General Specifications



COMPLIANT

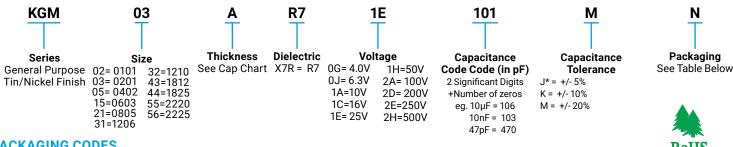


The X7R dielectric is the most popular of the intermediate EIA class II materials due to its relative temperature stability. While the capacitance change is non-linear, temperature variation is within ±15% from - 55°C to + 125°C.

Capacitance for X7R varies under the influence of electrical operating conditions such as voltage and frequency. X7R dielectric chip usage covers a broad spectrum of industrial applications where known changes in capacitance due to applied voltages are acceptable.

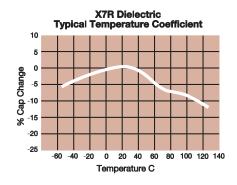
SpiCAT is an additional online resource that KAVX offers to help create engineering simulations. Please visit spicat. kyocera-avx.com for more information.

HOW TO ORDER

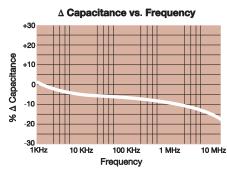


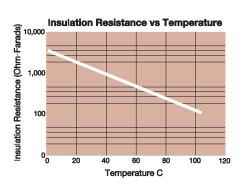
PACKAGING CODES

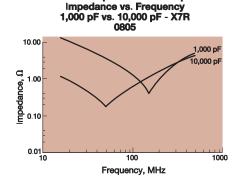
Code	EIA (inch)	IEC(mm)	7" Paper	7" Embossed	13" Paper	13"Embossed
02	0101	0402				
03	0201	0603	Н		N	
05	0402	1005	Н		N	
15	0603	1608	Т	U	М	L
21	0805	2012	Т	U	М	L
31	1206	3216	Т	U	М	L
32	1210	3225		U		L
43	1812	4532		V		S
44	1825	4564		v		s
55	2220	5750		v		s
56	2225	5763		v		s

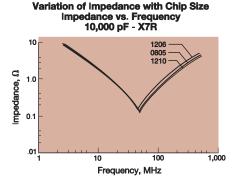


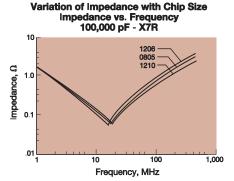
variation of Impedance with Cap Value











KYDCER3 | The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at www.kyocera-avx.com/disclaimer/ by reference and should be reviewed in full before placing any order.





