

MULTILAYER (MONO) CERAMIC CAPACITOR

Suntan®

TS17

FEATURES

- Miniature size, wide capacitance, tape and reel packaging available for auto-placement.
- Coating by epoxy resin, creates the excellent humidity resistance and prevents body from damaging during soldering and washing.
- Industry standard size and various load spacing available.

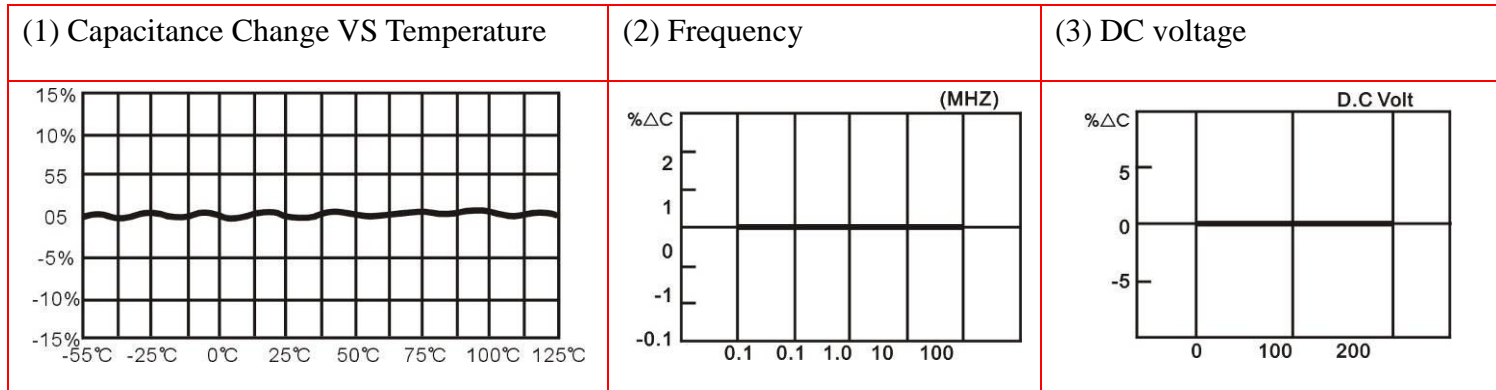


S	P	E	C	I	F	I	C	A	T	I	O	N	S
T.C	NPO/COG			X7R(B)			Y5V(Y/F)			Z5U(E)			
Dielectric type	Stable Class I Dielectric			Stable Class II Dielectric									
Electrical properties	With negligible dependence of electrical properties on temperature, voltage, frequency and time			With predictable change of properties with temperature, voltage, frequency and time, this dielectric is ferroelectric and offers higher capacitance ranges than Class I.			With high twist dielectric constant and greater variation of properties with temperature and test conditions, very high capacitance per unit volume.						
Application	Use in circuits requiring stable performance			Use as blocking, coupling, By-passing discriminating element.			Suited for By-passing and coupling application such as store power and memory circuit						
Capacitance range	1pF~10nF			100pF~5uF			1nF~14.7uf						
Operating temperature	0±30PPm/c -55°C~+125°C			±15% -55°C~+125°C			+30%~-80% -25°C~+85°C			+22%~-56% -10°C~+85°C			

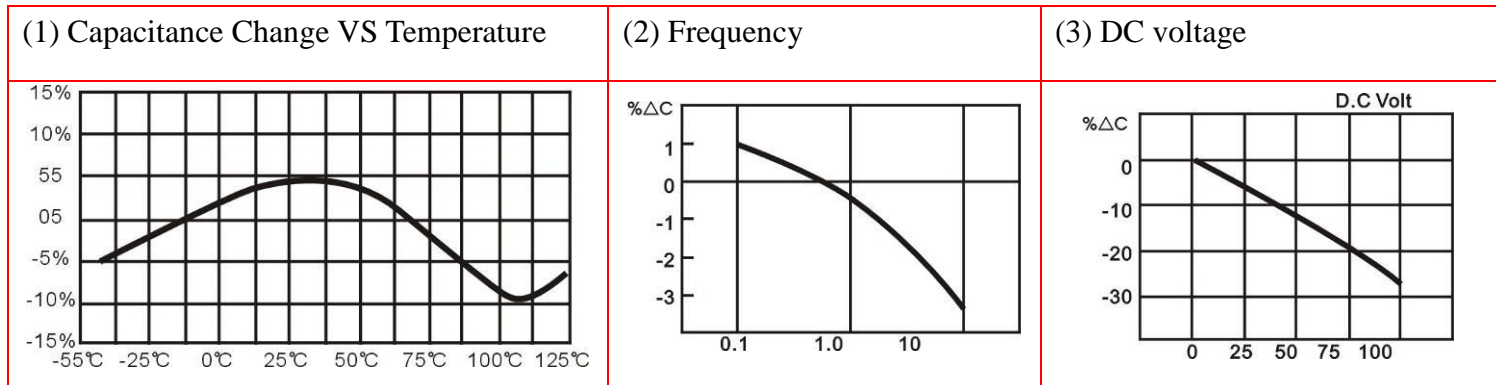
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Capacitance Change VS Temperature Characteristic ; Voltage ; Frequency Profiles

