

TYPE TPLH RADIAL GENERAL PURPOSE RADIAL LEAD ULTRACAPACITOR

CELLS

# FEATURES

- Small size and low resistance
- Quick charge and discharge
- RoHS compliant
- Sealed for improved performance in elevated humidity environments
- UL Recognized

### **APPLICATIONS**

- Pulse power demand
- Hybrid battery packs
- Portable electronic devices

# **GENERAL SPECIFICATIONS**

| Item   | Performance  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
| Operating temperature  | -40°C to +65°C @ 2.7V<br>-40°C to +85°C @ 2.3V   |  |  |  |  |  |  |  |  |
| Storage temperature  | -40°C to +70°C   |  |  |  |  |  |  |  |  |
| Capacitance  | 30F  |  |  |  |  |  |  |  |  |
| Rated voltage  | 2.7 VDC / 2.3 VDC  |  |  |  |  |  |  |  |  |
| Surge voltage  | 2.85 VDC   |  |  |  |  |  |  |  |  |
| Temperature characteristics  | Capacitance change: Within ±5% of initial measured value at +25°C (-40°C to +65°C)<br>Internal resistance: Within ±50% of initial measured value at +25°C (at -40°C) |  |  |  |  |  |  |  |  |
| Endurance<br>(At rated voltage & max. operating<br>temp)                     | After 1000 hours:<br>Capacitance change: ±30% of initial rated value<br>Internal resistance: Within 2 times of initial specified value                               |  |  |  |  |  |  |  |  |
| Projected Load life<br>(At rated voltage & 25°C)                             | After 10 years:<br>Capacitance change: Within ±30 % of initial rated value<br>Internal resistance: Within 2 times of initial specified value                         |  |  |  |  |  |  |  |  |
| Projected cycle life<br>(From rated voltage to 1/2 rated<br>voltage at 25°C) | After 500,000 cycles:<br>Capacitance change: Within ±30 % of initial rated value<br>Internal resistance: Within 2 times of initial specified value                   |  |  |  |  |  |  |  |  |
| Shelf life   | After 2 years at 25°C without load, the capacitor shall meet the specified endurance limits.   |  |  |  |  |  |  |  |  |
| Biased humidity life   | 3000 hours of continuous charging at VR, 60°C and 90%RH for mechanical integrity   |  |  |  |  |  |  |  |  |



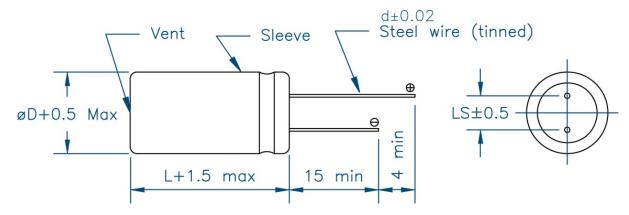
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## DIMENSIONS



