

## TS-ED Series 105°C, 3000 hours

- Highest ripple current capability for demanding inverter applications
- 2 and 3 pin versions available
- 3000 hour life at 105°C



Rated Working Voltage:	200 ~ 250 VDC	400 ~ 450 VDC																																			
Operating Temperature:	-40 ~ +105°C	-25 ~ +105°C																																			
Nominal Capacitance:	220~2200 µF	56 ~ 560µF																																			
Capacitance Tolerance:	± 20%																																				
Dissipation Factor (120Hz, 20°C):	15% maximum (120Hz, +20°C)																																				
Leakage Current:	3√CV (µA) max. after 5 minutes; C = Capacitance in µF, V = WV																																				
Ripple Current Multipliers:	<table border="1"> <thead> <tr> <th colspan="6">Ripple Current Frequency Factors</th> <th colspan="5">Ripple Current Ambient Temperature Factors*</th> </tr> <tr> <th>Frequency(Hz):</th> <th>50</th> <th>60</th> <th>100~120</th> <th>500</th> <th>1k</th> <th>10k~</th> <th colspan="5">Ambient Temperature: 105°C 85°C 70°C 60°C ≤45°C</th> </tr> </thead> <tbody> <tr> <td>Multiplier:</td> <td>0.71</td> <td>0.78</td> <td>1.0</td> <td>1.2</td> <td>1.25</td> <td>1.4</td> <td colspan="5">Multiplier: 1.0 1.7 2.0 2.2 2.35</td> </tr> </tbody> </table>		Ripple Current Frequency Factors						Ripple Current Ambient Temperature Factors*					Frequency(Hz):	50	60	100~120	500	1k	10k~	Ambient Temperature: 105°C 85°C 70°C 60°C ≤45°C					Multiplier:	0.71	0.78	1.0	1.2	1.25	1.4	Multiplier: 1.0 1.7 2.0 2.2 2.35				
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Multiplier:	0.71	0.78	1.0	1.2	1.25	1.4	Multiplier: 1.0 1.7 2.0 2.2 2.35																														
Endurance:	3000 hours at +105°C with maximum specified ripple current (see page 6)																																				

\*Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

### Part Number System

**E E T**  
Common Code

**E D**  
Series Code

**□ □**  
Voltage Code

**□ □ □**  
Capacitance Code

Diameter / Terminal Code			
# of pins:	2	2	3
pin length:	6.3mm	4.0mm	4.0mm
Diameter	22mm	B	H
	25mm	C	J
	30mm	D	K
	35mm	E	L

(Please see page 10 for details)

Insulation Options	
A	PVC with top plate
	PVC without top plate (no suffix)
J	PET sleeve without plate

