

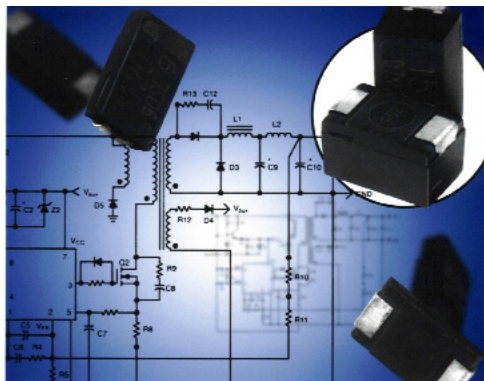


THE DATASHEET OF ESRD820M0ER



Type ESRD Solid Polymer Aluminum SMT Capacitors

Filtering power of 3 or more tantalum chips and 50 year life



Solid Polymer Aluminum capacitors combine the high capacitance capability of an electrolytic component with the high frequency performance of film capacitors. When the need for low impedance at high frequency is critical for your design, one ESRD chip is capable of replacing several liquid electrolyte aluminum or tantalum capacitors connected in parallel. This is due to the ultra-low ESR which results in significantly lower impedance than either aluminum or tantalum capacitors at frequencies of 100 kHz and above. There is no longer a need to stack capacitors to lower the impedance at high frequency. The low ESR and high capacitance make them ideal for bypassing high frequency noise, and for switching frequency filtering in DC/DC conversion. ESRD capacitors are packaged in a molded resin case with the same footprint (7.3 x 4.3 mm) as the industry standard tantalum "D" and "E" case sizes. The solid electrolyte results in a capacitor with stable impedance and equivalent series resistance over the entire operating temperature range and they have more than twice the ripple current handling capability of tantalum capacitors. In addition, the solid electrolyte delivers a typical expected operating life of more than 50 years, and it is ignition free.

