

Aluminum Electrolytic Capacitors

TUR/TSR

TUR/TSR Series

Key Features

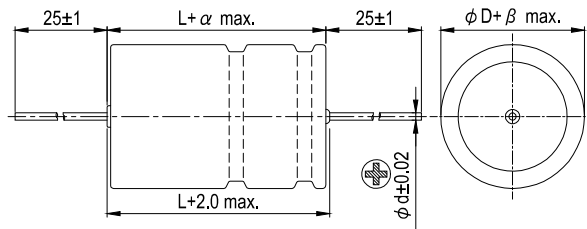
- High vibration resistance
- High ripple current capability
- Low ESR
- Useful life 3,000 hours at 125°C
- Shelf life up to 15 years at a storage temperature of 30°C
- RoHS compliance
- AEC-Q200 Parts Available: Replace "S" Suffix with "KS" or "LS" Suffix

Specifications

Rated Voltage V_R	25 ~ 40 V_{DC}	
Surge Voltage V_S	1.15 · V_R	
Rated Capacitance C_R	1,400 ~ 10,000 μF	at 100 Hz, 20°C
Capacitance Tolerance	-10% ~ +30%	
Leakage Current I_{leak} (at 20°C)	$I_{leak} \leq 0.006 \mu A \cdot CV + 4 \mu A$ C = Rated capacitance in μF , V = Rated DC working voltage in V After 5 minutes	
Useful Life 125°C: $V_R, I_{AC,R}$	3,000 Hrs	Requirements: Cap.: Within $\pm 30\%$ of initial value ESR: Within 300% of specified value I_{leak} : Within initial specified limit
Voltage Endurance Test 125°C: V_R	2,000 Hrs	Requirements: Cap.: Within $\pm 10\%$ of initial value ESR: Within 130% of specified value I_{leak} : Within initial specified limit
Vibration Resistance	The wires of the Axial-lead capacitor should be mounted at a distance of (6 \pm 1) mm from its body, which is additionally clamped. Soldering star capacitors should be mounted in a upright position and its terminals should be firmly soldered to the PCB and body additionally clamped. Vibration test according to IEC 60068-2-6, test Fc: Frequency range 10 Hz ~ 2 KHz, max. displacement amplitude 1.5 mm, max. acceleration 20 g, in total 6 hours (3*2 hours).	
Detail Specification Sectional Specification	Similar to CECC 30301-802 IEC 60384-4	

Product Dimensions

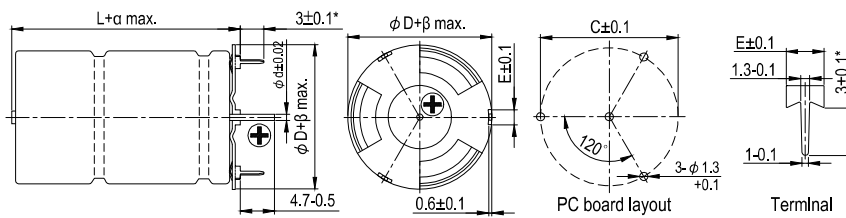
TUR Series



Unit: mm

ϕD	16	18	21
ϕd	1.0		
α	0.5		
β	0.5		

TSR Series



Unit: mm

ϕD	16	18	21
C	16.5	18.5	21.5
E	3.1		3.6
ϕd	1.0		
α	2.5		
β	1.2		



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Aluminum Electrolytic Capacitors

TUR/TSR

Characteristics and Permissible Ripple Current

Working Voltage (V _{DC})	Capacitance 100 Hz, 20°C (μF)	φ D×L (mm)	ESR _{max} 100 Hz, 20°C (Ω)	ESR _{max} 10k Hz, 20°C (Ω)	Imp. _{max} 100k Hz, 20°C (Ω)	I _{AC,R} 10k Hz, 125°C (A _{rms})	Axial-lead Part Number	Soldering star Part Number
25	2,400	18 × 25	0.052	0.032	0.031	3.1	TUR242Q1EAL-1825S	TSR242Q1ESS-1825S
	2,500	16 × 30	0.059	0.039	0.037	2.6	TUR252Q1EAL-1630S	TSR252Q1ESS-1630S
	3,300	18 × 30	0.039	0.024	0.023	3.8	TUR332Q1EAL-1830S	TSR332Q1ESS-1830S
	3,600	16 × 39	0.042	0.028	0.027	3.4	TUR362Q1EAL-1639S	TSR362Q1ESS-1639S
	4,700	18 × 39	0.028	0.017	0.017	5.1	TUR472Q1EAL-1839S	TSR472Q1ESS-1839S
	7,200	21 × 39	0.022	0.014	0.014	5.4	TUR722Q1EAL-2139S	TSR722Q1ESS-2139S
	10,000	21 × 49	0.016	0.011	0.011	6.8	TUR103Q1EAL-2149S	TSR103Q1ESS-2149S
40	1,400	16 × 30	0.072	0.038	0.037	2.6	TUR142Q1GAL-1630S	TSR142Q1GSS-1630S
	1,800	16 × 35	0.057	0.031	0.030	3.0	TUR182Q1GAL-1635S	TSR182Q1GSS-1635S
	1,800	18 × 30	0.050	0.024	0.023	3.8	TUR182Q1GAL-1830S	TSR182Q1GSS-1830S
	2,000	16 × 39	0.051	0.027	0.027	3.4	TUR202Q1GAL-1639S	TSR202Q1GSS-1639S
	2,600	18 × 39	0.035	0.017	0.017	5.1	TUR262Q1GAL-1839S	TSR262Q1GSS-1839S
	3,900	21 × 39	0.027	0.014	0.014	5.4	TUR392Q1GAL-2139S	TSR392Q1GSS-2139S
	5,100	21 × 49	0.021	0.011	0.011	6.8	TUR512Q1GAL-2149S	TSR512Q1GSS-2149S

