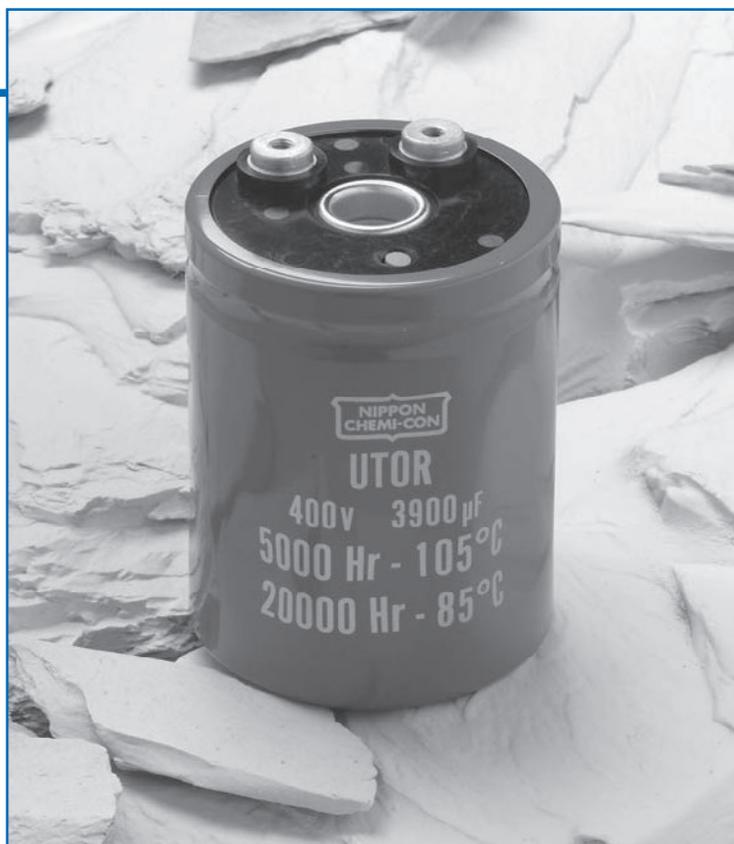


UTOR Series



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



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. 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

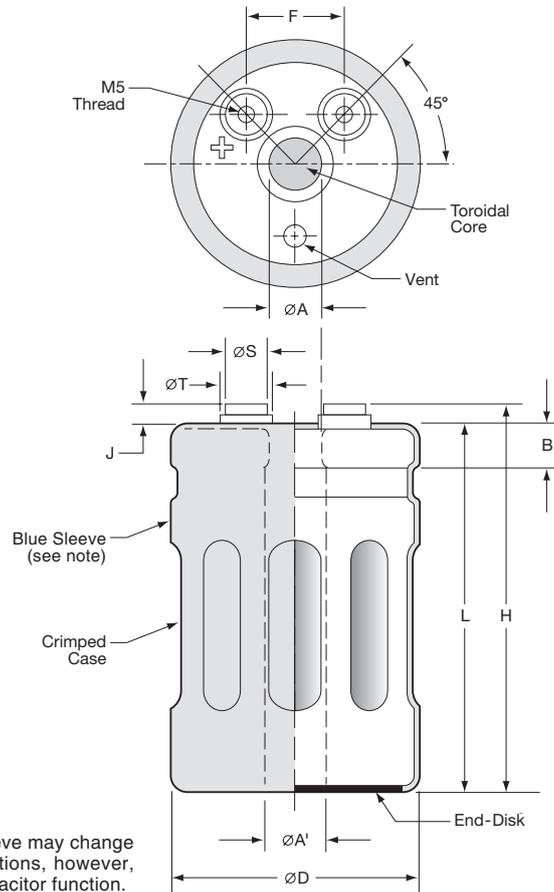
Item	Characteristics																											
Category Temperature Range	- 40 to +105°C																											
Rated Voltage Range	350 to 500VDC																											
Capacitance Range	680 to 10,000µF at +25°C, 120Hz																											
Capacitance Tolerance	±20% (M) at +25°C, 120Hz																											
Leakage Current	I = 0.02CV (µA) or 5mA, whichever is smaller, after 5 minutes at +25°C. Where I = Max. leakage current (µA), C = Nominal capacitance (µF) and V = Rated voltage (V)																											
Rated Ripple Current Multipliers	<p>Ambient Temperature (°C)</p> <table border="1"> <tr> <td>+45°C</td> <td>+65°C</td> <td>+85°C</td> <td>+105°C</td> </tr> <tr> <td>2.45</td> <td>2.12</td> <td>1.73</td> <td>1.00</td> </tr> </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																									
2.45	2.12	1.73	1.00																									
Mounting Type	Air Velocity																											
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Heat-Sink (fluid cooled)	1.35	1.65	1.75																									
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: ≤ ±20% of initial measured value ESR change : ≤ 200% of initial specified value Leakage current : ≤ 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: ≤ ±20% of initial measured value ESR change : ≤ 200% of initial specified value Leakage current : ≤ 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											
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																							
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



