

- Large Can Toroidal Design
- Lowest Thermal Resistance
- Optimum Cooling Capability
- New Lower Profile Sizes
- New Heat-Sink Mounting Kit
- RoHS Compliant (Pb-Free)



The UTOR series now offers higher capacitance and ripple current per case size. The upgrade allows the inverter designer to significantly reduce the size, weight, and cost of the capacitor bank. Its patented toroidal geometry is ideal for cooling by either forced air or by heat-sink with the use of a new mounting kit option. The heat-sink kit option provides optimum thermal transfer while maintaining electrical isolation. These capacitors have an endurance rating of 5,000 hours at +105°C or 20,000 hours at +85°C with the rated ripple current applied. The UTOR series represents the optimum cost per amp of ripple current for a screw terminal mounted electrolytic capacitor.

## Summary of Specifications

- Screw terminals, high ripple Metric thread.
- Capacitance range: 680 to 10,000µF.
- Voltage range: 350 to 500VDC.
- Operating temperature range: -40°C to +105°C.
- Leakage current: 0.02CV(µA) or 5mA, whichever is smaller, after 5 minutes at +25°C.
- Standard capacitance tolerance: ±20%
- Nominal case size (D×L): D = 76mm (3.000"); L = 54mm (2.125") to 168mm (6.625").
- Rated lifetime: 5,000 hours at +105°C with rated ripple current applied.