### TS-ED Standard Ratings (part numbers shown with 6.3mm length terminal and top vinyl plate)

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A <sub>ms</sub> )		20°C ESR (Ω, max.)		Panasonic Part Number	Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A <sub>ms</sub> )		20°C ESR (Ω, max.)		Panasonic Part Number	
		120Hz	10kHz~	120Hz	20kHz				120Hz	10kHz~	120Hz	20kHz		
<b>200 VDC Working, 250 VDC Surge</b>							<b>250 VDC Working, 300 VDC Surge (continued)</b>							
270	22 x 25	1.42	2.03	0.553	0.249	EETED2D271BA	390	22 x 40	1.72	2.45	0.383	0.172	EETED2E391BA	
330	22 x 30	1.56	2.23	0.452	0.203	EETED2D331BA	25 x 30	1.71	2.44	0.383	0.172	EETED2E391CA		
390	22 x 30	1.71	2.44	0.383	0.172	EETED2D391BA	30 x 25	1.71	2.44	0.383	0.172	EETED2E391DA		
	25 x 25	1.71	2.44	0.383	0.172	EETED2D391CA	470	22 x 45	1.85	2.64	0.317	0.143	EETED2E471BA	
470	22 x 35	1.85	2.64	0.317	0.143	EETED2D471BA		25 x 35	1.85	2.64	0.317	0.143	EETED2E471CA	
	25 x 30	1.85	2.64	0.317	0.143	EETED2D471CA		30 x 30	1.85	2.64	0.317	0.143	EETED2E471DA	
560	22 x 40	2.14	3.05	0.266	0.120	EETED2D561BA	560	25 x 40	2.14	3.05	0.266	0.120	EETED2E561CA	
	25 x 30	2.14	3.05	0.266	0.120	EETED2D561CA		30 x 30	2.14	3.05	0.266	0.120	EETED2E561DA	
	30 x 25	2.14	3.05	0.266	0.120	EETED2D561DA		680	35 x 25	2.14	3.05	0.266	0.133	EETED2E561EA
680	22 x 45	2.42	3.45	0.219	0.099	EETED2D681BA	25 x 45		2.42	3.45	0.219	0.099	EETED2E681CA	
	25 x 35	2.42	3.45	0.219	0.099	EETED2D681CA	30 x 35		2.42	3.45	0.219	0.099	EETED2E681DA	
	30 x 30	2.42	3.45	0.219	0.099	EETED2D681DA	35 x 30	2.42	3.45	0.219	0.110	EETED2E681EA		
820	22 x 50	2.63	3.76	0.182	0.082	EETED2D821BA	820	30 x 40	2.63	3.76	0.182	0.082	EETED2E821DA	
	25 x 40	2.63	3.76	0.182	0.082	EETED2D821CA		35 x 35	2.63	3.76	0.182	0.091	EETED2E821EA	
	30 x 30	2.63	3.76	0.182	0.082	EETED2D821DA	1000	30 x 50	2.84	4.06	0.149	0.067	EETED2E102DA	
35 x 25	2.63	3.76	0.182	0.091	EETED2D821EA	35 x 40		2.84	4.06	0.149	0.067	EETED2E102EA		
1000	25 x 45	2.84	4.06	0.149	0.067	EETED2D102CA	1200	35 x 45	3.13	4.47	0.124	0.062	EETED2E122EA	
	30 x 35	2.84	4.06	0.149	0.067	EETED2D102DA		1500	35 x 50	3.56	5.08	0.099	0.050	EETED2E152EA
	35 x 30	2.84	4.06	0.149	0.067	EETED2D102EA		<b>400 VDC Working, 450 VDC Surge</b>						
1200	30 x 40	3.13	4.47	0.124	0.062	EETED2D122DA	82	22 x 25	0.80	1.14	1.617	0.728	EETED2G820BA	
	35 x 35	3.13	4.47	0.124	0.062	EETED2D122EA	100	22 x 30	0.91	1.30	1.326	0.597	EETED2G101BA	
1500	30 x 50	3.56	5.08	0.099	0.050	EETED2D152DA		25 x 25	0.91	1.30	1.326	0.597	EETED2G101CA	
	35 x 40	3.56	5.08	0.099	0.050	EETED2D152EA	120	22 x 35	1.02	1.46	1.105	0.497	EETED2G121BA	
1800	35 x 45	3.84	5.48	0.083	0.041	EETED2D182EA		25 x 30	1.02	1.46	1.105	0.497	EETED2G121CA	
	2200	35 x 50	4.12	5.89	0.068	0.033	EETED2D222EA	150	22 x 40	1.07	1.53	0.884	0.398	EETED2G151BA
<b>250 VDC Working, 300 VDC Surge</b>						25 x 30	1.07		1.53	0.884	0.398	EETED2G151CA		
220		22 x 30	1.28	1.83	0.678	0.305	EETED2E221BA		30 x 25	1.07	1.53	0.884	0.398	EETED2G151DA
270	22 x 30	1.42	2.03	0.553	0.249	EETED2E271BA	180	22 x 45	1.12	1.60	0.737	0.332	EETED2G181BA	
	25 x 25	1.42	2.03	0.553	0.249	EETED2E271CA		25 x 35	1.12	1.60	0.737	0.332	EETED2G181CA	
330	22 x 35	1.64	2.34	0.452	0.203	EETED2E331BA	30 x 30	1.12	1.60	0.737	0.332	EETED2G181DA		
	25 x 30	1.56	2.23	0.452	0.203	EETED2E331CA	220	22 x 50	1.42	2.03	0.603	0.271	EETED2G221BA	