Note:
In some cases, the color of the sleeve may change slightly due to the operating conditions, however, the discoloration will not impair capacitor function.

Terminal Specifications in Millimeters

Terminal Code	Thread Size	Minimum Thread Depth	J ±0.50	ØS ±0.25	ØT ±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 ±0.020	ØS ±0.010	ØT ±0.010
CT	M5x0.8	0.413	0.276	0.512	0.728

Case Dimensions in Millimeters

ØA ±0.20	ØA' ±0.30	B ±0.5	F ±0.25
16.3	18.9	9.5	31.8

Case Dimensions in Inches

ØA ±0.008	ØA' ±0.012	B ±0.020	F ±0.010
0.642	0.744	0.374	1.250

Case Size Code	ØD +2.0	L +2.0	H ±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	ØD +0.080	L +0.080	H ±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

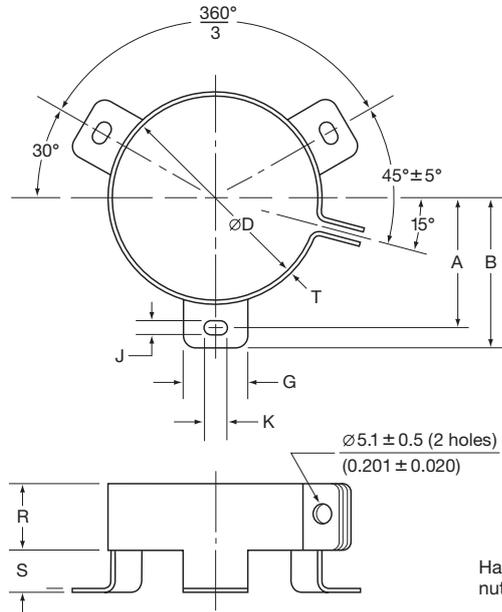


UTOR_{Series}

Mounting Hardware - Screw Terminals

Type C: Three-Footed Clamp

Unit: mm (inches)



Hardware: Screw, washer and hexagon nut included with each clamp.

