Type 944U Polypropylene, DC Link Capacitors

High Current, Low Profile for Inverter Applications



Type 944U is specifically designed for use in high power DC filtering applications. The low inductance internal construction utilizes low loss metallized polypropylene for high ripple current capability. Male or female terminal options offer design flexibility in a rugged UL 94VO rated flame retardant plastic case and resin fill. High current ratings and robust mounting flanges make the 944U suited for inverter applications in electric vehicle power inverters, wind power inverters and motor drives.

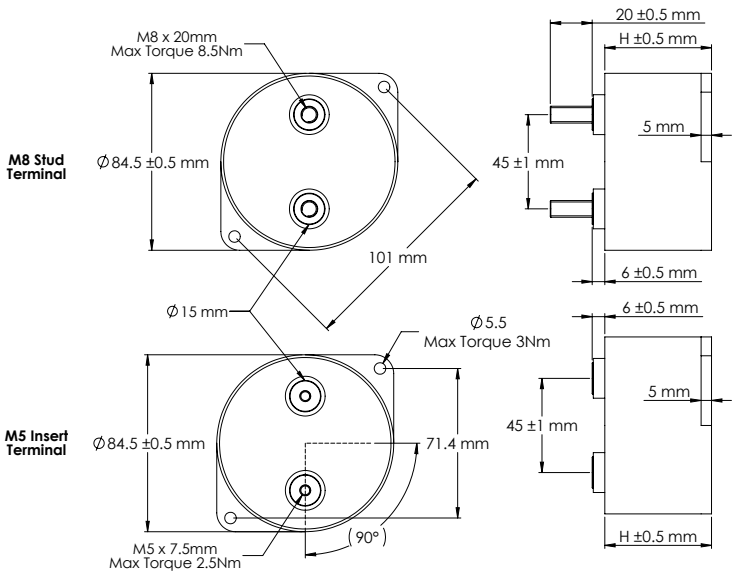
Highlights

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

Specifications

Capacitance Range	33 to 220 µF
Capacitance Tolerance	±10% standard
Rated Voltage	800 to 1400 Vdc
Operating Temperature Range	-40 ºC to 85 ºC
Maximum rms Current	74A @ 55 ºC
Maximum rms Voltage	230 Vac
Test Voltage between Terminal @ 25ºC	150% rated DC voltage for 10 s
Test Voltage between Terminals & Case @ 25ºC	4 kVac @ 50/60 Hz for 60 s
Life Test	5000 h @ 85 ºC, rated voltage
Standards	IEC 61071
Regulatory Information	

Dimensions



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

UL Recognized E128034
construction only - unprotected

Part Numbering System

944U	101	K	801	A	A	M
Type	**Capacitance**	**Tolerance**	**Voltage**	**Diameter D (mm)**	**Height H (mm)**	**Terminal**
944U	101 = 100 µF	K = ±10%	801 = 800 Vdc	A = 84.5	A = 40	M = M8 Thd Stud
	700 = 70 µF		102 = 1000 Vdc		B = 51	I = M5 Thd Insert
	470 = 47 µF		122 = 1200 Vdc		C = 64	
			142 = 1400 Vdc			

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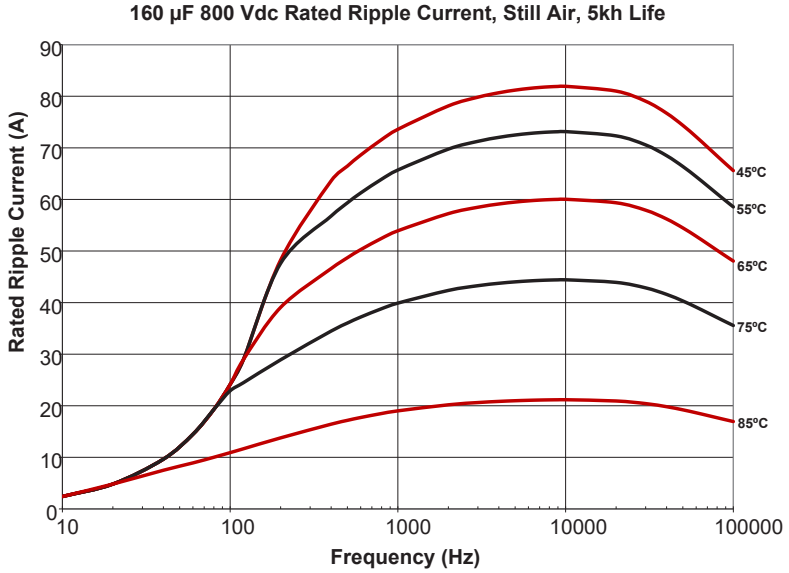
Ratings