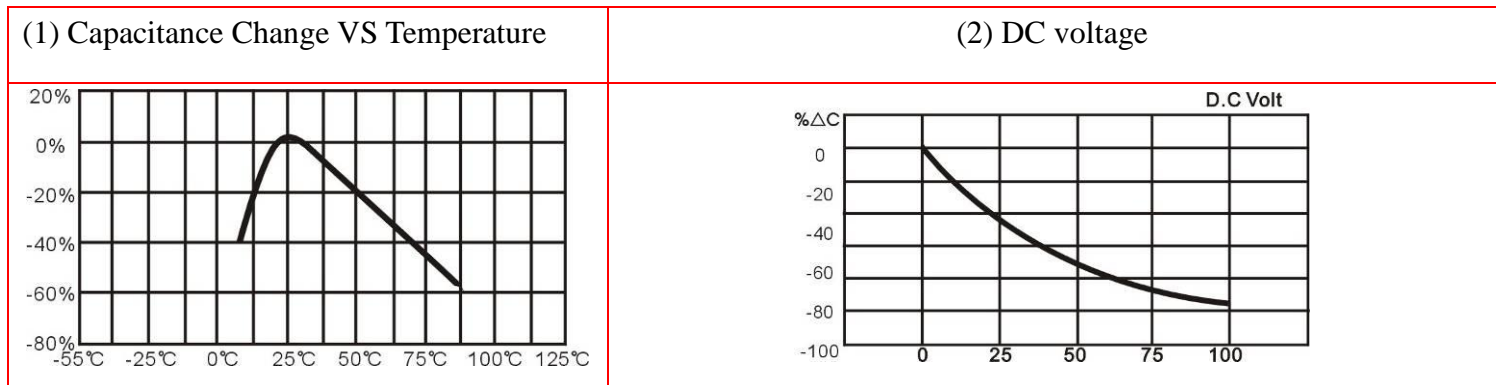
◆ NPO



◆ X7R



◆ Z5U



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Leads MLCC(Radial、Axial)

◆ Electrical Properties standard

Item	Test standard			
	NPO/CG/GH/RH/UJ/SL	X7R(B)	Z5U(E)	Y5V(Y/F)
Capacitance	±5%	±10%	+80-20%	±20%
Dissipation Factor	<0.15%	<3.5%	<5%	<7.5%(200nF)
				<10% (220~470nF)
				<15%(470~1000nF)
Insulation Resistance	<10nF	<25nF	<25nF	<25nF
	IR<1000C0M Ω	IR>25nF	IR>25nF	IR>25nF
	C>10nF	C>25Nf	C>25Nf	C>25Nf
	R • C>100S	R • C>100S	R • C>100S	R • C>100S
Withstanding Voltage	2.5 rated voltage	2.5 rated voltage	2.5 rated voltage	2.5 rated voltage
Test Condition				
Test Frequency	1 MHZ (C>1000PF 1KHz)	1KHz	1KHz	1KHz
Test Voltage of Cap. & D.F	1 ± 0.2V	1 ± 0.2V	0.3 ± 0.2V	0.3 ± 0.2V
Test Voltage of IR	Rated Voltage	Rated Voltage	Rated Voltage	Rated Voltage
Temperature	10~25℃	10~25℃	10~25℃	10~25℃
Humidity	<75%	<75%	<75%	<75%

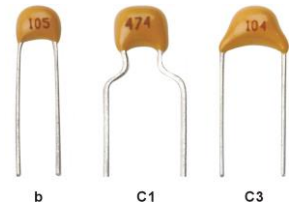
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Leads MLCC(Radial、 Axial)