Type C: Clamp Specifications

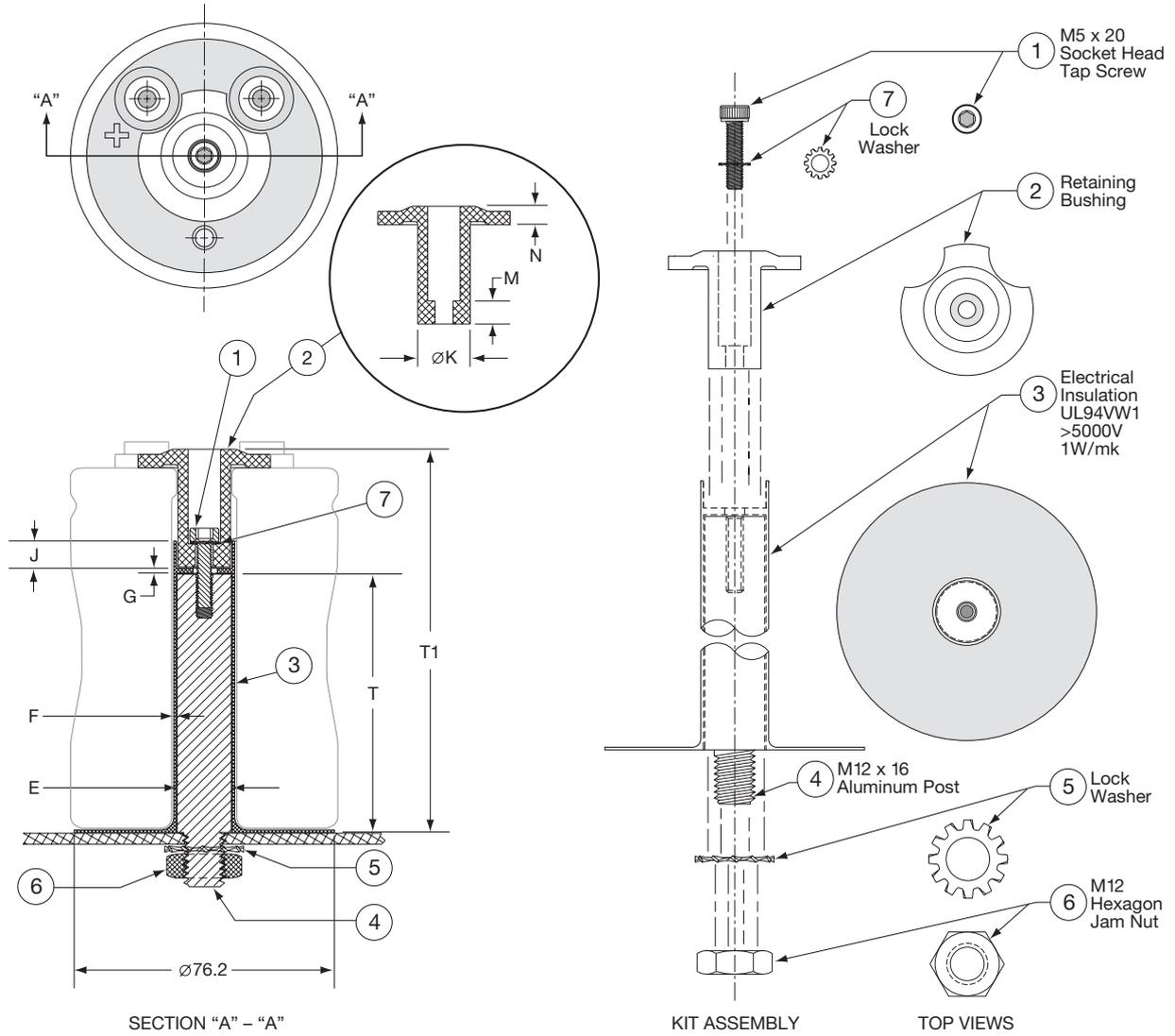
Mounting Code	Case $\varnothing D$	A ± 1.0 (0.040)	B ± 1.0 (0.040)	G ± 1.0 (0.040)	J ± 0.5 (0.020)	K ± 0.5 (0.020)	R ± 1.0 (0.040)	S ± 1.0 (0.040)	T ± 0.5 (0.020)
C	76.2 (3.000)	44.5 (1.750)	49.2 (1.937)	13.3 (0.524)	4.5 (0.177)	7.1 (0.280)	19.1 (0.751)	9.5 (0.374)	1.0 (0.040)

UTOR Series

Mounting Hardware - Screw Terminals

Type H: Heat Sink Mounting Kit

Unit: mm (inches)