RoHS Compliant

Applications

Motherboard By-Pass

Switching Supply Input/Output Filters

Power Supply Decoupling

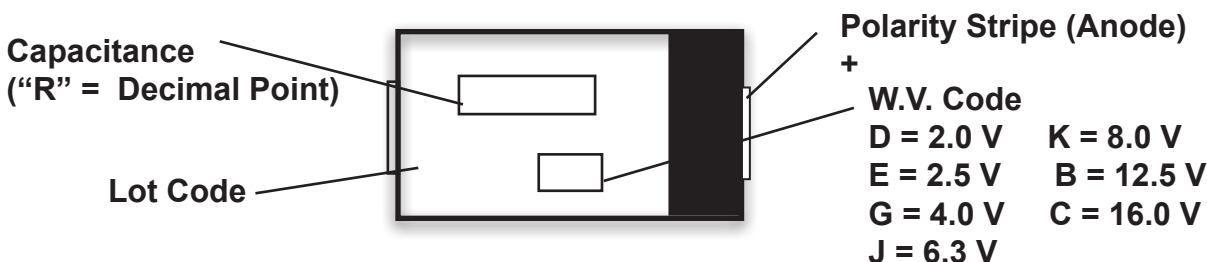
High Frequency Noise Reduction

Laptop LCD Displays

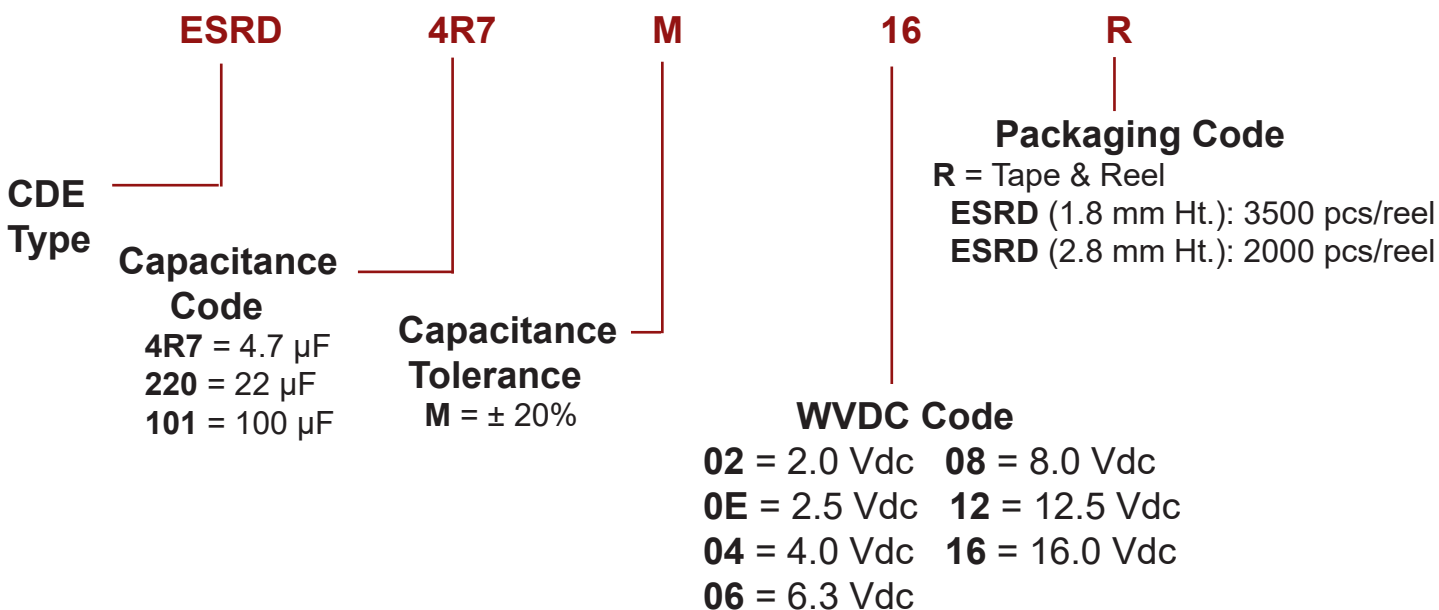
Automotive Digital Equipment

Portable Electronic Equipment

Markings



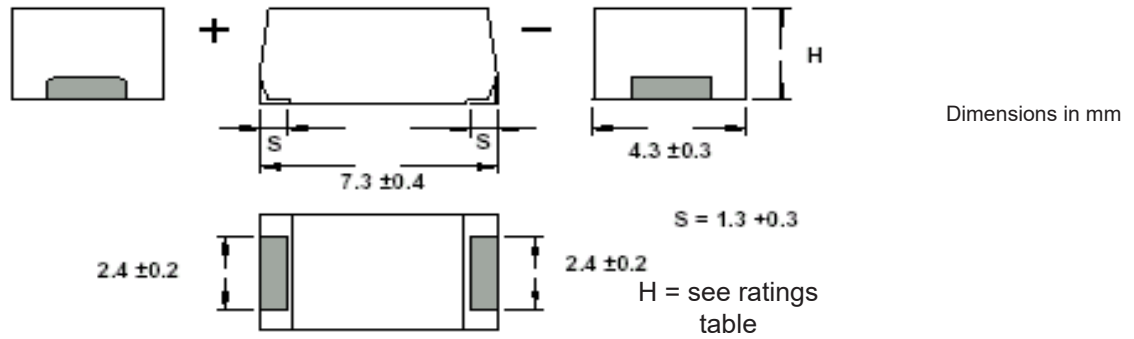
Ordering Information



Type ESRD Solid Polymer Aluminum SMT Capacitors

High Voltage

Outline Drawing



Ratings

Capacitance (μF)	Catalog Part Number (Tape & Reel)	Maximum E.S.R 100 kHz/20 °C (Ω)	Maximum ¹ Ripple Current 100 kHz/105 °C (Amps)	Case Height H (mm)
2.0 Vdc				
100	ESRD101M02R	0.018	2.5	1.8 \pm 0.1
120	ESRD121M02XR	0.015	2.7	1.8 \pm 0.1
180	ESRD181M02R	0.015	3.0	2.8 \pm 0.2
220	ESRD221M02R	0.015	3.0	2.8 \pm 0.2
270	ESRD271M02XR	0.012	3.3	2.8 \pm 0.2
2.5 Vdc				
82	ESRD820M0ER	0.018	2.5	1.8 \pm 0.1
100	ESRD101M0EXR	0.015	2.7	1.8 \pm 0.1
150	ESRD151M0ER	0.015	3.0	2.8 \pm 0.2
180	ESRD181M0ER	0.015	3.0	2.8 \pm 0.2
220	ESRD221M0EXR	0.012	3.3	2.8 \pm 0.2
4.0 Vdc				
56	ESRD560M04R	0.018	2.5	1.8 \pm 0.1
82	ESRD820M04XR	0.015	2.7	1.8 \pm 0.1
120	ESRD121M04R	0.015	3.0	2.8 \pm 0.2
150	ESRD151M04XR	0.012	3.3	2.8 \pm 0.2
6.3 Vdc				
10	ESRD100M06R	0.055	1.4	1.8 \pm 0.1
22	ESRD220M06R	0.040	1.6	1.8 \pm 0.1
33	ESRD330M06R	0.028	2.0	1.8 \pm 0.1
47	ESRD470M06R	0.018	2.5	1.8 \pm 0.1
68	ESRD680M06XR	0.015	2.7	1.8 \pm 0.1
100	ESRD101M06R	0.015	3.0	2.8 \pm 0.2
120	ESRD121M06XR	0.012	3.3	2.8 \pm 0.2
8.0 Vdc				
8.2	ESRD8R2M08R	0.055	1.4	1.8 \pm 0.1
15	ESRD150M08R	0.040	1.6	1.8 \pm 0.1
22	ESRD220M08R	0.028	2.0	1.8 \pm 0.1
33	ESRD330M08R	0.018	2.5	1.8 \pm 0.1
68	ESRD680M08R	0.015	3.0	2.8 \pm 0.2
12.5 Vdc				
4.7	ESRD4R7M12R	0.080	1.0	1.8 \pm 0.1
10	ESRD100M12R	0.060	1.0	1.8 \pm 0.1
15	ESRD150M12R	0.050	1.3	1.8 \pm 0.1
22	ESRD220M12R	0.030	1.6	1.8 \pm 0.1
16.0 Vdc				
2.2	ESRD2R2M16R	0.110	1.0	1.8 \pm 0.1
4.7	ESRD4R7M16R	0.080	1.0	1.8 \pm 0.1
6.8	ESRD6R8M16R	0.070	1.0	1.8 \pm 0.1
8.2	ESRD8R2M16R	0.045	1.3	1.8 \pm 0.1

Specifications

Operating Temperature Range:

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

Surge Voltage:

125% of the rated working Vdc

Capacitance Range:

2.2 µF to 270 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 — 16V: $I \leq 0.04CV$ 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 ESRD (1.8 mm ht.): DF is 0.06 Max.
