



FEATURES:

• Capacitance range: 0.1pF to 220uF

G

- Voltage range: 4V to 100V
- Terminations: 100% matte Tin (Sn), Palladium (Pd-Ag), Gold (Au) and Lead (Pb)
- Very low ESR in X7R/X5R (<10m Ω typical)
- · Ceramic monolithic structure provides excellent reliability









Unit: inches (mm)

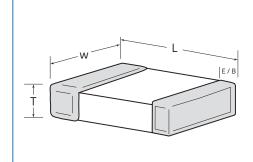
PART NUMBER STRUCTURE

С	0805	COG	500 -	101	J	N	P	
Series	Size	Temperature	Rated Voltage	Capacitance	Tolerance	Termination	Packaging	Optional Thickness
	01005	Characteristic	1st two digits	(picofarads)	* B = ± 0.1pF	N = 100% matte	D = Paper Tape	Identifier
	0201	(Dielectric)	are significant	1st two digits	* C = ± 0.25pF	Tin (Sn) over Nickel	(10" Reel)	Leave blank for stan-
	0402	COG	followed by	are significant,	* D = ± 0.5pF	* P = Palladium Silver	E = Embossed Tape	dard thickness.
	0504	X7R	number of zeroes.	followed by	F = ± 1%	* G = Gold over Nickel	(7" Reel)	Designate
	0603	X6S	4R0 = 4.0 VDCW	number of	G = ± 2%	Pb = 90% Tin (Sn) /10%	P = Paper Tape	"-" for Min.
	0805	X5R	6R3 = 6.3 VDCW	zeroes. e.g:	J = ± 5%	Lead (Pb)	(7" Reel)	"*" for Max.
	1206	Y5V	100 = 10 VDCW	101 = 100pF	K = ± 10%	* Pd/Ag & Gold	R = Paper Tape	followed by Thickness
	1210	Z5U	160 = 16 VDCW	R denotes	M = ± 20%	terminations have	(13" Reel)	Code
	1812		250 = 25 VDCW	decimal	N = ± 30%	limited values &	U = Embossed Tape	e.g:
	2220		500 = 50 VDCW	6R8 = 6.8pF	Z = +80 - 20%	sizes available.	(13" Reel)	- E (min. thickness
	22212		630 = 63 VDCW		* For values below			of .026")
			101 = 100 VDCW		10pF only.			* E (max. thickness
								of .026")
	L. D/N.	60005606	E00 101 IND					
Examp	ie P/N:	C0805C0G	500-101JNP	0	Lateral and a second state of	Altino Control		
				Optiona	ıl Thickness Iden	itifier Codes:		

DIMENSION: 015 .020 .026 .030 .035 .040 .045 .050 .055 .060 .065 .070 .075 .080 .085 .090 .095 .100 .105 .110 .023

J K L M N O P Q

DIMENSIONS -

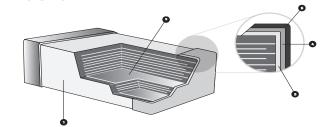


CODE:

SIZE	L	w	т	E/B
01005	0.016 ± 0.0008 (0.4 ± 0.02)	0.008 ± 0.0008 (0.2 ± 0.02)	See Specific Value	0.002 (min.) (0.05)
0201	0.024 ± 0.002 (0.6 ± 0.05)	0.012 ± 0.002 (0.3 ± 0.05)	See Specific Value	0.002 (min.) (0.20)
0402	0.040 ± 0.002 (1.0 ± 0.05)	0.020 ± 0.002 (0.5 ± 0.05)	See Specific Value	0.004 (min.) (0.10)
0603	0.063 ± 0.006 (1.6 ± 0.15)	0.031 ± 0.0046 (0.8 ± 0.15)	See Specific Value	0.008 (min.) (0.20)
0805	0.08 ± 0.008 (2.0 ± 0.20)	0.050 ± 0.008 (1.25 ± 0.20)	See Specific Value	0.020 ± 0.010 (0.508 ± 0.254)
1206	0.126 ± 0.008 (3.2 ± 0.20)	0.063 ± 0.008 (1.6 ± 0.20)	See Specific Value	0.020 ± 0.010 (0.508 ± 0.254)
1210	0.126 ± 0.008 (3.2 ± 0.20)	0.098 ± 0.008 (2.50 ± 0.20)	See Specific Value	0.020 ± 0.010 (0.508 ± 0.254)
1812	0.177 ± 0.012 (4.495 ± 0.30)	0.126 ± 0.012 (3.20 ± 0.30)	See Specific Value	0.024 ± 0.015 (0.6096 ± 0.381)
2220	0.225 ± 0.016 (5.715 ± 0.41)	0.200 ± 0.006 (5.08 ± 0.41)	See Specific Value	0.025 ± 0.015 (0.635 ± 0.381)

R S T

STRUCTURE



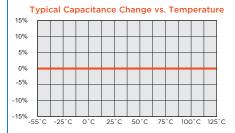
1	Ceramic Body (dielectric)	4	Nickel Plating
2	Inner Electrode	5	Tin Plating
3	Inner Termination		





ELECTRICAL SPECIFICATIONS

NPO/COG



Operating Temperature Range:

-55°C to +125°C

Temperature Coefficient:

0 ±30PPM/°C

Temperature Voltage Coefficient:

0 ±30PPM/°C

Insulation Resistance:

>1000 Ω -F or 10 G Ω , for values \leq 0.047uF (whichever is less at 25°C, WDCV). For Capacitance values > 0.047uF, the 500 Ω -F rule applies. (The IR at 125°C is 10% of the value at 25°C)

Ageing: None

Withstanding Voltage:

>2.5 times VDCW

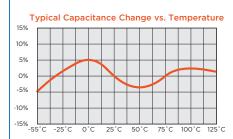
Capacitance Tolerance:

B,C,D,F,G,J,K

Dissipation Factor:

0.1% max

X7R



Operating Temperature Range:

-55°C to +125°C

Temperature Coefficient:

0 ±15%Δ°C MAX.

Temperature Voltage Coefficient:

X7R not applicable

Insulation Resistance:

>100 $\Omega\text{-F}$ or 10 G Ω , whichever is less at 25°C, VDCW. (The IR at 125°C is 10% of the value at 25°C)

Ageing:

2.5% per decade hour, typical

Withstanding Voltage:

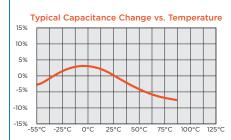
>2.5 times VDCW

Capacitance Tolerance:

J,K,M

RATED VOLTAGE	D.F.		EXCEPTION OF D.F.
. 501/	42 F0/	≤3%	0201 (50V); 0603≥0.047uF 0805≥0.22uF; 1206≥0.47uF
≥50V	≤2.5%	≤5%	0603≥1uF; 0805≥1uF; 1206≥4.7uF; 1210≥4.7uF
		≤5%	0201≥0.01uF; 0805≥1uF; 1210≥4.7uF
25V	≤2.5%	≤10%	0402≥0.10uF; 0603≥0.33uF; 0805≥2.2uF 1206≥4.7uF; 1210≥22uF
16V	-7.50/	≤5%	0201≥0.01uF; 0402≥0.033uF; 0805≥0.68uF; 1206≥2.2uF; 1210≥4.7uF
160	≤3.5%	≤10%	0402≥0.47uF; 0603≥0.68uF; 0805≥2.2uF; 1206≥4.7uF; 1210≥22uF
10 V	≤5%	≤10%	0402≥0.33uF; 0603≥0.33uF; 0805≥2.2uF; 1206≥2.2uF; 1210≥22uF
6.3V	≤10%		

X5R



Operating Temperature Range:

-55°C to +85°C

Temperature Coefficient:

0 ±15%Δ°C MAX.

Temperature Voltage Coefficient:

X7R not applicable

Insulation Resistance:

>100 Ω -F or 10 G Ω , whichever is less at 25°C, VDCW. (The IR at 125°C is 10% of the value at 25°C)

Ageing:

2.5% per decade hour, typical

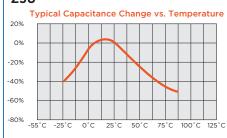
Withstanding Voltage: >2.5 times VDCW

Capacitance Tolerance:

K,M

RATED VOLTAGE	D.F.		EXCEPTION OF D.F.
>50V	<2.5%	≤3%	0201 (50V); 0603≥0.047uF 0805≥0.22uF; 1206≥0.47uF
2500	≤2.5%	≤5%	0603≥1uF; 0805≥1uF; 1206≥4.7uF; 1210≥4.7uF
		≤5%	0201≥0.01uF; 0805≥1uF; 1210≥4.7uF
25V	≤2.5%	≤10%	0402≥0.10uF; 0603≥0.33uF; 0805≥2.2uF 1206≥4.7uF; 1210≥22uF
16V	<3.5%	≤5%	0201≥0.01uF; 0402≥0.033uF; 0805≥0.68uF; 1206≥2.2uF; 1210≥4.7uF
167	≤3.5%	≤10%	0402≥0.47uF; 0603≥0.68uF; 0805≥2.2uF; 1206≥4.7uF; 1210≥22uF
≤10V	≤5%	≤10%	0402≥0.33uF; 0603≥0.33uF; 0805≥2.2uF; 1206≥2.2uF; 1210≥22uF
6.3V	≤10%		

Z5U



Operating Temperature Range:

+10°C to +85°C

Temperature Coefficient:

+22% - 56%Δ°C MAX.