Type H: Heat Sink Mounting Kit Dimensions

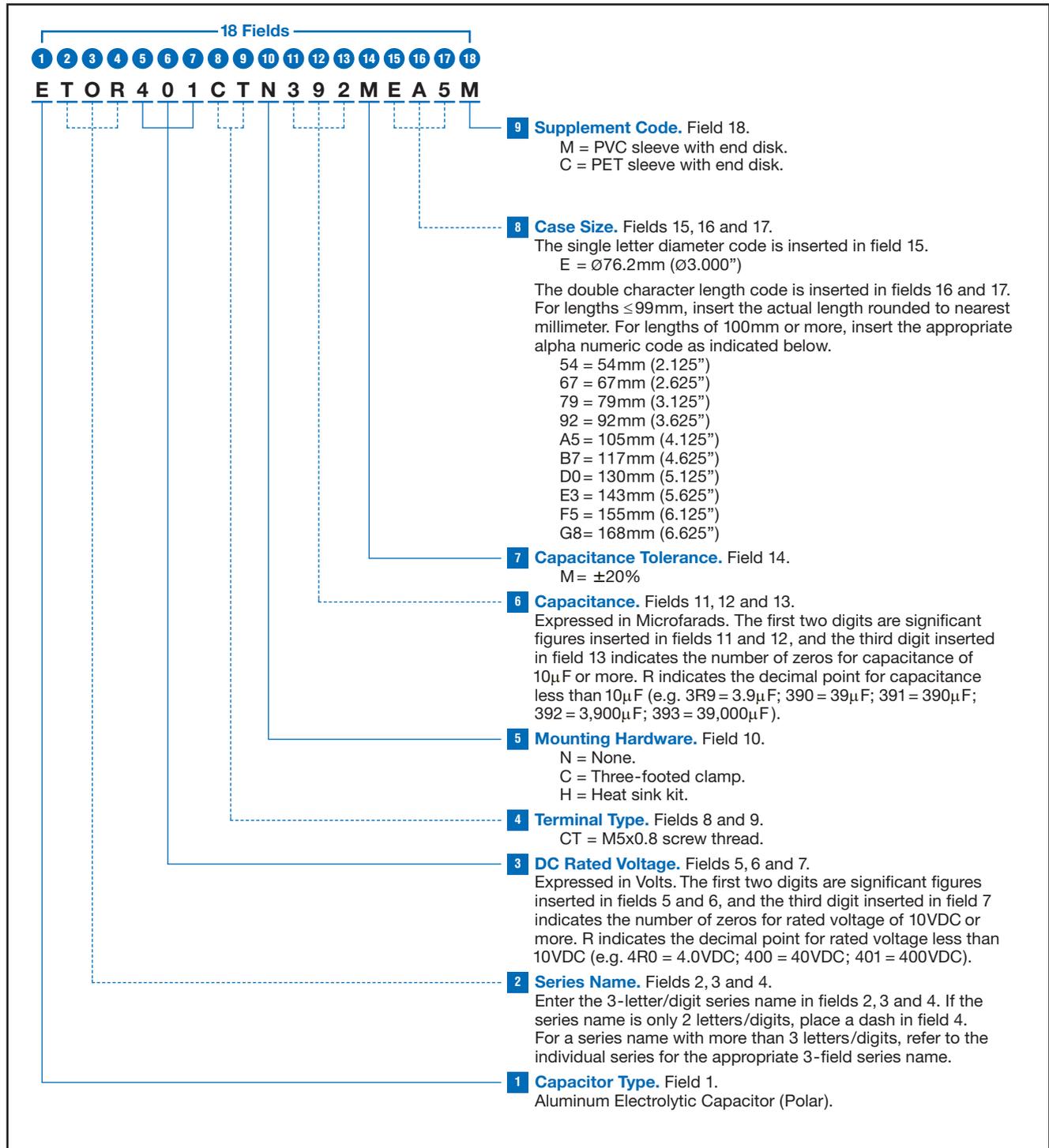
Mounting Code	Case Size Code	T ± 0.2 (0.008)	T1 ± 0.5 (0.020)
H	E54	35 (1.378)	58 (2.280)
H	E67	35 (1.378)	71 (2.780)
H	E79	60 (2.362)	83 (3.280)
H	E92	60 (2.362)	96 (3.780)
H	EA5	60 (2.362)	109 (4.280)
H	EB7	60 (2.362)	121 (4.780)
H	ED0	111 (4.370)	134 (5.280)
H	EE3	111 (4.370)	147 (5.780)
H	EF5	111 (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 x L (mm)	Case Size Code	Maximum ESR (mΩ) at +25°C, 120Hz	Rated Ripple Current (A rms) at +105°C		
						120Hz	300Hz	>3kHz
350 Volts 400 Volts Surge	1,800	ETOR351CTN182ME54M	76 x 54	E54	44	11.8	14.1	16.5
	2,700	ETOR351CTN272ME67M	76 x 67	E67	30	15.4	18.5	21.6
	3,300	ETOR351CTN332ME79M	76 x 79	E79	24	17.1	20.5	23.9
	4,700	ETOR351CTN472ME92M	76 x 92	E92	17	21.6	26.0	30.3
	5,600	ETOR351CTN562MEA5M	76 x 105	EA5	14	24.9	29.9	34.9
	6,800	ETOR351CTN682MED0M	76 x 130	ED0	12	30.2	36.2	42.2
	8,200	ETOR351CTN822MEE3M	76 x 143	EE3	10	34.5	41.4	48.3
	10,000	ETOR351CTN103MEG8M	76 x 168	EG8	8	41.0	49.2	57.4
400 Volts 450 Volts Surge	1,500	ETOR401CTN152ME54M	76 x 54	E54	53	10.7	12.9	15.0
	2,200	ETOR401CTN222ME67M	76 x 67	E67	36	13.9	16.7	19.5
	2,700	ETOR401CTN272ME79M	76 x 79	E79	30	15.4	18.5	21.6
	3,300	ETOR401CTN332ME92M	76 x 92	E92	24	18.1	21.8	25.4
	3,900	ETOR401CTN392MEA5M	76 x 105	EA5	21	20.8	25.0	29.1
	4,700	ETOR401CTN472MEB7M	76 x 117	EB7	17	24.0	28.8	33.6
	5,600	ETOR401CTN562MED0M	76 x 130	ED0	14	27.4	32.9	38.3
	6,800	ETOR401CTN682MEE3M	76 x 143	EE3	12	31.4	37.7	44.0
