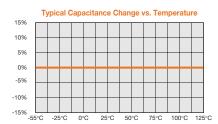
Multilaver chip capacitors have a low residual inductance, an excellent frequency response and minimal stray capacitance since there are no leads. These characteristics enable design to be very close to the theoretical values of the capacitors.

NPO/COG: SPECIFICATIONS:



OPERATING TEMPERATURE RANGE:

TEMPERATURE COEFFICIENT: TEMPERATURE VOLTAGE COEFFICIENT: 0 ±30PPM/°C DISSIPATION FACTOR:

INSULATION RESISTANCE:

0.1% MAX. >1000 ohms F or 100 G ohms, whichever is less at 25°C, VDCW.

(The IR at 125°C is 10% of the value at 25°C)

AGFING:

WITHSTANDING VOLTAGE:

TEST PARAMETERS:

>2.5 times VDCW

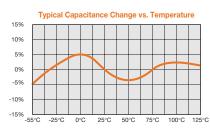
-55°C to +125°C

0 ±30PPM/°C

 $1MHz \pm 100KHz \text{ at } 1.0 \pm 0.2 \text{ Vrms} \le 100 \text{ pF}, 25^{\circ}\text{C}$ $1KHz \pm 100Hz$ at 1.0 ± 0.2 Vrms > 100 pF, 25°C

CAPACITANCE TOLERANCE: B,C,D,F,G,J,K

X7R: SPECIFICATIONS: OPERATING TEMPERATURE RANGE:



TEMPERATURE COEFFICIENT:

TEMPERATURE VOLTAGE COEFFICIENT:

DISSIPATION FACTOR:

AGEING:

AGEING:

INSULATION RESISTANCE:

WITHSTANDING VOLTAGE:

INSULATION RESISTANCE:

WITHSTANDING VOLTAGE:

CAPACITANCE TOLERANCE:

TEST PARAMETERS:*

-55°C to +125°C

0 ±15%∆°C MAX. X7R not applicable

For 50 volts and 100 volts: 2.5% MAX.;

For 25 volts: 3.0% MAX.; For 16 volts: 3.5% MAX.; For 10 volts: 5.0% MAX.; For 6.3 volts: 10% MAX.

For values $> 10\mu F$ and voltages $\le 10V$, the D.F. is 10% MAX. >1000 ohms F or 100 G ohms, whichever is less at 25°C, VDCW.

(The IR at 125°C is 10% of the value at 25°C)

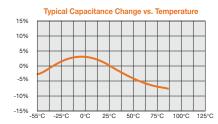
2.5% per decade hour, typical

>2.5 times VDCW

TEST PARAMETERS:* $1KHz \pm 100Hz$ at 1.0 ± 0.2 Vrms > 100 pF, 25°C

CAPACITANCE TOLERANCE: J.K.M

X5R: SPECIFICATIONS: OPERATING TEMPERATURE RANGE:



TEMPERATURE COEFFICIENT:

TEMPERATURE VOLTAGE COEFFICIENT:

DISSIPATION FACTOR:

0 ±15%Δ°C MAX. X5R not applicable

-55°C to +85°C

For 50 volts and 100 volts: 2.5% MAX .;

For 25 volts: 3.0% MAX.; For 16 volts: 3.5% MAX.;

For 10 volts: 5.0% MAX.; For 4.0 volts and 6.3 volts: 10% MAX. For values > 10µF and voltages ≤ 10V, the D.F. is 10% MAX.

>1000 ohms F or 100 G ohms, whichever is less

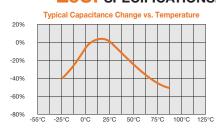
at 25°C, VDCW. (10,000 ohms at 125°C)

2.5% per decade hour, typical

>2.5 times VDCW

+10°C to +85°C

 $1KHZ \pm 100Hz$ at $1.0 \pm 0.2 Vrms > 100 pF, 25°C$



Z5U: SPECIFICATIONS: OPERATING TEMPERATURE RANGE:

TEMPERATURE COEFFICIENT:

INSULATION RESISTANCE:

AGEING: WITHSTANDING VOLTAGE:

TEST PARAMETERS: CAPACITANCE TOLERANCE:

DISSIPATION FACTOR:

+22% - 56%Δ°C MAX. 4.0% MAX.

>100 ohms F or 10 G ohms, whichever is less at 25°C, VDCW.