Insulation Resistance:

>100 $\Omega\text{-F}$ or 10 G Ω , whichever is less at 25°C, WDCV. (The IR at 125°C is 10% of the value at 25°C)

Ageing:

5% per decade hour, typical

Withstanding Voltage:

>2.5 times VDCW

Capacitance Tolerance: M,Z

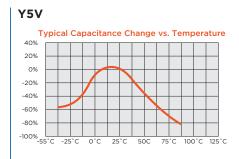
RATED VOLTAGE	D.F.		EXCEPTION OF D.F.
≥50V	≤5%	≤9%	0603≥0.1uF; 0805≥0.47uF; 1206≥4.7uF;
25V	≤5%	≤9%	0402≥0.047uF; 0603≥0.1uF; 0805≥0.33uF; 1206≥1uF; 1210≥4.7uF
16V	≤9%	≤12.5%	0603≥2.2uF; 0805≥3.3uF; 1206≥10uF; 1210≥22uF; 1812≥47uF
10V	≤12.5%	≤16%	0603≥2.2uF; 0805≥3.3uF; 1206≥4.7uF; 1210≥10uF; 1812≥47uF
6.3V	≤16%		



Rev: 12/2020-B



ELECTRICAL SPECIFICATIONS



Operating Temperature Range:

-30°C to +85°C

Temperature Coefficient:

+22% - 82%Δ°C MAX.

Insulation Resistance:

>100 $\Omega\text{-F}$ or 10 G Ω , whichever is less at 25°C, VDCW. (The IR at 125°C is 10% of the value at 25°C)

Ageing:

7% per decade hour, typical

Withstanding Voltage:

>2.5 times VDCW

Capacitance Tolerance:

M,Z

RATED VOLTAGE	D.F.		EXCEPTION OF D.F.
≥50V	≤5%	≤9%	0603≥0.1uF; 0805≥0.47uF; 1206≥4.7uF;
25V	≤5%	≤9%	0402≥0.047uF; 0603≥0.1uF; 0805≥0.33uF; ≥1206≥1uF; 1210≥4.7uF
16V	≤9%	≤12.5%	0603≥2.2uF; 0805≥3.3uF; 1206≥10uF; 1210≥22uF; 1812≥47uF
10V	≤12.5%	≤16%	0603≥2.2uF; 0805≥3.3uF; 1206≥4.7uF; 1210≥10uF; 1812≥47uF
6.3V	≤16%		

TEST PARAMETERS

Test parameters for Multilayer Ceramic Capacitors

- X7R, X5R and Y5V:

1KHz ± 100Hz at 1.0 ± 0.2 Vrms < 10uF (10 V min.)

1KHz \pm 100Hz at 0.5 \pm 0.1 Vrms < 10uF (6.3V max.) 120Hz \pm 24Hz at 1.0 \pm 0.1 Vrms \geq 10uF

Test parameters for Multilayer Ceramic Capacitors

- NPO/COG:

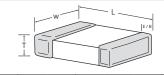
1MHz \pm 100KHz at 1.0 \pm 0.2 Vrms \leq 1000pF, 25°C

1KHz \pm 100Hz at 1.0 \pm 0.2 Vrms > 1000pF, 25°C

NOTE: To ensure proper capacitance readings, the voltage level must be held constant. The HP4284 and Agilent E4980 has a "ALC" (Automatic Level Control) function and should be switched to the "ON" position for accurate capacitance readings.

VOLTAGE AND CAPACITANCE RANGE

COG (NPO) DIELECTRIC



Values that are typically available.

(All measurements in inche

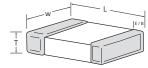
	s	IZE		(010 (± 0.0		3)	02 (± 0.	201 002)	(0402 ± 0.004	1)	05 (± 0.	04 008)	06 (± 0.	03 006)	(:	0805 ± 0.008	3)	12 (± 0.		12 (±0.0		18° (±0.0	
	T (max)		0.0	800		0.0	012		0.025		0.0	40	0.0	33		0.055		0.0	70	0.0	75	0.0	85
	Mir	n E/E	3		0.0	002		0.0	002		0.004		0.0	005	0.0	800	0.0	20 ± .0	010	0.020	± .010	0.020	± .010	0.024	± .015
	VDCW	V (M	AX)	6.3V	16V	25V	50V	25V	50V	25V	50V	100V	50V	100V	50V	100V	25V	50V	100V	50V	100V	50V	100V	50V	100V
Ŷ	OR1	Ŷ	0.1pF																						
	OR2		0.2pF																						
	OR3		0.3pF																						
	0R4		0.4pF																						
	OR5		0.5pF																						
	1R0		1.0pF																						
	1R2		1.2																						
	1R5		1.5																						
CODE-	1R8	VALUE	1.8																						
	2R2	⋠	2.2																						
I I	2R7	S	2.7																						
IA	3R3	AN	3.3																						
APACITANCE	3R9	CAPACITANCE	3.9																						
CAP	4R7	AP,	4.7																						
	5R0	0	5.0																						
	5R6		5.6																						
	6R8		6.8																						
	8R2		8.2																						
	100		10pF																						
	120		12																						
	150		15																						
	180		18																						
	220	V	22																						

Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.





COG (NPO) DIELECTRIC



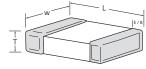
Values that are typically available.

				010	005		02	201		0402		05	04	06	03		0805		12	06	12	10	18	(All measu	2220	
	SIZE		(:		0008)		.002)	(±	± 0.00			008)		006)	(:	± 0.008			.008)		008)		.012)		.016)
	L	-		0.0				024	_	0.040		_)53	0.0			0.080			126		26		177	0.225	
	W T (mag		-		800			012		0.020			040)32		0.050		_	063)98		126	0.200	
	T (ma Min E,				008		_	012		0.025			040		033	0.0	0.055 0.055			070 ± .010)75 + .010		285 + .015	0.025	
	CW (1		6.3V		25V	50V	25V	50V	25V	50V	100V	50V	100V	50V	100V	25V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100
27		27																								
33	— i	33																								_
39 47	- :	39 47																								-
56	− i	56																								_
68	— i	68																								\vdash
82	0	82																								
10	1	100pF																								
12	- :	120																								_
15	-	150																								-
18	— i	180																								₩
27	_ :	270																								\vdash
33	─ !	330																								\vdash
39	91	390																								
47	71	470																								
56		560																								-
68	- :	680																								┝
10	_ :	820 1000pF																								\vdash
12:		1200																								H
15:	- :	1500																								\vdash
18:	2	1800																								
22	2	2200																								
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		7000							-																	\vdash
39 47	씱빙	3900 4700																								H
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68	12 P	6800																								Т
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10	3	.OluF																								
12:	— i	.012																								1
15	_ :	.015																								┢
22	_ !	.022																								
27	— i	.027																								
33	3	.033																								
39	— i	.039																								
47	_ :	.047																								
56 68	_ '	.056																								1
82		.082																								\vdash
10		.100uF																								T
124	_ !	.120																	25V 50V							T
15		.150																								
18	_ :	.180						-																		_
22		.220																								1
33	_ :	.270																								+
39	_ !	.390																								\vdash
47	— i	.470	+																							\vdash
56	_ :	.560																								I
68		.680																								
82	4 V	.820	ΙĪ																							





X7R DIELECTRIC



Values that are typically available.