	8,200	ETOR401CTN822MEG8M	76 x 168	EG8	10	37.1	44.5	52.0
420 Volts 470 Volts Surge	1,200	ETOR421CTN122ME54M	76 x 54	E54	89	9.3	11.1	13.0
	1,800	ETOR421CTN182ME67M	76 x 67	E67	59	12.2	14.6	17.1
	2,200	ETOR421CTN222ME79M	76 x 79	E79	40	14.9	17.9	20.9
	3,300	ETOR421CTN332ME92M	76 x 92	E92	32	17.5	21.0	24.5
	3,900	ETOR421CTN392MEA5M	76 x 105	EA5	27	20.1	24.1	28.2
	4,700	ETOR421CTN472MED0M	76 x 130	ED0	23	24.2	29.1	33.9
	5,600	ETOR421CTN562MEE3M	76 x 143	EE3	19	27.6	33.1	38.6
	6,800	ETOR421CTN682MEG8M	76 x 168	EG8	16	32.7	39.2	45.7
450 Volts 500 Volts Surge	1,000	ETOR451CTN102ME54M	76 x 54	E54	89	9.3	11.1	13.0
	1,500	ETOR451CTN152ME67M	76 x 67	E67	59	12.2	14.6	17.1
	2,200	ETOR451CTN222ME79M	76 x 79	E79	48	13.5	16.2	18.9
	2,700	ETOR451CTN272ME92M	76 x 92	E92	40	15.9	19.0	22.2
	3,300	ETOR451CTN332MEA5M	76 x 105	EA5	32	18.5	22.2	25.9
	3,900	ETOR451CTN392MEB7M	76 x 117	EB7	27	21.1	25.3	29.6
	4,700	ETOR451CTN472MED0M	76 x 130	ED0	23	24.2	29.1	33.9
	5,600	ETOR451CTN562MEF5M	76 x 155	EF5	19	28.6	34.3	40.1
500 Volts 550 Volts Surge	680	ETOR501CTN681ME54M	76 x 54	E54	206	6.5	7.8	9.1
	1,000	ETOR501CTN102ME67M	76 x 67	E67	140	8.4	10.1	11.8
	1,500	ETOR501CTN152ME79M	76 x 79	E79	93	10.3	12.4	14.4
	1,800	ETOR501CTN182ME92M	76 x 92	E92	78	12.0	14.4	16.8
	2,200	ETOR501CTN222MEA5M	76 x 105	EA5	64	14.0	16.8	19.6
	2,700	ETOR501CTN272MEB7M	76 x 117	EB7	52	16.3	19.5	22.8
	3,300	ETOR501CTN332MEE3M	76 x 143	EE3	42	19.6	23.5	27.4
	3,900	ETOR501CTN392MEG8M	76 x 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.



