + 5C/2$ <10 pF: $Q \geq 200 + 10C$		
	Insulation Resistance	$\geq$ Initial Value $\times$ 0.3 (See Above)		
	Dielectric Strength	Meets Initial Values (As Above)		

PREFERRED SIZES ARE SHADED

SIZE		0101*		0201		0402		0603				0805					1206										
Soldering		Reflow Only		Reflow Only		Reflow/Wave		Reflow/Wave				Reflow/Wave					Reflow/Wave										
Packaging		All Paper		All Paper		All Paper		All Paper				Paper/Embossed					Paper/Embossed										
(L) Length	mm	0.40 ± 0.02		0.60 ± 0.09		1.00 ± 0.10		1.60 ± 0.15				2.01 ± 0.20					3.20 ± 0.20										
	(in.)	(0.016 ± 0.0008)		(0.024 ± 0.004)		(0.040 ± 0.004)		(0.063 ± 0.006)				(0.079 ± 0.008)					(0.126 ± 0.008)										
W) Width	mm	0.20 ± 0.02		0.30 ± 0.09		0.50 ± 0.10		0.81 ± 0.15				1.25 ± 0.20					1.60 ± 0.20										
	(in.)	(0.008 ± 0.0008)		(0.011 ± 0.004)		(0.020 ± 0.004)		(0.032 ± 0.006)				(0.049 ± 0.008)					(0.063 ± 0.008)										
(t) Terminal	mm	0.10 ± 0.04		0.15 ± 0.05		0.25 ± 0.15		0.35 ± 0.15				0.50 ± 0.25					0.50 ± 0.25										
	(in.)	(0.004 ± 0.0016)		(0.006 ± 0.002)		(0.010 ± 0.006)		(0.014 ± 0.006)				(0.020 ± 0.010)					(0.020 ± 0.010)										
WVDC		16		25	50	16	25	50	16	25	50	100	200	16	25	50	100	200	250	16	25	50	100	200	250	500	
Cap (pF)	0.5			A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	1.0	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	1.2	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	1.5	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	1.8	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	2.2	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	2.7	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	3.3	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	3.9	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	4.7	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	5.6	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	6.8	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	8.2	B		A	A	C	C	C	G	G	G	G	G	J	J	J	J	J	J	J	J	J	J	J	J	J	
	10	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	12	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	15	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	18	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	22	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	27	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	33	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	39	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	47	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	56	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	68	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	82	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	100	B		A	A	C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	120					C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	150					C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	180					C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	220					C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	270					C	C	C	G	G	G	G	G	G	J	J	J	J	J	N	J	J	J	J	J	J	J
	330					C	C	C	G	G	G	G	G		J	J	J	J	J	N	J	J	J	J	J	J	J
	390					C	C	C	G	G	G	G	G		J	J	J	J	J		J	J	J	J	J	J	J
	470					C	C	C	G	G	G	G	G		J	J	J	J	J		J	J	J	J	J	J	J
	560					C	C	C	G	G	G	G	G		J	J	J	J	J		J	J	J	J	J	J	J
	680					C	C	C	G	G	G	G	G		J	J	J	J	J		J	J	J	J	J	J	J
	820					C	C	C	G	G	G	G	G		J	J	J	J	J		J	J	J	J	J	J	J
	1000					C	C	C	G	G	G	G			J	J	J	J	J		J	J	J	J	J	J	J
	1200								G	G	G				J	J	J	J	J		J	J	J	J	J	J	J
	1500								G	G	G				J	J	J	J	J		J	J	J	M	Q		
	1800								G	G	G				J	J	J	N			J	J	M	M	Q		
	2200								G	G	G				N	N	N	N			J	J	M	P	Q		
	2700								G	G	G				N	N	N	N			J	J	M	P	Q		
	3300								G	G	G				P	N	N	N			J	J	M	P			
	3900								G	G	G				P	P	P	N			J	J	M	P			
	4700								G	G	G				P	P	P	N			J	J	M	P			
	5600														P	P	P				J	J	M	P			
	6800														P	P	P				M	M	M	P			
	8200														P	P	P				M	M	M	P			
Cap (µF)	0.010														P	P	P				P	P	P				
	0.012														P	P	P										
	0.015														P	P	P										
	0.018														P	P	P										
	0.022														P	P	P										
	0.027														P	P	P										
	0.033																										
	0.039																										
	0.047																										
	0.068																										
	0.082																										
	0.1																										
WVDC		16		25	50	16	25	50	16	25	50	100	200	16	25	50	100	200	250	16	25	50	100	200	250	500	
SIZE		0101*		0201		0402		0603				0805					1206										