(All measurements in inches)

SIZE L W				010 (± 0.0	005			2 01 .002)				1 02 004)			0504 ± 0.008				0603 ± 0.006		All mea:		0805 ± 0.008	
			-	0.0				002)	_			004)		(0.053				0.063)		(0.008	
			-	0.0				012)20			0.040				0.032				0.050	
	T (n)	0.0				012			-	025			0.040				0.038				0.058	
	Min				002			002			-	004			0.005				0.008			0.0)20 ± .0	
	VDCW	(MA	AX)	6.3V	10V	6.3V	10V	16V	25V	16V	25V	50V	100V	25V	50V	100V	10V	16V	25V	50V	100V	25V	50V	100V
Ŷ	101	Ņ	100pF																					
	121		120																					
	151		150																					
	181		180																					
	221		220																					
	271		270																					
	331		330																					
	391		390																					
	471		470																					
	561		560																					
	681		680																					
1.	821	<u></u>	820																					
CAPACITANCE CODE:	102	VALUE	1000pF																					
ЩU	122	×	1200																					
N N	152	NC	1500																					
1	182	ITA	1800																					
PA(222	CAPACITANCE	2200																					
Ϋ́	272	ĊĀ	2700																					
	332		3300																					
	392		3900																					
	472		4700																					
	562		5600																					
	682		6800																					
	822		8200																					
	103		.01uF																					
	123		.012																					
	153		.015																					
	183		.018																					
	223		.022																					
	273		.027																					
٧	333	Ÿ	.033																					

 $^{^{\}ast}$ For values above 1uF, thickness may be greater than specified above.

T(max): 0603 - 0.040" 0805 - 0.060"

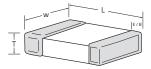
NOTE: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.

All components manufactured with the X7R dielectric are also available as an X5R dielectric.





X7R DIELECTRIC



Values that are typically available.

(All measurements in inches)

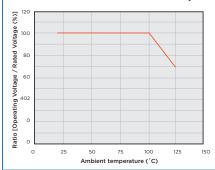
		SIZE 0201 (± 0.002)																		All measur	rements in	n inches)	
	SIZ	ZE		(0201 ± 0.002	!)		(0402 ± 0.004	1)				06 (± 0.	03 006)						00 5 .008)		
	-	L			0.024				0.040					0.0	063					0.0	080		
	١	N			0.012				0.020					0.0)32					0.0)50		
	T (m	nax)	*		0.012				0.025					0.0	38					0.0)58		
	Min	E/B	3		0.002				0.004					0.0	800					0.020	± .010		
	VDCW	(M/	AX)	4V	6.3V	10 V	6.3V	10V	16V	25V	50V	6.3V	10 V	16V	25V	50V	100V	6.3V	10 V	16V	25V	50V	100V
·	393	1	.039																				
	473		.047																				
	563		.056																				
	683		.068																				
	823		.082																				
	104		0.10uF	**	**																		
	124		.120																				
	154	.180																					
	184	224 .220																					
	224	— ú <u> </u>																					
DE	274		.270																				
8	334		.330																				
CAPACITANCE CODE:	394	CAPACITANCE	.390																				
Ι	474	¥	.470																				
AC	564	AC	.560																				
CAF	684	Ä	.680																				
IĬ	824	ľ	.820																				
	105		1.00uF																				
	125		1.20																				
	155		1.50																<u> </u>	<u> </u>	<u> </u>		
	185		1.80																				
	225		2.20																				
	335		3.30																				
	475		4.70																			35V	
	685		6.80																				
	106		10.0uF																				
	156		15.0uF																				
	226		22.0uF																	<u> </u>			
	476		47.0uF																	<u> </u>			
Ÿ	107	v	100.0uF																				

 $[\]ensuremath{^*}$ For values above 1uF, thickness may be greater than specified above.

T(max): 0603 - 0.040" 0805 - 0.060"

NOTE: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available. All components manufactured with the X7R dielectric are also available as an X5R dielectric.

DERATING CURVE FOR 0201, 0.1UF, X7R ONLY

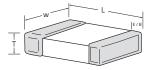




^{**} RE: 0201, X7R, 0.1uF; When the operating temperature range is between 100°C and 125°C, it is recommended to apply the following voltage derating as shown in the diagram below



X7R DIELECTRIC



Values that are typically available.

(All measurements in inches)

																				All mea		/	
	SI	ΖE			(1206 ± 0.008	3)			(1210 (±0.008)				(±0	.012)				2220 (±0.	/ 2221 016)	
		L				0.126					0.126					0.	177				0.225	/ .225	
	١	W				0.063					0.098					0.	126				0.200	/ .210	
	T (n	nax))*			0.070					0.125					0.0	085				0.108	/.108	
	Min	E/E	3		0.0	020 ± .0	010			0.0	020 ± .0	010				.024	± .015				00.025	± .015	
	VDCW	/ (M	AX)	10V	16V	25V	50V	100V	10 V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V	16V	25V	50V	100V
^	102	Ŷ	1000pF																				
	122		1200																				
	152		1500																				
	182		1800																				
	222		2200																				
	272		2700																				
	332		3300																				
	392		3900																				
	472		4700																				
	562		5600																				
	682		6800																				
	822		8200																				
DE-	103	VALUE-	.01uF																				
00	123	\ ∀	.012																				
S	153	É	.015																				
N A	183	PACITANCE	.018																				
	223	Ę	.022																				
CAPACITANCE CODE-	273	۸PA	.027																				
Y	333	-CA	.033																				
	393		.039																				
	473		.047																				
	563		.056																				
	683		.068																				
	823		.082																				
	104		.100uF																				
	124		.120																				
	154		.150																				
	184		.180																				
	224		.220																				
	274		.270																				
'	334		.330																				

^{*} For values above 1uF, thickness may be greater than specified above.

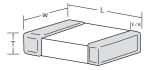
T(max): 0603 - 0.040" 0805 - 0.060"

NOTE: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available. All components manufactured with the X7R dielectric are also available as an X5R dielectric.





X7R DIELECTRIC



Values that are typically available.

(All measurements in inches)

																					(AI	ineasi	uremer	its in in	(Cries)
	s	IZE					06 008)					12 (±0.0						18 (±0.	12 012)				2220 (±0.	/ 2221 016)	
		L				0.1	26					0.1	26					0.1	177				0.225	/ .225	
		W				0.0)63					0.0	98					0.1	26				0.200	/ .210	
	T (1	max)*			0.0	70					0.1	25					0.0	95				0.108	/.108	
	Mir	1 E/	В			0.020	± .010					0.020	± .010					0.024	± .015				0.025	± .015	
	VDCV	V (M	AX)	6.3V	10 V	16V	25V	50V	100V	6.3V	10 V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V	16V	25V	50V	100V
1 1	394	1	.390																						
	474		.470																						
	564		.560																						
	684		.680																						
	824		.820																						
<u> </u>	105	4	1.00uF																						
CODE	125	VALUE	1.20																						
	155		1.50																						Ш
N N	185	N N	1.80																						Ш
CAPACITANCE	225	CAPACITANCE	2.20																						
PA	335	PAC	3.30																						
Ÿ	475	Ş	4.70																						
	685		6.80																						
	106		10.0uF																						
	156		15.0uF																				X7S	X7S	X7S
	226		22.0uF																						
	476		47.0uF																						Ш
v	107	\ <u>'</u>	100.0uF																						

 $^{^{\}ast}$ For values above 1uF, thickness may be greater than specified above.

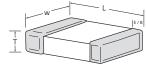
T(max): 1206 - 0.075" 1812 - 0.130" 1210 - 0.125" 2220 - 0.135"

NOTE: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available. All components manufactured with the X7R dielectric are also available as an X5R dielectric.





X5R DIELECTRIC



Values that are typically available.

(All measurements in inches)

			010	005	Ι		0201					04	02					06	03			П		0805					06	easu	_	ents ir 210	18	
	SIZ L		(±0.0	0008)			±0.00 0.024						004)					(±0.0						±0.00		-			008)		_	.016) 126	(±0.0	
<u> </u>	W		-	008			0.024		-				20					0.0						0.050					063		-	098	0.1	
Т (008			0.0216)25					0.0						0.060					072		 	125	0.1	
Mir	n. E	E/B	0.0	002			0.002	2				0.0	004					0.0	08				0.0	020±.0	010			0.020	0±.010		0.020	0±.010	0.024	£.015
VDCV	N ((MAX)	6.3V	10V	4V	6.3V	10V	16V	25V	4V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	35V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	16V	25V	16V	25V
^ 102	٨	1000pF																																
122		1200																																
152		1500																																
182		1800																																
222		2200																																
272		2700																																
332	İ	3300																																
392		3900																																
472		4700																																
562		5600																																
682		6800																																
822		8200																																
103		.01uF																																
0 153	VALUE	.015																																
일 223																																		
103 00 153 00 223 223 333 44 V 393	APACITANCE	.033																																
4 393	APAC	.039																																
473	Ċ	.047																																
104		0.10uF																																
154		.150																																
224		.220																																
334		.330																																
474	İ	.470																																
684		.680																																
105		1.00uF																																
125		1.20																																
155		1.50																																
185		1.80																																
225		2.20																																
335	;	3.30																																

* For values above 1uF, thickness may be greater than specified above.