◆ Quality Item & Reliability inspection

Item	Test Specifications		Test Methods																													
Solderability	Termination area shall be at least 75% covered with a new solder coating.		The lead wire of a capacitor shall be dipped into a 25% methanol solution of rosin and then into molten solder of 235°C for 2 ± 0.5seconds,in both cases the depth of dipping is up to about 2.5 to 3.0mm from the root of lead.																													
Resistance to soldering heat	There shall be no evidence of damage or flash over during the test and sign in focus.		The lead wire shall be immersed into the melted solder of 260°C ± 5°C.up to about 2.5 to 3.0mm from the main body for 5 ± 0.5sec and the specified items shall be measured after leaving for 24 ± 2hours																													
	T.C	$\Delta C/C <$																														
	CG/CH/RH	0.5% or 0.5Pf																														
	UJ/SL	1% or 1pF																														
	B	± 10%																														
	Y(F)/E	± 20%																														
Life test	Appearance	There shall be no evidence of damage or flash over during the test and sign in focus	<table border="1"> <thead> <tr> <th>Condition</th> <th>NPO</th> <th>X7R</th> <th>Y5V</th> <th>Z5U</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td colspan="2">+125°C</td> <td colspan="2">+85°C</td> </tr> <tr> <td>Time</td> <td colspan="4">T=1000h</td> </tr> <tr> <td>Voltage</td> <td colspan="4">V=1.5Vr</td> </tr> <tr> <td>Recovery time</td> <td colspan="4">24 ± 1h</td> </tr> </tbody> </table>					Condition	NPO	X7R	Y5V	Z5U	Temperature	+125°C		+85°C		Time	T=1000h				Voltage	V=1.5Vr				Recovery time	24 ± 1h			
	Condition	NPO	X7R	Y5V	Z5U																											
	Temperature	+125°C		+85°C																												
	Time	T=1000h																														
	Voltage	V=1.5Vr																														
Recovery time	24 ± 1h																															
Capacitance change	NPO:<2%;X7R<20%; Y5V:<30%																															
D.F	NPO:<0.3 X7R:<5% Y5V:<7%																															
I.R	R.C<258																															

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Leads MLCC(Radial, Axial)

◆ Size Code, Capacitance and Voltage

Diagram	Size code	shape	Dimensions(mm)				Voltage	Capacitance(PF)		
			P(±0.5)	Lmax	Wmax	Tmax		COG(NPO)	X7R	Y5V(Z5U)
<p>a</p>	0805	b	2.54	4.2	3.8	3.0	25V 50V 100V	OR5~103	101~105	103~475
		C1	5.08							
		C3	5.08	4.2	5.0	3.0				
<p>b</p>	1206	a	2.54	5.0	4.5	3.5	25V 50V 100V	OR5~104	101~225	103~106
		b	3.5							
		C1	5.08							
<p>C1</p>	1210	a	2.54	5.0	4.5	3.5	25V 50V 100V	OR5~104	101~106	103~106
		b	3.5							
		C1	5.08							
<p>C1</p>	1812	b	5.08	7.0	6.0	4.0	25V 50V 100V	OR5~104	101~106	103~106
		b	5.08							
		b	5.08							
<p>C3</p>	2225	b	5.5	10	9	4.5	25V 50V 100V	OR5~104	101~106	103~106
		b	5.5							
		b	5.5							
<p>C3</p>	3035	b	7.5	12	10	4.5	25V 50V 100V	OR5~104	101~106	103~106
		b	7.5							
		b	7.5							

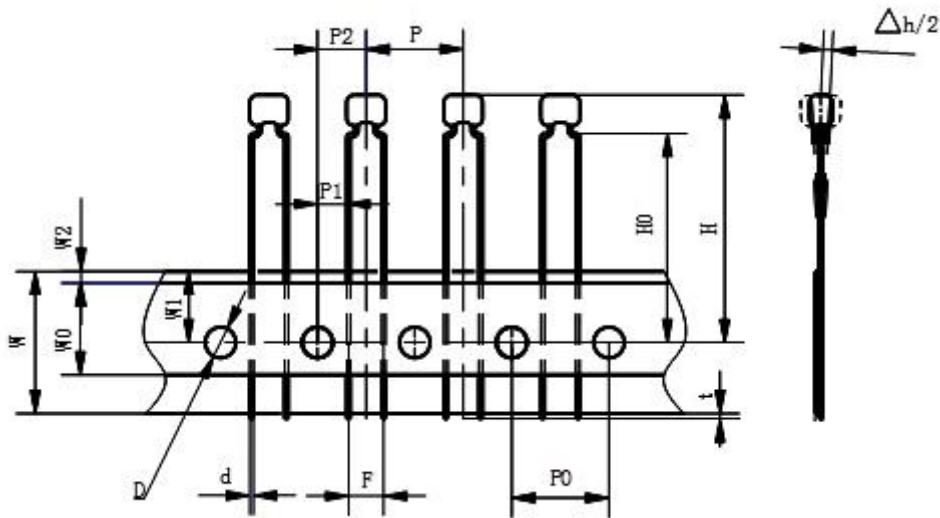
*Notice 1: Normal length of lead is 10.0mm(±1)& it can be adjusted between 3.0~25mm by customer request.

