

### T-UP Series 85°C, 3000 hours

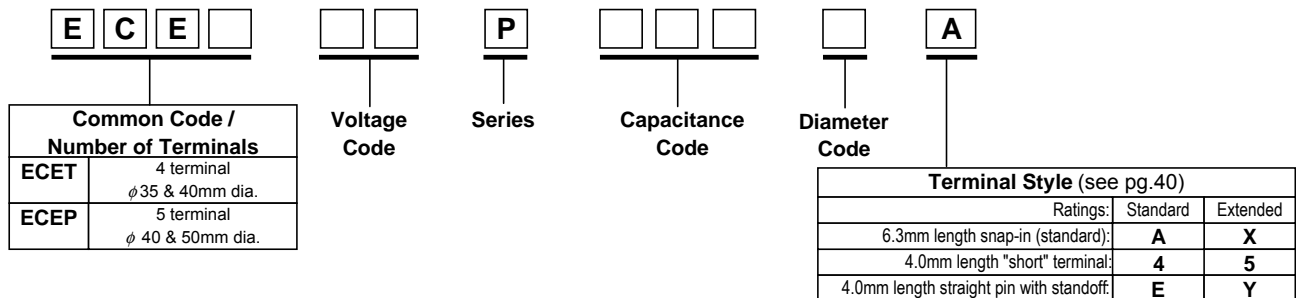
- 4 or 5 terminal mounting provides stability and keyed polarity
- Extended CV ratings
- Endurance rating of 3000 hours at 85°C
- Can vent construction



Rated Working Voltage:	16 ~ 250 VDC	350 ~ 500 VDC																																			
Operating Temperature:	-40 ~ +85°C	-25 ~ +85°C																																			
Nominal Capacitance:	1200 ~ 270000µF (±20% tolerance)	220 ~ 2700µF (±20% tolerance)																																			
Leakage Current:	3√CV (µA) max. after 5 minutes; C = Capacitance in µF, V = WV																																				
Ripple Current Multipliers:	<table border="1"> <tr> <td>Frequency(Hz):</td> <td>50</td> <td>60</td> <td>100-120</td> <td>500</td> <td>1k</td> <td>10k~</td> <td colspan="4">Ambient Temperature Factor*</td> </tr> <tr> <td>16-100WV:</td> <td>0.93</td> <td>0.95</td> <td>1.0</td> <td>1.05</td> <td>1.08</td> <td>1.15</td> <td>Temperature (°C):</td> <td>85°C</td> <td>70°C</td> <td>60°C</td> <td>≤45°C</td> </tr> <tr> <td>160-500WV:</td> <td>0.75</td> <td>0.8</td> <td>1.0</td> <td>1.2</td> <td>1.25</td> <td>1.4</td> <td>Multiplier:</td> <td>1.0</td> <td>1.3</td> <td>1.4</td> <td>1.5</td> </tr> </table>		Frequency(Hz):	50	60	100-120	500	1k	10k~	Ambient Temperature Factor*				16-100WV:	0.93	0.95	1.0	1.05	1.08	1.15	Temperature (°C):	85°C	70°C	60°C	≤45°C	160-500WV:	0.75	0.8	1.0	1.2	1.25	1.4	Multiplier:	1.0	1.3	1.4	1.5
Frequency(Hz):	50	60	100-120	500	1k	10k~	Ambient Temperature Factor*																														
16-100WV:	0.93	0.95	1.0	1.05	1.08	1.15	Temperature (°C):	85°C	70°C	60°C	≤45°C																										
160-500WV:	0.75	0.8	1.0	1.2	1.25	1.4	Multiplier:	1.0	1.3	1.4	1.5																										
Endurance:	3000 hours at +85°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



### T-UP Standard Ratings

Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A <sub>ms</sub> )		Max 20°C E.S.R. (Ω)		Panasonic Part Number	Cap. (µF)	Size (mm) D x L	Max 85°C R.C. (A <sub>ms</sub> )		Max 20°C E.S.R. (Ω)		Panasonic Part Number
		120Hz	10kHz~	120Hz	20kHz				120Hz	20kHz			
<b>16 VDC Working, 20 VDC Surge</b>							<b>35 VDC Working, 44 VDC Surge (continued)</b>						
47000	35 x 40	7.47	8.59	0.021	0.019	ECET1CP473EA	33000	35 x 50	7.15	8.22	0.018	0.014	ECET1VP333EA
56000	40 x 40	9.05	10.41	0.022	0.021	ECET1CP563FA	39000	35 x 63	7.94	9.13	0.015	0.012	ECET1VP393EA
68000	35 x 50	9.05	10.41	0.018	0.017	ECET1CP683EA	40 x 50	7.98	9.18	0.017	0.014	ECET1VP393FA	
