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Electrolytic (Aluminum & Tantalum) Capacitors - Voltage Derating Guideline

(updated 15AUG2016)

1.) Liquid Electrolyte Construction & Hybrid Construction Aluminum Electrolytic Capacitors

NIC Series: *NA_*, *NR_*, *NL_*, *NN_*, *NSR_*, *NSPE_* and *NST_* series

Voltage Derating: **NO** voltage derating

➔ The sum of DC voltage and peak value of ripple voltage shall not exceed the rated working voltage of the capacitor or result in reverse bias operation

VOLTAGE DE-RATING:

- Voltage de-rating is **not required** for this product
- Liquid electrolyte construction and hybrid construction aluminum electrolytic capacitors can safely be used, to rated voltage, over listed operating temperature range

2.) Solid Polymer Aluminum Electrolytic Capacitors

NIC Series: *NPC* & *NSP* series

Voltage Derating: **NO** voltage derating

➔ The sum of DC voltage and peak value of ripple voltage shall not exceed the rated working voltage of the capacitor or result in reverse bias operation

VOLTAGE DE-RATING:

- Voltage de-rating is **not required** for this product
- Solid polymer aluminum electrolytic capacitors can safely be used, to rated voltage, over listed operating temperature range

NIC Series	Operating temperature range
<i>NPC, NSP, NSPL, NSPX</i>	-55°C ~ +105°C

3. Polymer Cathode Tantalum Electrolytic Capacitors

NIC Series: *See below tables*

Voltage Derating: Suggested the operating voltage (VDC) be derated to 80% ~ 90% of rated voltage *based upon product series and voltage ratings (see below tables)*

NTP Series/ * recommended derating is 80% of the rated voltage

Rated Voltage @ +85°C	2.5VDC	4VDC	6.3VDC	10VDC	16VDC	20VDC	25VDC
Derated Voltage <i>Suggested maximum operating voltage</i>	2VDC	3.2VDC	5VDC	8VDC	12.8VDC	16VDC	20VDC

**NTPF Series / * Parts with rated voltage 10VDC recommended derating is 80% of the rated voltage.
For parts with rated voltage <10VDC recommended derating is 90% of the rated voltage**

Rated Voltage @ +105°C	4VDC	6.3VDC	10VDC
Derated Voltage <i>Suggested maximum operating voltage</i>	3.6VDC	5.67VDC	8VDC

**NTPG Series / * Parts with rated voltage ≤8VDC recommended derating is 90% of the rated voltage.
For parts with rated voltage >8VDC recommended derating is 80% of the rated voltage.**

Rated Voltage @ +85°C	2.5VDC	4VDC	6.3VDC	8VDC	10VDC	12.5VDC
Derated Voltage <i>Suggested maximum operating voltage</i>	2.25VDC	3.6VDC	5.67VDC	7.2VDC	8VDC	10VDC

2. Polymer Cathode Tantalum Electrolytic Capacitors (continued)

NTPH Series / * Recommended derating is 90% of the rated voltage

Rated Voltage @ +105°C	16VDC	20VDC	25VDC	35VDC
Derated Voltage <i>Suggested maximum operating voltage</i>	14.4VDC	18VDC	22.5VDC	31.5VDC

**NTPL Series / * Parts with rated voltage ≤8VDC recommended derating is 90% of the rated voltage.
For parts with rated voltage >8VDC recommended derating is 80% of the rated voltage.**

Rated Voltage @ +85°C	2.5VDC	4VDC	6.3VDC	10VDC
Derated Voltage <i>Suggested maximum operating voltage</i>	2.25VDC	3.6VDC	5.67VDC	8VDC

**NTPS Series / * Parts with rated voltage ≤8VDC recommended derating is 90% of the rated voltage.
For parts with rated voltage 10VDC recommended derating is 80% of the rated voltage.**

Rated Voltage @ +85°C	2VDC	2.5VDC	4VDC	6.3VDC	8VDC	10VDC
Derated Voltage <i>Suggested maximum operating voltage</i>	1.8VDC	2.25VDC	3.6VDC	5.67VDC	7.2VDC	8VDC

➔ The sum of DC voltage and peak value of ripple voltage shall not exceed the rated working voltage of the capacitor or result in reverse bias operation

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