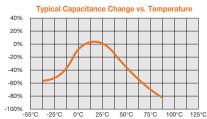
5% per decade hour, typical

>2.5 times VDCW

 $1KHz \pm 100Hz$ at 0.5 ± 0.1 Vrms, $25^{\circ}C$

M,Z,P

Y5V: SPECIFICATIONS: OPERATING TEMPERATURE RANGE:



TEMPERATURE COEFFICIENT:

DISSIPATION FACTOR:

INSULATION RESISTANCE:

WITHSTANDING VOLTAGE:

CAPACITANCE TOLERANCE:

TEST PARAMETERS:*

AGEING:

-30°C to +85°C +22% - 82%Δ°C MAX.

For 25 volts and 50 volts: 5% MAX.;

For 16 volts: 7% MAX.; For 10 volts: 9% MAX.;

For 6.3 volts: 11% MAX.

For higher Cap values > 10µF, the D.F. is 20% MAX.

>100 ohms F or 10 G ohms, whichever is less at 25°C, VDCW.

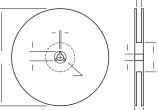
7% per decade hour, typical

>2.5 times VDCW

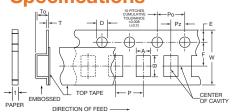
1KHz \pm 100Hz at 1.0 \pm 0.2 Vrms, 25°C

- Test parameters for Hi-Caps: X7R, X5R and Y5V $1KHz \pm 100Hz$ at 1.0 ± 0.2 Vrms $\leq 10uF$ (10 V min.) $1KHz \pm 100Hz \text{ at } 0.5 \pm 0.1 \text{ Vrms} \le 10uF (6.3V \text{ max.})$ $120Hz \pm 24Hz$ at $0.5 \pm 0.1 Vrms > 10uF$
- All components in this section are RoHS compliant per the EU directives and definitions.

All tape and reel specifications must be adhered to per EIA-481-1-A as noted and stated in the Chip Resistor section on page 61.



Taping Specifications



SIZE

Reel Dimensions

Unit: mm (inch)

TAPE	B min	С	A (7")	A (13")	D min	N min	G	T max
8mm	0.3	13 ± .05	178 ± 2.0	330 ± 2.0	20.2	50	10 ± 1.5	14.9
	(.012)	(.512 ± .02)	$(7 \pm .079)$	$(13 \pm .08)$	(.795)	(1.97)	$(.394 \pm .059)$	(.587)
12mm	0.3	13 ± .05	178 ± 2.0	330 ± 2.0	20.2	_50_	10 ± 1.5	14.9
	(.012)	(.512 ± .02)	$(7 \pm .079)$	$(13 \pm .08)$	(.795)	(1.97)	$(.394 \pm .059)$	(.587)

7 in. Reel Quantities**

SIZE	01005	0201*	0402*	0603	0805	1206	1210	1812	2221
TAPE SIZE	8mm	8mm	8mm	8mm	8mm	8mm	8mm	12mm	12mm
MIN QTY PER REEL	20,000†	15,000	5000	3000	2000	2000	1000	1000	1000
MAX QTY PER REEL	20,000†	15,000	10,000	4000	5000	5000	5000	3000	1000

D

Quantity dependent on Chip Thickness

F

- 0201 and 0402 Pitch ("P") is .079" ± .004" (2.0 ± 0.1mm)
- Smaller quantities may be available. Please contact your sales person.

Unit: mm (inch) Р

Paper Tape Carrier **Dimensions**

(8mm)