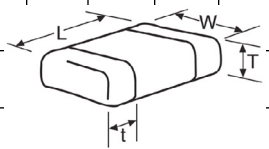
Letter

Max. Thickness

A	B	C	E	G	J	K	M	N	P	Q	X	Y	Z
0.33 (0.013)	0.22 (0.009)	0.56 (0.022)	0.71 (0.028)	0.90 (0.035)	0.94 (0.037)	1.02 (0.040)	1.27 (0.050)	1.40 (0.055)	1.52 (0.060)	1.78 (0.070)	2.29 (0.090)	2.54 (0.100)	2.79 (0.110)
PAPER						EMBOSSED							

PREFERRED SIZES ARE SHADED

SIZE		1210					1812					1825				2220				2225			
Soldering		Reflow Only					Reflow Only					Reflow Only				Reflow Only				Reflow Only			
Packaging		Paper/Embossed					All Embossed					All Embossed				All Embossed				All Embossed			
(L) Length	mm	3.20 ± 0.20					4.50 ± 0.30					4.50 ± 0.30				5.70 ± 0.40				5.72 ± 0.25			
	(in.)	(0.126 ± 0.008)					(0.177 ± 0.012)					(0.177 ± 0.012)				(0.225 ± 0.016)				(0.225 ± 0.010)			
W) Width	mm	2.50 ± 0.20					3.20 ± 0.20					6.40 ± 0.40				5.00 ± 0.40				6.35 ± 0.25			
	(in.)	(0.098 ± 0.008)					(0.126 ± 0.008)					(0.252 ± 0.016)				(0.197 ± 0.016)				(0.250 ± 0.010)			
(t) Terminal	mm	0.50 ± 0.25					0.61 ± 0.36					0.61 ± 0.36				0.64 ± 0.39				0.64 ± 0.39			
	(in.)	(0.020 ± 0.010)					(0.024 ± 0.014)					(0.024 ± 0.014)				(0.025 ± 0.015)				(0.025 ± 0.015)			
	WVDC	25	50	100	200	500	25	50	100	200	500	50	100	200	50	100	200	50	100	200			
Cap (pF)	0.5																						
	1.0																						
	1.2																						
	1.5																						
	1.8																						
	2.2																						
	2.7																						
	3.3																						
	3.9																						
	4.7																						
	5.6																						
	6.8																						
	8.2																						
	10					J																	
	12					J																	
	15					J																	
	18					J																	
	22					J																	
	27					J																	
	33					J																	
	39					J																	
	47					J																	
	56					J																	
	68					J																	
	82					J																	
	100					J																	
	120					J																	
	150					J																	
	180					J																	
	220					J																	
	270					J																	
	330					J																	
	390					M																	
	470					M																	
	560	J	J	J	J	M																	
	680	J	J	J	K	P																	
	820	J	J	J	K	P																	
	1000	J	J	P	P	P	K	K	N	N	M	M	M	M				M	M	P			
	1200	P	P	P	P	P	K	K	N	N	M	M	M	M				M	M	P			
	1500	P	P	P	P	P	K	K	N	N	M	M	M	M				M	M	P			
	1800	P	P	P	P	P	K	K	N	N	M	M	M	M				M	M	P			
	2200	P	P	P	P	N	K	K	N	N	P	X	X	M				M	M	P			
	2700	P	P	P	P		K	K	N	P	Q	X	X	M				M	M	P			
	3300	P	P	P	P		K	K	N	P	Q	X	X	X			X	M	M	P			
	3900	P	P	P			K	K	N	P	Q	X	X	X			X	M	M	P			
	4700	P	P	P			K	K	N	P	Y	X	X	X		X	X	M	M	P			
	5600	P	P	P			K	K	P	P	Y	X	X	X		X	X	M	M	P			
	6800	P	P	P			K	K	Q	Q		X	X	X		X	X	M	M	P			
	8200	P	P				K	M	Q	Q		X	X	X		X	X	M	M	P			
Cap (pF)	0.010	N	N				K	M	Q	Q		X	X	X		X	X	M	M	P			
	0.012	N	N				K	M	Q			X	X	X		X	X	M	M	P			
	0.015						P	P	Q			X	X	X		X	X	M	M	Y			
	0.018						P	P	Q			X	X	X		X	X	M	M	Y			
	0.022						P	P	Q			X	X	X		X	X	M	Y	Y			
	0.027						Q	Q	X			X	X	Y		X	X	P	Y	Y			
	0.033						Q	Q	X			X	X			X	X	X	Y	Y			
	0.039						X	X	X			X				Y		X	Y	Y			
	0.047						X	X	X			X				Y		X	Z				
	0.068						Z	Z	Y							Z		X	Z				
	0.082						Z	Z	Y							Z		X	Z				
	0.1						Z	Z	Z							Z		X	Z				
	WVDC	25	50	100	200	500	25	50	100	200	500	50	100	200	50	100	200	50	100	200			
SIZE		1210					1812					1825				2220				2225			
Letter		A	B	C	E	G	J	K	M	N	P	Q	X	Y	Z								
Max. Thickness		0.33 (0.013)	0.22 (0.009)	0.56 (0.022)	0.71 (0.028)	0.90 (0.035)	0.94 (0.037)	1.02 (0.040)	1.27 (0.050)	1.40 (0.055)	1.52 (0.060)	1.78 (0.070)	2.29 (0.090)	2.54 (0.100)	2.79 (0.110)								
		PAPER						EMBOSSED															