T(max): 1206 - 0.075" 1812 - 0.130" 1210 - 0.125" 2220 - 0.135"

NOTE: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available. All components manufactured with the X7R dielectric are also available as an X5R dielectric.





X5R DIELECTRIC (0402-1206)



																		•				(All	measi	uremei	its in i	nches)
	5	SIZE		(:	0201 ± 0.002	2)			02 009)			(<u>±</u>	0603					08 (± 0.					(:	1206 ± 0.008	8)	
		L			0.024			0.0	40				0.063					0.0	080					0.126		
		W			0.012			0.0	20				0.032					0.0	50					0.063		
	Т ((max	()		0.0216			0.0	335				0.040					0.0	60					0.072		
	Mi	n E/	В		0.002			0.0	004				0.008					0.020	± .010				0.0	20 ± .	010	
	VDCV	W (M	1AX)	4V	6.3V	10V	4V	6.3V	10V	16V	4V	6.3V	10V	16V	25V	4V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V
1	395	\ \	3.90uF																							
	475		4.70uF																							
	685		6.80uF																							
CODE-	106	VALUE-	10.0uF																							
	156	CE V	15.0uF																							
-CAPACITANCE	226	PACITAN	22.0uF																							
APAC	476	APAC	47.0uF																							
O	107) - 	100.0uF																							
	157		150.0uF																							
V	227	V	220.0uF															·								

X5R DIELECTRIC (1210-2221)

(All measurements in inches)

	s	SIZE				1210 (±0.016)					312 .016)				/ 2221 .016)	
		L				0.126				0.	177			0.225	/ .225	
		W				0.098				0.	126			0.200) / .210	
	Т ((max	()			0.125				0.	130			0.	135	
	Mir	n E/	В			0.020 ± .010	0			0.024	± .015			0.025	± .015	
	VDCV	N (M	IAX)	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	6.3V	10V	25V	50V
^	395	^	3.90uF													
	475		4.70uF													
	685		6.80uF													
CODE	106	LUE	10.0uF													
	156	APACITANCE VALUE	15.0uF													
CAPACITANCE	226	TANO	22.0uF													
PAC	476	PACI	47.0uF													
\ \frac{1}{2}	107	CA	100.0uF													
	157		150.0uF													
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	227	\ \ \	220.0uF													

 $^{^{\}ast}$ For values above 1uF, thickness may be greater than specified above.

T(max): 1206 - 0.075" 1812 - 0.130" 1210 - 0.125" 2220 - 0.135"

NOTE: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available. All components manufactured with the X7R dielectric are also available as an X5R dielectric.



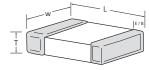
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10



VOLTAGE AND CAPACITANCE RANGE -

Z5U DIELECTRIC



Values that are typically available.

(All measurements in inches)

					0.4					100		- 10	10			surements	
	S	IZE			04 008)		.006)		05 008)	(± 0.	06 008)	12 (±0.			12 016)	2220 (±0.	
		L		0.0	50	0.0	063	0.0	080	0.1	26	0.1	26	0.1	77	0.225	/ .225
		W		0.0	040	0.0	032	0.0)50	0.0	63	0.0	98	0.1	26	0.200	/ .210
	Т (max)	0.0	040	0.0	038	0.0)58	0.0	70	0.0	75	0.0)85	0.108	/.108
	Mir	ı E/I	В	0.0	005	0.0	008	0.020	± .010	0.020	± .010	0.020	± .010	0.024	± .015	0.025	± .015
	VDCV	/ (M	AX)	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V
?	102	<u>^</u>	1000pF														
	122		1200														
	152		1500														
	182		1800														
	222		2200														
Н	272		2700														
Н	332		3300														
	392		3900														
	472		4700														
Н	562		5600														
Н	682		6800														
Н	822		8200														
CODE-	103	CODE-	.01uF														
0	123	S	.012														
	153	S	.015														
CAPACITANCE	183	CAPACITANCE	.018														
AC	223	ACI	.022														
A P	273	ΆP	.027														
ľ	333		.033														
	393		.039														
	473		.047														
	563		.056														
	683		.068														
	823		.082														
Н	104		.100uF														
	124		.120														
	154		.150														
	184		.180														
	224		.220														
	274		.270														
v	334	\ \	.330														

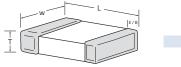
NOTE: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.





VOLTAGE AND CAPACITANCE RANGE -

Z5U DIELECTRIC



Values that are typically available.

(All measurements in inches)

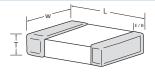
	s	IZE			04		503		805		06		10		(All mea		/ 2221
					(800		.006)		.008)		008)		016)		016)		016)
		L)50		063		080		26		26	0.1	l77 		/ .225
		W		0.0	040	0.0	032	0.0	050	0.0	063	0.0	98	0.1	26	0.200	/ .210
	Т (max)	0.0	040	0.0	038	0.0	058	0.0	70	0.0)75	0.0	085	0.108	/.108
	Mi	n E/	В	0.0	005	0.0	800	0.020	± .010	0.020	± .010	0.020	± .010	0.024	± .015	0.025	± .015
	VDCV	V (M	AX)	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V
^	394	1	.390														
	474		.470														
	564		.560														
	684		.680														
	824		.820														
	105		1.00uF														
) E	125	Œ-	1.20														
CODE	155	CODE	1.50														
	185		1.80														
CITANCE	225	CITANCE	2.20														
CIT	335	CH	3.30														
APA	395	APA	3.90														
Ç	475	Ÿ	4.70														
	685		6.80														
	106		10.0uF														
	156		15.0uF														
-	226		22.0uF														
	476		47.0uF														
!	107		100.0uF														

NOTE: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available. For values above 1uF, thickness may be greater than specified above.





Y5V DIELECTRIC



Values that are typically available.

(All measurements in inches)

	S	IZE		0201 (± 0.002)			0402					0603					0805					06 .008)			12	.016)	suren		1812 ±0.016	
		L		0.024			0.040)				0.063	3				0.080)			0.1	126			0.1	126			0.177	
		W		0.012			0.020)				0.032	2				0.050)			0.0	063			0.0	98			0.126	
	T (ı	max)	0.012			0.025	5				0.038	3				0.058	3			0.0	070			0.0	96			0.085	j
	Min	ı E/I	3	0.002			0.004	4				0.008	3			0.0	20 ±	.010			0.020	± .01	0).020	± .01	0	0.0	24 ±	.015
	VDCW	/ (M	AX)	10 V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	10 V	16V	25V	50V	6.3V	10V	16V	25V	6.3V	10V	25V
1	102	1	1000pF	:																										
	122		1200																											
	152		1500																											
	182		1800																											
	222		2200																											
	272		2700																											
	332		3300																											
	392		3900																											
	472		4700																											
	562		5600																											
	682		6800																											
CODE-	822	VALUE	8200																											
	103	₹	.01uF																											
CAPACITANCE	123	S	.012																											
1 A	153	MA	.015																											
A O	183	CAPACITANCE	.018																											
AP	223	AP,	.022																											
	273	Y	.027																											
	333		.033																											
	393		.039																											
	473		.047																											
	563		.056																											
	683		.068																											
	823		.082																											
	104		.100uF																											
	124		.120																						<u> </u>					
	154		.150																											
	184		.180																											
	224		.220																											
	274		.270																											
V	334	Ÿ	.330																											

NOTE: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available. For values above 1uF, thickness may be greater than specified above.

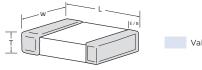


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Rev: 12/2020-B



Y5V DIELECTRIC



Values that are typically available.