# UTOR Series

## UTOR Specifications - Screw Terminals

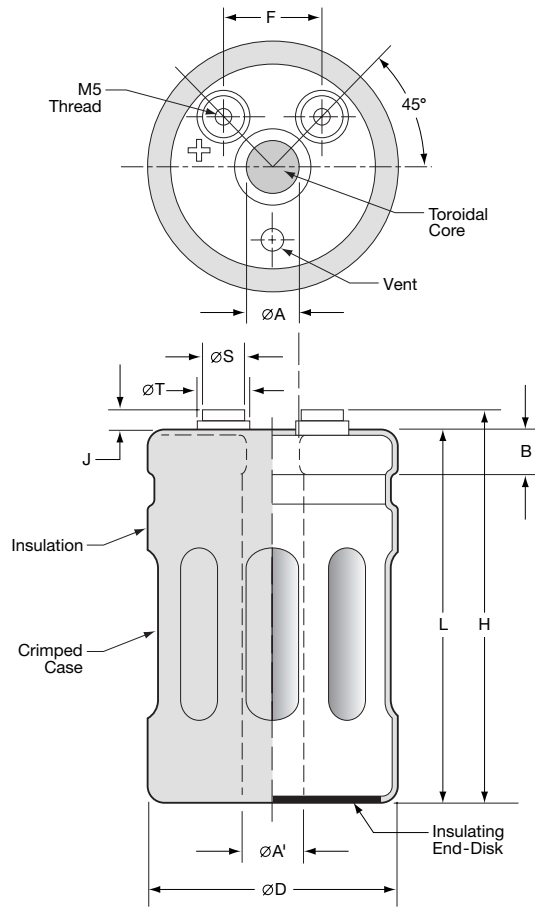
Item	Characteristics																											
Category Temperature Range	- 40 to +105°C																											
Rated Voltage Range	350 to 500VDC																											
Capacitance Range	680 to 10,000 $\mu$ F at +25°C, 120Hz																											
Capacitance Tolerance	$\pm$ 20% (M) at +25°C, 120Hz																											
Leakage Current	I = 0.02CV ( $\mu$ A) or 5mA, whichever is smaller, after 5 minutes at +25°C. Where I = Max. leakage current ( $\mu$ A), C = Nominal capacitance ( $\mu$ F) and V = Rated voltage (V)																											
Rated Ripple Current Multipliers	<p>Ambient Temperature (°C)</p> <table border="1"> <thead> <tr> <th>+45°C</th> <th>+65°C</th> <th>+85°C</th> <th>+105°C</th> </tr> </thead> <tbody> <tr> <td>2.45</td> <td>2.12</td> <td>1.73</td> <td>1.00</td> </tr> </tbody> </table> <p>Cooling</p> <table border="1"> <thead> <tr> <th rowspan="2">Mounting Type</th> <th colspan="3">Air Velocity</th> </tr> <tr> <th>Static</th> <th>1.0m/s</th> <th>2.0m/s</th> </tr> </thead> <tbody> <tr> <td>Clamp Mount</td> <td>1.00</td> <td>1.20</td> <td>1.30</td> </tr> <tr> <td>Heat-Sink (air cooled)</td> <td>1.20</td> <td>1.45</td> <td>1.55</td> </tr> <tr> <td>Heat-Sink (fluid cooled)</td> <td>1.35</td> <td>1.65</td> <td>1.75</td> </tr> </tbody> </table>	+45°C	+65°C	+85°C	+105°C	2.45	2.12	1.73	1.00	Mounting Type	Air Velocity			Static	1.0m/s	2.0m/s	Clamp Mount	1.00	1.20	1.30	Heat-Sink (air cooled)	1.20	1.45	1.55	Heat-Sink (fluid cooled)	1.35	1.65	1.75
+45°C	+65°C	+85°C	+105°C																									
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Endurance (Load Life)	<p>The following specifications shall be satisfied when the capacitors are restored to +25°C after subjecting them to DC voltage for 5,000 hours at +105°C with the rated ripple current applied. The sum of the DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors.</p> <p>Capacitance change: <math>\leq \pm</math>20% of initial measured value            Tan <math>\delta</math> (DF) : <math>\leq</math> 200% of initial specified value            Leakage current : <math>\leq</math> initial specified value</p>																											