			_		-	_			_	_	-
. [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	2.0 ± 0.05	1.5 + 0.1 - 0.0	1.15 MAX	2.0 ± 0.05
	0.000	(0.010 ± .002)	(0.018 ± .002)	(.315 ± .008)	(.138 ± .004)	(.069 ± .004)	(.157 ± .004)	(.039 ± .002)	(.064 + .004)	(.045 MAX)	(.079 ± .002)
	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	2.0 ± 0.05	1.5 + 0.1 - 0.0	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)
	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	2.0 ± 0.05	1.5 + 0.1 - 0.0	1.15 MAX	2.0 ± 0.05
	0102	(.026 ± .004)	(.043 ± .008)	(.315 ± .008)	(.138 ± .004)	(.069 ± .004)	(.157 ± .004)	(.039 ± .002)	(.064 + .004)	(.045 max)	(.079 ± .002)
	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	2.0 ± 0.05	1.5 + 0.1	1.15 MAX	4.0 ± 0.1
		(.043 ± .008)	(.075 ± .008)	(.315 ± .008)	(.138 ± .004)	(.069 ± .004)	(.157 ± .004)	(.079 ± .002)	(.064 + .004) 000	(.045 MAX)	(.157 ± .004)
	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	2.0 ± 0.05	1.5 + 0.1 - 0.0	1.15 MAX	4.0 ± 0.1
	5555	(.046 ± .008)	(.095 ± .008)	(.315 ± .008)	(.138 ± .004)	(.069 ± .004)	(.157 ± .004)	(.079 ± .002)	(.064 + .004) 000	(.045 max)	(.157 ± .004)
	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	2.0 ± 0.05	1.5 + 0.1 - 0.0	1.15 MAX	4.0 ± 0.1
	.200	(.079 ± .008)	(.142 ± .008)	(.315 ± .008)	(.138 ± .004)	(.069 ± .004)	(.157 ± .004)	(.079 ± .002)	(.064 + .004)	(.045 MAX)	(.157 ± .004)

Embossed Carrier Dimensions

(8mm & 12mm)

	SIZE	Α	В	w	F	E	Po	Pz	D	То	Т	Р
r	0805	1.48 ± 0.2	2.3 ± 0.2	8.0 ± 0.2	3.5 ± .0.1	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	1.5 + 0.1 - 0.0	2.5 MAX	0.6 MAX	4.0 ± 0.1
3	0000	$(.058 \pm .008)$	$(.091 \pm .008)$	(.315 ± .008)	$(.138 \pm .004)$	$(.069 \pm .004)$	(.157 ± .004)	(.079 ± .002)	(.06 + .004)	(.098 MAX)	(.024 MAX)	(.157 ± .004)
	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	2.0 ± 0.05	1.5 + 0.1 - 0.0	2.5 MAX	0.6 MAX	4.0 ± 0.1
)	1200	$(.079 \pm .008)$	(.142 ± .008)	(.315 ± .008)	(.138 ± .004)	$(.069 \pm .004)$	(.157 ± .004)	(.079 ± .002)	(. 06 + .004)	(.098 MAX)	(.024 MAX)	(.157 ± .004)
)	1210	2.9 ± 0.2	3.6 ± 0.2	8.0 ± 0.2	3.5 ± .0.1	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	1.5 + 0.1 - 0.0	2.5 MAX	0.6 MAX	4.0 ± 0.1
	1210	(.114 ± .008)	(.142 ± .008)	(.315 ± .008)	(.138 ± .004)	$(.069 \pm .004)$	(.157 ± .004)	(.079 ± .002)	(.06 + .004)	(.098 MAX)	(.024 MAX)	(.157 ± .004)
	1812	3.6 ± 0.2	4.9 ± 0.2	12.0 ± 0.3	5.6 ± .0.1	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	1.5 + 0.1 - 0.0	3.8 MAX	0.6 MAX	8.0 ± 0.1
	1012	(.142 ± .008)	(.193 ± .008)	(.472 ± .012)	(.221 ± .004)	(.069 ± .004)	(.157 ± .004)	(.079 ± .002)	(.06 + .004)	(.150 MAX)	(.024 MAX)	(.315 ± .004)

C0805

COG

Temperature Series See Chart Characteristic

500

Rated Voltage 1st two digits are significant followed by number of zeroes. 4R0 = 4.0 VDCW

6R3 = 6.3 VDCW 100 = 10 VDCW 160 = 16 VDCW

250 = 25 VDCW 500 = 50 VDCW 630 = 63 VDCW

101 = 100 VDCW 201 = 200 VDCW 251 = 250 VDCW

101

Capacitance (pico - Farads) 1st two digits are significant. followed by number of zeroes. 101 = 100 pFR denotes decimal 6R8 = 6.8 pF

Tolerance Code: $*B = \pm 0.1 pF$ $*C = \pm 0.25 pF$ $*D = \pm 0.5 pF$

 $F = \pm 1\%$ $G = \pm 2\%$ $J = \pm 5\%$ $K = \pm 10\%$ $M=\pm~20\%$ $N = \pm 30\%$

Z = +80 - 20%P = +100 - 0% * For capacitance values below 10 pF only.