### TS-ED Standard Ratings (continued)

Cap. ( $\mu$ F)	Size (mm) D x L	Max 105°C R.C. ( $A_{rms}$ )		20°C ESR ( $\Omega$ , max.)		Panasonic Part Number
		120Hz	10kHz~	120Hz	20kHz	
<b>400 VDC Working, 450 VDC Surge (continued)</b>						
220	25 x 40	1.42	2.03	0.603	0.271	EETED2G221CA
	30 x 30	1.42	2.03	0.603	0.271	EETED2G221DA
	35 x 25	1.42	2.03	0.603	0.271	EETED2G221EA
270	25 x 45	1.56	2.23	0.491	0.221	EETED2G271CA
	30 x 35	1.56	2.23	0.491	0.221	EETED2G271DA
	35 x 30	1.56	2.23	0.491	0.221	EETED2G271EA
330	30 x 40	1.71	2.44	0.402	0.181	EETED2G331DA
	35 x 30	1.71	2.44	0.402	0.181	EETED2G331EA
390	30 x 45	1.85	2.64	0.340	0.153	EETED2G391DA
	35 x 35	1.85	2.64	0.340	0.153	EETED2G391EA
470	35 x 40	2.01	2.87	0.282	0.127	EETED2G471EA
560	35 x 45	2.35	3.36	0.237	0.107	EETED2G561EA
<b>420 VDC Working, 470 VDC Surge</b>						
68	22 x 25	1.08	0.95	1.950	0.878	EETED2S680BA
82	22 x 30	1.14	1.08	1.617	0.728	EETED2S820BA
	25 x 25	1.14	1.08	1.617	0.728	EETED2S820CA
100	22 x 30	1.30	1.14	1.326	0.597	EETED2S101BA
	25 x 25	1.30	1.14	1.326	0.597	EETED2S101CA
120	22 x 35	1.46	1.30	1.105	0.497	EETED2S121BA
	25 x 30	1.46	1.30	1.105	0.497	EETED2S121CA
150	22 x 40	1.53	1.46	0.884	0.398	EETED2S151BA
	25 x 35	1.53	1.46	0.884	0.398	EETED2S151CA
	30 x 25	1.53	1.46	0.884	0.398	EETED2S151DA
180	22 x 45	1.60	1.53	0.737	0.332	EETED2S181BA
	25 x 40	1.60	1.53	0.737	0.332	EETED2S181CA
	30 x 30	1.60	1.53	0.737	0.332	EETED2S181DA
	35 x 25	1.60	1.53	0.737	0.332	EETED2S181EA
220	25 x 45	2.03	1.60	0.603	0.271	EETED2S221CA
	30 x 35	2.03	1.60	0.603	0.271	EETED2S221DA
	35 x 30	2.03	1.60	0.603	0.271	EETED2S221EA
270	25 x 50	2.40	2.03	0.491	0.221	EETED2S271CA
	30 x 40	2.40	2.03	0.491	0.221	EETED2S271DA
	35 x 30	2.40	2.03	0.491	0.221	EETED2S271EA
330	30 x 45	2.54	2.45	0.402	0.181	EETED2S331DA
	35 x 35	2.54	2.45	0.402	0.181	EETED2S331EA
390	30 x 50	2.73	2.64	0.340	0.153	EETED2S391DA
	35 x 40	2.73	2.64	0.340	0.153	EETED2S391EA
470	35 x 45	3.18	2.82	0.282	0.127	EETED2S471EA
<b>450 VDC Working, 500 VDC Surge</b>						
56	22 x 25	0.67	0.95	2.368	1.066	EETED2W560BA
68	22 x 30	0.76	1.08	1.950	0.878	EETED2W680BA
	25 x 25	0.76	1.08	1.950	0.878	EETED2W680CA
82	22 x 30	0.80	1.14	1.617	0.728	EETED2W820BA
	25 x 25	0.80	1.14	1.617	0.728	EETED2W820CA
100	22 x 35	0.91	1.30	1.326	0.597	EETED2W101BA
	25 x 30	0.91	1.30	1.326	0.597	EETED2W101CA
120	22 x 40	1.02	1.46	1.105	0.497	EETED2W121BA
	25 x 35	1.02	1.46	1.105	0.497	EETED2W121CA
	30 x 25	1.02	1.46	1.105	0.497	EETED2W121DA
150	22 x 45	1.07	1.53	0.884	0.398	EETED2W151BA
	25 x 40	1.07	1.53	0.884	0.398	EETED2W151CA
	30 x 30	1.07	1.53	0.884	0.398	EETED2W151DA
	35 x 25	1.07	1.53	0.884	0.398	EETED2W151EA
180	22 x 50	1.12	1.60	0.737	0.332	EETED2W181BA
	25 x 40	1.12	1.60	0.737	0.332	EETED2W181CA
	30 x 30	1.12	1.60	0.737	0.332	EETED2W181DA
	35 x 25	1.12	1.60	0.737	0.332	EETED2W181EA
220	25 x 45	1.42	2.03	0.603	0.271	EETED2W221CA
	30 x 35	1.42	2.03	0.603	0.271	EETED2W221DA
	35 x 30	1.42	2.03	0.603	0.271	EETED2W221EA
270	30 x 40	1.72	2.45	0.491	0.221	EETED2W271DA
	35 x 35	1.72	2.45	0.491	0.221	EETED2W271EA
330	30 x 50	1.85	2.64	0.402	0.181	EETED2W331DA
	35 x 40	1.85	2.64	0.402	0.181	EETED2W331EA
390	35 x 40	1.97	2.82	0.340	0.153	EETED2W391EA
470	35 x 50	2.47	3.53	0.282	0.127	EETED2W471EA