Shelf Test	<p>The following specifications shall be satisfied when the capacitors are restored to +25°C after exposing them for 1,000 hours at +105°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements.</p> <p>Capacitance change: <math>\leq \pm</math>20% of initial measured value            Tan <math>\delta</math> (DF) : <math>\leq</math> 200% of initial specified value            Leakage current : <math>\leq</math> initial specified value</p>																											
Vibration Rating	10-55Hz, 10g sinusoidal in three axis, 2 hours per axis.																											
Maximum Tightening Torque	<table border="1"> <thead> <tr> <th rowspan="2">Terminal Code</th> <th rowspan="2">Thread Size</th> <th colspan="2">3 Threads Engaged</th> <th colspan="2">6 Threads Engaged</th> </tr> <tr> <th>in·lb</th> <th>N·m</th> <th>in·lb</th> <th>N·m</th> </tr> </thead> <tbody> <tr> <td>CT</td> <td>M5x0.8</td> <td>18.0</td> <td>2.0</td> <td>28.5</td> <td>3.2</td> </tr> </tbody> </table>	Terminal Code	Thread Size	3 Threads Engaged		6 Threads Engaged		in·lb	N·m	in·lb	N·m	CT	M5x0.8	18.0	2.0	28.5	3.2											
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Typical Inductance	25nH at 1MHz																											
Custom Designs	Custom CV values per case size may be available upon request. Contact appropriate representative with specific requirements.																											

# UTOR Series

## Diagram of Dimensions - Screw Terminals

### Toroidal Large Can/Screw Terminals

Unit: mm and inches



#### Terminal Specifications in Millimeters

Terminal Code	Thread Size	Minimum Thread Depth	J $\pm 0.50$	$\phi S$ $\pm 0.25$	$\phi T$ $\pm 0.25$
CT	M5x0.8	10.5	7.0	13.0	18.5

#### Terminal Specifications in Inches

Terminal Code	Thread Size	Minimum Thread Depth	J $\pm 0.020$	$\phi S$ $\pm 0.010$	$\phi T$ $\pm 0.010$
CT	M5x0.8	0.413	0.276	0.512	0.728

#### Case Dimensions in Millimeters

$\phi A$ $\pm 0.20$	$\phi A'$ $\pm 0.30$	B $\pm 0.5$	F $\pm 0.25$
16.3	18.9	9.5	31.8

