

# Type ESRE Solid Polymer Aluminum SMT Capacitors

## Capacitance Tripled



Type ESRE capacitors triple the capacitance found in CDE's type ESRD capacitors.

Type ESRE polymer aluminum capacitors are low voltage polarized electrolytic capacitors, with extremely low equivalent series resistance at high frequency. This yields capacitors with very low high frequency impedance and higher ripple current capability than aluminum electrolytic or tantalum capacitors. One type ESRE capacitor can replace three or more tantalum or aluminum electrolytic capacitors. The solid electrolyte of the polymer aluminum capacitor gives it a long life that is ignition free.

## Highlights

- Lowest ESR: <10 mΩ at 100 kHz
- 3.5 A ripple current at 100 kHz
- "D" case footprint: 7.3 (l) x 4.3 (w)
- Ignition Free

## Applications

Motherboard By-Pass

Switching Supply Input/Output Filters

Power Supply Decoupling

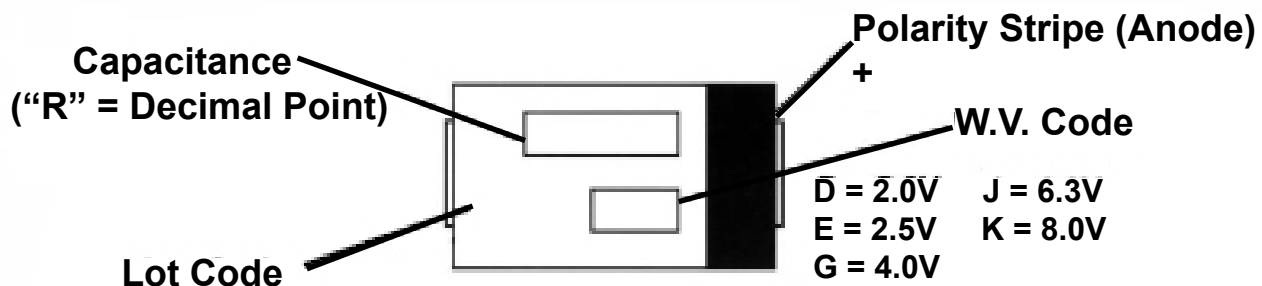
High Frequency Noise Reduction

Laptop LCD Displays

Automotive Digital Equipment

Portable Electronic Equipment

## Markings



## Ordering Information

ESRE

CDE  
Type

101

Capacitance  
Code  
101 = 100 μF

M

Capacitance  
Tolerance  
M = ±20%

08

WVDC Code  
02 = 2.0 Vdc    06 = 6.3 Vdc  
0E = 2.5 Vdc    08 = 8.0 Vdc  
04 = 4.0 Vdc

R

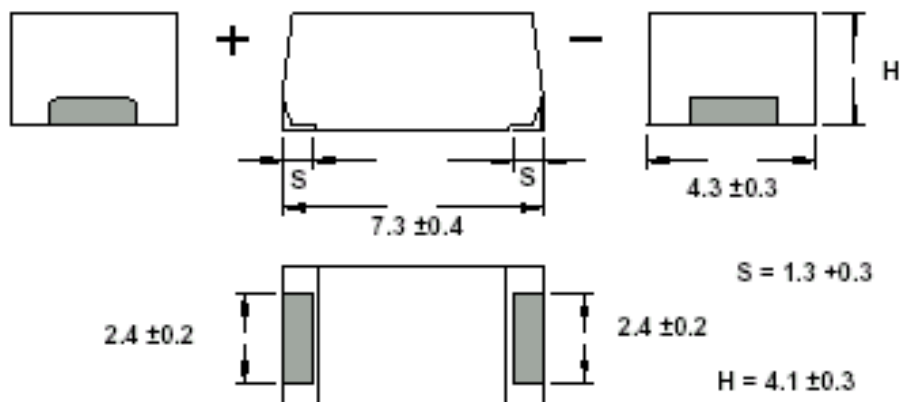
Packaging Code

R = Tape & Reel 2000 pcs/reel

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## Surface Mount, High Capacitance