Paramete	er/Test	X7R Specification Limits	М	easuring Conditions						
Operating Tempo		-55°C to +125°C	Temp	perature Cycle Chamber						
Capacit Dissipation		Within specified tolerance ≤ 10% for ≥ 50V DC rating≤ 12.5% for 25V DC rating ≤ 12.5% for 25V and 16V DC rating ≤ 12.5% for ≤ 10V DC rating Contact Factory for DF by PN	Vo	Freq.: 1.0 kHz ± 10% oltage: 1.0Vrms ± .2V o > 10μF, 0.5Vrm @ 120Hz						
Insulation R	esistance	10,000MΩ or 500MΩ - μF, whichever is less		levice with rated voltage for ecs @ room temp/humidity						
Dielectric S	Strength	No breakdown or visual defects	charge and disch	50% of rated voltage for 1-5 seconds, w/ arge current limited to 50 mA (max) th 150% of rated voltage for 500V devices.						
	Appearance	No defects								
Resistance to	Capacitance Variation	≤ ±12%		Deflection: 2mm						
Flexure Stresses	Dissipation Factor	Meets Initial Values (As Above)	Test Time: 30 seconds							
	Insulation Resistance	≥ Initial Value x 0.3								
Soldera	bility	≥ 95% of each terminal should be covered with fresh solder		in eutectic solder at 230 ± 5°C or 5.0 ± 0.5 seconds						
	Appearance	No defects, <25% leaching of either end terminal								
	Capacitance Variation	≤ ±7.5%								
Resistance to Solder Heat	Dissipation Factor	Meets Initial Values (As Above)	Dip device in eutectic room temperature for	solder at 260°C for 60 seconds. Store at 24 ± 2hours before measuring electrical						
Solder Heat	Insulation Resistance	Meets Initial Values (As Above)		properties.						
	Dielectric Strength	Meets Initial Values (As Above)								
	Appearance	No visual defects	Step 1: -55°C ± 2°	30 ± 3 minutes						
	Capacitance Variation	≤ ±7.5%	Step 2: Room Temp ≤ 3 minutes							
Thermal Shock	Dissipation Factor	Meets Initial Values (As Above)	Step 3: +125°C ± 2°	30 ± 3 minutes						
	Insulation Resistance	Meets Initial Values (As Above)	Step 4: Room Temp	≤ 3 minutes						
	Dielectric Strength	Meets Initial Values (As Above)	,	and measure after 24 ± 2 hours at room temperature						
	Appearance Capacitance Variation	No visual defects ≤ ±12.5%	Pre-treatment: After m 10C for 2 hour, then	ounting, perform heat treatment 150+0/- stabilise for 24+/-2 hour at room temp, then measure.						
	Dissipation Factor	≤ Initial Value x 2.0 (See Above)		≥ rated voltage in test chamber set at						
Load Life	Insulation Resistance	≥ Initial Value x 0.3 (See Above)		2°C for 1000 hours (+48, -0).						
	Dielectric Strength	Meets Initial Values (As Above)	treatment 150+0/-100 at roo	emove from test chamber, perform heat of or 2 hour, then stabilise for 24+/-2 hour om temp, then measure. A AVX for datasheet of specific parts.						
	Appearance	No visual defects	Pre-treatment: After m	ounting, perform heat treatment 150+0/-						
	Capacitance Variation	≤ ±12.5%	10C for 2 hour, then	stabilise for 24+/-2 hour at room temp, then measure.						
Load	Dissipation Factor	≤ Initial Value x 2.0 (See Above)		per set at 85°C ± 2°C/ 85% ± 5% relative						
Humidity	Insulation Resistance	≥ Initial Value x 0.3 (See Above)	humidity for 1000 hours (+48, -0) with rated voltage applied. Pre-treatment: After remove from test chamber, perform heat							
	Dielectric Strength	Meets Initial Values (As Above)	treatment 150+0/-10C for 2 hour, then stabilise for 24+/-2 hour at room temp, then measure.							