(All measurements in inches)

	s	IZE		0201 (± 0.002)		0402				0603					0805				12 (± 0.					1210 ±0.016			(:	1812 ±0.016	 5)
		L		0.024		0.040				0.063				_	0.080				0.1					0.126				0.177	
		w		0.012		0.020)			0.032					0.050				0.0	63				0.098	3			0.126	
	T (max)	0.012		0.025	5			0.038	3				0.058				0.0	70				0.10				0.085	;
	Mir	n E/I	В	0.002		0.004	1			0.008	3			0.0	20 ±	010		(0.020	± .010)		0.0	20 ±	.010		0.0	24 ± .	.015
٧	/DCW	V (M	AX)	10 V	6.3V	10V	16V	6.3V	10 V	16V	25V	50V	6.3V	10V	16V	25V	50V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10 V	25
ì	394	^	.390																										
	474		.470																										
	564		.560																										
	684		.680																										
-	824		.820																										
-			1.00uF																										
-	105																												
<u>.</u> -	125	VALUE-	1.20																										
<u>ک</u> لـ	155		1.50																										
2	185	NCE	1.80																										
<u> </u>	225	CITA	2.20																										
CAPACITANCE	335	CAPACITANCE	3.30																										
	395		3.90																										
	475		4.70																										
	685		6.80																										
	106		10.0uF																										
	156		15.0uF																										
-	226		22.0uF																										
	476		47.0uF																										
,	107	V	100.0uF																										

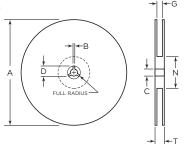
NOTE: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available. For values above 1uF, thickness may be greater than specified above.





TAPE & REEL SPECIFICATIONS

REEL

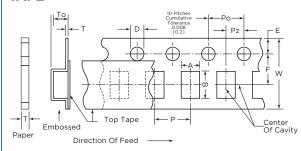


All tape and reel specifications must be adhered to per EIA-481-1-A.

Unit: mm (inch)

Tape	B min	С	A (7")	A (13")	D min	N min	G	T max
4mm	2.0 (0.079)	13 ± 0.05 (0.512 ± 0.02)	178 ±2.0 (7 ± 0.079)	-	21 ± 0.8 (0.82 ± 0.03)	50 (1.97)	5.0 ± 1.5 (0.196 ± 0.05)	8.0 max (0.315 max)
8mm	2.0	13 ± 0.05	178 ±2.0	330 ± 2.0	20.2	50	10 ± 1.5	14.9
	(0.07)	(0.512 ± 0.02)	(7 ± 0.079)	(13± 0.08)	(0.795)	(1.97)	(0.394 ± 0.059)	(0.587)
12mm	2.0	13 ± 0.05	178 ±2.0	330 ± 2.0	20.2	50	10 ± 1.5	14.9
	(0.07)	(0.512 ± 0.02)	(7 ± 0.079)	(13± 0.08)	(0.795)	(1.97)	(0.394 ± 0.059)	(0.587)

TAPE



7" Reel Quantities **

SIZE	01005 (E)	01005 (P)	0201	0402	0603	0805	1206	1210	1812	2221
Tape Size	4mm	8mm	8mm	8mm	8mm	8mm	8mm	8mm	12mm	12mm
Min Qty Per Reel	40,000*	20000*	15,000	5,000	3,000	2,000	2,000	1,000	1,000	1,000
Max Qty Per Reel	40,000*	20000*	15,000	10,000	4,000	5,000	5,000	5,000	3,000	1,000

NOTE: ** Quantity dependent on thickness

Paper Tape Carrier Dimensions (8mm)

	II OI I eeu								l	Jnit: mm (inch)
Size (inches)	Α	В	w	F	E	Ро	Pz	D	t	P
5							2.0 ± 0.05			
01005	0.25 ± 0.05	0.45 ± 0.05	8.0 ± 0.2	3.5 ± 0.1	1.75 ± 0.1	4.0 ± 0.1	- 0.0	1.5 + 0.1	1.15 max	2.0 ± 0.05
01005	(0.010 ± .002)	(0.018 ± .002)	(.315 ± .008)	(.138 ± .004)	(.069 ± .004)	(.157 ± .004)	(.039 ± .002)	(.064 + .004)	(.045 max)	(.079 ± .002)
							000			
							2.0 ± 0.05			
0201	0.37 ± 0.05	0.67 ± 0.05	8.0 ± 0.2	3.5 ± 0.1	1.75 ± 0.1	4.0 ± 0.1	- 0.0	1.5 + 0.1	1.15 max	2.0 ± 0.05
0201	(0.014 ± .002)	(0.026 ± .002)	(.315 ± .008)	(.138 ± .004)	(.069 ± .004)	(.157 ± .004)	(.039 ± .002)	(.064 + .004)	(.045 max)	(.079 ± .002)
							000			
							2.0 ± 0.05			
0402	0.65 ± 0.1	1.10 ± 0.2	8.0 ± 0.2	3.5 ± 0.1	1.75 ± 0.1	4.0 ± 0.1	- 0.0	1.5 + 0.1	1.15 max	2.0 ± 0.05
0402	(.026 ± .004)	(.043 ± .008)	(.315 ± .008)	(.138 ± .004)	(.069 ± .004)	(.157 ± .004)	(.039 ± .002)	(.064 + .004)	(.045 max)	(.079 ± .002)
							000			
							2.0 ± 0.05			
0603	1.10 ± 0.2	1.90 ± 0.2	8.0 ± 0.2	3.5 ± 0.1	1.75 ± 0.1	4.0 ± 0.1	- 0.0	1.5 + 0.1	1.15 max	4.0 ± 0.1
	(.043 ± .008)	(.075 ± .008)	(.315 ± .008)	(.138 ± .004)	(.069 ± .004)	(.157 ± .004)	(.039 ± .002)	(.064 + .004)	(.045 max)	(.157 ± .004)
							000			
							2.0 ± 0.05			
0805	1.16 ± 0.2	2.4 ± 0.2	8.0 ± 0.2	3.5 ± 0.1	1.75 ± 0.1	4.0 ± 0.1	- 0.0	1.5 + 0.1	1.15 max	4.0 ± 0.1
	(.046 ± .008)	(.095 ± .008)	(.315 ± .008)	(.138 ± .004)	(.069 ± .004)	(.157 ± .004)	(.039 ± .002)	(.064 + .004)	(.045 max)	(.157 ± .004)
							000			
	00.00	76.00		75.01	175 . 01	40.01	2.0 ± 0.05	15.01	115	40.01
1206	2.0 ± 0.2	3.6 ± 0.2	8.0 ± 0.2	3.5 ± 0.1	1.75 ± 0.1	4.0 ± 0.1	- 0.0	1.5 + 0.1	1.15 max	4.0 ± 0.1
	(.079 ± .008)	(.142 ± .008)	(.315 ± .008)	(.138 ± .004)	(.069 ± .004)	(.157 ± .004)	(.039 ± .002)	(.064 + .004)	(.045 max)	(.157 ± .004)
							000			

Embossed Carrier Dimensions (4mm, 8mm & 12mm)

	Size (inches)	А	В	w	F	E	Ро	Pz	D	То	Т	Р
5	01005	0.23 (0.009)	<u>0.43</u> (0.016)	4.0 ± 0.05 (0.157 ± 0.002)	1.8 ± 0.02 (0.070 ± 0.001)	0.9 ± 0.05 (0.035 ± 0.002)	2.0 ± 0.04 (0.079 ± 0.001)	2.00 (0.079)	0.8 ± 0.04 (0.031 ± 0.001)	0.5 max (0.019 max)	0.15 ~0.4 (0.005 ~0.015)	1.00 (0.039)
	0805	1.48 ± 0.2 (.058 ± .008)	2.3 ± 0.2 (.091 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± .0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 + 0.1 - 0.0 (.06 + .004) 000	2.5 max (.098 max)	0.6 max (.024 max)	4.0 ± 0.1 (.157 ± .004)
	1206	2.0 ± 0.2 (.079 ± .008)	3.6 ± 0.2 (.142 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± .0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 + 0.1 - 0.0 (.06 + .004) 000	2.5 max (.098 max)	0.6 max (.024 max)	4.0 ± 0.1 (.157 ± .004)
	1210	2.9 ± 0.2 (.114 ± .008)	3.6 ± 0.2 (.142 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± .0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 + 0.1 - 0.0 (.06 + .004) 000	2.5 max (.098 max)	0.6 max (.024 max)	4.0 ± 0.1 (.157 ± .004)
	1812	3.6 ± 0.2 (.142 ± .008)	4.9 ± 0.2 (.193 ± .008)	12.0 ± 0.3 (.472 ± .012)	5.6 ± .0.1 (.221 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 + 0.1 - 0.0 (.06 + .004) 000	3.8 max (.150 max)	0.6 max (.024 max)	8.0 ± 0.1 (.315 ± .004)



Rev: 12/2020-B

^{*}Smaller quantities may be available. Please contact us.