### Outline Drawing



### Ratings

| Capacitance<br>( $\mu\text{F}$ ) | Catalog<br>Part Number | Maximum<br>E.S.R.<br>100 kHz/20 °C<br>( $\Omega$ ) | Maximum<br>Ripple Current<br>100 kHz/105 °C<br>(Amps) |
|----------------------------------|------------------------|----------------------------------------------------|-------------------------------------------------------|
| <b>2.0 Vdc</b>                   |                        |                                                    |                                                       |
| 270                              | ESRE271M02R            | 0.012                                              | 3.3                                                   |
| 330                              | ESRE331M02R            | 0.012                                              | 3.3                                                   |
| 390                              | ESRE391M02XR           | 0.010                                              | 3.5                                                   |
| <b>2.5 Vdc</b>                   |                        |                                                    |                                                       |
| 220                              | ESRE221M0ER            | 0.012                                              | 3.3                                                   |
| 270                              | ESRE271M0ER            | 0.012                                              | 3.3                                                   |
| 330                              | ESRE331M0EXR           | 0.010                                              | 3.5                                                   |
| <b>4.0 Vdc</b>                   |                        |                                                    |                                                       |
| 180                              | ESRE181M04R            | 0.012                                              | 3.3                                                   |
| 220                              | ESRE221M04XR           | 0.010                                              | 3.5                                                   |
| <b>6.3 Vdc</b>                   |                        |                                                    |                                                       |
| 150                              | ESRE151M06R            | 0.012                                              | 3.3                                                   |
| 180                              | ESRE181M06XR           | 0.010                                              | 3.5                                                   |
| <b>8.0 Vdc</b>                   |                        |                                                    |                                                       |
| 100                              | ESRE101M08R            | 0.012                                              | 3.3                                                   |

## Specifications

### Operating Temperature Range:

–55 °C to +105 °C, at 100% rated voltage

### Surge Voltage:

125% of the rated working Vdc

### Capacitance Range:

100 µF to 390 µF

### Capacitance Tolerance:

±20% at 120 Hz and +20 °C

### DC Leakage Current (DCL):

After a two minute application of the rated working voltage at +20 °C:

2V — 4V:  $I \leq 0.06CV$

6.3V — 8V:  $I \leq 0.04CV$  or 3 µA  
(whichever greater)

### Dissipation Factor (DF):

The ratio of the capacitor's equivalent series resistance to its reactance at 120Hz and +20 °C ESRE: DF is 0.10 Max.

### Resistance to Soldering Heat:

Heat the capacitors at 235 °C in an oven for 200 seconds. The capacitors will meet the following limits after stabilizing at 20 °C:

$\Delta C = \pm 10\%$  of the initial measured value

$DF \leq$  the initial specified value

$DCL \leq$  the initial specified value

### Vibration:

No abnormal change shall occur to capacitors that have been soldered (and attached) to a board when subjected to a vibration of 1.5 mm amplitude that is varied from 10 Hz to 2000 Hz in 20 min. cycles. The test duration is 2 hours for each right angle direction (total 6 hours). Capacitance is monitored during the last cycle of the test for stability.

### Moisture Resistance:

After 500 hours storage at +60 °C and 90% to 95% RH without load, the capacitor will meet the following limits:

$\Delta C = +70\%/-20\%$  of the initial measured value (2.0 Vdc, 2.5 Vdc),

+60%/-20% of the initial measured value (4.0 Vdc),

+50%/-20% of the initial measured value (6.3 Vdc),

+40%/-20% of the initial measured value (all other voltages)

$DF \leq$  two times the initial specified value

$DCL \leq$  the initial specified value

### Life Test:

Apply rated DC working voltage at 105 °C for 1000 hours, and then stabilize them to +20 °C. Capacitors will meet the following limits:

$\Delta C = \pm 10\%$  of the initial measured value

$DF \leq$  the initial specified value

$DCL \leq$  the initial specified value

### Shelf Life Test:

Shelf life is typically 5 to 10 years. Accelerated test: after 500 hours at 105 °C, capacitors will meet the following limits after stabilization at 20 °C:

$\Delta C = \pm 10\%$  of the initial measured value

$DF \leq$  the initial specified value

$DCL \leq$  the initial specified value

### Shear Test:

No damage shall be visible after subjecting a mounted capacitor to a side force of 5 N for 10 seconds.

For more information on this product please see the Solid Polymer Aluminum Capacitors Application Guide

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