Capacitance Range





SIZE	0101*			0201					04	02						06	03								0805	,				1206								
Soldering	Reflow Only		Ref	low C	Only			R	Reflow	//Wa	ve				R	eflow	/Wa	ve						Refl	ow/V	Vave					Reflow/Wave							
Packaging	Paper		A	II Pap	er				All F	aper					Pap	oer/Ei	mbos	sed					F	aper	/Emb	osse	d					F	aper.	/Emb	osse	d		
(L) Length mm	0.40 ± 0.02			0 ± 0					1.00							1.60 :									1 ± 0					3.20 ± 0.30								
· · · · (III.)	(0.016 ± 0.0008)			24 ± 0					.040							.063 :					-			(0.07						(0.126 ± 0.012)								
W) Width mm (in.)	0.20 ± 0.02 (0.008 ± 0.0008)			30 ± 0 11 ± 0					0.50				0.81 ± 0.15 (0.032 ± 0.006)										5 ± 0					1.60 ± 0.30 (0.063 ± 0.012)										
mm	0.10± 0.04			5 ± 0					0.25				(0.032 ± 0.006) 0.35 ± 0.15							(0.049 ± 0.008) 0.50 ± 0.25										0 ± 0								
	(0.004 ± 0.0016)			06 ± 0					.010							.014								(0.02									(0.02					
WVDC	16	6.3	10	16	25	50	6.3	10	16	25	50	100	6.3	10	16	25	50	100	200	250	6.3	10	16	25	50	100	200	250	500	6.3	10	16	25	50	100	200	250	500
Cap 100 101	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	В	В									В									
(pF) 150 151	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	В	В									В									
220 221	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	В	В		N	N	N	N	N	N	N	В	В	В	В	В	В	В	Т	Т	D
330 331	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	В	В		N	N	N	N	N	N	N	В	В	В	В	В	В	В	Т	Т	D
470 471	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	В	В		N	N	N	N	N	N	N	В	В	В	В	В	В	В	Т	Т	D
680 681	A	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	В	В		N	N	N	N	N	N	N	В	В	В	В	В	В	В	Т	Т	D
1000 102	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	В	В		N	N	N	N	N	N	N	В	В	В	В	В	В	В	Т	Т	D
1500 152		Α	Α	Α	Α		Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	В	В		N	N	N	N	N	N	N	В	В	В	В	В	В	В	T	Т	D
2200 222		Α	Α	Α	Α		Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	В	В		N	N	N	N	N	N	N	В	В	В	В	В	В	В	T	Т	D
3300 332		Α	Α	Α	Α		Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	В	В		N	N	N	N	N	Α	Α	Α	В	В	В	В	В	В	T	Т	D
3900 392		Α	Α	Α	A	_	Α	Α	A	Α	A	Α	Α	Α	A	Α	Α	A	В	В	_	N	N	N	N	N	A	Α	Α	В	В	В	В	В	В	T	T	D