ESRD (2.8 mm ht.): 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 42 months. 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)

Type ESRD Solid Polymer Aluminum SMT Capacitors

Notice and Disclaimer: All product drawings, descriptions, specifications, statements, information and data (collectively, the "Information") in this datasheet or other publication are subject to change. The customer is responsible for checking, confirming and verifying the extent to which the Information contained in this datasheet or other publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without any guarantee, warranty, representation or responsibility of any kind, expressed or implied. Statements of suitability for certain applications are based on the knowledge that the Cornell Dubilier company providing such statements ("Cornell Dubilier") has of operating conditions that such Cornell Dubilier company regards as typical for such applications, but are not intended to constitute any guarantee, warranty or representation regarding any such matter – and Cornell Dubilier specifically and expressly disclaims any guarantee, warranty or representation concerning the suitability for a specific customer application, use, storage, transportation, or operating environment. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by Cornell Dubilier with reference to the use of any Cornell Dubilier products is given gratis (unless otherwise specified by Cornell Dubilier), and Cornell Dubilier assumes no obligation or liability for the advice given or results obtained. Although Cornell Dubilier strives to apply the most stringent quality and safety standards regarding the design and manufacturing of its products, in light of the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies or other appropriate protective measures) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage. Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated in such warnings, cautions and notes, or that other safety measures may not be required.

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- ⊖ [View ESRD820M0ER on WIN SOURCE](#)
- ⊖ [Cornell Dubilier Electronics \(CDE\) Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

- ✓ Global Sourcing Solution
- ✓ Obsolete Management
- ✓ Cost Control Management
- ✓ Shortage Management
- ✓ Alternative Solution
- ✓ Excess Inventory Management