



Schedule of Scope to Certificate of Conformity Approved Component

IECQ Certificate No.: IECQ-C ULTW 16.0001

CB Certificate No.: 20002429AQP

Schedule Number: IECQ-C ULTW 16.0001-S

Rev No.: 1 Revision Date: 2016-01-04

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Approval Scope

Map Range and Thickness Code --- 50~100V

Dielectric & Series		X7R – Soft termination					
Cap. (pF)	EIA Size	0603	0805	1206	1210	1808	1812
	Rated Voltage Cap. Thick. rule code code	50~100V					
100	101						
150	151						
180	181						
220	221	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	
270	271	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
330	331	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
390	391	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
470	471	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
560	561	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
680	681	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
820	821	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
1000	102	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
1200	122	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
1500	152	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
1800	182	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
2200	222	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
2700	272	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
3300	332	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
3900	392	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
4700	472	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
5600	562	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
6800	682	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
8200	822	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
10000	103	SXB	XBMJC	XBMJCIDEP	MJCIDEPFG	CIDEPF	CIDEPFGH
12000	123	B	XBMJC	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
15000	153	B	XBMJC	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
18000	183	B	XBMJC	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
22000	223	B	XBMJC	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
27000	273	B	MJC	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH

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Cap. (pF)	EIA Size	0603	0805	1206	1210	1808	1812
	Rated Voltage Cap. Thick. rule code code	50~100V					
33000	333	B	MJC	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
39000	393		MJC	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
47000	473		MJC	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
56000	563		MJC	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
68000	683		MJC	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
82000	823		MJC	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
100000	104		C	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
120000	124		C	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
150000	154		C	XBMJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
180000	184		C	MJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
220000	224			MJCIDEP	MJCIDEPFG	EPF	CIDEPFGH
270000	274			CIDEP	MJCIDEPFG		CIDEPFGH
330000	334			EP	MJCIDEPFG		CIDEPFGH
390000	394			EP	CIDEPFG		CIDEPFGH
470000	474			EP	CIDEPFG		CIDEPFGH
560000	564			P	EPFG		CIDEPFGH
680000	684			P	EPFG		CIDEPFGH
820000	824				PFG		CIDEPFGH
1000000	105				PFG		CIDEPFGH
1200000	125				FG		CIDEPFGH
1500000	155						CIDEPFGH
1800000	185						EPFGH

Table 1 Sample Part Number

No.	Size	Cap. Range	Thickness Code & Range	
1	0603	220pF~33nF	S, X, B	0.70~0.95mm
2	0805	220pF~180nF	X, B, M, J, C	0.70~1.35mm
3	1206	220pF~680nF	X, B, M, J, C, I, D, E, P	0.70~1.90mm
4	1210	220pF~1.2μF	M, J, C, I, D, E, P, F, G	0.85~2.80mm
5	1808	220pF~220nF	C, I, D, E, P, F	1.15~2.20mm
6	1812	270pF~1.8μF	C, I, D, E, P, F, G, H	1.15~3.10mm

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P/N Explanation:

MT	18	X	221	J	500	X	S	E
<i>Remark 1</i>	<i>Remark 2</i>	<i>Remark 3</i>	<i>Remark 4</i>	<i>Remark 5</i>	<i>Remark 6</i>	<i>Remark 7</i>	<i>Remark 8</i>	<i>Remark 9</i>

Remark 1	PDC family
Code	Description
MT	AEC-Q200 --- Automotive safe concern

Remark 2	EIA size		
Code	Description	Code	Description
18	0603 (1608)	32	1210 (3225)
21	0805 (2012)	42	1808 (4520)
31	1206 (3216)	43	1812 (4532)

Remark 3	Dielectric Material Characteristics
Code	Description
X	X7R

Remark 4	Capacitance Rule Code				
Code	Description	Code	Description	Code	Description
221	221=22x10¹=220pF	184	184=18x10⁴=180nF	125	125=12x10⁵=1.2μF
271	271=27x10¹=270pF	224	224=22x10⁴=220nF	185	185=18x10⁵=1.8μF
333	333=33x10³=33nF	684	684=68x10⁴=680nF	---	---