Notice 2: The diameter of lead is $\phi 0.5 \pm 0.05\text{mm}$

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Radial Leads MLCC

◆ Packaging Style

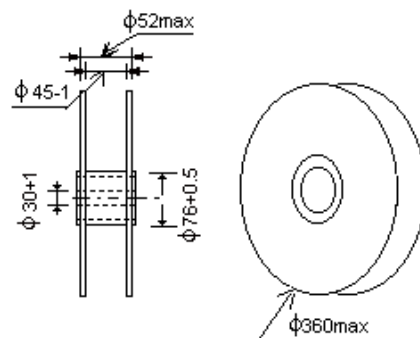
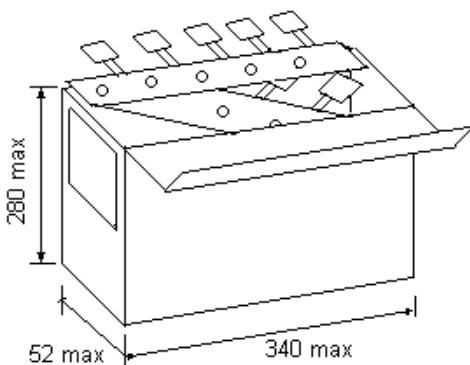


Note: P1=3.85mm for F=5.08mm P1=5.1mm for F=2.54mm

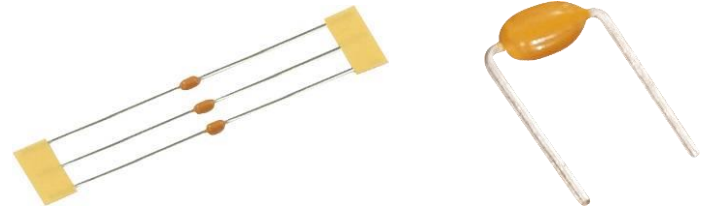
Code	P	P0	P1	P2	d	Δh	w	W0	W1	W2	H	H0	D	t
Dim	12.7	12.7	3.85 5.1	6.35	0.5	0	18.5	12	9	1.5	25	15~20	4.0	0.7
Tol	±0.2	±0.2	0.7	±1.3	±0.1	±2	±1	±1	±0.5	±1.5	Max	±0.5	±0.2	Max

* Ammo packaging

* Reel packaging



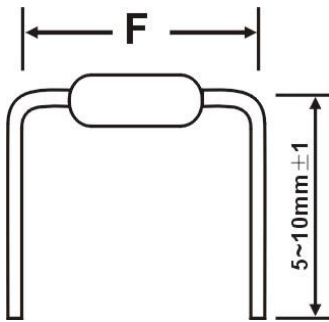
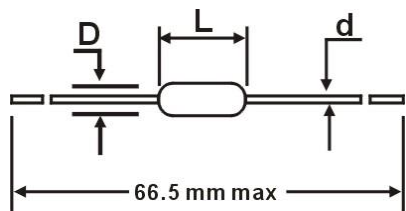
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Axial Laser MLCC