ENVIRONMENTAL CHARACTERISTICS

NO	ITEM				F	PERFORMANCE	TE	ST CONDITION				
1	APPEARAN	NCE				BNORMAL EXTERIOR APPEARANCE	THROUG	H MICROSCOPE (X10))			
2	INSULATIO RESISTAN				WHIC	OOM OR 500M μF PRODUCT :HEVER IS SMALLER D VOLTAGE IS BELOW 0,000M OR 100M μF)	RATED VOLTAGE SHALL BE APPLIED. MEASUREMENT TIME IS 60 - 120 RATED VOLTAGE TIME 60 SEC .					
3	WITHSTANI VOLTAG				В	NO DIELECTRIC REAKDOWN OR MECHANICAL BREAKDOWN	CLASS I: 300% OF THE RATED VOLTAGE FOR 1-5 SEC, CLASS II: 250% OF THE RATED VOLTAGE FOR 1-5 SEC IS APPLIED WITH LESS THAN 50MA CURRENT					
							CAPACITANCE	FREQUENCY	VOLTAGE			
		CLASS I			WITH	HIN THE SPECIFIED TOLERANCE	1,000pF AND BELOW	1MHz ±10%				
						TOLLIVATOL	MORE THAN 1,000 pF	1kHz ± 10%	0.5 ~ 5 Vrms			
4	CAPACITANCE						CAPACITANCE	FREQUENCY	VOLTAGE			
		CLASS II			WITH	HIN THE SPECIFIED	10μF AND BELOW	1kHz ± 10%	1.0 ± 0.2Vrms			
	62,100					TOLERANCE	MORE THAN 10μF	120Hz ± 20%	0.5 ± 0.1Vrms UENCY VOLTAGE ± ±10% 0.5 - 5 Vrms			
					OVE	ER 30pF : Q 1.000	CAPACITANCE	FREQUENCY	VOLTAGE			
5	Q CLA					THAN 30pF: Q 400 +20C	1,000pF AND BELOW	1MHz ±10%				
					(C	: CAPACITANCE)	MORE THAN 1,000 pF	1kHz ± 10%	0.5 ~ 5 Vrms			
						X7R, X6S, X5R	,					
			Rated Voltage	D.F.		Exception of D.F.						
					≤3%	0201 (50V); 0603≥0.047uF 0805≥0.22uF; 1206≥0.47uF						
			≥50V	≤2.5%	≤5%	0603≥1uF; 0805≥1uF; 1206≥4.7uF; 1210≥4.7uF						
					≤5%	0201≥0.01uF; 0805≥1uF; 1210≥4.7uF						
			25V	≤2.5%	≤10%	0402≥0.10uF; 0603≥0.33uF; 0805≥2.2uF 1206≥4.7uF; 1210≥22uF						
					≤5%	0201≥0.01uF; 0402≥0.033uF; 0805≥0.68uF; 1206≥2.2uF; 1210≥4.7uF						
	DISSIPATION		16V	≤3.5%	≤10%	0402≥0.47uF; 0603≥0.68uF; 0805≥2.2uF; 1206≥4.7uF; 1210≥22uF						
6	FACTOR (TanΘ CLASS II)	CLASS II	10V	≤5%	≤10%	0402≥0.33uF; 0603≥0.33uF; 0805≥2.2uF; 1206≥2.2uF; 1210≥22uF						
			6.3V	≤10%								
						Y5V, Z5U						
			Rated Voltage	D.F.		Exception of D.F.						
			≥50V	≤5%	≤9%	0603≥0.1uF; 0805≥0.47uF; 1206≥4.7uF;						
			25V	≤5%	≤9%	0402≥0.047uF; 0603≥0.1uF; 0805≥0.33uF; 1206≥1uF; 1210≥4.7uF						
			16V	≤9%	≤12.5%	0603≥2.2uF; 0805≥3.3uF; 1206≥10uF; 1210≥22uF; 1812≥47uF						
			10V	≤12.5%	≤16%	0603≥2.2uF; 0805≥3.3uF; 1206≥4.7uF; 1210≥10uF; 1812≥47uF						
			6.3V	≤16%								





NO	ITE	M		PEF	RFORMA	NCE			TEST CONDIT	ION
			CHARACTE				L TOLERANCE APPLY TO 2 POINT MEASURE- RE COEFFICIENT: ONE AT -25°C AND AT 85°C			
				0 ± 60 (0 ± 60 (±30)		STEP	TE	EMPERATURE (°C)
						-150 ± 60		1		25 ± 2
7	CAPACITANCE TEMPERATURE	CLASS I				-220 ± 60		2	MI	N RATED TEMP ± 2
	COEFFICIENT		COG/NF	0		-330 ± 60		3		25 ± 2
						-470 ± 60		4	MA	XX RATED TEMP ± 2
						-750 ± 120		5		25 ± 2
						+350 ~ -1000				
				CA	PACITAN	NCE CHANGE		STEP	TEMP. (°C) B	TEMP. (°C) F
				CHA	AR.	CAP. CHANGE (%)		1	25 ± 2	25 ± 2
					X7R	±15%		2	-55 ± 2	-25 ± 2
				×	X6S	±22%		3	25 ± 2	25 ± 2
8	TEMPER		CLASS II		X5R	±15%		4	125 ± 2	85 ± 2
	CHARACT	ERISTICS	027.00		Y5V	-82% ~ +22%		5	25 ± 2	25 ± 2
				Y	Z5U	-56% ~ +22%		C2 - C1 X 100%		
								APACITANCE AT S	TANDARD TEMPERATU	JRE (25°C)
								A 500g.f PRESS	SURE SHALL BE APPLII	ED FOR 10±1 SECOND
9	ADHESIVE :		NO INDICATION OF PEELING SHALL OCCUR ON THE TERMINAL ELECTRODE							
	OI TEMI	TVATION								
										500g. f
		APPEARANCE	NO MECHA	ANICAL DA	AMAGE S	SHALL OCCURE	ВЕ	NDING SHALL BE	APPLIED TO THE LIMI	T (1mm) WITH 0.3mm/SEC
			CHARACTER	CHAI	NGE OF	CAPACITANCE			/ ← → R=340)
10	BENDING		CLASS	S I		IN ±5% OR ±0.5pF HEVER IS LARGER		<u>5</u>	50	1
	STRENGTH	CAPACITANCE		X (X7R, X6S, X5R) v	VITHIN ±12.5%				
			CLASS II	Y (Y5V,Z5U) \	WITHIN ±30%	45±1 45±1 BENDING LIMIT			
		ı	SURFAC	MORE THAN 75% OF THE TERMINAL SURFACE IS TO BE SOLDERED NEWLY, SO METAL PART (A) DOES NOT COME OUT OR DISSOLVE			COLDED TEMPEDATURE: 245 L 5 °C			
11	11 SOLDERABILITY		/	OUT OR DISSOLVE				SOLDER TEMPERATURE: 245 ± 5 °C SOLDER: Sn_Ag3_0.5Cu FLUX: RMA Type PRE-HEATING: AT 80 - 120 °C FOR 10 - 30 SEC.		





ENVIRONMENTAL CHARACTERISTICS

NO	ITE	М		PERFORM	ANCE		TEST CONDITION				
		APPEARANCE	NO MECHANI	CAL DAMA	GE SHALL OCCUR						
			CHARACT	ERISTIC	CAP. CHANGE	DIP: SOLDER TEMPERATURE OF 270± 5 °C DIP TIME: 10±1 SEC.					
		CAPACITANCE	CLASSS I		WITHIN ±2.5% OR ±0.25 pF WHICHEVER IS LARGER	1 80-100		DWING: TIME (SEC.) 60			
	RESISTANCE		CLASS II	Х	WITHIN ±7.5%	2 150-180 60 MEASURE AT ROOM TEMP. AFTER COOLING FOF CLASS 1: 24 ± 2 HOURS					
12	TO SOLDERING HEAT		CE/NSS II	Y	WITHIN ±20%		CLASS II : 48 ± 4 HOUF				
	QCLASS I 30 pF AND OVER: Q 1000 LESS THAN 30 pF: Q 400 + 20xC										
		Tan CLASS II	TO SA	TISFY THE							
		INSULATION RESISTANCE		TISFY THE	SPECIFIED ALUE						
		WITHSTANDING VOLTAGE	TO SA	TISFY THE INITIAL VA	SPECIFIED ALUE						
		APPEARANCE	NO MECHANICAL DAMAGE SHALL OCCUR								
			CHARACT	ERISTIC	CAP. CHANGE						
		CAPACITANCE	CLAS	SS I	WITHIN ±2.5% OR ±0.25 pF WHICHEVER IS LARGER	HARMONIC MOTIO	TOR SHALL BE SUBJECTED TO A N HAVING A TOTAL AMPLITUDE of 1.5mm EQUENCY RANGE, FROM 10 TO 55Hz				
13	VIBRATION			Х	WITHIN ±5%		RN TO 10Hz SHALL BE				
	TEST		CLASS II	Y	WITHIN ±20%		IN 1 MINUTE.				
		QCLASS I			R: Q 1000 Q 400 + 20xC	EACH THREE	SHALL BE PERFORME MUTUALLY PERPENDI OR TOTAL PERIOD of 6	CULAR DIREC-			
		Tan CLASS II	TO SA	TISFY THE	SPECIFIED ALUE	2.,					
		INSULATION RESISTANCE		TISFY THE INITIAL VA	SPECIFIED ALUE						