4700 472		Α	Α	Α	Α		Α	Α	A	Α	A	Α	Α	A	A	Α	Α	A	В	В	<u> </u>	N	N	N	N	N	A	Α	Α	В	В	В	В	В	В	T	T	D
5600 562		Α	Α	Α	A	<u> </u>	Α	Α	A	Α	A	Α	Α	A	A	A	Α	A	В	В	_	N	N	N	N	N	A	Α	Α	В	В	В	В	В	В	T	T	D
6800 682		Α	Α	Α	A	<u> </u>	Α	Α	A	Α	A	Α	Α	A	A	A	Α	A	В	В	_	N	N	N	N	N	A	Α	Α	В	В	В	В	В	В	T	T	D
Cap 0.01 103		Α	Α	Α	Α		Α	A	A	A	A	Α	Α	A	A	A	Α	A	В	В	-	N	N	N	N	N	Α	Α	A	В	В	В	В	В	В	D	D	D
(μF) 0.012 123			_			_	Α	A	A	A	A		A	A	A	A	A	A B	B	В	-	N	N	N	N	N	Α	Α	A	B	В	В	B	В	B	D D	D D	D D
0.015 153 0.018 183				-		_	Α	A	A	A	A		A	A	A	A	A	В	В	В	-	N	N	N	N	A	A	A	A	В	В	В	В	B B	В	D	D	D
0.018 183		Α.	_	Α	-		Α	A	A	A	A	_	A	Α	A	A	A	В	В	В	-	N	N	N N	N	A	A	A	A	В	B	В	В	В	В	D	D	A
0.022 223		Α	Α	А	-		A	A	A	A	A		A	A	A	A	A	В	В	Ь	-	N	N	N	N N	A	A	A	A	В	В	В	В	В	В	D	D	A
0.027 273							A	A	A	A	A		A	A	A	В	В	В		-		N	N	N	N	A	A	A		В	В	В	В	В	В	A	A	A
0.039 393							A	A	A	A	A		A	A	A	В	В	В				N	N	N	N	A	A	A		В	В	В	В	В	В	A	A	A
0.047 473						\vdash	A	A	Â	A	A		A	A	A	В	В	В		\vdash		N	N	N	N	Â	A	A		В	В	В	В	В	В	Â	Ā	A
0.068 683							A	A	A	A	C		Α	A	A	В	В	В				N	N	N	N	A	A	7.		В	В	В	В	В	D	A	A	
0.082 823							Α	A	A	A	C		Α	A	A	В	В	В				N	N	N	N	A	Α			В	В	В	В	В	D	A	Α	\neg
0.1 104		Α					Α	Α	A	Α	c		Α	A	Α	В	В	В				N	N	N	N	A	A			В	В	В	В	В	D	Α	A	\neg
0.12 124													Α	Α	A	В	В					N	N	N	E	Α				В	В	В	В	В	D	A	Α	\dashv
0.15 154							Α	Α	Α	Α			Α	Α	Α	В	В					Е	Е	Е	E	Α				٧	V	٧	М	М	Α	Α	Α	\neg
0.22 224							Α	Α	Α	Α		İ	Α	В	В	В	В			İ		Α	Α	Α	Α	Α				٧	٧	٧	М	М	Α	Α	Α	\neg
0.33 334												İ	В	В	В	В	В					Α	Α	Α	Α	Α				٧	٧	٧	М	Р	Α			П
0.47 474							Α	Α					В	В	В	В	В					Α	Α	Α	Α	Α				Н	Н	Н	Н	Н	Α			П
0.68 684													В	В	В							Α	Α	Α	Α	Α				Н	Н	Н	Н	Н	Н			
1.0 105							Α	Α					В	В	В	В	С					Α	Α	Α	Α	Α				Н	Н	Н	Н	Η	Н			
2.2 225													В	В	С							Α	Α	Α	Α					Н	Н	Н	Н	Η	Н			
4.7 475													С									Α	Α	Α						Н	Н	Н	Н	Н				
10 106																						Α	Α							Н	Н	Н	Н	Н				
22 226																														Н	Н							
47 476																																						
100 107																																						Ш
WVDC	16	6.3	_			50	6.3	10			50	100	6.3	10	16	_		100	200	250	6.3	10	16		_		200	250	500	6.3	10	16				200	250	500
SIZE	0101*			0201					04	02						06	03								0805	i								1206				