- Always read "Notes on Use" before using the product in order to enable you to use the product correctly and prevent any faults and accidents from occurring.
- Request the Product Specification on the product of NIPPON CHEMI-CON CORPORATION to refer to it as well as this brochure prior to the order of the products. Some specific notes on use of the ordered product may be described in the specifications.
- The products listed in this catalog are designed and manufactured for general electronics equipment use and are not intended for use in applications that can adversely affect human life; where the malfunction of equipment may cause damage to life or property. In addition, our products are not intended to be used in specific applications that may cause a major social impact. Please consult with us in advance of usage of our products in the following listed applications. ① Aerospace equipment ② Power generation equipment such as thermal power, nuclear power etc. ③ Medical equipment ④ Transport equipment (automobiles, trains, ships, etc.) ⑤ Transportation control equipment ⑥ Disaster prevention / crime prevention equipment ⑦ Highly publicized information processing equipment ⑧ Submarine equipment ⑨ Other applications that are not considered general-purpose applications.
- The circuits described as examples in this catalog and the "delivery specifications" are featured in order to show the operations and usage of our products, however, this fact does not guarantee that the circuits are available to function in your equipment systems. We are not in any case responsible for any failures or damage caused by the use of information contained herein. You should examine our products, of which the characteristics are described in the "delivery specifications" and other documents, and determine whether or not our products suit your requirements according to the specifications of your equipment systems. Therefore, you bear final responsibility regarding the use of our products.
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- We reserve the right to discontinue production and delivery of products. We do not guarantee that all the products included in this catalog will be available in the future.
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- We continually strive to improve the quality and reliability of our products, but in any case that our product does not meet our published specifications, please stop using it promptly and contact us immediately. As for compensation for non-conforming goods delivered by Chemi-Con, we will limit it only to goods found in non-compliance of our published specifications. This may be accomplished by a no cost replacement of non-conforming individual products, a credit of the piece price paid per each individual non-conforming product, or in other ways deemed necessary.
In addition, we have an established system with enhanced traceability, therefore we will limit the applicable lot items for any potential compensation.

[Part Numbering System](#)

[Part Numbering System \(Appendix\)](#)

[Standardization](#)

[Available Items by Manufacturing Locations](#)

[Environmental Measures](#)

[Technical Note](#)

[Precautions and Guidelines](#)

[Recommended Soldering Conditions](#)

[Taping, Lead-preforming and Packaging](#)

[Available Terminals for Snap-in and Screw Mount Type](#)