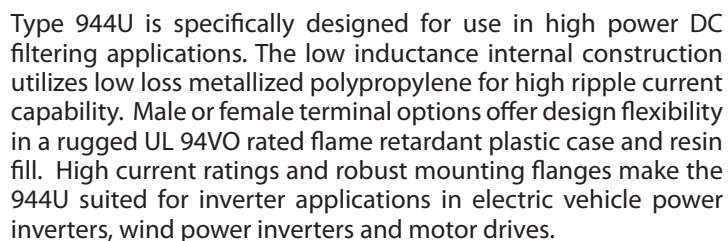


## High Current, Low Profile for Inverter Applications



- Low Inductance
- Low Profile
- Low ESR
- High Ripple Current
- High Voltage Ratings

|                                              |                                |
|----------------------------------------------|--------------------------------|
| Capacitance Range                            | 33 to 220 µF                   |
| Capacitance Tolerance                        | ±10% standard                  |
| Rated Voltage                                | 800 to 1400 Vdc                |
| Operating Temperature Range with Ripple      | -40 °C to 85 °C                |
| Maximum rms Current                          | 74A @ 55 °C                    |
| Maximum rms Voltage                          | 230 Vac                        |
| Test Voltage between Terminal @ 25°C         | 150% rated DC voltage for 10 s |
| Test Voltage between Terminals & Case @ 25°C | 4 kVac @ 50/60 Hz for 60 s     |
| Life Test                                    | 5000 h @ 85 °C, rated voltage  |
| RoHS Compliant                               |                                |

| Construction Details |                   |
|----------------------|-------------------|
| Case Material        | Plastic UL94V-0   |
| Resin Material       | Dry Resin UL94V-0 |
| Terminal Material    | Tin Plated Brass  |



# Type 944U Polypropylene, DC Filter Capacitors

## High Current, Low Profile for Inverter Applications

### Part Numbering System

| 944U | 101                                                       | K             | 801                                                                 | A               | A                          | M                                    |
|------|-----------------------------------------------------------|---------------|---------------------------------------------------------------------|-----------------|----------------------------|--------------------------------------|
| Type | Capacitance                                               | Tolerance     | Voltage                                                             | Diameter D (mm) | Height H (mm)              | Terminal                             |
| 944U | 101 = 100 $\mu$ F<br>700 = 70 $\mu$ F<br>470 = 47 $\mu$ F | K = $\pm$ 10% | 801 = 800 Vdc<br>102 = 1000 Vdc<br>122 = 1200 Vdc<br>142 = 1400 Vdc | A = 84.5        | A = 40<br>B = 51<br>C = 64 | M = M8 Thd Stud<br>I = M5 Thd Insert |

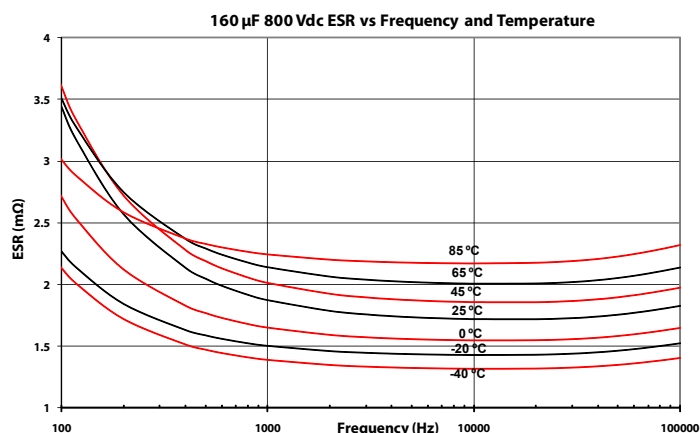
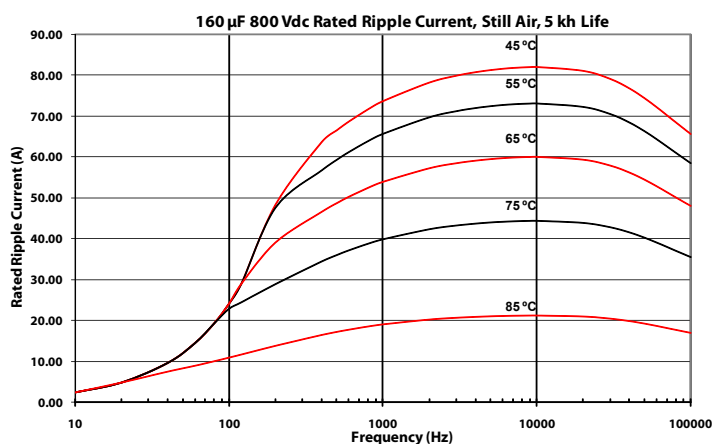
### Ratings