Rev: 12/2020-B



ENVIRONMENTAL CHARACTERISTICS

NO	- 1	TEM				PERFORMANCE	TEST CONDITION			
		APPEARANCE			NO ME	CHANICAL DAMAGE SHALL OCCUR				
			CHARA	CTERIS ⁻	TIC	CAPACITANCE CHANGE				
		CAPACITANCE	CL	ASS I		WITHIN ±5% OR±0.5pF WHICHEVER IS LARGER				
			CLASS		×	WITHIN ±12.5%				
			II	,	Y	WITHIN ±30%				
		QCLASS I			LE	30pF AND OVER : Q 350 10 - 30pF : Q 275 + 2.5xC :SS THAN 10pF : Q 200 + 10xC				
						X7R, X6S, X5R	-			
			Rated Voltage	D.F.		Exception of D.F.				
			≥50V	≤2.5%	≤3%	0201 (50V); 0603≥0.047uF 0805≥0.22uF; 1206≥0.47uF				
					≤5%	0603≥1uF; 0805≥1uF; 1206≥4.7uF; 1210≥4.7uF				
			251/	.0.50/	≤5%	0201≥0.01uF; 0805≥1uF; 1210≥4.7uF				
			250	≤2.5%	≤10%	0402≥0.10uF; 0603≥0.33uF; 0805≥2.2uF 1206≥4.7uF; 1210≥22uF	TEMPERATURE : 40±2 °C			
	HUMIDITY		16)/	-7 F0/	≤5%	0201≥0.01uF; 0402≥0.033uF; 0805≥0.68uF; 1206≥2.2uF; 1210≥4.7uF	TEST TIME : 500 +12/-0 Hr.			
4	(STEADY STATE)		167	≤3.5%	≤10%	0402≥0.47uF; 0603≥0.68uF; 0805≥2.2uF; 1206≥4.7uF; 1210≥22uF	AFTER COOLING FOR CLASS I : 24±2 Hr.			
			10V	≤5%	≤10%	0402≥0.33uF; 0603≥0.33uF; 0805≥2.2uF; 1206≥2.2uF; 1210≥22uF	SEE (FIG.3)			
		DISSIPATION FACTOR	6.3V	≤10%						
	CLASS									
				D.F.		Exception of D.F.				
			≥50V	≤5%	≤9%	0603≥0.1uF; 0805≥0.47uF; 1206≥4.7uF;	RELATIVE HUMIDITY: 90-95 %RH TEST TIME: 500 +12/-0 Hr. MEASURE AT ROOM TEMPERATUR AFTER COOLING FOR CLASS I: 24±2 Hr. CLASS II: 48±4 Hr.			
			25V	≤5%	≤9%					
			16V	≤9%	≤12.5%					
			10V	≤12.5%	≤16%					
		6.3V	≤16%							
					MINI	IMI IM INICI II ATIONI DECISTANCE:				
		INSULATION RESISTANCE		1,0001		IMUM INSULATION RESISTANCE: DM μF PRODUCT WHICHEVER IS SMALLER				





ENVIRONMENTAL CHARACTERISTICS

NO	ľ	TEM				PERFORMANCE	TEST CONDITION
		APPEARANCE			NO ME	CHANICAL DAMAGE SHALL OCCUR	
			CHARA	CTERIS	TIC	CAPACITANCE CHANGE	
		CAPACITANCE	CI	CLASS I		WITHIN ±7.5% OR±0.75pF WHICHEVER IS LARGER	
			CLASS		X	WITHIN ±12.5%	
			II		Y	WITHIN ±30%	
	15 MOISTURE RESISTANCE 16V ≤3.5% 35% 0201≥0.01uF; 0803≥0.33uF; 0805≥2.2uF 1206≥4.7uF 1210≥22uF 1206≥2.2uF; 1210≥4.7uF 1206≥2.2uF; 1210≥2.2uF 1206≥2.2uF; 1210≥2.2uF; 1210≥2.2uF 1206≥2.2uF; 1210≥2.2uF; 1210						
				D.F.		Exception of D.F.	
			≥50V	≤2.5%	≤3%		0805≥0.22uF; 1206≥0.47uF ; 0805≥1uF; 1206≥4.7uF; 1210≥4.7uF ≥0.01uF; 0805≥1uF; 1210≥4.7uF APPLIED VOLTAGE: RATED VOLTAGE RATED VOLTAGE TEMPERATURE: 40±2 °C RATES TOTAL PROPERTURE: 40±2 °C RA
						0603≥1uF; 0805≥1uF; 1206≥4.7uF; 1210≥4.7uF	
	25V ≤2.5% ≤10% 0402	0201≥0.01uF; 0805≥1uF; 1210≥4.7uF					
			25V	≤2.5%	≤10%		RELATIVE HUMIDITY: 90~95%RH
15			161/		≤5%		CURRENT APPLIED: 50mA MAX.
			16V	≤3.5%	≤10%		AFTER COOLING FOR CLASS I : 24±2 Hr.
		CLASS I WITHIN ±7.5% OR±0.75pF WHICHEVER CLASS X WITHIN ±12.5% Y WITHIN ±30% QCLASS I 30pF AND OVER : Q 200 30pF AND BELOW : Q 100 +10/3xC X7R, X6S, X5R Rated Voltage D.F. Exception of D.F. ≥50V ≤2.5% ≤3% 0201 (50V); 0603≥0.047uF 0805≥0.22uF; 1206≥4.7uF 1210≥4.7uF 25V ≤2.5% ≤10% 0402≥0.10uF; 0805≥1uF; 1210≥4.7uF 25V ≤2.5% ≤10% 0402≥0.10uF; 0805≥1uF; 1210≥2.2uF 1206≥4.7uF; 1210≥2.2uF 1206≥2.2uF;	10V	≤5%	≤10%		CLASS II : 48±4 Hr. SEE (FIG.3)
						Y5V, Z5U	
		STURE STANCE					
			≥50V	≤5%	≤9%	0603≥0.1uF; 0805≥0.47uF; 1206≥4.7uF;	1
			25V	≤5%	≤9%		
			16V	≤9%	≤12.5%		
			10V	≤12.5%			
			6.3V	≤16%			
				100 M			





ENVIRONMENTAL CHARACTERISTICS

NO	ITE	M				PERFORMANCE	TES	T CONDITI	ON
		APPEARANCE		٨	IO MECH	HANICAL DAMAGE SHALL OCCUR			
			CHARA	ACTERIS	STIC	CAP. CHANGE	APPLIED VOLTAGE: 200% OF RATED VOLTAGE		
		CAPACITANCE	C	CLASS I		WITHIN ±3% OR ±0.3pF, WHICHEVER IS LARGER	TEST TIME : 1000 +48/-0 Hr. CURRENT APPLIED: 50mA MAX.		
			CLASS		X	WITHIN ±12.5%	CHAR.		TEMP.
			II		Υ	WITHIN ±30%	CLASS		125 ±3 °C
		QCLASS I		'	10	30pF AND OVER: Q 350 0 - 30 pF: Q 275 + 2.5xC S THAN 10pF: Q 200 + 10xC	CLASS II	X Y	125 ±3 °C 85 ±3 °C
						X7R, X6S, X5R			
			Rated Voltage	D.F.		Exception of D.F.			
			≥50V	≤2.5%	≤3%	0201 (50V); 0603≥0.047uF 0805≥0.22uF; 1206≥0.47uF			
					≤5%	0603≥1uF; 0805≥1uF; 1206≥4.7uF; 1210≥4.7uF			
					≤5%	0201≥0.01uF; 0805≥1uF; 1210≥4.7uF	J≥4.7uF		
			25V	≤2.5%	≤10%	0402≥0.10uF; 0603≥0.33uF; 0805≥2.2uF 1206≥4.7uF; 1210≥22uF			
16	HIGH TEMERATURE RESISTANCE		16V	≤3.5%	≤5%	0201≥0.01uF; 0402≥0.033uF; 0805≥0.68uF; 1206≥2.2uF; 1210≥4.7uF			
			16 V	≤3.5%	≤10%	0402≥0.47uF; 0603≥0.68uF; 0805≥2.2uF; 1206≥4.7uF; 1210≥22uF	FOR CLASS	ALUE MEASI II CAPACITO VOLTAGE :	ORS, 200 %
		DISSIPATION FACTOR (TanΘ	10V	≤5%	≤10%	0402≥0.33uF; 0603≥0.33uF; 0805≥2.2uF; 1206≥2.2uF; 1210≥22uF	APPLIED MAXIMUM OP	FOR 1 HOU	R AT THE EMPERATURE,
		CLASS II)	6.3V	≤10%			TEMPERA	TURE FOR 4	
						Y5V, Z5U		3EE (FIG.3)	
			Rated Voltage	D.F.		Exception of D.F.			
			≥50V	≤5%	≤9%	0603≥0.1uF; 0805≥0.47uF; 1206≥4.7uF;			
			25V	≤5%	≤9%	0402≥0.047uF; 0603≥0.1uF; 0805≥0.33uF; 1206≥1uF; 1210≥4.7uF			
			16V	≤9%	≤12.5%	0603≥2.2uF; 0805≥3.3uF; 1206≥10uF; 1210≥22uF; 1812≥47uF			
			10V	≤12.5%	≤16%	0603≥2.2uF; 0805≥3.3uF; 1206≥4.7uF; 1210≥10uF; 1812≥47uF			
			6.3V	≤16%					
		INSULATION RESISTANCE		1,000M		UM INSULATION RESISTANCE: I µF PRODUCT WHICHEVER IS SMALLER			