How To Order

Termination N = Nickel Barrier, Tinned Termination Composition is

No Markina" 100% matte Tin (Sn) ‡ P = Palladium Silver

‡ G = Gold over Nickel Pb: 90% Tin (Sn)/10% Lead (Pb) Termination

Standard termination finish for this product is 100% matte Tin (Sn). If a 100% Tin designation is required, add Sn.

Marking** 6 = EIA "J" Code

"Leave blank if

‡ Pd/Ag & Gold terminations have limited values

available. Please consult your salesperson.

** 0201 and 0402 size capacitors cannot be marked

*

Optional Identifier

Packaging Optional Ider D = Paper Tape (10" Reel)

R = Paper Tape (13" Reel)

E = Embossed Tape (7" Reel)
P = Paper Tape (7" Reel)

U = Embossed Tape (13" Reel)

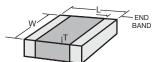
OPTIONAL IDENTIFIER

Min./Max. thickness

 designates minimum thickness * designates maximum thickness

The following letters define thickness as signified below: Н G K L M DIMENSION: 0.10 0.015 0.020 0.026 0.030 0.035 0.040 0.045 0.050 0.055 0.060 0.065 0.070 0.075 0.080 0.085 0.090 0.095 0.023

NP0/C0G Dielectric



Values that are typically available.

25V Available in 25V only.

(J	II measure	ements	in inches)		_		0				ı		ı					П		П		Г	
Н		Size		01005 (±	± 0.0008)	0201 (± 0.002)	040	2 (± 0.004	.)	0504 (±	: 0.008)	0603 (±	: 0.006)	0	805 (± 0.00	8)	1206 (:	± 0.008)	1210 (:		1812 (:	±0.012)
Г	L				016		.024		.040)50)63		.080	<u>, </u>		126		126		177
Г	W				008		.012		.020)40)32		.050			063		098		126
	T (ma	ax)*		.1	008		.012		.025		.0)40	.()33		.055			070	.0)75	.(085
	Min E	-/B			002		.002		.004		.0	05	.(008		.020 ± .01	0	.020	± .010	.020	± .010	.024	± .015
г	VDCW	V (MA)	()	16V		25V	50V	25\	50	ov	50V	100V	50V	100V	25V	50V	100V	50V	100V	50V	100V	50V	100V
_	0R1	Т	0.1pF																				
Î	0R2	1 1	0.2pF					+															
	0R3	11	0.3pF																				
	0R4	1	0.4pF																				
	0R5	1	0.5pF																				
	1R0	1	1.0pF		Φ		9.																
	1R2	1	1.2		01005 size		1 size																
	1R5] [1.5		1005		0201																
	1R8		1.8		o o _																		
	2R2		2.2		2.0 		2.0 lable for																
	2R7		2.7		3.0 2.0 available for		3.0 avail																
	3R3	11	3.3		_ e _		also																
	3R9	1	3.9		* Values shown to the left are		4.0 are a																
	4R7	1	4.7		5.0 he le		05.0 left a	+		_													
	5R6	1	5.6		0.0 to t		.0 6.0 the	+-	+	+													
	6R8	1	6.8		9.0 8.07.0 6.05.0 s shown to the I		to 2	+	+	_													
	8R2	1	8.2		9.08 s she		9.0 8.	+-		_													
	100	1	10pF 12		_ alne		es s	+															
	150	1	15		— ^{>} –		Values	+-	+	+													
	180	1	18				+ *	+															
	220	11	22																				
	270	1 🕹	27																				
CAP. CODE	330	-CAP. VALUE	33																				
SAP. (390	CAP.	39																				
Ĭ	470] [47																				
	560		56																				
	680		68							\perp													
	820		82																				
	101		100pF																				
	121	1	120				1																
	151	1	150				-																
	181	1	180							1													
	221	1	270																				
	331	1	330																				
	391	1	390																				
	471	1	470				+																
	561	1	560																				
	681	1	680																				
	821]	820																				
	102]	1000pF																				
	122		1200																				
	152		1500																				
	182		1800				1																
	222	1	2200																				
	272		2700							_													
Ľ	332	LŤ	3300																				