#### Case Dimensions in Inches

$\phi A$ $\pm 0.008$	$\phi A'$ $\pm 0.012$	B $\pm 0.020$	F $\pm 0.010$
0.642	0.744	0.374	1.250

Case Size Code	$\phi D$ $+2.0$	L $+2.0$	H $\pm 1.0$
E54	76	54	61
E67	76	67	74
E79	76	79	86
E92	76	92	99
EA5	76	105	112
EB7	76	117	124
ED0	76	130	137
EE3	76	143	150
EF5	76	155	162
EG8	76	168	175

Case Size Code	$\phi D$ $+0.080$	L $+0.080$	H $\pm 0.040$
E54	3.000	2.125	2.402
E67	3.000	2.625	2.913
E79	3.000	3.125	3.386
E92	3.000	3.625	3.898
EA5	3.000	4.125	4.409
EB7	3.000	4.625	4.882
ED0	3.000	5.125	5.394
EE3	3.000	5.625	5.906
EF5	3.000	6.125	6.378
EG8	3.000	6.625	6.890

# UTOR Series

## Mounting Hardware - Screw Terminals

### Type C: Three-Footed Clamp

Unit: mm (inches)



Clamp: Zinc with silver trivalent chromate post treatment.  
Hardware: Screw, washer and hexagon nut included with each clamp.

### Type C: Clamp Specifications

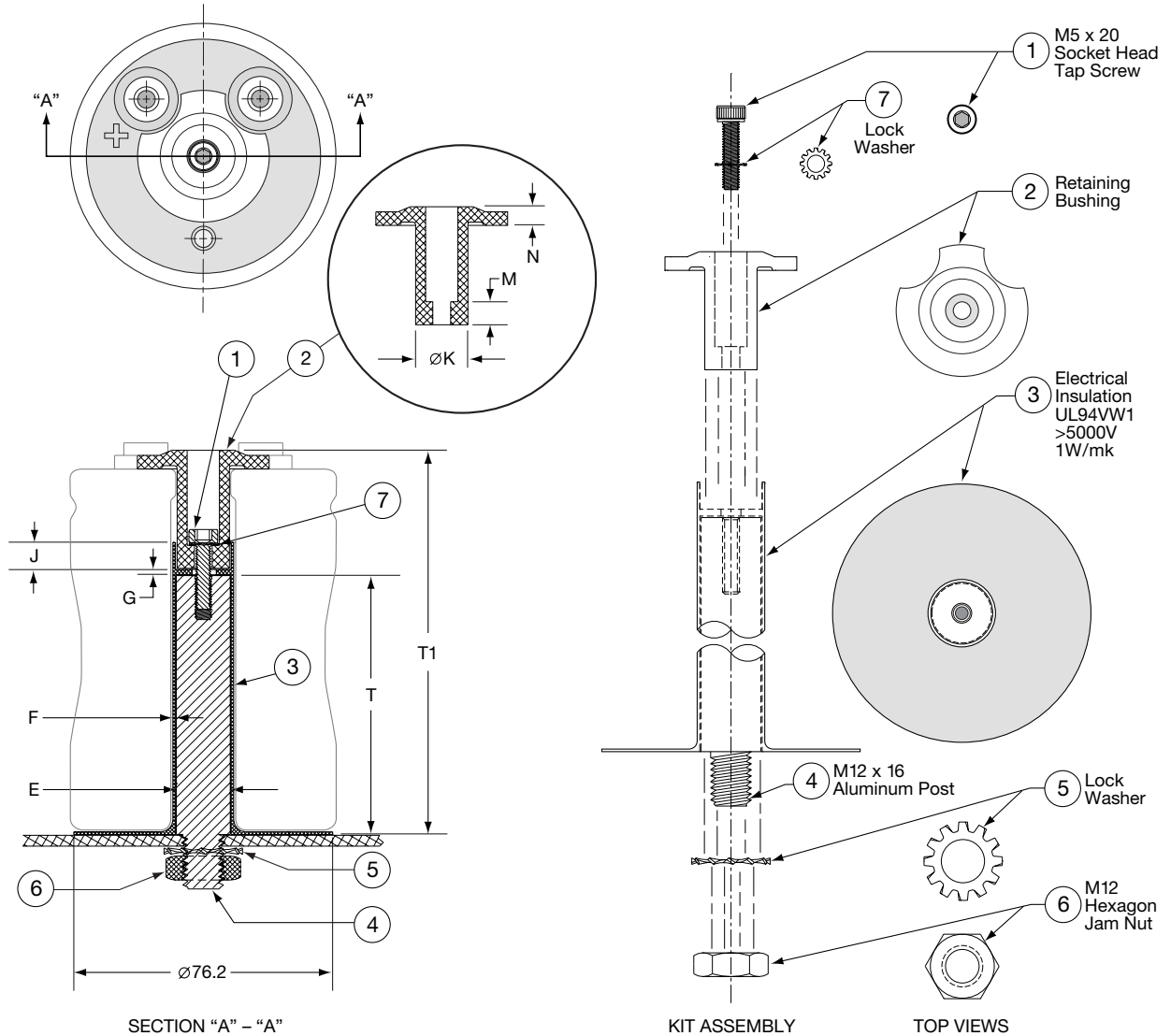
Mounting Code	Case ØD	A ±1.0 (0.040)	B ±1.0 (0.040)	G ±1.0 (0.040)	J ±0.5 (0.020)	K ±0.5 (0.020)	R ±1.0 (0.040)	S ±1.0 (0.040)	T ±0.5 (0.020)
C	76.2 (3.000)	44.5 (1.750)	49.2 (1.937)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	1.0 (0.040)