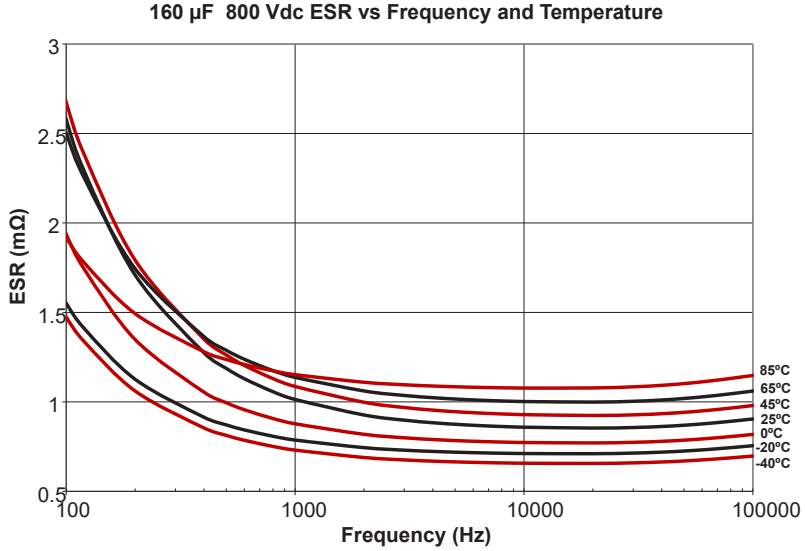
NOTE: Other ratings, sizes and performance specifications are available. Contact us.

Catalog Part Number	Cap (µF)	Rated Voltage (Vdc)	H Height mm	Typical ESR 10kHz (mΩ)	Typical ESL (nH)	Max Irms 55°C (A)	Thermal Resistance Θcc (°C/W)	Thermal Resistance Θca (°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





Expected Lifetime Predictions

Capacitance:	C (µF)
Equivalent Series Resistance:	ESR (mΩ)
Frequency:	f (kHz)
Ripple Current:	I (A_{rms})
Ambient Temperature:	T_A (°C)
Core Temperature:	T_C (°C)
Total Thermal Resistance:	Θ (°C/W)
Thermal Resistance case-to-ambient:	$Θ_{CA}$ (°C/W)
Thermal Resistance core-to-case:	$Θ_{CC}$ (°C/W)
Airflow Speed:	v (m/s)
Applied Voltage:	V_A (V_{DC})
Rated Voltage:	V_R (V_{DC})

Determine ESR at Operating Frequency

Use the 10 kHz ESR from the ratings tables.
For operation below 10 kHz, the ESR will need to be adjusted using the following equation: ESR - 31.83/(10C) + 31.83/(fC).

Determine Thermal Resistance at Operating Frequency and Air Flow

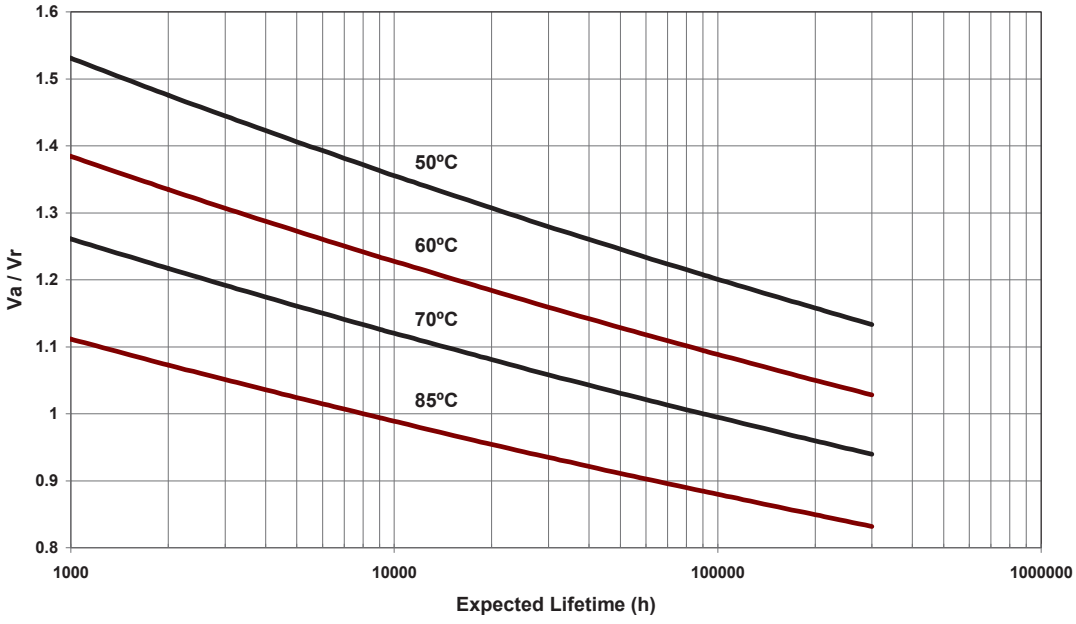
Compute $Θ = Θ_{CC} + Θ_{CA}$. In the ratings tables, $Θ_{CA}$ is for still air. For v = 0 to 5 m/s, multiply $Θ_{CA}$ by $[(5 + 17.6(0.1^{0.66})) / (5 + 17.6(v + 0.1)^{0.66})]$

Determine Expected Lifetime

Look up Expected Lifetime on the graph using V_A/V_R and $T_C = T_A + I^2 (ESR/1000) Θ$

The maximum allowed temperature rise is 40 °C and the maximum allowed core temperature is 95 °C.

Expected Lifetime vs Hot Spot Temperature and Applied DC Voltage



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