Part Numbering System

TUR series 1,400 μF -10% ~ +30% 40V Axial-lead 16 φ × 30L

TUR **142** **Q** **1G** **AL** : **1630** **S**

Series name Capacitance Capacitance tolerance Rated voltage Lead forming Sealing type Case size Regional Code

Note: Please refer to "Part Numbering System" section on page 1 for more details.

Product Guide

Selection Chart

TUR / TSR -40 ~ +125°C High Ripple Current 125°C, 3,000 Hrs	TUK / TSK -40 ~ +125°C Long Life Time 125°C, 5,000 Hrs 140°C, 2,000 Hrs	TUP / TSP -40 ~ +150°C High Temperature 125°C, 10,000 Hrs 150°C, 2,000 Hrs
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Capacitor Series Table

Series	Highlights	Temperature	Rated Voltage Range (V, DC)	Capacitance Range (µF)	Page
TUR / TSR	High Ripple Current	-40 ~ 125°C	25 ~ 40	1,400 ~ 10,000	3 ~ 4
TUK / TSK	High Reliability, Long Lifetime	-40 ~ 125°C	25 ~ 100	220 ~ 10,000	5 ~ 6
TUP / TSP	High Temperature	-40 ~ 150°C	25 ~ 63	360 ~ 4,500	7 ~ 8

Part Numbering System

Product Code Guide

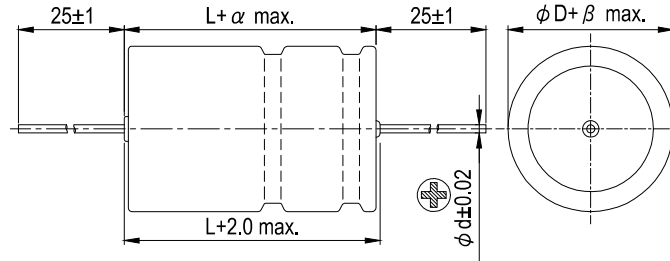
Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Example:	T	U	R	1	7	2	Q	1	E	A	L	-	1	8	3	0		

Digit	Description																										
1 ~ 3	Series Name When the series name is represented by only two letters, a hyphen, "-", is used to fill the third space.																										
4 ~ 6	Capacitance <table border="1"> <tr> <td>Capacitance</td> <td>220</td><td>300</td><td>700</td><td>1,000</td><td>4,700</td><td>5,600</td><td>10,000</td> </tr> <tr> <td>Code</td> <td>221</td><td>301</td><td>701</td><td>102</td><td>472</td><td>562</td><td>103</td> </tr> </table>	Capacitance	220	300	700	1,000	4,700	5,600	10,000	Code	221	301	701	102	472	562	103										
Capacitance	220	300	700	1,000	4,700	5,600	10,000																				
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7	Capacitance Tolerance <table border="1"> <tr> <td>Tolerance</td> <td>K</td><td>M</td><td>N</td><td>Q</td> </tr> <tr> <td>Code</td> <td>±10%</td><td>±20%</td><td>±30%</td><td>-10 ~ +30%</td> </tr> </table>	Tolerance	K	M	N	Q	Code	±10%	±20%	±30%	-10 ~ +30%																
Tolerance	K	M	N	Q																							
Code	±10%	±20%	±30%	-10 ~ +30%																							
8 ~ 9	Rated Voltage <table border="1"> <tr> <td>Voltage (WV)</td> <td>25</td><td>35</td><td>40</td><td>50</td><td>63</td><td>75</td><td>100</td> </tr> <tr> <td>Code</td> <td>1E</td><td>1V</td><td>1G</td><td>1H</td><td>1J</td><td>1R</td><td>2A</td> </tr> </table>	Voltage (WV)	25	35	40	50	63	75	100	Code	1E	1V	1G	1H	1J	1R	2A										
Voltage (WV)	25	35	40	50	63	75	100																				
Code	1E	1V	1G	1H	1J	1R	2A																				
10 ~ 11	Lead Forming <table border="1"> <tr> <td>AL</td><td>SS</td><td>PP</td> </tr> <tr> <td>Axial-lead,</td><td>Soldering star</td><td>Two plate</td> </tr> </table>	AL	SS	PP	Axial-lead,	Soldering star	Two plate																				
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12	Sealing Type - : Standard																										
13 ~ 16	Case Size <table border="1"> <tr> <td>φ D×L</td> <td>16×25</td><td>16×30</td><td>16×35</td><td>16×39</td><td>18×25</td><td>18×30</td><td>18×35</td><td>18×39</td><td>21×30</td><td>21×35</td><td>21×39</td><td>21×49</td> </tr> <tr> <td>Code</td> <td>1625</td><td>1630</td><td>1635</td><td>1639</td><td>1825</td><td>1830</td><td>1835</td><td>1839</td><td>2130</td><td>2135</td><td>2139</td><td>2149</td> </tr> </table>	φ D×L	16×25	16×30	16×35	16×39	18×25	18×30	18×35	18×39	21×30	21×35	21×39	21×49	Code	1625	1630	1635	1639	1825	1830	1835	1839	2130	2135	2139	2149
φ D×L	16×25	16×30	16×35	16×39	18×25	18×30	18×35	18×39	21×30	21×35	21×39	21×49															
Code	1625	1630	1635	1639	1825	1830	1835	1839	2130	2135	2139	2149															
17	Lead Wire and Marking Type																										
18	Supplement Code: For special control purposes																										