Remark 5	Tolerance				
Code	Description	Code	Description	Code	Description
J	±5%	I	-10%~0%	N	-5%~+10%
K	±10%	L	0%~+10%	M	±20%

Remark 6	Rated voltage		
Code	Description	Code	Description
500	50VDC	101	100VDC

Remark 7	Packaging Type			
Code	Description	Code	Description	
X	Bulk	B	Tray package	
P	Tape and 7" Reel, Embossed Tape	T	Tape and 7" Reel, Paper Tape	
K	Tape and 10" Reel, Embossed Tape	Q	Tape and 10" Reel, Paper Tape	
L	Tape and 13" Reel, Embossed Tape	G	Tape and 13" Reel, Paper Tape	

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Remark 8		Thickness Description			
Code	Description	Code	Description	Code	Description
S	0.80±0.07 mm	C	1.25±0.10 mm	F	2.00±0.20 mm
X	0.80±0.10 mm	I	1.25±0.20 mm	G	2.50±0.30 mm
B	0.8 +0.15/-0.10mm	D	1.40±0.15 mm	H	2.80±0.30 mm
M	0.95±0.10 mm	E	1.60±0.20 mm	---	---
J	1.15±0.15 mm	P	1.60 +0.3/-0.10mm	---	---

Remark 9		Series - Special Control Code
Code	Description	
E	Soft Termination [Anti-Bend termination base with Ni barrier (100% Tin plating)]	

Outline Drawing and Dimension

Outline Drawing	Size	Dimension			
		L (mm)	W (mm)	T (mm)	MB (mm)
	0603	1.60±0.20	0.80±0.20	0.95 max.	0.20 min.
	0805	2.10±0.20	1.25±0.20	1.35 max.	0.30 min.
	1206	3.30±0.30	1.60 +0.30/-0.10	1.90 max.	0.30 min.
	1210	3.30±0.40	2.50±0.30	2.80 max.	0.30 min.
	1808	4.60±0.50	2.00±0.25	2.20 max.	0.30 min.
	1812	4.60±0.50	3.20±0.40	3.10 max.	0.30 min.

Electrical Characteristics

<i>Dielectric</i>	X7R
Size	0603, 0805, 1206, 1210, 1808, 1812
Capacitance range	220pF to 1.8µF
Capacitance tolerance**	J, K, I, L, N, M
Dissipation Factor	≤2.5%
Rated voltage (WVDC)	50V, 100V
Insulation resistance at Ur	≥10GΩ or RxC≥500ΩxF whichever is smaller
Operating temperature	-55 to +125°C
Temperature Characteristic of Capacitance	±15%

** Preconditioning for MLCC : Perform a heat treatment at 150±10°C for 1hour, then leave in ambient condition for 24±4hours before measurement.

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Standards and Specifications

AEC-Q200 Rev.D, Stress Test Qualification for Passive Components

MIL-STD-105E, Sampling Procedure and Tables for Inspection by Attributes

MIL-STD-202G, Test Method Standard, Electronic and Electrical Component Part

MIL-STD-883, Test Method Standard, Microcircuits

EIA-469, Standard Test Method for Destructive Physical Analysis (Dpa) of Ceramic Monolithic CAPA

JESD22-A104E, Temperature Cycling

JESD22-B100B, Physical Dimension

J-STD-020D, Moisture/Reflow Sensitivity Classification for Nonhermetic Solid State Surface Mount Devices

J-STD-002, Solderability Tests for Component Leads, Terminations, Lugs, Terminals and Wires

IEC 60384-22, Sectional specification: Fixed surface mount multilayer capacitors of ceramic dielectric, Class 2

EIA-198, Ceramic Dielectric Capacitors Classes I, II, III and IV

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