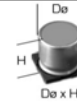


## Characterization of Vibration Withstanding Characteristics of Surface Mount (SMT) Aluminum Electrolytic Capacitors

Case Sizes (D $\phi$ x H): 8x10.5, 8x10.8, 10x10.5, 10x10.8, 10x12.8, 12.5x14, 16x17, 18x17.5 & 18x22						
Test method	JIS C 5102 *	AEC Q 200 **	Vibration-Proof Test ***			
Peak acceleration	1.5mm max.	5G max. or 1.5mm max. whichever is smaller	10G	20G	30G	
Total amplitudes			1.5mm max.	1.5mm max.	5mm max.	
Frequency	10 to 55 Hz (1 min.)	10 to 2,000 Hz (20 min.)	5 to 2,000 Hz (20 min.)			
Direction / Duration of vibration	2 hrs each for X,Y,Z, Total 6 hrs	4 hrs each for X,Y,Z, Total 12 hrs	2 hrs each for X,Y,Z, Total 6 hrs			
Two Terminal (T2)	○	- - -	X	X	X	
T2 with YF Suffix Part Number	○	○	X	X	X	
Wide Terminal (WT)	○	○	○	○	○	



\* - See Attachment "C"

\*\* - See Attachment "B"

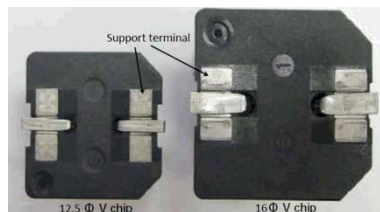
\*\*\* - Internally developed test, see Attachment "A" - ( Note: 18x22WT size under development to meet 30G test)

### Two Terminals (T2)

#### T2 with YF Suffix Part Number



### Wide Terminal (WT)



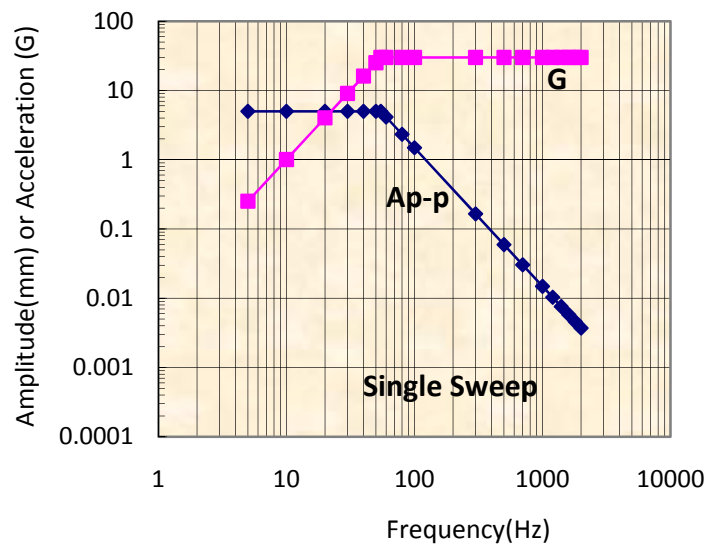
Prepared by TPMG / [tpmg@niccomp.com](mailto:tpmg@niccomp.com)

## Attachment "A" - Vibration Test & Profile

<b>30G Test (Internally determined method)</b>	
Number of test sample	n=20
Frequency	5 to 2,000 Hz (20 minute per sweep)
Total amplitudes	5mm max.
Peak acceleration	30G
Direction and Duration of Vibration	X, Y, Z axis direction for 2 hrs each, with a total of 6 hrs
Thickness of solder paste	0.20±0.03mm

Frequency	Acceleration Max.30G	Amplitude (p-p) Max. 5mm
5	0.25	5
10	1.01	5
20	4.03	5
30	9.06	5
40	16.11	5
50	25.18	5
54.58	30.02	5.00
60	30	4.14
80	30	2.33
100	30	1.49
300	30	0.165
500	30	0.060
700	30	0.030
1000	30	0.015
1200	30	0.010
1400	30	0.0076
1600	30	0.0058
1800	30	0.0046
2000	30	0.0037

Acceleration G & Ap-p vs Frequency  
30G Test

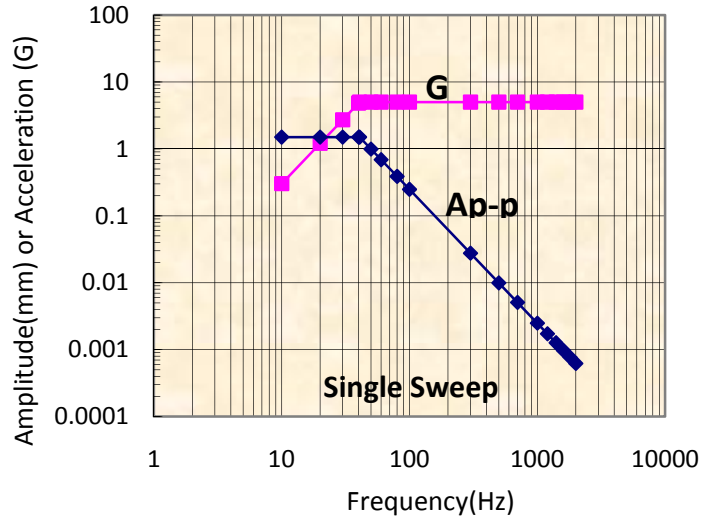


Attachment "B" - Vibration Test & Profile

AEC Q200 Ver. C / 5 G Test	
Number of test sample	n=30
Frequency	10 to 2,000 Hz (20 minute per sweep)
Total Amplitude Peak acceleration	1.5mm max. or Acceleration 5G max. whichever smaller
Direction and Duration of Vibration	X, Y, Z axis direction for 4 hrs each, with a total of 12 hrs
Thickness of solder paste	0.20±0.03mm

Frequency	Acceleration Max. 5G	Amplitude (p-p) max. 1.5mm
10	0.30	1.5
20	1.21	1.5
30	2.72	1.5
40	4.83	1.5
40.68	5.00	1.5
50	5	0.993
60	5	0.690
80	5	0.388
100	5	0.248
300	5	0.0276
500	5	0.0099
700	5	0.0051
1000	5	0.0025
1200	5	0.0017
1400	5	0.0013
1600	5	0.0010
1800	5	0.0008
2000	5	0.0006

Acceleration G & Ap-p vs. Frequency  
AEC-Q200 5G Test



## Attachment "C" - Vibration Test & Profile

<b>JIS C5102 8.2</b>	
Number of test sample	n=10
Frequency	10 to 55 Hz (1 minute per sweep)
Total Amplitude Peak acceleration	1.5mm max / See Acceleration (G) table below
Direction and Duration of Vibration	X, Y, Z axis direction for 2 hrs each, with a total of 6 hrs
Thickness of solder paste	0.20±0.03mm

Frequency	Acceleration (G)	Amplitude (p-p) max. 1.5mm
10	0.30	1.5
15	0.68	1.5
20	1.21	1.5
25	1.89	1.5
30	2.72	1.5
35	3.70	1.5
40	4.83	1.5
40.68	5.00	1.500
45	6.12	1.226
50	7.55	0.993
55	9.14	0.821