NP0/C0G Dielectric



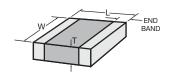
Simple Control Colora	(A	II measure	ments i	n inches)				_															\exists
Fig. 10			Size		0201 (±	: 0.002)	0402 (±	± 0.004)	0504 (±	- 0.008)	0603 (±	0.006)	08	805 (± 0.00	8)	1206 (±	: 0.008)	1210 (:	±0.008)	1812 (±	:0.012)	2220 / 222	1 (±0.016)
The color The		L			.(024	.(040	.0	050	.(063		.080		.1	26		126	.1	77	.225	/ .225
The color of the		W).	012	.(020	.0	040	.()32		.050		.0)63		098	.1	26	.200	/ .210
VICUTION VICUTION		T (ma	x)*).	012	.(025	.0	040	.(033		.055		.0)70		075	.0	185	.108	/.108
1		Min E	/B		.(002	.(004	.0	005	.(800		.020 ± .01	0	.020	± .010	.020	± .010	.024	± .015	.025	± .015
1		VDCW	/ (MAX)	25V		25V	50V	50V	100V	50V	100V	25V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100V
100 100	_	_	_	_																			
	Ĩ	-	l Î																				
		562		5600																			
1921 1931 1932 1933 1934		682		6800																			
123		822		8200																			
133		103		.01µF																			
10		123		.012																			
223 727 727 728		153		.015																			
273 383		183		.018																			
333 338																							
303 0.03 0.047 0.05 0.06		_																					
A		-																					
Second S																							
0.00		-																					
0.00 0.00																							
104 144 154 159 150			1																				
124																251							
154 150 180			1													230							
180			1																				
334	<u></u>		H H																				
334	99	_	W																				
334 330 390	-CAP		ÇAP																				
474																							
564 684 680		394	1	.390																			
684 824 820		474		.470																			
824 105 1.00µF 1.20 1.50 1.80		564		.560																			
105 125 1.00µF 1.20 1.50 1.80		684		.680																			
125		824		.820																			
1.50		105		1.00µF																			
185		125		1.20																			
225		155		1.50																			
335 3.30 3.90 4.70 4.70 685 6.80 6.80 6.80 6.50 6.		\vdash																					
395																							
475		_																					
685 6.80 10.0μF 15.0μF 15.0μ																							
106 10.0µF 15.0µF 15.0																							
156			1																				
226 22.0µF 47.0µF																							
476 47.0µF 47.0µF																							
			1																	\vdash			
	V		v																				

Note:

Due to demand and raw material fluctuations in the market, changes and availability of individual values may occur. Minimum order quantities may apply.

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

X7R Dielectric





Values that are typically available.

Available in X5R only. See X5R chart on page 14, for all values 1µF and above

Martin	(A	l measure	ments	in inches)	0			_															
Things		5	Size		01005 (± 0.0008)		0201 (±	0.002)		04	402 (± 0.00	4)	05	i04 (± 0.00	8)		06	603 (± 0.00	16)		08	805 (± 0.00	8)
Marce Marc	L																						
Marchane Marchane	⊩																						
	⊩						-																
100	⊩					2.011																	
120	H				6.3V	6.3V	100	16V	25V	160	250	500	25V	500	1000	100	16V	25V	50V	1000	25V	50V	1000
181 181 180	lî	101	^	100pF																			
Note		121		120																			
27		151		150																			
271 231 330		181		180																			
331 330 380		221		220																			
391 390		271		270																			
471		331		330																			
471		391		390																			
Secondary Seco																							
681 680				-																			
Ray Ray																							
102 103		681		680																			
122 152 150 X5R 150		821		820																			
152 152 150		102		1000pF	X5R																		
182 183 183 183 183 183 183 183 183 183 183 183 183 183 183 183 183 183 183 183 184		122		1200																			
222 2200 X5R	DE	152	LUE	1500	X5R																		
222 2200 X5R	AP. CO	182	AP. VA	1800																			
332 3300 X5R 3900 39	٥	222	0	2200	X5R																		
392 3900 3		272		2700																			
392 3900 3		332		3300	X5R																		
470		_																					
562 5600 5600 682 6800 X5R					Y5R																		
682					XOIT																		
822 8200					VED																		
103					X5K																		
123		822																					
153		103		.01µF	X5R																		
183		123		.012																			
223 .022 X5R		153		.015		X5R																	
273 .027		183		.018																			
		223		.022		X5R																	
		273		.027																			
V 333 V .033 X5R	V		V			X5R																	

^{*} For values above 1uF, thickness may be greater than specified above. T(max): 0603 - 0.048" 0805 - 0.075"

