



## Specifications

Items	Condition			Specifications			
Rated voltage (V)	—			2.5	4.0	6.3	10
Surge voltage (V)	—			2.9	4.6	7.2	12
Category temperature range (°C)	—			-55 to +105 / -55 to +85 (Rated temp. 85°C)			
Capacitance tolerance (%)	120Hz/20°C			M : ±20			
Rated capacitance range (μF)	120Hz/20°C			33 to 220			
Dissipation Factor (DF)	120Hz/20°C			Please see the attached characteristics list			
Leakage current	Rated voltage applied, after 5 minutes			Please see the attached characteristics list			
Equivalent series resistance (ESR)	100kHz/20°C			Please see the attached characteristics list			
Characteristics of impedance ratio at high temp. and low temp.	100kHz/+20°C	-55°C	Z/Z <sub>20°C</sub>	0.6 to 2.0			
		+85°C	Z/Z <sub>20°C</sub>	0.6 to 2.0			
Endurance	105°C, 1,000h rated voltage applied ※Rated temp. 85°C Products: 85°C, 1,000h, rated voltage applied	ΔC/C		Within±20% of the initial value			
		DF		≤ 1.5 times of the initial limit			
		LC		Within the initial limit			
Damp heat (Steady State)	60°C, 90 to 95%RH, 500h, No-applied voltage	ΔC/C		Within+50%, -20% of the initial value (ETPH220MABC)			
		ΔC/C		Within+40%, -20% of the initial value (Except for above model)			
		DF		≤ 1.5 times of the initial limit			
		LC		≤ 3 times of the initial limit			
Surge	105°C, 1,000 cycles, 1kΩ discharge resistance, surge voltage applied ※Rated temp. 85°C Products:85°C	ΔC/C		Within±5% of the initial value			
		DF		Within the initial limit			
		LC		≤ 3 times of the initial limit			

## Marking and dimensions

(unit : mm)					
Size code	L ±0.2	W ±0.2	H ±0.1	S ±0.2	W1 ±0.1
A09	3.2	1.6	0.9	0.8	1.2
A14	3.2	1.6	1.4	0.8	1.2

6TPH100MAEA

※1 The rated voltage is as follows.

R.V.	2.5	4.0	6.3	10
Mark	e	g	j	A

※2 The rated capacitance is as follows.

Capacitance(μF)	33	47	68	100	150	220
Mark	N7	S7	W7	A8	E8	J8

## Recommended land pattern dimension of PWB

(unit : mm)			
Size code	a	b	c
A09	1.6	1.4	1.0
A14	1.6	1.4	1.0

## Size list

RV:Rated voltage

RV	2.5	4.0	6.3	10
μF				
33				A09
47			A09	
68		A09		
100	A09		A14, A09	
150		A14		
220	A14			

## TPH series characteristics list

Size code	Part number	Rated voltage (V)	Rated temperature (°C)	Rated capacitance (μF)	Category voltage (V)	Category temperature (°C)	DF (% max)	LC (μA) max/5min.	ESR (mΩ max) 100kHz/20°C	Maximum allowable ripple current (mA rms) 100kHz※1	MSL Reflow temp. ≤ 260°C Reflow temp. ≤ 250°C
A09	ATPH33MAHA	10	85	33	10	85	10	33.0	150	510	3
	6TPH100MAEA	6.3	85	100	6.3	85	10	63.0	100	670	3
	6TPH47MHA	6.3	105	47	6.3	105	10	29.6	150	510	3
	4TPH68MHA	4.0	105	68	4.0	105	10	27.2	150	510	3
	ETPH100MHA	2.5	105	100	2.5	105	10	25.0	150	510	3
A14	6TPH100MABC	6.3	85	100	6.3	85	10	126.0	70	740	3
	4TPH150MABC	4.0	85	150	4.0	85	10	120.0	70	740	3
	ETPH220MABC	2.5	85	220	2.5	85	10	110.0	70	740	3

※1 100k to 500kHz, 45°C

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