◆ Size Code、Capacitance and Voltage

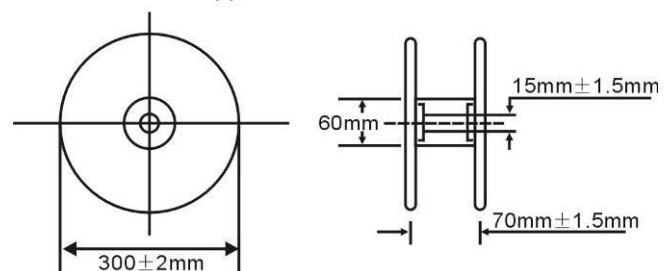
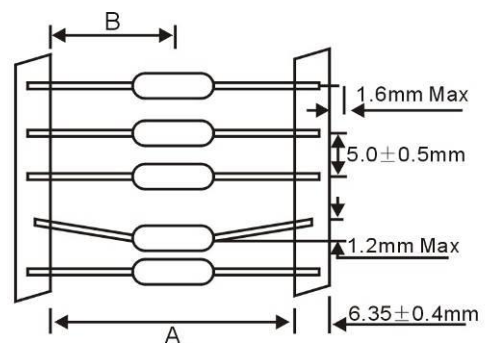
Size code	Dimensions(mm)				voltage e	Capacitance ranges			
	L max	D max	F (±0.6)			d (±0.05)	COG (NPO)	X7R	Y5V (Z5U)
15	3.8	2.5	5.08	10.0	0.45	25V	OR5~102	101~333	222~224
						50V	OR5~821	101~223	222~154
						100V	OR5~561	101~472	
16	5.08	2.5	5.08	10.0	0.45	25V	OR5~332	331~104	103~105
						50V	OR5~222	331~473	103~684
						100V	OR5~102	331~223	
17	4.30	2.5	5.08	10.0	0.45	25V	OR5~332	331~104	103~105
						50V	OR5~222	331~473	103~684
						100V	OR5~102	331~223	
19	7.50	3.0	7.50	10.0	0.45	25V	OR5~472	102~224	103~125
						50V	OR5~392	102~104	103~105
						100V	OR5~152	102~683	
20	5.10	3.0	7.50	10.0	0.45	25V	OR5~472	102~224	103~125
						50V	OR5~392	102~104	103~105
						100V	OR5~152	102~683	



◆ Packaging style

Tape and reel

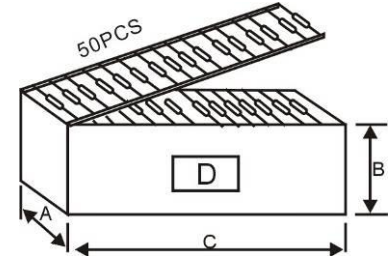
Tape style	A	B
Tape width:52.4mm	52.4±1.5mm	26.2±0.76mm



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Ammo package

Tape style	A	B	C	D
52.4mm	81(±5)mm	72(±5)mm	258(±5)mm	Lable

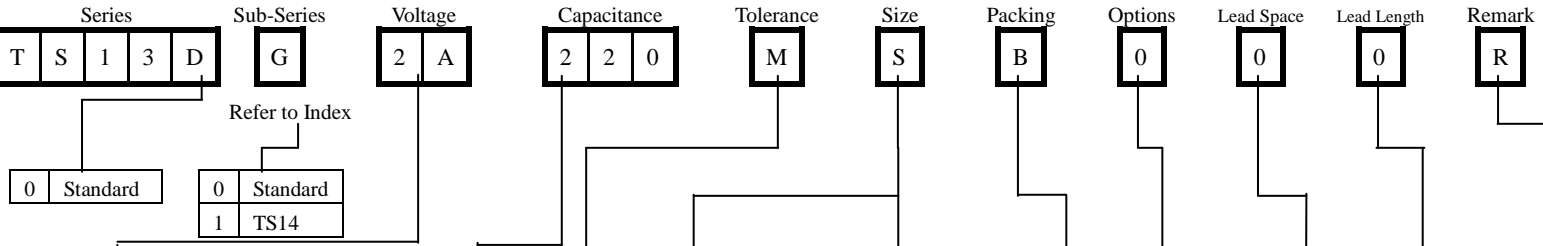


Packaging quantity

Size code	Tape and reel	Ammo package	Bulk package
15	5000	5000	1000(500)
16	5000	5000	1000(500)
17	5000	5000	1000(500)
19	2500(5000)	2500(5000)	500
20	2500(5000)	2500	500

*packaging according to the customer's requirement

PART NUMBER SYSTEM



Code	Voltage
0E	-2.5V
0G	-4V
0J	-6.3V
1A	-10V
1C	-16V
1D	-20V
1E	-25V
1V	-35V
1G	-40V
1H	-50V
1J	-63V
1M	-70V
1U	-75V
1K	-80V
2A	-100V
2B	-125V
2N	-150V
2C	-160V
2D	-200V
2E	-250V
2L	-300V
2F	-315V
2U	-330V
2V	-350V
2Z	-360V
2R	-370V
2G	-400V
2W	-450V
2H	-500V
2J	-630V
2I	-650V
2K	-800V
3A	-1,000V
3L	-1,200V
3B	-1,250V
3N	-1,500V
3C	-1,600V
3D	-2,000V
3E	-2,500V
3F	-3,000V
3G	-4,000V
3H	-5,000V
3I	-6,000V
3J	-6,300V
3U	-7,500V
3K	-8,000V
4A	-10,000V
4L	-12,000V
4C	-15,000V
4I	-18,000V
4D	-20,000V
4E	-25,000V
4F	-30,000V
5V	-35,000V
4G	-40,000V
4H	-50,000V
2Q	-125VAC
2T	-250VAC
2S	-275VAC
2X	-280VAC
22	-300VAC
I0	-305VAC
A9	-310VAC
L0	-330VAC
2Y	-400VAC
P0	-440VAC
Q0	-450VAC
V0	-630VAC