Product Guide

Dimensional and Lead Forming Drawings

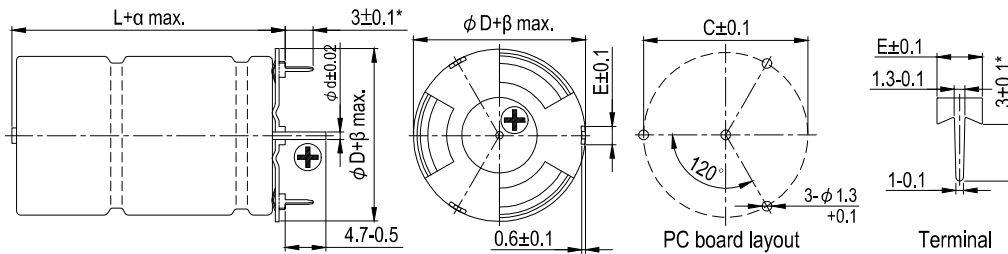
Axial-lead capacitors



Dimensions and packing units

$\phi D \times L$ mm	$\phi D + \beta$ (max.) $\times L + \alpha$ (max.) mm	ϕd mm	Q'ty / Tray pcs	Q'ty / Box pcs
16 × 25	16.5 × 25.5	1.0	45	315
16 × 30	16.5 × 30.5	1.0	45	315
16 × 35	16.5 × 35.5	1.0	45	315
16 × 39	16.5 × 39.5	1.0	45	315
18 × 25	18.5 × 25.5	1.0	45	315
18 × 30	18.5 × 30.5	1.0	45	315
18 × 35	18.5 × 35.5	1.0	45	315
18 × 39	18.5 × 39.5	1.0	45	315
21 × 30	21.5 × 30.5	1.0	45	270
21 × 35	21.5 × 35.5	1.0	45	270
21 × 39	21.5 × 39.5	1.0	45	270
21 × 49	21.5 × 49.5	1.0	35	210

Soldering star capacitors



Dimensions and packing units

$\phi D \times L$ mm	$\phi D + \beta$ (max.) $\times L + \alpha$ (max.) mm	ϕd mm	$C \pm 0.1$ mm	$E \pm 0.1$ mm	Q'ty / Tray pcs	Q'ty / Box pcs
16 × 25	17.2 × 27.5	1.0	16.5	3.1	45	315
16 × 30	17.2 × 32.5	1.0	16.5	3.1	45	315
16 × 35	17.2 × 37.5	1.0	16.5	3.1	45	315
16 × 39	17.2 × 41.5	1.0	16.5	3.1	35	245
18 × 25	19.2 × 27.5	1.0	18.5	3.1	45	315
18 × 30	19.2 × 32.5	1.0	18.5	3.1	45	315
18 × 35	19.2 × 37.5	1.0	18.5	3.1	45	315
18 × 39	19.2 × 41.5	1.0	18.5	3.1	35	245
21 × 30	22.2 × 32.5	1.0	21.5	3.6	45	270
21 × 35	22.2 × 37.5	1.0	21.5	3.6	45	270
21 × 39	22.2 × 41.5	1.0	21.5	3.6	35	210
21 × 49	22.2 × 51.5	1.0	21.5	3.6	35	210