

### Type TYEH Series



Tyco Electronics vertical chip-type aluminum electrolytic capacitors are designed for surface mounting in high density PCB population. Supplied on tape and reel for use with automatic placement equipment. The TYEH series offers miniature case sizes with an extended temperature range (-40°C to +105°C) and voltage ratings up to 100V dc. Suitable for applications requiring reliability under more demanding conditions.

### Key Features

- High temperature surface mount aluminum electrolytic capacitors
- 105°C temperature rating
- 1000 to 2000 hours load life assured
- Wide capacitance range
- Taped and Reeled
- 15" diameter reel size
- Designed for reflow soldering
- RoHS Compliant

### Characteristics - Electrical

												Test Conditions JIS C5101-1,-18	
<b>Operating Temp. Range</b>	-40°C ~ +105°C										—		
<b>Rated Voltage</b>	DC 6.3 ~ 100V										105°C		
<b>Capacitance</b>	0.1 ~ 1000µF										105°C		
<b>Capacitance Tolerance</b>	±20%										120Hz, 20°C		
<b>Leakage Current</b>	0.01CV or 3µA whichever is greater										C = rated capacitance (µF) V = rated DC working voltage (V) Temperature = 20°C		
<b>Dissipation Factor (Tanδ)</b>	Rated Voltage	6.3	10	16	25	35	50	63	100				120Hz, 20°C
	Case L = 5.3	0.3	0.3	0.22	0.16	0.13	0.12	-	-				
	Case L = 6.5~10												
	Case dia = 6.3	0.32	0.28	0.24	0.18	0.15	0.14	-	-				
	Case dia = 8~10	0.3	0.26	0.22	0.16	0.13	0.12	0.11	0.1				
<b>Low Temperature Characteristics</b>	Rated Voltage	6.3	10	16	25	35	50	63	100				120Hz
	Impedance Ratio (max)												
	Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	2	2				
	Z(-40°C)/Z(+20°C)	8	5	4	3	3	3	3	3				
<b>Load Life Test Case L = 5.3</b>	Test Time	1000 Hrs										Specification satisfied when the capacitors are restored to 20°C after the rated voltage applied for 1000 hrs at 105°C	
	Capacitance Change	Within ±20% of initial value											
	Dissipation Factor	Less than 200% of specified value											
	Leakage Current	Within specified value											
<b>Load Life Test Case L = 6.5~10</b>	Test Time	2000 Hrs										Specification satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2000 hrs at 105°C	
	Capacitance Change												
	6.3V	Within ±30% of initial value											
	10~16V	Within ±25% of initial value											
	25~100V	Within ±20% of initial value											
	Dissipation Factor												
	6.3~16V	Less than 300% of specified value											
25~100V	Less than 200% of specified value												
Leakage Current	Within specified value												
<b>Shelf Life Test</b>	Test Time	1000 hrs										Other items same as those for load life test	
<b>Ripple Current &amp; Multipliers Frequency</b>	Frequency (Hz)	50	120	1k	10k and above							—	
	Multiplier ≤16VDC	0.8	1.0	1.15	1.25								
	Multiplier 25~35VDC	0.8	1.0	1.25	1.4								
	Multiplier 50~63VDC	0.8	1.0	1.35	1.5								
	Multiplier 100VDC	0.7	1.0	1.35	1.5								

### Product Availability Chart

Capacitance		Rated Voltage (V.DC)							
		6.3	10	16	25	35	50	63	100
µF	Code	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L
0.1	104						4 x 5.3		
0.22	224						4 x 5.3		
0.33	334						4 x 5.3		
0.47	474						4 x 5.3		
1.0	105						4 x 5.3		
2.2	225						4 x 5.3		
3.3	335						4 x 5.3		
4.7	475				4 x 5.3	4 x 5.3	5 x 5.3		
10	106			4 x 5.3	5 x 5.3	5 x 5.3	6.3 X 5.3		8 x 10
22	226	4 x 5.3	5 x 5.3	5 x 5.3	6.3 x 5.3	6.3 x 5.3	8 x 6.5	8 x 10	8 x 10
									10 x 10
33	336	5 x 5.3	5 x 5.3	6.3 x 5.3	6.3 x 5.3	6.3 x 5.7	6.3 x 7.7	10 x 10	10 x 10
						8 x 6.5	8 x 10		
47	476	5 x 5.3	6.3 x 5.3	6.3 x 5.3	6.3 x 5.3	8 x 10	6.3 x 7.7	8 x 10	
					8 x 6.5		8 x 10	10 x 10	
100	107	6.3 x 5.3	6.3 x 5.3	6.3 x 5.3	6.3 x 7.7	8 x 10	8 x 10		
			8 x 6.5		8 x 10	10 x 10	10 x 10		
220	227		6.3 x 7.7	6.3 x 7.7	8 x 10	10 x 10	10 x 10		
			8 x 10	10 x 10	10 x 10				
330	337	8 x 10	8 x 10	8 x 10	10 x 10	10 x 10			
				10 x 10					
470	477	8 x 10	8 x 10	8 x 10	10 x 10				
			10 x 10	10 x 10					
1000	108	10 x 10	10 x 10						