82000	35 x 63	10.02	11.52	0.016	0.015	ECET1CP823EA	47000	35 x 80	9.53	10.96	0.014	0.011	ECET1VP473EA
	40 x 50	10.29	11.83	0.016	0.015	ECET1CP823FA	40 x 63	9.58	11.02	0.016	0.013	ECET1VP473FA	
100000	35 x 80	11.00	12.65	0.015	0.014	ECET1CP104EA	56000	40 x 80	10.30	11.85	0.015	0.012	ECET1VP563FA
	40 x 63	11.36	13.06	0.018	0.017	ECET1CP104FA	50 x 50	10.94	12.58	0.015	0.012	ECEP1VP563HA	
120000	35 x 105	12.81	14.73	0.014	0.013	ECET1CP124EA	68000	35 x 105	10.62	12.21	0.010	0.008	ECET1VP683EA
	40 x 80	12.42	14.28	0.017	0.016	ECET1CP124FA	50 x 63	11.93	13.72	0.013	0.011	ECEP1VP683HA	
	50 x 50	13.17	15.15	0.014	0.013	ECEP1CP124HA	82000	40 x 105	12.02	13.82	0.012	0.009	ECET1VP823FA
150000	50 x 63	14.40	16.56	0.012	0.011	ECEP1CP154HA	50 x 80	13.06	15.02	0.012	0.010	ECEP1VP823HA	
180000	40 x 105	14.85	17.08	0.013	0.012	ECET1CP184FA	100000	50 x 92	13.97	16.07	0.011	0.009	ECEP1VP104HA
	50 x 80	15.69	18.04	0.011	0.010	ECEP1CP184HA	120000	50 x 105	14.86	17.09	0.010	0.008	ECEP1VP124HA
220000	50 x 92	16.73	19.24	0.010	0.009	ECEP1CP224HA	<b>50 VDC Working, 63 VDC Surge</b>						
270000	50 x 105	17.79	20.46	0.009	0.008	ECEP1CP274HA	15000	35 x 40	6.44	7.41	0.028	0.021	ECET1HP153EA
<b>25 VDC Working, 32 VDC Surge</b>							18000	40 x 40	6.94	7.98	0.023	0.017	ECET1HP183FA
33000	35 x 40	6.84	7.87	0.019	0.015	ECET1EP333EA	22000	35 x 50	7.57	8.71	0.021	0.017	ECET1HP223EA
39000	40 x 40	8.00	9.20	0.020	0.018	ECET1EP393FA	27000	35 x 63	8.31	9.56	0.018	0.015	ECET1HP273EA
47000	35 x 50	8.00	9.20	0.014	0.012	ECET1EP473EA	40 x 50	8.12	9.34	0.018	0.015	ECET1HP273FA	
56000	35 x 63	8.85	10.18	0.015	0.013	ECET1EP563EA	33000	35 x 80	9.23	10.61	0.015	0.012	ECET1HP333EA
	40 x 50	8.96	10.30	0.016	0.015	ECET1EP563FA	40 x 63	9.10	10.47	0.018	0.014	ECET1HP333FA	
68000	35 x 80	10.43	11.99	0.013	0.011	ECET1EP683EA	50 x 50	10.48	12.05	0.018	0.014	ECEP1HP333HA	
	40 x 63	10.25	11.79	0.017	0.015	ECET1EP683FA	39000	40 x 80	10.12	11.64	0.015	0.012	ECET1HP393FA
82000	50 x 50	12.29	14.13	0.016	0.015	ECEP1EP823HA	47000	35 x 105	10.27	11.81	0.014	0.011	ECET1HP473EA
100000	35 x 105	11.97	13.77	0.010	0.008	ECET1EP104EA	50 x 63	11.54	13.27	0.013	0.010	ECEP1HP473HA	
	40 x 80	12.08	13.89	0.012	0.011	ECET1EP104FA	56000	40 x 105	11.47	13.19	0.012	0.009	ECET1HP563FA
	50 x 63	13.45	15.47	0.014	0.013	ECEP1EP104HA	50 x 80	12.46	14.33	0.012	0.009	ECEP1HP563HA	
120000	50 x 80	15.29	17.58	0.012	0.011	ECEP1EP124HA	68000	50 x 92	13.17	15.15	0.011	0.009	ECEP1HP683HA
