

Fig. 25 - Constant Current (CC) with V-Limit Charging Method at RT
Typical Charge / Discharge Characteristics at RT: 90 F / 5.6 V

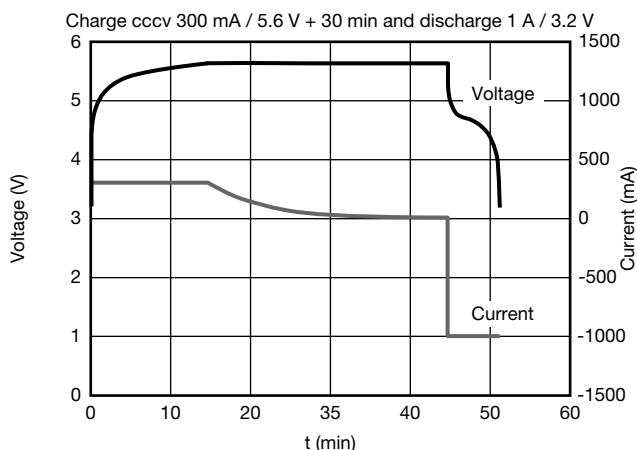


Fig. 26 - Constant Current (CC)-Constant Voltage (CV)
Charging Method at RT
Typical Charge / Discharge Characteristics at RT: 90 F / 5.6 V

Note

- Charge and discharge cycles at room temperature (RT) - maximal 50 000 cycles at room temperature allowed!

CHARGING VOLTAGE AT DIFFERENT TEMPERATURES				
OPERATING TEMPERATURE RANGE	0 °C UP TO +45 °C		+45 °C UP TO +60 °C	+60 °C UP TO +70 °C / +85 °C
Charge voltage	1 cell	$U_R + 0.03 \text{ V}$	U_R	$U_R - n^{(1)} \times 0.0015 \times (T[^\circ\text{C}] - 45)$
	2 cells	$U_R + 0.06 \text{ V}$		
	3 cells	$U_R + 0.09 \text{ V}$		
	> 4 cells	$U_R + 0.10 \text{ V}$		

Notes

- Capacitor is polarized, product will be damaged if reverse charged
- Voltages higher than specified need to be avoided; otherwise reduction of life time, internal gas generation or damage of HVC hybrid capacitor will occur
- For other operating temperatures, a temperature derating factor has to be considered for correct charging voltage
- Surge voltage is only allowed a few seconds per day, but not as a charging process

⁽¹⁾ n... number of cells

DERATING

Working voltage at temperatures above 60 °C should be below rated voltage U_R . A derating-factor of -1.5 mV/°C per cell is recommended.

PRODUCT AND MOUNTING CHARACTERISTICS

Attention: parts are pre-charged at delivery - handle appropriate.

At delivery products are pre-charged and voltage over terminals is near nominal voltage. Short circuiting of product terminals is permitted. Do not short circuit permanently. Short circuiting of charged cells may heat up the cells.

For printed circuit board mounting it has to be taken into account, that for certain form factors top and bottom of products may not be insulated.

Capacitor disposal methods should be in accordance with local and state regulations.