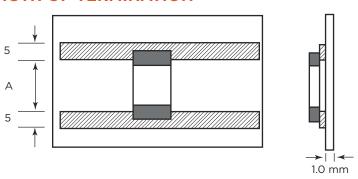
ENVIRONMENTAL CHARACTERISTICS

NO	ITE	M				PERFORMANCE		TEST CONDITION			
		APPEARANCE		N	О МЕСН	ANICAL DAMAGE SHALL OCCUR		CITORS SHALL BE SUBJ			
			CHARA	CTERIS	TIC	CAP. CHANGE		TO FIVE CYCLES OF TH RATURE CYCLE AS FOL			
		CAPACITANCE	CL	CLASS I		WITHIN ±2.5% OR ±0.25pF WHICHEVER IS LARGER	STEP	TEMP.(°C)	TIME (MIN)		
		CAPACITANCE	CAPACITANCE)	X	WITHIN ±7.5%		MIN.		
			CLASS		Y	WITHIN ±20%	1	RATED TEMP. +0/-3	HELLOWING TIME (MIN) 30 2-3 30 2-3		
		QCLASS I				pF AND OVER : Q 1000 THAN 30pF;Q 400 +20xC	2	25 MAX.	2 ~ 3		
						X7R, X6S, X5R	3	RATED TEMP. +3/-0	30		
			Rated Voltage	D.F.		Exception of D.F.	4	25	2 ~ 3		
			≥50V	≤2.5%	≤3%	0201 (50V); 0603≥0.047uF 0805≥0.22uF; 1206≥0.47uF					
					≤5%	0603≥1uF; 0805≥1uF; 1206≥4.7uF; 1210≥4.7uF					
					≤5%	0201≥0.01uF; 0805≥1uF; 1210≥4.7uF					
			25V	≤2.5%	≤10%	0402≥0.10uF; 0603≥0.33uF; 0805≥2.2uF 1206≥4.7uF; 1210≥22uF					
17	TEMERATURE CYCLE				16V	≤3.5%	≤5%	0201≥0.01uF; 0402≥0.033uF; 0805≥0.68uF; 1206≥2.2uF; 1210≥4.7uF			
			100	55.576	≤10%	0402≥0.47uF; 0603≥0.68uF; 0805≥2.2uF; 1206≥4.7uF; 1210≥22uF					
		TAN CLASS II	10V	≤5%	≤10%	0402≥0.33uF; 0603≥0.33uF; 0805≥2.2uF; 1206≥2.2uF; 1210≥22uF	MEAS	URE AT ROOM TEMPER AFTER COOLING FOR	ATURE		
			6.3V	≤10%				CLASS I : 24±2 Hr. CLASS II : 48±4 Hr. SEE(FIG.3)			
						Y5V, Z5U			HE LLOWING TIME (MIN) 30 2-3 30 2-3		
			Rated Voltage	D.F.		Exception of D.F.					
			≥50V	≤5%	≤9%	0603≥0.1uF; 0805≥0.47uF; 1206≥4.7uF;					
			25V	≤5%	≤9%	0402≥0.047uF; 0603≥0.1uF; 0805≥0.33uF; 1206≥1uF; 1210≥4.7uF					
			16V	≤9%	≤12.5%	0603≥2.2uF; 0805≥3.3uF; 1206≥10uF; 1210≥22uF; 1812≥47uF					
			10V	≤12.5%	≤16%	0603≥2.2uF; 0805≥3.3uF; 1206≥4.7uF; 1210≥10uF; 1812≥47uF					
			6.3V	≤16%							
		INSULATION RESISTANCE		TC) SATISF	THE SPECIFIED INITIAL VALUE					





ADHESIVE STRENGTH OF TERMINATION

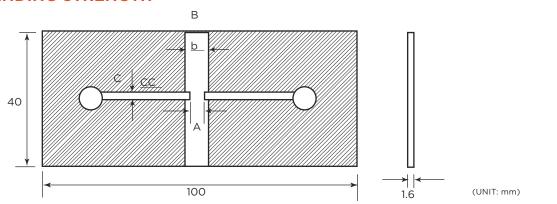


CODE	CODE DIMENSION (mm)		CODE	DIMENSION (mm)	A (mm)
01005 (0402)	0.40 × 0.20	0.12	1206 (3216)	3.2 x 1.6	2.2
0201 (0603)	0.61 x 0.31	0.2	1210 (3225)	3.2 x 2.5	2.2
0402 (1005)	1.0 x 0.5	0.4	1812 (4532)	4.5 x 3.2	3.5
0603 (1608)	1.6 x 0.8	1.0	2220 (5750)	5.7 x 5.08	4.7
0805 (2012)	2.0 x 1.25	1.2			

Material: Alumina Substrate (Al203 95% Min) or Glass Epoxy Substrate

Copper Foil (T = 0.035mm)

SUBSTRATE BENDING STRENGTH



CODE	DIMENSION (mm)	A (mm)	B (mm)	C (mm)
01005 (0402)	0.40 x 0.20	0.12	0.7	0.20
0201 (0603)	0.61 x 0.31	0.2	1.0	0.4
0402 (1005)	1.0 x 0.5	0.4	1.4	0.5
0603 (1608)	1.6 x 0.8	1.0	3.0	1.0
0805 (2012)	2.0 x 1.25	1.2	4.0	1.65
1206 (3216)	3.2 x 1.6	2.2	5.0	2.0
1210 (3225)	3.2 x 2.5	2.2	5.0	3.2
1812 (4532)	4.5 x 3.2	3.5	7.0	4.0
2220 (5750)	5.7 x 5.08	4.7	8.5	5.0

MATERIAL: GLASS EPOXY SUBSTRATE

COPPER FOIL (t = 0.035mm)

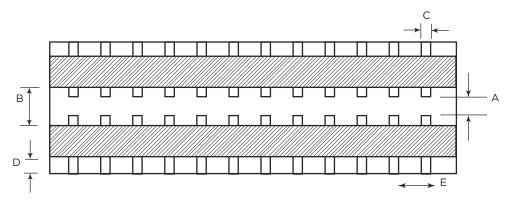


SOLDER RESIST





TEST SUBSTRATE -



(UNIT: mm)

CODE	DIMENSION (MM)	A	В	С	D	E
0201 (0603)	0.61 x 0.31	0.2	1.0	0.4	7.5	3.6
0402 (1005)	1.0 x 0.5	0.4	1.4	0.5	7.5	3.8
0603 (1608)	1.6 x 0.8	1.0	3.0	0.7	7.5	4.0
0805 (2012)	2.0 x 1.25	1.2	4.0	1.0	7.5	4.2
1206 (3216)	3.2 x 1.6	2.2	5.0	1.3	7.5	4.6
1210 (3225)	3.2 x 2.5	2.2	5.0	2.0	7.5	5.5
1812 (4532)	4.5 x 3.2	3.5	7.0	2.7	7.5	6.2
2220 (5750)	5.7 x 5.08	4.7	8.5	3.4	7.5	7.0

MATERIAL: GLASS EPOXY SUBSTRATE

COPPER FOIL (t = 0.035mm)



SOLDER RESIST