### Standard Product Table

Rated Voltage V.DC	Capacitance µF	Capacitance Code	Case Size Dia x L	Case Code	Dissipation Factor (%)*	Ripple Current (mA)*	Part Number
6.3	22	226	4 x 5.3	D55	30	21	TYEH0J226D55MTR
6.3	33	336	5 x 5.3	E55	30	30	TYEH0J336E55MTR
6.3	47	476	5 x 5.3	E55	30	36	TYEH0J476E55MTR
6.3	100	107	6.3 x 5.3	F55	30	61	TYEH0J107F55MTR
6.3	330	337	8 x 10	G10	30	178	TYEH0J337G10MTR
6.3	470	477	8 x 10	G10	30	210	TYEH0J477G10MTR
6.3	1000	108	10 x 10	H10	30	440	TYEH0J108H10MTR
10	22	226	5 x 5.3	E55	26	25	TYEH1A226E55MTR
10	33	336	5 x 5.3	E55	26	31	TYEH1A336E55MTR
10	47	476	6.3 x 5.3	F55	26	43	TYEH1A476F55MTR
10	100	107	6.3 x 5.3	F55	26	65	TYEH1A107F55MTR
10	100	107	8 x 6.5	G68	26	110	TYEH1A107G68MTR
10	220	227	6.3 x 7.7	F80	28	105	TYEH1A227F80MTR
10	220	227	8 x 10	G10	26	178	TYEH1A227G10MTR
10	330	337	8 x 10	G10	26	215	TYEH1A337G10MTR
10	470	477	8 x 10	G10	26	250	TYEH1A477G10MTR
10	470	477	10 x 10	H10	26	324	TYEH1A477H10MTR
10	1000	108	10 x 10	H10	26	440	TYEH1A108H10MTR
16	10	106	4 x 5.3	D55	22	16	TYEH1C106D55MTR
16	22	226	5 x 5.3	E55	22	28	TYEH1C226E55MTR
16	33	336	6.3 x 5.3	F55	22	40	TYEH1C336F55MTR
16	47	476	6.3 x 5.3	F55	22	47	TYEH1C476F55MTR
16	100	107	6.3 x 5.3	F55	22	70	TYEH1C107F55MTR