150000	40 x 105	14.07	16.18	0.011	0.010	ECET1EP154FA	82000	50 x 105	13.87	15.95	0.011	0.008	ECEP1HP823HA
	50 x 92	16.01	18.41	0.011	0.010	ECEP1EP154HA	<b>63 VDC Working, 79 VDC Surge</b>						
180000	50 x 105	16.89	19.42	0.010	0.009	ECEP1EP184HA	10000	35 x 40	6.52	7.50	0.041	0.033	ECET1JP103EA
<b>35 VDC Working, 44 VDC Surge</b>							12000	35 x 50	7.15	8.22	0.035	0.028	ECET1JP123EA
22000	35 x 40	6.10	7.02	0.026	0.020	ECET1VP223EA	40 x 40	7.15	8.22	0.035	0.028	ECET1JP123FA	
27000	40 x 40	6.84	7.87	0.021	0.017	ECET1VP273FA	15000	35 x 63	7.71	8.87	0.028	0.022	ECET1JP153EA

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## T-UP Standard Ratings (continued)

Cap. (µF)	Size (mm) D x L	Max. 85°C R.C. (A <sub>rms</sub> )		Max. 20°C E.S.R. (Ω)		Panasonic Part Number	Cap. (µF)	Size (mm) D x L	Max. 85°C R.C. (A <sub>rms</sub> )		Max. 20°C E.S.R. (Ω)		Panasonic Part Number
		120Hz	10kHz~	120Hz	20kHz				120Hz	10kHz~	120Hz	20kHz	
<b>63 VDC Working, 79 VDC Surge (continued)</b>							<b>200 VDC Working, 250 VDC Surge (continued)</b>						
15000	40 x 50	7.53	8.66	0.033	0.027	ECET1JP153FA	6800	40 x 105	8.65	12.11	0.032	0.017	ECET2DP682FA
18000	35 x 80	9.41	10.82	0.023	0.018	ECET1JP183EA	50 x 80	11.41	15.97	0.032	0.017	0.017	ECET2DP682HA
	40 x 63	9.25	10.64	0.028	0.022	ECET1JP183FA	7500	50 x 92	12.28	17.19	0.029	0.016	ECET2DP752HA
27000	35 x 105	10.38	11.94	0.015	0.012	ECET1JP273EA	8200	50 x 92	13.02	18.23	0.026	0.014	ECET2DP822HX
	40 x 80	9.97	11.47	0.018	0.015	ECET1JP273FA	50 x 105	13.16	18.42	0.026	0.014	ECET2DP822HA	
	50 x 50	10.86	12.49	0.018	0.015	ECET1JP273HA	10000	50 x 105	14.17	19.84	0.021	0.011	ECET2DP103HA
33000	40 x 105	11.76	13.52	0.015	0.012	ECET1JP333FA	<b>250 VDC Working, 300 VDC Surge</b>						
	50 x 63	11.67	13.42	0.017	0.013	ECET1JP333HA	1200	35 x 40	3.32	4.65	0.166	0.083	ECET2EP122EA
47000	50 x 80	12.78	14.70	0.013	0.010	ECET1JP473HA	1500	35 x 50	4.04	5.66	0.133	0.066	ECET2EP152EA
	51000	50 x 92	13.34	15.34	0.012	0.010	ECET1JP513HA	40 x 40	4.04	5.66	0.133	0.066	ECET2EP152FA
56000	50 x 105	13.93	16.02	0.012	0.009	ECET1JP563HA	1800	35 x 63	4.49	6.29	0.111	0.055	ECET2EP182EA
<b>80 VDC Working, 100 VDC Surge</b>							40 x 50	4.49	6.29	0.111	0.055	ECET2EP182FA	
6800	35 x 40	5.16	5.93	0.046	0.035	ECET1KP682EA	2200	35 x 63	4.70	6.58	0.090	0.045	ECET2EP222EX
8200	35 x 50	5.83	6.70	0.038	0.029	ECET1KP822EA	35 x 80	4.94	6.92	0.090	0.045	ECET2EP222EA	
	40 x 40	5.83	6.70	0.038	0.029	ECET1KP822FA	40 x 63	4.94	6.92	0.090	0.045	ECET2EP222FA	