X7R Dielectric

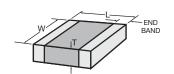


(A	I measure	ments	in inches)																		1		
H		Size		0	201 (± 0.00)	2)		04	402 (± 0.00	4)				0603 (±						0805 (±			
	L				.024				.040						063						180		
	W				.012				.020					.(032					.0	150		
_	T (ma				.012				.025						033					.0	155		
_	Min E	/B			.002				.004						800					.020	± .010		
	VDCW	(MAX	()	4V	6.3V	10V	4V	6.3V	10V	16V	25V	6.3V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V
î	393	1	.039		X5R																		
	473		.047		X5R																		
	563		.056																				
	683		.068																				
	823		.082																				
	104		.100µF		X5R						X5R												
	124		.120																				
	154		.150																				
	184		.180																				
	224		.220	X5R																			
				7,011																			
	274		.270																				
	334		.330					X5R															
	394		.390																				
	474		.470																				
CAP. CODE	564	WALU	.560																				
CAP.	684	CAP. VALUE-	.680									X5R	X5R										
	824		.820																				
								VED	VED					VED									
	105		1.00µF					X5R	X5R					X5R									
	125		1.20																				
	155		1.50																				
	185		1.80																				
	225		2.20				X5R	X5R				X5R	X5R	X5R									
	335		3.30																X5R	X5R			
	475		4.70									X5R	X5R						X5R				
	685		6.80																				
												VED							VED				
	106		10.0µF									X5R							X5R				
	156		15.0µF																				
	226		22.0µF																				
	476		47.0μF																				
\\\\\	107		100.0μF																				
			1 "																				

 $^{^{\}ast}$ For values above 1uF, thickness may be greater than specified above. T(max): 0603-0.048"

Note:

X7R Dielectric



Values that are typically available.

Available in X5R only. See X5R chart on page 14, for all values $1\mu F$ and above

(A	II measure		in inches)																				
┡		Size			12	206 (± 0.00	08)			12	210 (±0.00	8)				1812 (±						21 (±0.016)	
H	L W					.126					.126						77 26					/ .225	
	T (ma.	x)*				.070					.098						20 185					/ .210	-
	Min E					.020 ± .0	10				.020 ± .01	0					± .015					± .015	
	VDCW	(MA)	()	10V	16V	25V	50V	100V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V	16V	25V	50V	100V
Ŷ	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																				
	103		.01µF																				
	123		.012																				
GDE	153	ALUE-	.015																				
CAP. CODE-	183	-CAP. VALUE-	.018																				
	223		.022																				
	273		.027																				
	333		.033																				
	393		.039																				
	473		.047																				
	563		.056																				
	683		.068																				
	823		.082																				
	104		.100µF																				
	124		.120																				
	154		.150																				
	184		.180																				
	224		.220																				
	274		.270																				
\\\\\\\\\	334	V	.330																				
	1-2.	_	1.225																				

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

T(max): 1206 – 0.110" 1812 – 0.130"
1210 – 0.125" 2220 – 0.135"

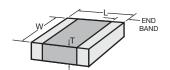
X7R Dielectric



(Al	II measurer	ments i	n inches)																		E		
	S	Size			12	206 (± 0.00	18)			1	210 (±0.00	8)				1812 (±0.012)				2220 / 222	21 (±0.016)	
	L					.126					.126						177					/ .225	
_	W					.063					.098						126					/ .210	
	T (max					.070					.075						085					/.108	
_	Min E	/B				.020 ± .01	10				.020 ± .0	10				.024	± .015				.025	± .015	
	VDCW	(MAX		10V	16V	25V	50V	100V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V	16V	25V	50V	100V
<u>^</u>	394	^	.390																				
	474		.470																				
	564		.560																				
	\vdash																						
	684		.680																				
	824		.820																				
	105		1.00µF																				
	125		1.20																				
	155		1.50																				
 H	\vdash	.UE																					
-CAP. CODE-	185	-CAP. VALUE	1.80																				
/O	225	CA	2.20																				
	335		3.30																				
	475		4.70																				
	685		6.80																				
	106		10.0µF		X5R	X5R											X5R						<u> </u>
	156		15.0µF																		X5R		
	226		22.0µF						X5R	X5R	X5R					X5R	X5R						
	476		47.0µF											X5R	X5R								
Ų	107		100.0μF																				
()	107	V	ισοισμι																				

^{*} For values above 1uF, thickness may be greater than specified above. T(max): 1206 – 0.110" 1812 – 0.130" 1210 – 0.125" 2220 – 0.135"

X5R Dielectric (1µF and above)



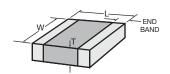
Values that are typically available. For values less than 1µF, see X7R chart on pages 10–13.