### **STANDARD PRODUCTS**

| Nom.<br>Cap.<br>(F) GMV<br>(F)* | -           | ESR DC           | ESR AC<br>Max.                | Leakage<br>Current   | Dimensions (mm)   |   |   |  | Rated  | Weight/Unit  |
|---------------------------------|-------------|------------------|-------------------------------|--|---|---|---|--|--|--|
|                                 | (mΩ)        | (mΩ)<br>(1 KHz)  | (11A)<br>(72 hrs @<br>25C)    | D  | L   | d   | LS  | (A)  | (grams)  |  |
| 30                              | 27          | 26               | 23                            | 0.13   | 16  | 26  | 0.8   | 7.5  | 19.76  | 8.5  |
|                                 | Cap.<br>(F) | Cap.<br>(F) (F)* | Cap. (F)* Typical<br>(F) (mΩ) | Nom.<br>Cap.<br>(F)GMV<br>(F)*ESR DC<br>Typical<br>(mΩ)Max.<br>(mΩ)<br>(1 KHz) | $\begin{array}{c c} \text{Nom.} \\ \text{Cap.} \\ (F) \end{array}  \begin{array}{c} \text{GMV} \\ (F)^* \end{array}  \begin{array}{c} \text{ESR DC} \\ \text{Typical} \\ (m\Omega) \end{array}  \begin{array}{c} \text{ESR AC} \\ \text{Max.} \\ (m\Omega) \\ (1 \text{ KHz}) \end{array}  \begin{array}{c} \text{Current} \\ (mA) \\ (72 \text{ hrs } @ \\ 25C) \end{array}$ | $\begin{array}{c c} Nom. \\ Cap. \\ (F) \\ (F) \\ \end{array} \begin{array}{c} GMV \\ (F)^* \\ (F)^* \end{array} \begin{array}{c} ESR DC \\ Typical \\ (m\Omega) \\ (m\Omega) \\ \end{array} \begin{array}{c} ESR AC \\ Max. \\ (m\Omega) \\ (1 \text{ KHz}) \\ \end{array} \begin{array}{c} Current \\ (mA) \\ (72 \text{ hrs } @ \\ 25C) \end{array} \begin{array}{c} Dim \\ D \\ D \\ \end{array}$ | $\begin{array}{c c} Nom. \\ Cap. \\ (F) \end{array}  \begin{array}{c} GMV \\ (F)^* \end{array}  \begin{array}{c} ESR \ DC \\ Typical \\ (m\Omega) \end{array}  \begin{array}{c} ESR \ AC \\ Max. \\ (m\Omega) \\ (1 \ KHz) \end{array}  \begin{array}{c} Current \\ (mA) \\ (72 \ hrs \ @ \\ 25C) \end{array}  \begin{array}{c} Dimensing \\ D \end{array}$ | $\begin{array}{c c} Nom. \\ Cap. \\ (F) \end{array} & \begin{array}{c} GMV \\ (F)^* \end{array} & \begin{array}{c} ESR \ DC \\ Typical \\ (m\Omega) \end{array} & \begin{array}{c} ESR \ AC \\ Max. \\ (m\Omega) \\ (1 \ KHz) \end{array} & \begin{array}{c} Current \\ (mA) \\ (72 \ hrs \ @ \\ 25C) \end{array} & \begin{array}{c} Dimensions (methods) \\ D \end{array} & \begin{array}{c} L \\ d \end{array} & \begin{array}{c} d \end{array} & \begin{array}{c} d \end{array} \\ \end{array}$ | $\begin{array}{c c} Nom. \\ Cap. \\ (F) \end{array} \begin{array}{c} GMV \\ (F)^{*} \end{array} \begin{array}{c} ESR DC \\ Typical \\ (m\Omega) \end{array} \begin{array}{c} ESR AC \\ Max. \\ (m\Omega) \\ (1 \text{ KHz}) \end{array} \begin{array}{c} Current \\ (mA) \\ (72 \text{ hrs }@ \\ 25C) \end{array} \begin{array}{c} D \\ D \end{array} \begin{array}{c} L \\ d \end{array} \begin{array}{c} LSR AC \\ LS \end{array}$ | $\begin{array}{c c} Nom. \\ Cap. \\ (F) \end{array} & \begin{array}{c} GMV \\ (F)^{*} \end{array} & \begin{array}{c} ESR \ DC \\ Typical \\ (m\Omega) \end{array} & \begin{array}{c} ESR \ AC \\ Max. \\ (m\Omega) \\ (1 \ KHz) \end{array} & \begin{array}{c} Current \\ (mA) \\ (72 \ hrs @ \\ 25C) \end{array} & \begin{array}{c} D \end{array} & \begin{array}{c} Dimensions \ (mm) \\ D \end{array} & \begin{array}{c} Rated \\ Current \\ (A) \end{array}$ |

\*NOTE: GMV = Guaranteed Minimum Value.