Multilayer Ceramic Capacitors for Automotive Powertrain/Safety (AEC-Q200 Qualified)

REFLOW
AEC-Q200

■PART NUMBER

M	A	A	S	J	3	1	L	A	B	7	1	0	6	K	T	N	A	0	1
①				②	③		④	⑤	⑥		⑦			⑧	⑨	⑩			

①Series

Code (1)(2)(3)(4)	
MAAS	Multilayer Ceramic Capacitor (High dielectric type) for Automotive Powertrain/Safety (AEC-Q200 Qualified) Multilayer Ceramic Capacitor (Temperature compensating type) for Automotive Powertrain/Safety (AEC-Q200 Qualified)
MAJC	Soft Termination Multilayer Ceramic Capacitors for Automotive Powertrain/Safety (AEC-Q200 Qualified)

(1) Product Group

Code	
M	Multilayer Ceramic Capacitor

(2) Category

Code	Recommended equipment
A	for Automotive Powertrain/Safety (AEC-Q200 Qualified)

(3) Type

Code	
A	Two terminals
J	Soft Termination

(4) Features, Characteristics

Code	
S	Standard/General
C	Crack prevention

②Rated voltage

Code	Rated voltage[VDC]
P	2.5
A	4
J	6.3
L	10
E	16
T	25
G	35
U	50
H	100
Q	250
S	630
V	1000

④Thickness

Code	Thickness[mm]
3	0.3
5	0.5
8	0.8
9	0.85
Q	1.15
G	1.25
L	1.6
N	1.9
M	2.5

③Dimension(L×W)

Code	L×W [mm]	JIS(mm)	EIA(inch)
06	0.6 × 0.3	0603	0201
10	1.0 × 0.5	1005	0402
16	1.6 × 0.8	1608	0603
21	2.0 × 1.25	2012	0805
31	3.2 × 1.6	3216	1206
32	3.2 × 2.5	3225	1210

⑤Dimension tolerance

Code	Dimension code	L[mm]	W[mm]	T[mm]	Thickness code
A	10	1.0±0.10	0.5±0.10	0.5±0.10	5
	16	1.6+0.15/−0.05	0.8+0.15/−0.05	0.8+0.15/−0.05	8
	21	2.0+0.15/−0.05	1.25+0.15/−0.05	1.25+0.15/−0.05	G
	31	3.2±0.20	1.6±0.20	1.6±0.20	L
	32	3.2±0.30	2.5±0.30	1.9±0.30	N
				2.5±0.30	M
B	10	1.0+0.15/−0.05	0.5+0.15/−0.05	0.5+0.15/−0.05	5
	16	1.6+0.20/−0	0.8+0.20/−0	0.8+0.20/−0	8
	21	2.0+0.20/−0	1.25+0.20/−0	1.25+0.20/−0	G
	31	3.2±0.30	1.6±0.30	1.6±0.30	L
C	10	1.0+0.20/−0	0.5+0.20/−0	0.5+0.20/−0	5
	21	2.0+0.25/−0	1.25+0.25/−0	1.25+0.25/−0	G
D	21	2.0+0.30/−0	1.25+0.30/−0	1.25+0.30/−0	G
E	10	1.0+0.30/−0	0.5+0.30/−0	0.5+0.30/−0	5
H	31	3.2±0.15	1.6±0.15	0.85±0.10	9
				1.15±0.10	Q
L	32	3.2±0.50	2.5±0.30	2.5±0.30	M
M	32	3.2±0.35	2.5±0.30	2.5±0.30	M
S	06	0.6±0.03	0.3±0.03	0.3±0.03	3
	10	1.0±0.05	0.5±0.05	0.5±0.05	5
	16	1.6±0.10	0.8±0.10	0.8±0.10	8
	21	2.0±0.10	1.25±0.10	1.25±0.10	G
	31	3.2±0.15	1.6±0.15	1.6±0.20	L
	32	3.2±0.30	2.5±0.20	1.9±0.20	N
				2.5±0.20	M

⑥Temperature characteristics code

■High dielectric type

Code	Applicable standard		Temperature range[℃]	Ref. Temp.[℃]	Capacitance change	Capacitance tolerance	Tolerance code
B7	EIA	X7R	−55～+125	25	±15%	±10%	K
						±20%	M
C7	EIA	X7S	−55～+125	25	±22%	±10%	K
						±20%	M
D7	EIA	X7T	−55～+125	25	+22%/−33%	±10%	K
						±20%	M
L8	EIA	X7R	−55～+125	25	±15%	±10%	K
						±20%	M
		X8L	−55～+150	25	+15%/−40%	±10%	K
						±20%	M