Code	Capacitance	
2R2	2.2pF	
100	10pF	
101	100pF	
102	1000pF	=0.001uF
223	22,000pF	=0.022uF
154	150,000pF	=0.15uF
105	1,000,000pF	=1uF
155	1,500,000pF	=1.5uF
106	10,000,000pF	=10uF
107	100,000,000pF	=100uF

Code	Capacity
104	0.1F
105	1F
106	10F
107	100F
108	1000F

Code	Capacitance
0R1	0.1uF
R47	0.47uF
010	1uF
2R2	2.2uF
220	22uF
102	1000uF
223	22000uF

Code	Tolerance
C	+/-0.25pF
D	+/-0.5pF
F	+/-1%
G	+/-2%
H	+/-2.5%
J	+/-5%
K	+/-10%
L	+/-15%
M	+/-20%
R	+20-0%
V	+20-10%
W	+30-0%
X	+30-10%
Z	+80-20%

Code	Size
A	Standard
B	Mini
8	refer TS08 spec

Code	Size
A/S	Standard
B	Mini

Code	Size
A	4x5.4
B	4x5.8
C	5x5.4
D	5x5.8
E	6.3x5.4
F	6.3x5.8
G	6.3x7.7
H	8x6.2
J	8x10.5
K	10x10.5
L	10x13.5
M	12.5x13.5
N	12.5x16
P	16x16.5
Q	16x21.5

Code	Size
A	5x7
B	5x8
C	5x10
D	6.3x7.4
E	6.3x9
F	6.3x12
G	8x8
H	8x9
J	8x10
K	8x12
L	10x12
M	10x12.5

Code	Size
S	Standard
M	Ministure

Code	Size
1	1210 size
2	1206 size
3	1808 size
4	0402 size
5	1812 size
6	0603 size
7	2220 size
8	0805 size
9	2225 size
A	2211 size
B	0201 size
C	3035 size
S	TS17R 0805 size

Code	Size
A	A case
B	B case
C	C case
D	D case
E	E case

Code	Size
1	DM5
2	DM10
3	DM15
4	DM19
5	DM20
6	DM30
7	DM42

Code	Size
6	Dia6mm
A	Dia6.5mm
7	Dia7mm
9	Dia9mm
4	Dia4mm
5	Dia5mm
F	Dia13mm
L	Dia18mm

Code	Packing
A	Ammo Tape in Box
B	Bulk
T	Tape & reel

Code	Material
0	Standard

Code	Material
N	NPO
S	SL
B	X7R
E	Z5U
F	Y5V
U	Y5U
P	Y5P
V	Z5V
X	X5R
T	Y5T
D	N4700
L	DL

Code	Terminal Options
R	Radial
S	Snap-in
G	Screw

Code	Lead Space
0	Standard
1	1.5mm
3	2mm
4	3.5mm
5	6.3mm
6	12.5mm
7	17.5mm
8	18.5mm
9	31.5mm
A	2.54mm
B	5.08mm
C	7.5mm
D	10mm
E	15mm
F	20mm
G	22.5mm
H	25mm
I	27.5mm
J	32.5mm
K	35mm
L	37mm
M	26mm
N	8mm
O	11.5mm
P	31mm
Q	4mm
R	4.5mm
S	41mm
T	14mm
U	9.5mm
V	51.5mm

Code	Lead Length
0	Standard
2	12mm
3	16mm
4	20mm
5	18.5mm
6	15mm
K	26mm
L	25mm
F	27mm
Z	28mm
G	30mm
H	31mm
J	35mm
X	45mm
M	10mm
N	50mm
P	8mm
R	6mm
S	5mm
T	4mm
B	2mm
U	13.5mm
V	3.5mm
W	4.5mm
Y	70mm

Code	Remark
F	Lead Free
R	RoHS

Code	Voltage
27	2.7V
30	3.0V