(F	II measure	ments i	n inches)																							
		Size			0402 (± 0.004)				0603 (± 0.006)					.008)				2 06 .008)			12 (±0.				1812 (±0.012)	
	L				.040				.063				.(080			.1	126				126			.177	
	W				.020				.032					050			.(063				098			.126	
L	T (ma	x)*			.025				.033				.(055			.(070			.(075			.085	
ı	Min E	/B			.004				.008				.020	± .010			.020	± .010			.020	± .010		.(024 ± .0	15
Г	VDCW	(MAX)	4V	6.3V	10V	4V	6.3V	10V	16V	25V	6.3V	10V	16V	25V	6.3V	10V	16V	25V	6.3V	10V	16V	25V	6.3V	10V	16V
^	105	î	1.00µF																							
	125		1.20																							
CODE	155	VALUE-	1.50																							
-CAP.	185	-CAP.	1.80																							
	225		2.20																							
V	335	V	3.30																							

^{*} For values above 1uF, thickness may be greater than specified above. T(max): 0603 - 0.048" 1206 - 0.110" 1812 - 0.130" 0805 - 0.075" 1210 - 0.125" 2220 - 0.135"

Note:

X5R Dielectric (1µF and above)



Values that are typically available. For values less than $1\mu F$, see X7R chart on pages 10-13.

(A	I measure	ments i	in inches)]																	
	;	Size		0402 (± 0.004)			6 03 .006)				8 05 .008)			12 (± 0.	06 .008)				1 0 008)				12 012)			2220 (±0.	/ 2221 016)	
	L			.040			063				080			.1	126				126			.1	177			.225	/ .225	
	W			.020			032				050			.(063				098			.1	126			.200	/ .210	
	T (ma	x)*		.025			033				055			.(070				075			.(085			.108	/.108	
	Min E	/B		.004			800			.020	± .010			.020	± .010			.020	± .010			.024	± .015			.025	± .015	
	VDCW	/ (MAX	()	6.3V	4V	6.3V	10V	16V	6.3V	10V	16V	25V	6.3V	10V	16V	25V	6.3V	10V	16V	25V	6.3V	10V	16V	25V	6.3V	10V	25V	50V
Ŷ	395	Ŷ	3.90																									
	475		4.70																									
	685		6.80																									
C0 DE	106	VALUE	10.0μF																									
-CAP. (156	CAP. V	15.0µF																									
	226		22.0µF																									
	476		47.0μF																									
V	107	\ V	100.0μF																									

Due to demand and raw material fluctuations in the market, changes and availability of individual values may occur. Minimum order quantities may apply.

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

Z5U Dielectric



Values that are typically available.

(A	II measure		in inches)									-						
		Size		0504 (±		0603 (±		0805 (±		1206 (±		1210 (:		1812 (:		2220 / 222		
⊩	L				050		063		080		26		126		77		/ .225	
⊩	W T (ma	(x)*			040 040)32)33)50)55)63)70)98)75)85		/ .210 /.108	
H	Min E				005	.008			± .010		± .010		± .010		± .015		± .015	
H	VDCW (MAX)			25V 50V		25V	50V											
Ŷ	102	Ŷ	1000pF															
	122		1200															
	152	1	1500															
	182		1800															
	-																	
ı	222		2200															
ı	272		2700															
ı	332		3300															
	392		3900															
	472		4700															
	562		5600															
	682		6800															
	822		8200															
	103		.01μF															
	123		.012															
CAP. CODE	153	-CAP. VALUE	.015															
CAP. C	183	CAP. V	.018															
	223		.022															
	273		.027															
	333		.033															
	393		.039															
	473		.047															
	563		.056															
	683		.068															
	823		.082															
	104		.100µF															
	124		.120															
	154		.150															
	184		.180															
	224		.220															
	274		.270															
\ \	334	V	.330															
		_			I													

Note:

Due to demand and raw material fluctuations in the market, changes and availability of individual values may occur. Minimum order quantities may apply.