10000	35 x 63	6.38	7.34	0.033	0.025	ECET1KP103EA	2700	35 x 80	5.63	7.88	0.074	0.037	ECET2EP272EA
	40 x 50	6.56	7.54	0.033	0.025	ECET1KP103FA	40 x 63	5.81	8.13	0.074	0.037	ECET2EP272FX	
12000	35 x 80	6.92	7.96	0.028	0.021	ECET1KP123EA	50 x 50	6.77	9.48	0.074	0.037	ECET2EP272HA	
	40 x 63	7.29	8.38	0.028	0.021	ECET1KP123FA	3300	40 x 80	7.00	9.80	0.060	0.030	ECET2EP332FA
15000	40 x 80	8.93	10.27	0.024	0.018	ECET1KP153FA	50 x 50	7.22	10.11	0.060	0.060	ECET2EP332HX	
18000	50 x 50	10.00	11.50	0.023	0.017	ECET1KP183HA	50 x 63	7.79	10.91	0.060	0.030	ECET2EP332HA	
22000	35 x 105	9.86	11.34	0.015	0.011	ECET1KP223EA	3900	35 x 105	7.47	10.46	0.051	0.026	ECET2EP392EA
	50 x 63	11.08	12.74	0.019	0.014	ECET1KP223HA	40 x 80	7.36	10.30	0.051	0.026	ECET2EP392FA	
27000	40 x 105	11.35	13.05	0.015	0.012	ECET1KP273FA	50 x 63	8.19	11.47	0.051	0.026	ECET2EP392HA	
	50 x 80	12.33	14.18	0.015	0.012	ECET1KP273HA	4700	40 x 105	8.88	12.43	0.042	0.021	ECET2EP472FA
33000	50 x 92	13.37	15.38	0.014	0.010	ECET1KP333HA	50 x 80	9.65	13.51	0.042	0.021	ECET2EP472HA	
39000	50 x 105	14.34	16.49	0.013	0.010	ECET1KP393HA	5600	50 x 80	14.34	20.08	0.036	0.018	ECET2EP562HX
<b>100 VDC Working, 125 VDC Surge</b>							50 x 92	10.80	15.12	0.036	0.018	ECET2EP562HA	
4700	35 x 40	5.13	5.90	0.071	0.049	ECET2AP472EA	6800	50 x 105	12.16	17.02	0.029	0.015	ECET2EP682HA
5600	40 x 40	5.75	6.61	0.059	0.044	ECET2AP562FA	7500	50 x 105	12.56	17.58	0.026	0.014	ECET2EP752HA
6800	35 x 50	6.60	7.59	0.049	0.037	ECET2AP682EA	<b>350 VDC Working, 400 VDC Surge</b>						
8200	35 x 63	7.05	8.11	0.040	0.030	ECET2AP822EA	470	35 x 40	2.40	3.36	0.388	0.175	ECET2VP471EA
	40 x 50	7.28	8.37	0.040	0.030	ECET2AP822FA	680	35 x 50	2.96	4.14	0.366	0.165	ECET2VP681EA
10000	35 x 80	7.74	8.90	0.033	0.025	ECET2AP103EA	40 x 40	2.96	4.14	0.366	0.165	ECET2VP681FA	
	40 x 63	7.97	9.17	0.033	0.025	ECET2AP103FA	1000	35 x 63	3.80	5.32	0.249	0.112	ECET2VP102EA
	50 x 50	8.82	10.14	0.033	0.025	ECET2AP103HA	40 x 50	3.80	5.32	0.249	0.112	ECET2VP102FA	
12000	35 x 105	8.57	9.86	0.028	0.021	ECET2AP123EA	1200	35 x 80	4.42	6.19	0.207	0.093	ECET2VP122EA
	40 x 80	8.65	9.95	0.028	0.021	ECET2AP123FA	40 x 63	4.42	6.19	0.207	0.093	ECET2VP122FA	
15000	40 x 105	10.12	11.64	0.022	0.017	ECET2AP153FA	50 x 50	5.18	7.25	0.207	0.093	ECET2VP122HA	
	50 x 63	10.07	11.58	0.022	0.017	ECET2AP153HA	1500	50 x 63	6.01	8.41	0.166	0.075	ECET2VP152HA
18000	50 x 80	11.00	12.65	0.018	0.014	ECET2AP183HA	1800	35 x 105	5.79	8.11	0.138	0.062	ECET2VP182EA