\* DF measured at 120Hz, 20°C

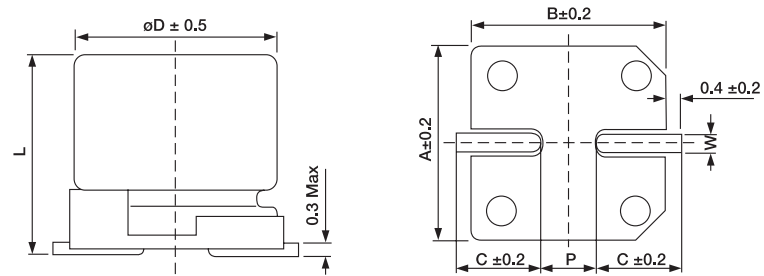
\* RC measured at 120Hz, 105°C

#### Standard Product Table (continued)

Rated Voltage V.DC	Capacitance $\mu$ F	Capacitance Code	Case Size Dia x L	Case Code	Dissipation Factor (%)*	Ripple Current (mA)*	Part Number
16	220	227	6.3 x 7.7	F80	24	110	TYEH1C227F80MTR
16	220	227	10 x 10	H10	22	324	TYEH1C227H10MTR
16	330	337	8 x 10	G10	22	300	TYEH1C337G10MTR
16	330	337	10 x 10	H10	22	324	TYEH1C337H10MTR
16	470	477	8 x 10	G10	22	330	TYEH1C477G10MTR
16	470	477	10 x 10	H10	22	324	TYEH1C477H10MTR
25	4.7	475	4 x 5.3	D55	16	12	TYEH1E475D55MTR
25	10	106	5 x 5.3	E55	16	21	TYEH1E106E55MTR
25	22	226	6.3 x 5.3	F55	16	36	TYEH1E226F55MTR
25	33	336	6.3 x 5.3	F55	16	44	TYEH1E336F55MTR
25	47	476	6.3 x 5.3	F55	16	60	TYEH1E476F55MTR
25	47	476	8 x 6.5	G68	16	110	TYEH1E476G68MTR
25	100	107	6.3 x 7.7	F80	18	85	TYEH1E107F80MTR
25	100	107	8 x 10	G10	16	178	TYEH1E107G10MTR
25	220	227	8 x 10	G10	16	178	TYEH1E227G10MTR
25	220	227	10 x 10	H10	16	324	TYEH1E227H10MTR
25	330	337	10 x 10	H10	16	324	TYEH1E337H10MTR
25	470	477	10 x 10	H10	16	350	TYEH1E477H10MTR
35	4.7	475	4 x 5.3	D55	13	14	TYEH1V475D55MTR
35	10	106	5 x 5.3	E55	13	23	TYEH1V106E55MTR
35	22	226	6.3 x 5.3	F55	13	50	TYEH1V226F55MTR
35	33	336	6.3 x 5.7	F60	15	60	TYEH1V336F60MTR
35	33	336	8 x 6.5	G68	13	110	TYEH1V336G68MTR
35	47	476	8 x 10	G10	13	178	TYEH1V476G10MTR
35	100	107	8 x 10	G10	13	215	TYEH1V107G10MTR
35	100	107	10 x 10	H10	13	324	TYEH1V107H10MTR
35	220	227	10 x 10	H10	13	324	TYEH1V227H10MTR
35	330	337	10 x 10	H10	13	350	TYEH1V337H10MTR
50	0.1	104	4 x 5.3	D55	12	2.0	TYEH1H104D55MTR
50	0.22	224	4 x 5.3	D55	12	3.0	TYEH1H224D55MTR
50	0.33	334	4 x 5.3	D55	12	4.0	TYEH1H334D55MTR
50	0.47	474	4 x 5.3	D55	12	5.0	TYEH1H474D55MTR
50	1.0	105	4 x 5.3	D55	12	7.0	TYEH1H105D55MTR
50	2.2	225	4 x 5.3	D55	12	10	TYEH1H225D55MTR
50	3.3	335	4 x 5.3	D55	12	12	TYEH1H335D55MTR
50	4.7	475	5 x 5.3	E55	12	17	TYEH1H475E55MTR
50	10	106	6.3 X 5.3	F55	12	26	TYEH1H106F55MTR
50	22	226	8 x 6.5	G68	12	65	TYEH1H226G68MTR
50	33	336	6.3 x 7.7	F80	14	60	TYEH1H336F80MTR
50	33	336	8 x 10	G10	12	99	TYEH1H336G10MTR
50	47	476	6.3 x 7.7	F80	14	70	TYEH1H476F80MTR
50	47	476	8 x 10	G10	12	99	TYEH1H476G10MTR
50	100	107	8 x 10	G10	12	135	TYEH1H107G10MTR
50	100	107	10 x 10	H10	12	160	TYEH1H107H10MTR
50	220	227	10 x 10	H10	12	210	TYEH1H227H10MTR
63	22	226	8 x 10	G10	11	99	TYEH1J226G10MTR
63	33	336	10 x 10	H10	11	160	TYEH1J336H10MTR
63	47	476	8 x 10	G10	11	140	TYEH1J476G10MTR
63	47	476	10 x 10	H10	11	160	TYEH1J476H10MTR
100	10	106	8 x 10	G10	10	67	TYEH2A106G10MTR
100	22	226	8 x 10	G10	10	100	TYEH2A226G10MTR
100	22	226	10 x 10	H10	10	133	TYEH2A226H10MTR
100	33	336	10 x 10	H10	10	150	TYEH2A336H10MTR

\* DF measured at 120Hz, 20°C

\* RC measured at 120Hz, 105°C

**Dimensions**


Case Code	Dimensions (mm)						
	Dia	L	A	B	C	W	P $\pm 0.2$
D55	4.0	5.3 $\pm 0.3$	4.3	4.3	2.0	0.5 to 0.8	1.0
E55	5.0	5.3 $\pm 0.3$	5.3	5.3	2.3	0.5 to 0.8	1.5
F55	6.3	5.3 $\pm 0.3$	6.6	6.6	2.7	0.5 to 0.8	2.0
F80	6.3	7.7 $\pm 0.3$	6.6	6.6	2.7	0.5 to 0.8	2.0
G68	8.0	6.5 $\pm 0.3$	8.4	8.4	3.4	0.5 to 0.8	2.3
G10	8.0	10 $\pm 0.5$	8.4	8.4	3.0	0.7 to 1.1	3.1
H10	10	10 $\pm 0.5$	10.4	10.4	3.3	0.7 to 1.1	4.7

**How to Order**

TYEH	0J	226	D55	M	TR
Common Part	Voltage Code	Capacitance	Case Code	Tolerance	Packaging
TYEH	0J (6.3V) 1A (10V) 1C (16V) 1E (25V) 1V (35V) 1H (50V) 1J (63V) 2A (100V)	e.g. 226	e.g. D55	M (20%)	TR = 15" Reels D55 Case - 2000 pcs E55, F55, F80 and G68 Case - 1000 pcs G10 and H10 Case - 500 pcs