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

Z5U Dielectric



(All measurements in inches)				ı					1							E	
	5	Size		0504 (±	: 0.008)	0603 (±	: 0.006)	0805 (±	± 0.008)	1206 (±	: 0.008)	1210 (:	±0.008)	1812 (±	±0.012)	2220 / 222	21 (±0.016)
	L).	050	.(063	.(080	.1	26	.1	126	.1	177	.225	/ .225
	W				040		032		050		063		098		126		/ .210
	T (ma	x)*).	040	.(033	.(055	.()70	.()75	.(085	.108	3 /.108
	Min E	/B		.(005	.(008	.020	± .010	.020	± .010	.020	± .010	.024	± .015	.025	± .015
	VDCW	(MAX)	25V	50V	25V 50V		25V 50V		25V	50V	25V	50V	25V	50V	25V	50V
Ŷ	394	<u>^</u>	.390														
	474		.470														
	564		.560														
H	684		.680														
	824		.820														
	105		1.00µF														
	125		1.20														
	155		1.50														
E	185	.UE	1.80														
CAP. CODE	225	CAP. VALUE-	2.20														
/O	335	C.	3.30														
	395		3.90														
	475		4.70														
	685		6.80														
	106		10.0μF														
	156		15.0µF														
	226		22.0µF														
	476		47.0µF														
V	107	V	100.0µF														

Note:

Due to demand and raw material fluctuations in the market, changes and availability of individual values may occur. Minimum order quantities may apply.

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

Y5V Dielectric



(A	II measure	ments i	n inches)																											
L		Size		0201 (± 0.002)	.0402 (± 0.004) .040 .020 .025						060	3 (± 0.0	106)			080	5 (± 0.0	(80				0.008)		1210 (±0.008)				18	12 (±0.0	
L	L			.024						.063					.080						26		.126				.177			
⊩	W T (ma	2v)*		.012						.032 .033				.050					.063				.098 .075				.085			
	Min E				.002 .004					.008				.020 ± .010					.020 ± .010				.020 ± .010					024 ± .0		
H		/ (MAX	.)	10V	6.3V 10V 16V 25V 50V				6.3V 10V 16V 25V 50V				6.3V 10V 16V 25V 50V			10V 16V 25V 50V			50V	6.3V 10V 16V 25V			6.3V	10V	25V					
Ŷ	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																											
	103		.01µF																											
	123		.012																											
CAP. CODE	153	ALUE-	.015																											
-CAP.	183	-CAP. VALUE	.018																											
	223	}	.022																											
	273	-	.027																											
	333	$\left\{ \right\}$.033																											
	393	$\left\{ \right\}$.039																											
	473	-	.047																											
	563 683	-	.056							$\vdash \vdash$																_			$\vdash\vdash$	$\vdash\vdash$
	823	1	.082																											$\vdash\vdash$
	104		.100µF																											\vdash
	124	1	.120																											\vdash
	154	1	.150																											$\vdash \vdash$
	184	1	.180																											\square
	224		.220																											\square
	274		.270																											
\ \	334		.330																											\square
			1					1	l																					

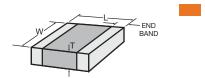
Note

Due to demand and raw material fluctuations in the market, changes and availability of individual values may occur. Minimum order quantities may apply.

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

Values that are typically available.

Y5V Dielectric



(Al	I measuren	measurements in inches)																							[
	s	ize		0201 (± 0.002)							060	03 (± 0.0	006)		0805 (± 0.008)					1206 (± 0.008)				1210 (±0.008)				18	12 (±0.0)12)
	L			.024			.040			.063																		.177		
	W			.012		.020					.032				.050				.063				.098				.126			
	T (max	x)*		.012	.025					.033					.055				.070				.075				.085			
	Min E	/B		.002	.004							.008				.()20 ± .0	010			.020	± .010		.020 ± .010				.024 ± .015		
	VDCW	(MAX)	10V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	10V	16V	25V	50V	6.3V	10V	16V	25V	6.3V	10V	25V
^	394	^	.390																											
	474		.470																											
	564		.560																											
	684		.680																											
	824		.820																											
	105		1.00µF																											
	125		1.20																											
	155		1.50																											
)DE	185	LUE	1.80																											
CAP. CODE-	225	CAP. VALUE-	2.20																											
	335	3	3.30																											
	395		3.90																											
	475		4.70																											
	685		6.80																											
	106		10.0μF																											
	156		15.0µF																											
	226		22.0μF																											
	476		47.0μF																											
	107		100.0µF																											

Note:

Due to demand and raw material fluctuations in the market, changes and availability of individual values may occur. Minimum order quantities may apply.

All components in this section are RoHS compliant per the EU directives and definitions.

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