22000	50 x 92	11.76	13.52	0.015	0.011	ECET2AP223HA	40 x 80	5.85	8.19	0.138	0.062	ECET2VP182FA	
27000	50 x 105	12.53	14.41	0.014	0.010	ECET2AP273HA	50 x 80	6.89	9.65	0.138	0.062	ECET2VP182HA	
<b>160 VDC Working, 200 VDC Surge</b>							2200	40 x 105	6.91	9.67	0.113	0.051	ECET2VP222FA
2200	35 x 40	4.78	6.69	0.098	0.049	ECET2CP222EA	50 x 92	7.79	10.91	0.113	0.051	ECET2VP222HA	
2700	35 x 50	5.45	7.63	0.080	0.044	ECET2CP272EA	2700	50 x 105	8.80	12.32	0.092	0.041	ECET2VP272HA
	40 x 40	5.45	7.63	0.080	0.044	ECET2CP272FA	<b>400 VDC Working, 450 VDC Surge</b>						
3300	35 x 63	6.29	8.81	0.065	0.036	ECET2CP332EA	470	35 x 45	2.39	3.35	0.388	0.136	ECET2GP471EX
	40 x 50	6.29	8.81	0.065	0.036	ECET2CP332FA	560	35 x 50	2.72	3.81	0.326	0.114	ECET2GP561EA
3900	35 x 80	7.27	10.18	0.055	0.030	ECET2CP392EA	40 x 40	2.69	3.77	0.326	0.114	ECET2GP561FA	
	40 x 63	7.27	10.18	0.055	0.030	ECET2CP392FA	680	40 x 50	3.38	4.73	0.268	0.093	ECET2GP681FA
5600	40 x 80	8.32	11.65	0.038	0.021	ECET2CP562FA	820	35 x 63	3.55	4.97	0.222	0.078	ECET2GP821EA
	50 x 50	8.25	11.55	0.038	0.021	ECET2CP562GA	40 x 50	3.38	4.73	0.222	0.078	ECET2GP821FA	
6800	35 x 105	9.05	12.67	0.032	0.017	ECET2CP682EA	1000	35 x 80	3.42	4.79	0.199	0.080	ECET2GP102EA
8200	50 x 63	8.93	12.50	0.026	0.014	ECET2CP822GA	40 x 63	4.16	5.82	0.199	0.080	ECET2GP102FA	
10000	40 x 105	9.86	13.80	0.022	0.012	ECET2CP103FA	50 x 50	4.76	6.66	0.199	0.080	ECET2GP102HA	
	50 x 80	9.80	13.72	0.022	0.012	ECET2CP103GA	1200	35 x 80	4.52	6.33	0.152	0.053	ECET2GP122EA
12000	50 x 92	12.93	18.10	0.018	0.010	ECET2CP123GA	40 x 63	4.52	6.33	0.152	0.053	ECET2GP122FA	
15000	50 x 105	14.10	19.74	0.014	0.008	ECET2CP153GA	50 x 50	5.21	7.29	0.166	0.066	ECET2GP122HX	
<b>200 VDC Working, 250 VDC Surge</b>							50 x 63	5.47	7.66	0.166	0.066	ECET2GP122HA	
1800	35 x 40	4.32	6.05	0.120	0.060	ECET2DP182EA	1500	35 x 105	5.44	7.62	0.122	0.043	ECET2GP152EA
2200	35 x 50	4.92	6.89	0.098	0.054	ECET2DP222EA	40 x 80	5.50	7.70	0.122	0.043	ECET2GP152FA	
	40 x 40	4.92	6.89	0.098	0.054	ECET2DP222FA	50 x 63	6.12	8.57	0.133	0.053	ECET2GP152HX	
2700	35 x 63	5.50	7.70	0.080	0.044	ECET2DP272EA	50 x 80	6.47	9.06	0.133	0.053	ECET2GP152HA	
	40 x 50	5.41	7.57	0.080	0.044	ECET2DP272FA	1800	40 x 105	6.53	9.14	0.101	0.035	ECET2GP182FA
3300	35 x 80	6.44	9.02	0.065	0.036	ECET2DP332EA	50 x 80	7.09	9.93	0.111	0.044	ECET2GP182HX	
	40 x 63	6.32	8.85	0.065	0.036	ECET2DP332FA	50 x 92	7.35	10.29	0.111	0.044	ECET2GP182HA	
3900	35 x 80	6.60	9.24	0.055	0.030	ECET2DP392EA	2200	50 x 92	8.13	11.38	0.090	0.036	ECET2GP222HX