**NOTE:** Other ratings, sizes and performance specifications are available. Contact us.

| Catalog Part Number | Cap ( $\mu$ F) | Rated Voltage (Vdc) | H Height mm | Max ESR 10kHz (m $\Omega$ ) | Typical ESL (nH) | Max Irms 55°C (A) | Thermal Resistance $\Theta_{cc}$ (°C/W) | $\Theta_{ca}$ (°C/W) |
|---------------------|----------------|---------------------|-------------|-----------------------------|------------------|-------------------|-----------------------------------------|----------------------|
| 944U101K801AA*      | 100            | 800                 | 40          | 0.5                         | 20               | 74                | 2.8                                     | 5.2                  |
| 944U161K801AB*      | 160            | 800                 | 51          | 0.8                         | 30               | 73                | 3.0                                     | 4.5                  |
| 944U221K801AC*      | 220            | 800                 | 64          | 1.0                         | 40               | 72                | 3.1                                     | 4.0                  |
| 944U660K102AA*      | 66             | 1000                | 40          | 0.6                         | 20               | 70                | 2.8                                     | 5.2                  |
| 944U101K102AB*      | 100            | 1000                | 51          | 0.8                         | 30               | 68                | 3.0                                     | 4.5                  |
| 944U141K102AC*      | 140            | 1000                | 64          | 1.0                         | 40               | 65                | 3.1                                     | 4.0                  |
| 944U470K122AA*      | 47             | 1200                | 40          | 0.7                         | 20               | 67                | 2.8                                     | 5.2                  |
| 944U700K122AB*      | 70             | 1200                | 51          | 1.0                         | 30               | 65                | 3.0                                     | 4.5                  |
| 944U101K122AC*      | 100            | 1200                | 64          | 1.3                         | 40               | 64                | 3.1                                     | 4.0                  |
| 944U330K142AA*      | 33             | 1400                | 40          | 0.8                         | 20               | 64                | 2.8                                     | 5.2                  |
| 944U520K142AB*      | 52             | 1400                | 51          | 1.1                         | 30               | 60                | 3.0                                     | 4.5                  |
| 944U700K142AC*      | 70             | 1400                | 64          | 1.4                         | 40               | 59                | 3.1                                     | 4.0                  |

\* M = M8 Stud I = M5 Insert

### Typical Performance Curves



# Type 944U Polypropylene, DC Filter Capacitors

## High Current, Low Profile for Inverter Applications

### Expected Lifetime Predictions

To use the Expected Lifetime curves calculate  $V_a/V_r$  and core temperature  $T$ . Start by estimating:

Applied dc voltage  $V_a$   
Ripple Current  $I$   
Ripple Frequency  $f$   
Ambient Temperature  $T_a$   
Airflow speed  $v$

Units:

$A = m^2$                        $T, T_a \text{ \& } T_c = ^\circ C$   
 $C = \mu F$                        $\theta, \theta_{ca} \text{ \& } \theta_{cc} = ^\circ C/W$   
 $ESR = m\Omega$                        $v = m/s$   
 $f = kHz$                        $V_a \text{ \& } V_r = V_{dc}$   
 $I = A$

NOTE: The temperature rise in the 944U is  $I^2(ESR)$  times the thermal resistance  $\theta$ . The ESR is mainly the metal resistance; the metal resistance is the 10 kHz ESR. For operation below 10kHz add the dielectric resistance. It is the dielectric dissipation factor—no more than 0.0002—times the capacitive reactance, i.e.,  $0.0002/(2\pi fC)$ . That's equal to  $31.83/(fC)$ .