# UTOR Series

## Mounting Hardware - Screw Terminals

### Type H: Heat Sink Mounting Kit

Unit: mm (inches)



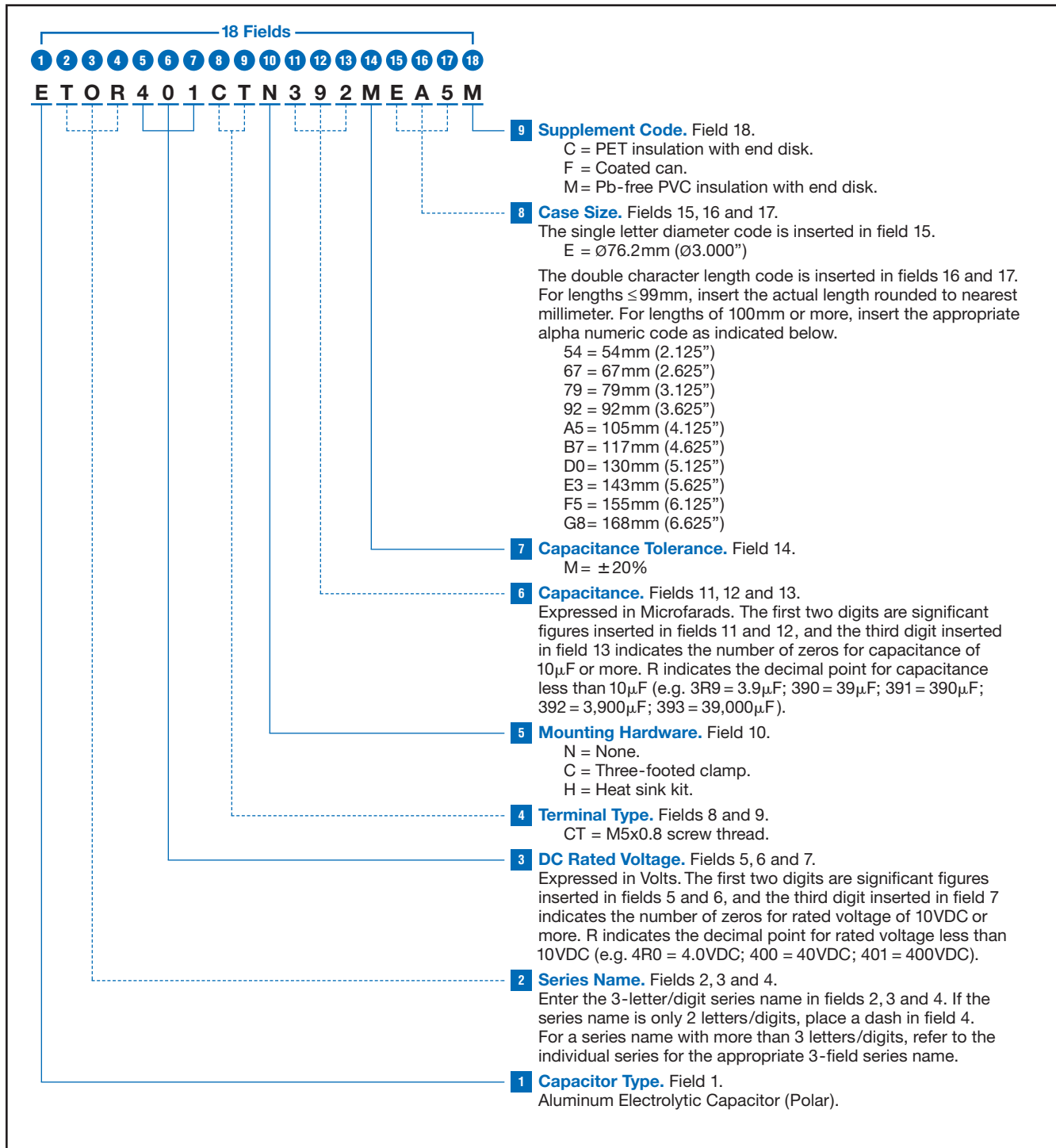
### Type H: Heat Sink Mounting Kit Dimensions

