

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: $<10\text{ m}\Omega$ 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

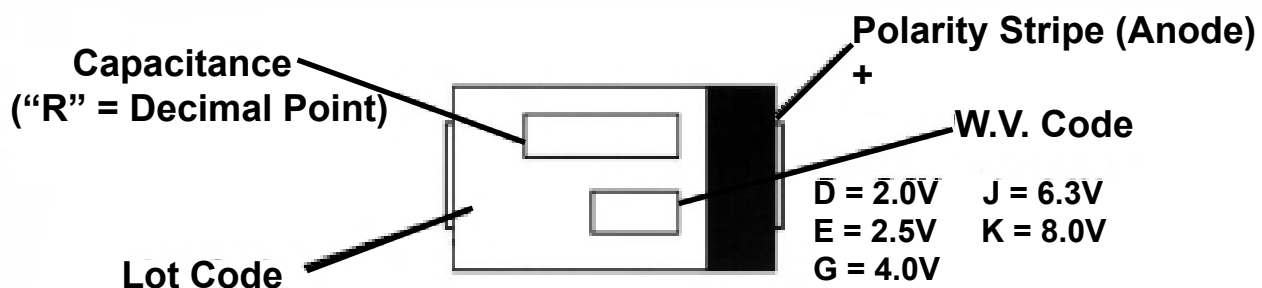
High Frequency Noise Reduction

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 = $\pm 20\%$

08

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

R

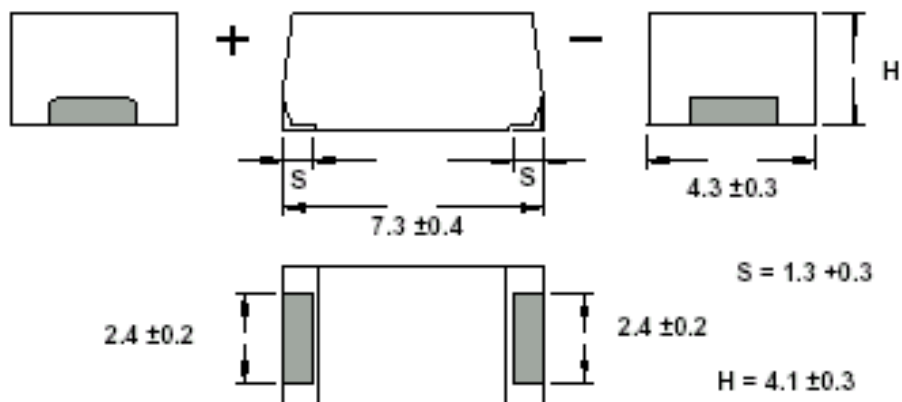
Packaging Code

R = Tape & Reel 2000 pcs/reel

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Surface Mount, High Capacitance

Outline Drawing



Ratings

Capacitance (μF)	Catalog Part Number	Maximum E.S.R. 100 kHz/20 °C (Ω)	Maximum Ripple Current 100 kHz/105 °C (Amps)
2.0 Vdc			
270	ESRE271M02R	0.012	3.3
330	ESRE331M02R	0.012	3.3
390	ESRE391M02XR	0.010	3.5
2.5 Vdc			
220	ESRE221M0ER	0.012	3.3
270	ESRE271M0ER	0.012	3.3
330	ESRE331M0EXR	0.010	3.5
4.0 Vdc			
180	ESRE181M04R	0.012	3.3
220	ESRE221M04XR	0.010	3.5
6.3 Vdc			
150	ESRE151M06R	0.012	3.3
180	ESRE181M06XR	0.010	3.5
8.0 Vdc			
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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