■Temperature compensating type

Code	Applicable standard		Temperature range[℃]	Ref. Temp.[℃]	Capacitance change	Capacitance tolerance	Tolerance code
CG	JIS	CG	−55～+125	20	0±30ppm/℃	±5%	J
	EIA	C0G		25			

⑦Nominal capacitance

Code (example)	Nominal capacitance
101	100pF
102	1,000pF
103	0.01μF
104	0.1μF
105	1μF
106	10μF
107	100μF

⑧Capacitance tolerance

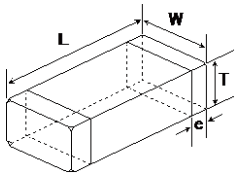
Code	Capacitance tolerance
J	±5%
K	±10%
M	±20%

⑨Packaging

Code	Packaging
F	φ178mm Taping (2mm pitch)
T	φ178mm Taping (4mm pitch)
P	φ178mm Taping (4mm pitch) 3225 type(Thickness code M)

⑩Internal code

■STANDARD EXTERNAL DIMENSIONS



Type	JIS (mm)	EIA (inch)	Dimension [mm] (inch)				
			L	W	T	*1	e
MAAS□06	0603	0201	0.6±0.03 (0.024±0.001)	0.3±0.03 (0.012±0.001)	0.3±0.03 (0.012±0.001)	3	0.15±0.05 (0.006±0.002)
MAAS□10	1005	0402	1.0±0.05 (0.039±0.002)	0.5±0.05 (0.020±0.002)	0.5±0.05 (0.020±0.002)	5	0.25±0.10 (0.010±0.004)
MAJC□10	1005	0402	1.0±0.05 (0.039±0.002)	0.5±0.05 (0.020±0.002)	0.5±0.05 (0.020±0.002)	5	0.25+0.15/−0.10 (0.010+0.006/−0.004)
MAAS□16	1608	0603	1.6±0.10 (0.063±0.004)	0.8±0.10 (0.031±0.004)	0.8±0.10 (0.031±0.004)	8	0.35±0.25 (0.014±0.010)
MAJC□16	1608	0603	1.6±0.10 (0.063±0.004)	0.8±0.10 (0.031±0.004)	0.8±0.10 (0.031±0.004)	8	0.35+0.3/−0.25 (0.014+0.012/−0.010)
MAAS□21	2012	0805	2.0±0.10 (0.079±0.004)	1.25±0.10 (0.049±0.004)	1.25±0.10 (0.049±0.004)	G	0.5±0.25 (0.020±0.010)
MAJC□21	2012	0805	2.0±0.10 (0.079±0.004)	1.25±0.10 (0.049±0.004)	1.25±0.10 (0.049±0.004)	G	0.5+0.35/−0.25 (0.020+0.014/−0.010)
MAAS□31	3216	1206	3.2±0.15 (0.126±0.006)	1.6±0.15 (0.063±0.006)	0.85±0.10 (0.033±0.004)	9	0.5+0.35/−0.25 (0.020+0.014/−0.010)
					1.15±0.10 (0.045±0.004)	Q	
					1.6±0.20 (0.063±0.008)	L	
MAJC□31	3216	1206	3.2±0.15 (0.126±0.006)	1.6±0.15 (0.063±0.006)	1.6±0.20 (0.063±0.008)	L	0.6+0.4/−0.3 (0.024+0.016/−0.012)
MAAS□32	3225	1210	3.2±0.30 (0.126±0.012)	2.5±0.20 (0.098±0.008)	1.9±0.20 (0.075±0.008)	N	0.6±0.3 (0.024±0.012)
					2.5±0.20 (0.098±0.008)	M	
MAJC□32	3225	1210	3.2±0.30 (0.126±0.012)	2.5±0.20 (0.098±0.008)	1.9±0.20 (0.075±0.008)	N	0.6+0.4/−0.3 (0.024+0.016/−0.012)
					2.5±0.20 (0.098±0.008)	M	

*1.Thickness code

■STANDARD QUANTITY

Type			Thickness		Standard quantity[pcs]	
Code	JIS(mm)	EIA(inch)	[mm]	Code	Paper tape	Embossed tape
06	0603	0201	0.3	3	15000	—
10	1005	0402	0.5	5	10000	—
16	1608	0603	0.8	8	4000	—
					3000 (Soft Termination)	—
21	2012	0805	1.25	G	—	3000
						2000 (Soft Termination)
31	3216	1206	0.85	9	4000	—
			1.15	Q	—	3000
			1.6	L	—	2000
32	3225	1210	1.9	N	—	2000
			2.5	M	—	1000