	40 x 63	6.81	9.53	0.055	0.030	ECET2DP392FX	50 x 105	8.43	11.80	0.090	0.036	ECET2GP222HA	
	50 x 50	8.22	11.51	0.055	0.030	ECET2DP392HA	2700	50 x 105	9.34	13.08	0.073	0.025	ECET2GP272HA
4700	40 x 80	8.38	11.73	0.046	0.025	ECET2DP472FA	<b>450 VDC Working, 500 VDC Surge</b>						
	50 x 63	9.32	13.05	0.046	0.025	ECET2DP472HA	330	35 x 40	2.01	2.81	0.553	0.249	ECET2WP331EA
5600	35 x 105	8.90	12.46	0.038	0.021	ECET2DP562EA	470	35 x 50	2.53	3.54	0.423	0.233	ECET2WP471EA
	50 x 63	9.57	13.40	0.038	0.021	ECET2DP562HA	40 x 35	2.53	3.54	0.423	0.233	ECET2WP471FA	

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### T-UP Standard Ratings (continued)

Cap. ( $\mu$ F)	Size (mm) D x L	Max. 85°C R.C. ( $A_{rms}$ )		Max. 20°C E.S.R. ( $\Omega$ )		Panasonic Part Number
		120 Hz	10kHz~	120Hz	20kHz	
<b>400 VDC Working, 450 VDC Surge (continued)</b>						
560	35 x 63	2.90	4.06	0.355	0.195	ECET2WP561EA
680	35 x 80	3.17	4.44	0.293	0.161	ECET2WP681EA
	40 x 50	3.15	4.41	0.293	0.161	ECET2WP681FA
820	35 x 80	3.78	5.29	0.243	0.133	ECET2WP821EA
	40 x 63	3.70	5.18	0.243	0.133	ECET2WP821FA
	50 x 50	4.31	6.03	0.263	0.145	ECET2WP821HA
1000	40 x 80	4.21	5.89	0.216	0.119	ECET2WP102FA
	50 x 63	4.96	6.94	0.216	0.119	ECET2WP102HA
1200	35 x 105	4.80	6.72	0.166	0.091	ECET2WP122EA
	40 x 80	4.84	6.78	0.166	0.091	ECET2WP122FA
	50 x 63	5.43	7.60	0.180	0.099	ECET2WP122HX
	50 x 80	5.71	7.99	0.180	0.099	ECET2WP122HA
1500	40 x 105	5.81	8.13	0.133	0.073	ECET2WP152FA
	50 x 80	6.15	8.61	0.144	0.079	ECET2WP152HX
	50 x 92	6.55	9.17	0.144	0.079	ECET2WP152HA
1800	50 x 92	7.02	9.83	0.120	0.066	ECET2WP182HX
	50 x 105	7.36	10.30	0.120	0.066	ECET2WP182HA
<b>500 VDC Working, 550 VDC Surge</b>						
270	35 x 40	1.76	2.46	0.614	0.276	ECET2HP271EA
330	40 x 40	2.16	3.02	0.502	0.276	ECET2HP331FA
390	35 x 50	2.22	3.11	0.425	0.234	ECET2HP391EA
470	35 x 63	2.58	3.61	0.353	0.194	ECET2HP471EA
	40 x 50	2.70	3.78	0.353	0.194	ECET2HP471FA
560	40 x 63	3.11	4.35	0.326	0.179	ECET2HP561FA
	50 x 50	3.52	4.93	0.355	0.195	ECET2HP561HA
680	35 x 80	3.21	4.49	0.244	0.134	ECET2HP681EA
	50 x 50	3.88	5.43	0.293	0.161	ECET2HP681HX
	50 x 63	4.07	5.70	0.293	0.161	ECET2HP681HA
820	35 x 105	3.97	5.56	0.202	0.111	ECET2HP821EA
	40 x 80	3.88	5.43	0.222	0.122	ECET2HP821FA
	50 x 63	4.47	6.26	0.222	0.122	ECET2HP821HA
1000	50 x 80	5.05	7.07	0.199	0.109	ECET2HP102HA
1200	40 x 105	5.90	8.26	0.152	0.084	ECET2HP122FA
	50 x 80	5.35	7.49	0.166	0.091	ECET2HP122HX
	50 x 92	5.74	8.04	0.166	0.091	ECET2HP122HA
1500	50 x 105	6.65	9.31	0.144	0.079	ECET2HP152HA