1. Start with the 10 kHz ESR from the Ratings table. If frequency is less than 10 kHz, add  $31.83/(fC)$ .

2. Compute total thermal resistance  $\theta$  as the sum of core-to-case thermal resistance  $\theta_{cc}$  and case-to-ambient thermal resistance  $\theta_{ca}$ . Both are in the Ratings table but  $\theta_{ca}$  is for still air and  $\theta_{cc}$  is for 10 kHz or less. For frequency  $> 10$  kHz multiply  $\theta_{cc}$  by  $[1+(f-10)/100]$ , e.g., for 75 kHz multiply  $\theta_{cc}$  by 1.65. For moving air use the capacitor surface area  $A$  and airflow speed  $v$  to calculate  $\theta_{ca} = 1/[A(5+17.5(v+0.1)^{0.66})]$ .

3. Compute  $V_a/V_r$  and the core temperature  $T$ .  
 $T = T_a + I^2(ESR)\theta$

4. Look up estimated lifetime from the Expected Lifetime curves.

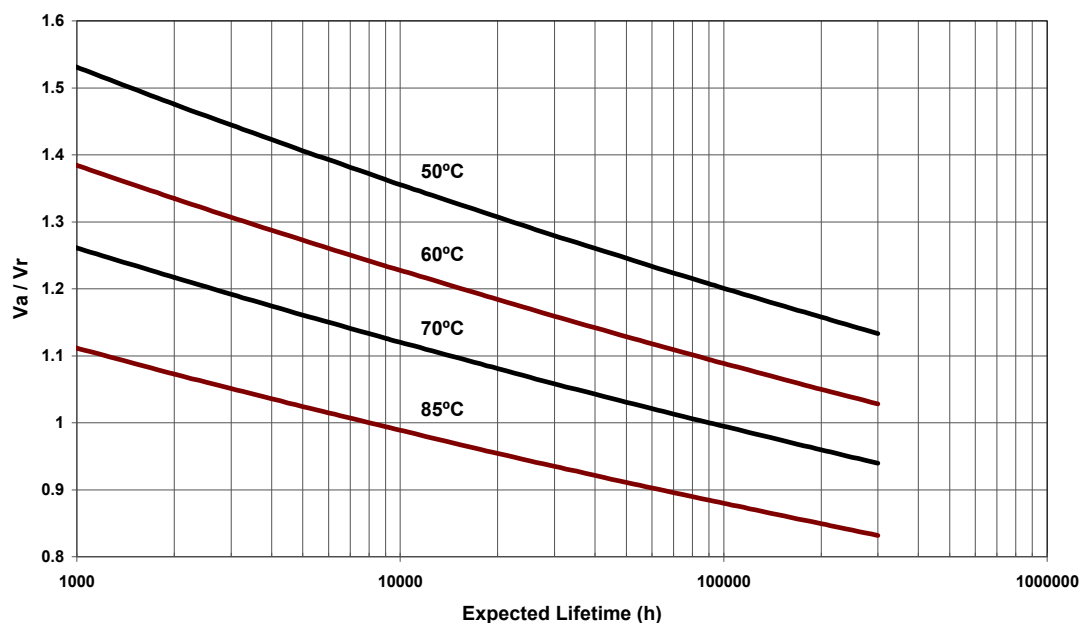
5. If you want a longer expected lifetime, choose a capacitor with higher voltage rating or consider using multiple capacitors in parallel to share the ripple current.

The expected lifetime predictions assume no exposure to overvoltage transients. Expected lifetime can be calculated for varying exposure to overvoltage transients. As an illustration at 50 °C the expected lifetime is 100,000 h with the 24-hour  $V_a/V_r$  profile below:

| $V_a / V_r$ | Duration   |
|-------------|------------|
| 1.67        | 100 ms     |
| 1.50        | 5 minutes  |
| 1.30        | 2.5 hours  |
| 1.10        | 9.6 hours  |
| 1.00        | 11.9 hours |

For applications with more severe 24-hour profiles, contact us.

### Expected Lifetime vs Hot Spot Temperature and Applied DC Voltage



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Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9