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RE: Surge Voltage Test for Aluminum Electrolytic Capacitors

Surge Voltage Test Conditions:

Surge voltage VDC applied, 1000 cycles, 30 seconds ON, 5.5 minutes OFF, +15°C ~ +35°C

<Condition>

Capacitors shall be applied the surge voltage through a $(100 \pm 50) / C_R$ [kΩ] resistor in series for 30±5 seconds in every 6±0.5 minutes at 15 to 35°C. Procedure shall be repeated 1000 times. Then the capacitors shall be left under normal humidity for 1 to 2 hours before measurement. [C_R: Nominal Capacitance (μF)]

<Criteria>

Leakage Current	Not more than the specified value
Capacitance Change	Within ±15% of the initial value
Dissipation Factor	Not more than the specified value
Appearance	Notable changes shall not be found

◇ This test simulates overvoltage at abnormal situations, and not be hypothesizing that overvoltage is always applied.

Series Resistance

Capacitance Value	10uF	47uF	100uF	330uF	1000uF	2200uF
Series Resistance Value	5KΩ ~ 15KΩ	1.06KΩ ~ 3.19KΩ	0.5KΩ ~ 1.5KΩ	150Ω ~ 455Ω	50Ω ~ 150Ω	22.7Ω ~ 68.2Ω

Surge Voltage (SV) Test Levels:

Unless identified in individual product specification, the following are the typical surge voltage test levels for liquid electrolyte and hybrid construction aluminum electrolytic capacitors

Liquid Electrolyte Construction

WV	6.3VDC	10VDC	16VDC	25VDC	35VDC	50VDC	63VDC	80VDC	100VDC	160VDC	200VDC	400VDC
SV	8.2VDC	13VDC	20VDC	32VDC	44VDC	63VDC	79VDC	100VDC	125VDC	200VDC	250VDC	450VDC

Hybrid (liquid – polymer) Construction ... Note: Same SV test levels as liquid electrolyte construction

WV	6.3VDC	10VDC	16VDC	25VDC	35VDC	40VDC	50VDC	63VDC	80VDC	100VDC	125VDC
SV	8.2VDC	13VDC	20VDC	32VDC	44VDC	50VDC	63VDC	79VDC	100VDC	125VDC	157VDC

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