Mounting Code	Case Size Code	T ±0.2 (0.008)	T1 ±0.5 (0.020)
H	E54	35 (1.378)	58 (2.280)
H	E67	35 (1.378)	71 (2.780)
H	E79	60 (2.362)	83 (3.280)
H	E92	60 (2.362)	96 (3.780)
H	EA5	60 (2.362)	109 (4.280)
H	EB7	60 (2.362)	121 (4.780)
H	ED0	111 (4.370)	134 (5.280)
H	EE3	111 (4.370)	147 (5.780)
H	EF5	111 (4.370)	160 (6.280)
H	EG8	111 (4.370)	172 (6.780)

Dimension	Millimeters	Inches
E	18.6 Max.	0.732 Max.
F	0.56 ± 0.05	0.022 ± 0.002
G	2.00 ± 0.13	0.080 ± 0.005
J	8.00 ± 0.13	0.315 ± 0.005
ØK	15.24 ± 0.20	0.600 ± 0.008
M	6.76 ± 0.13	0.266 ± 0.005
N	5.49 ± 0.13	0.216 ± 0.005

# UTOR Series

**Part Numbering System for UTOR Series** When ordering, always specify complete 18-field global part number.



# UTOR Series

## Standard Voltage Ratings - Screw Terminals

Rated Voltage (WVDC)	Capacitance (µF)	Global Part Number†	Nominal Case Size* D × L (mm)	Case Size Code	Maximum ESR (mΩ) at +25°C, 120Hz	Rated Ripple Current (A rms) at +105°C		
						120Hz	300Hz	>3kHz
<b>350 Volts</b> 400 Volts Surge	1,800	ETOR351CTN182ME54M	76 × 54	E54	44	11.8	14.1	16.5
	2,700	ETOR351CTN272ME67M	76 × 67	E67	30	15.4	18.5	21.6
	3,300	ETOR351CTN332ME79M	76 × 79	E79	24	17.1	20.5	23.9
	4,700	ETOR351CTN472ME92M	76 × 92	E92	17	21.6	26.0	30.3
	5,600	ETOR351CTN562MEA5M	76 × 105	EA5	14	24.9	29.9	34.9
	6,800	ETOR351CTN682MED0M	76 × 130	ED0	12	30.2	36.2	42.2
	8,200	ETOR351CTN822MEE3M	76 × 143	EE3	10	34.5	41.4	48.3
	10,000	ETOR351CTN103MEG8M	76 × 168	EG8	8	41.0	49.2	57.4
<b>400 Volts</b> 450 Volts Surge	1,500	ETOR401CTN152ME54M	76 × 54	E54	53	10.7	12.9	15.0
	2,200	ETOR401CTN222ME67M	76 × 67	E67	36	13.9	16.7	19.5
	2,700	ETOR401CTN272ME79M	76 × 79	E79	30	15.4	18.5	21.6
	3,300	ETOR401CTN332ME92M	76 × 92	E92	24	18.1	21.8	25.4
	3,900	ETOR401CTN392MEA5M	76 × 105	EA5	21	20.8	25.0	29.1
	4,700	ETOR401CTN472MEB7M	76 × 117	EB7	17	24.0	28.8	33.6
	5,600	ETOR401CTN562MED0M	76 × 130	ED0	14	27.4	32.9	38.3
	6,800	ETOR401CTN682MEE3M	76 × 143	EE3	12	31.4	37.7	44.0
8,200	ETOR401CTN822MEG8M	76 × 168	EG8	10	37.1	44.5	52.0	
<b>420 Volts</b> 470 Volts Surge	1,200	ETOR421CTN122ME54M	76 × 54	E54	89	9.3	11.1	13.0
	1,800	ETOR421CTN182ME67M	76 × 67	E67	59	12.2	14.6	17.1
	2,200	ETOR421CTN222ME79M	76 × 79	E79	40	14.9	17.9	20.9
	3,300	ETOR421CTN332ME92M	76 × 92	E92	32	17.5	21.0	24.5
	3,900	ETOR421CTN392MEA5M	76 × 105	EA5	27	20.1	24.1	28.2
	4,700	ETOR421CTN472MED0M	76 × 130	ED0	23	24.2	29.1	33.9
	5,600	ETOR421CTN562MEE3M	76 × 143	EE3	19	27.6	33.1	38.6
	6,800	ETOR421CTN682MEG8M	76 × 168	EG8	16	32.7	39.2	45.7
<b>450 Volts</b> 500 Volts Surge	1,000	ETOR451CTN102ME54M	76 × 54	E54	89	9.3	11.1	13.0
	1,500	ETOR451CTN152ME67M	76 × 67	E67	59	12.2	14.6	17.1
	2,200	ETOR451CTN222ME79M	76 × 79	E79	48	13.5	16.2	18.9
	2,700	ETOR451CTN272ME92M	76 × 92	E92	40	15.9	19.0	22.2
	3,300	ETOR451CTN332MEA5M	76 × 105	EA5	32	18.5	22.2	25.9
	3,900	ETOR451CTN392MEB7M	76 × 117	EB7	27	21.1	25.3	29.6
	4,700	ETOR451CTN472MED0M	76 × 130	ED0	23	24.2	29.1	33.9
	5,600	ETOR451CTN562MEF5M	76 × 155	EF5	19	28.6	34.3	40.1
<b>500 Volts</b> 550 Volts Surge	680	ETOR501CTN681ME54M	76 × 54	E54	206	6.5	7.8	9.1
	1,000	ETOR501CTN102ME67M	76 × 67	E67	140	8.4	10.1	11.8
	1,500	ETOR501CTN152ME79M	76 × 79	E79	93	10.3	12.4	14.4
	1,800	ETOR501CTN182ME92M	76 × 92	E92	78	12.0	14.4	16.8
	2,200	ETOR501CTN222MEA5M	76 × 105	EA5	64	14.0	16.8	19.6
	2,700	ETOR501CTN272MEB7M	76 × 117	EB7	52	16.3	19.5	22.8
	3,300	ETOR501CTN332MEE3M	76 × 143	EE3	42	19.6	23.5	27.4
	3,900	ETOR501CTN392MEG8M	76 × 168	EG8	36	22.1	26.5	31.0

†For mounting and construction options, refer to the part numbering system for descriptions and codes.

\*Refer to diagram of dimensions for detailed case size specifications.