Case Size	0101 (KGM 02)	0201 (KGM03)	0402 (K	402 (KGM05) 0603 (KGM15) 0805 (KGM21) 1206 (KGM31)															
Thickness Letter	Α	Α	Α	С	Α	В	С	Α	Е	N	A B D H M P T							V	
Max Thickness (mm)	0.22	0.33	0.55	0.70	0.90	0.95	1.00	1.45	1.35	1.00	1.80	0.94	1.45	1.90	1.25	1.40	1.35	1.22	
Carrier Tape	PAPER	PAPER	PAF	PER	PAPER	PAPER	PAPER	EMB	EMB	PAPER	EMB	PAPER	EMB	EMB	EMB	EMB	EMB	EMB	
Packaging Code 7"reel	Н	Н	Н	Н	T	T	Т	U	U	T	U	Т	U	U	U	U	U	U	
Packaging Code 13"reel	n/a N N M					М	М	L	L L M L M L						L	L	L	L	
	PAPER									EMBOSSED (EMB)									





SIZE					1210						18	12				1825		2220					2225			
Soldering				Re	flow Or	nly					Reflov	v Only			Re	eflow Or	ıly		Re	eflow Or	nly		Re	eflow Or	ıly	
Packaging				Pape	r/Embo	ssed					All Emi	ossed			All	Emboss	sed		All	Embos	All	Embos	sed			
I (I) I ength	mm				.30 ± 0.						4.50					50 ± 0.4				70 ± 0.5				70 ± 0.4		
() 0	(in.)				30± 0.0				(0.177 ± 0.016) 3.20 ± 0.40							77 ± 0.0		(0.224 ± 0.020) 5.00 ± 0.40						(0.224 ± 0.016)		
	mm (in.)				50 ± 0.3 98 ± 0.0						3.20 ± ± 0.126)		,			40 ± 0.4 52 ± 0.0		(0.197 ± 0.016)						6.30 ± 0.40 (0.248 ± 0.016)		
	mm				50 ± 0.2						0.61				<u> </u>	61 ± 0.3				64 ± 0.3			(0.248 ± 0.016) 0.64 ± 0.39			
	(in.)				20 ± 0.0						(0.024 ±)			24 ± 0.0				25 ± 0.0				25 ± 0.0		
WV	-	10	16	25	50	100	200	500	16	25	50	100	200	500	50	100	200	25	50	100	200	500	50	100	200	
	101																					ا >	· ~	l ⊷W	'	
(1 /	151	_	_		_	_	_	_													~	<u>- L</u>		777		
	221 331	R	R	R R	R	R	R	D		Α											_) <i>-</i>	J) J	_	
	471	R R	R R	R	R R	R R	R R	D D	A	A	A	A	A	A							<u> </u>					
	681	R	R	R	R	R	R	D	A	A	A	A	A	A									* [*		. —	
	102	R	R	R	R	R	R	D	A	A	A	A	A	В	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	152	R	R	R	R	R	R	D	A	A	A	A	A	В	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	222	R	R	R	R	R	R	D	Α	Α	Α	Α	Α	В	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	332	R	R	R	R	R	R	Е	Α	Α	Α	Α	Α	В	С	С	С	Z	Z	Z	Z	Z	D	D	D	
3900 3	392	R	R	R	R	R	R	Е	Α	Α	Α	Α	Α	В	С	С	С	Z	Z	Z	Z	Z	D	D	D	
4700 4	472	R	R	R	R	R	R	Е	Α	Α	Α	Α	Α	В	С	С	С	Z	Z	Z	Z	Z	D	D	D	
5600 5	562	R	R	R	R	R	R	Е	Α	Α	Α	Α	Α	В	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	682	R	R	R	R	R	R	Е	Α	Α	Α	Α	Α	В	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	103	R	R	R	R	R	R	Е	Α	Α	Α	Α	Α	В	С	С	С	Z	Z	Z	Z	Z	D	D	D	
· /	123	R	R	R	R	R	R	E	Α	Α	Α	Α	Α	В	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	153	R	R	R	R	R	R	E	A	A	Α	A	A	В	С	С	С	Z	Z	Z	Z	Z	D D	D D	D D	
	183 223	R R	R R	R R	R R	R R	R	E E	A	A	A	A	A	B B	C	C	C	Z Z	Z Z	Z Z	Z	Z	D	D	D	
	273	R	R	R	R	R	E	Н	A	A	A	A	A	В	C	С	C	Z	Z	Z	Z	Z	D	D	D	
	333	R	R	R	R	R	E	H	A	A	A	A	A	В	С	С	C	Z	Z	Z	Z	Z	D	D	D	
	393	R	R	R	R	R	E	Н	A	A	A	A	A	В	C	С	C	Z	Z	Z	Z	Z	D	D	D	
	473	R	R	R	R	R	E	Н	Α	Α	Α	Α	В	В	C	С	С	Z	Z	Z	Z	Z	D	D	D	
0.068 6	683	R	R	R	R	R	Н	Р	Α	Α	Α	Α	В	F	С	С	С	Z	Z	Z	Z	Z	D	D	D	
0.082 8	823	R	R	R	R	R	Н	Р	Α	Α	Α	Α	В	F	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	104	R	R	R	R	R	Н	Р	Α	Α	Α	В	В	F	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	124	R	R	R	R	R	Н		Α	Α	Α	В	В	J	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	154	E	E	E	E	E	L		Α	Α	Α	В	F	J	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	224	E	E	E	E	Ε	L		Α	A	Α	В	F	J	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	334	E	E	E	E	H	L		A	A	A	В	F	J	С	С	С	Z	Z	Z	Z	Z	D	D	D	
	474 684	E E	E E	E E	E E	L	L		A F	A F	A F	F	F J	J	C	C	C	Z Z	Z	Z Z	Z	Z C	D D	D D	D D	
	105	E	E	E	E	L	L		F	F	F	F	J		C	C	C	Z	Z	Z	Z	D	D	D	D	
	225	L	L	L	L	L			F	F	F	J	J		C	C	F	Z	Z	Z	C	U	D	D	G	
	475	L		L	L	L			J	J	J	J			C	F	Г	Z	Z	Z	U		D	G	G	
	106	L	ì	L	i				J	J	J	- 3			F	F		C	C	C			G	G	$\vdash \vdash \vdash$	
	226	L	Ĺ	L	-				U	- 0	U							D							\vdash	
	476	L																							\vdash	
	107																									
WVDC		10	16	25	50	100	200	500	16	25	50	100	200	500	50	100	200	25	50	100	200	500	50	100	200	
SIZE					1210						18	12				1825				2220				2225		