IMPORTANT INFORMATION/DISCLAIMER

All product specifications, statements, information and data (collectively, the “Information”) in this datasheet or made available on the website are subject to change. The customer is responsible for checking and verifying the extent to which the Information contained in this publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without guarantee, warranty, or responsibility of any kind, expressed or implied.

Statements of suitability for certain applications are based on AVX’s knowledge of typical operating conditions for such applications, but are not intended to constitute and AVX specifically disclaims any warranty concerning suitability for a specific customer application or use.

ANY USE OF PRODUCT OUTSIDE OF SPECIFICATIONS OR ANY STORAGE OR INSTALLATION INCONSISTENT WITH PRODUCT GUIDANCE VOIDS ANY WARRANTY.

The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by AVX with reference to the use of AVX’s products is given without regard, and AVX assumes no obligation or liability for the advice given or results obtained.

Although AVX designs and manufactures its products to the most stringent quality and safety standards, given the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage.

Unless specifically agreed to in writing, AVX has not tested or certified its products, services or deliverables for use in high risk applications including medical life support, medical device, direct physical patient contact, water treatment, nuclear facilities, weapon systems, mass and air transportation control, flammable environments, or any other potentially life critical uses. Customer understands and agrees that AVX makes no assurances that the products, services or deliverables are suitable for any high-risk uses. Under no circumstances does AVX warrant or guarantee suitability for any customer design or manufacturing process.

Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated or that other measures may not be required.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

AVX:

08055A330KAT4A	08055A330MAT2A	08055A331FAT2A	08055A331FAT4A	08055A331GAT2A	08055A331JAT2A
08055A331JAT4A	08055A331KAT2A	08055A331KAT4A	08055A332JAT2A	08055A360GAT2A	08055A360JAT2A
08055A390FAT2A	08055A390FAT4A	08055A390GAT2A	08055A390JAT2A	08055A390JAT4A	08055A390KAT2A
08055A390KAT4A	08055A391FAT2A	08055A391FAT4A	08055A391GAT2A	08055A391JAT2A	08055A391JAT4A
08055A391KAT2A	08055A391KAT4A	08055A392JAT2A	08055A3R0CAT2A	08055A3R3BAT2A	08055A3R3CAT2A
08055A0R5BAT2A	08055A0R5CAT2A	08055A100BAT2A	08055A100CAT2A	08055A100CAT4A	
08055A100DAT2A	08055A100DAT4A	08055A100FAT2A	08055A100JAT2A	08055A101FAT2A	08055A101FAT4A
08055A101GAT2A	08055A101JAJ2A	08055A101JAT2A	08055A101JAT4A	08055A101KAT2A	08055A101KAT4A
08055A101MAT2A	08055A102FAT2A	08055A102GAT2A	08055A102JAT2A	08055A102JAT4A	08055A102JBT1A
08055A102KAT2A	08055A102KAT4A	08055A102KBT1A	08055A110JAT2A	08055A120CAT2A	08055A120JAT2A
08055A121FAT2A	08055A121FAT4A	08055A121JAT2A	08055A121JAT4A	08055A121KAT2A	08055A121KAT4A
08055A122FAT2A	08055A122FAT4A	08055A122JAT2A	08055A122JAT4A	08055A122KAT2A	08055A131JAT2A
08055A132JAT2A	08055A150GAT2A	08055A150JAT2A	08055A150JAT4A	08055A151FAT2A	08055A151FAT4A
08055A151GAT2A	08055A151JAT2A	08055A151JAT4A	08055A151KAT2A	08055A151KAT4A	08055A6R8DAT2A
08055A6R8DAT4A	08055A750FAT2A	08055A750JAT2A	08055A751JAT2A	08055A7R5CAT2A	08055A7R5DAT2A
08055A820FAT2A	08055A820FAT4A	08055A820JAT2A	08055A820JAT4A	08055A820KAT2A	08055A820KAT4A
08055A821FAT2A	08055A821FAT4A	08055A821JAT2A	08055A821KAT2A	08055A821KAT4A	