Case Size	1210 (KGM 32)						1812 (K	GM 43)		1825 (K	(GM 44)	222	20 (KGM	2225 (KGM56)				
Thickness Letter	D	E	Н	L	Р	R	Α	В	F	J	С	F	D	С	Z	D	G	
Max Thickness (mm)	1.4	1.45	1.8	2.80	2.2	1.05	1.4	1.45	2.21	2.80	2.21	2.80	3.3	2.80	2.21	2.21	2.80	
Carrier Tape	EMB	EMB	EMB	EMB	EMB	PAPER	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	
Packaging Code 7"reel	U U U U T						V	٧	٧	V	V	٧	٧	V	V	V	٧	
Packaging Code 13"reel	L L L L M						S	S										
		PAPER						EMBOSSED(EMB)										

Mouser Electronics

Authorized Distributor

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KYOCERA AVX:

KGM05AR71C473JF	KGM05AR71C473KF	KGM05AR71C473KN	KGM05AR71C823K	H KGM05AR71E101KH
KGM05AR71E103JH	KGM05AR71E103JN	KGM05AR71E103KH	KGM05AR71E103KN	KGM05AR71E103MH
KGM05AR71E104JH	KGM05AR71E104KH	KGM05AR71E104KN	KGM05AR71E153KH	KGM05AR71E153KN
KGM05AR71E183JN	KGM05AR71E183KH	KGM05AR71E222KH	KGM05AR71E223JH	KGM05AR71E223KH
KGM05AR71E223KN	KGM05AR71E224KH	KGM05AR71E333JH	KGM05AR71E333KH	KGM05AR71E393KH
KGM05AR71E472KH	KGM05AR71E472KN	KGM05AR71E473KH	KGM05AR71E473KN	KGM05AR71E562KH
KGM05AR71E562KN	KGM05AR71E682JH	KGM05AR71E682KH	KGM05AR71E682KN	KGM05AR71E683KH
KGM05AR71H102JH	KGM05AR71H102JN	KGM05AR71H102KH	KGM05AR71H102KN	KGM05AR71H102MH
KGM05AR71H103JH	KGM05AR71H103KH	KGM05AR71H103KN	KGM05AR71H151JH	KGM05AR71H151KH
KGM05AR71H151KN	KGM05AR71H152JH	KGM05AR71H152KH	KGM05AR71H152KN	KGM05AR71H221JH
KGM05AR71H221JN	KGM05AR71H221KH	KGM05AR71H221KN	KGM05AR71H222JH	KGM05AR71H222JN
KGM05AR71H222KH	KGM05AR71H222KN	KGM05AR71H331JH	KGM05AR71H331JN	KGM05AR71H331KH
KGM05AR71H331KN	KGM05AR71H332JH	KGM05AR71H332KH	KGM05AR71H332KN	KGM05AR71H392JH
KGM05AR71H392KH	KGM05AR71H392KN	KGM05AR71H471JH	KGM05AR71H471KH	KGM05AR71H471KN
KGM05AR71H471MH	KGM05AR71H472JH	KGM05AR71H472JN	KGM05AR71H472KH	KGM05AR71H472KN
KGM05AR71H562JH	KGM05AR71H562KH	KGM05AR71H562KN	KGM05AR71H681JH	KGM05AR71H681JN
KGM05AR71H681KH	KGM05AR71H681KN	KGM05AR72A102KH	KGM05AR72A221KH	KGM05AR72A222KH
KGM05AR72A331KH	KGM05AR72A471JH	KGM05AR72A471KH	KGM05CR71H104KH	KGM05CR71H104KN
KGM05CR71H123JH	KGM05CR71H153KH	KGM05CR71H223JH	KGM05CR71H223JN	KGM05CR71H223KH
KGM05CR71H333KH	KGM05CR71H473KH	KGM05CR71H683KH	KGM15AR71A124JT	KGM15AR71A124KT