



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 +85°C Z/Z _{20°C}	-55°C Z/Z _{20°C}	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	+85°C Z/Z _{20°C}	0.6 to 2.0		
Damp heat (Steady State)	60°C, 90 to 95%RH, 500h, No-applied voltage	△C/C	Within±20% of the initial value		
Surge	105°C, 1,000 cycles, 1kΩ discharge resistance, surge voltage applied ※Rated temp. 85°C Products: 85°C	DF	≤ 1.5 times of the initial limit		
		LC	Within the initial limit		
		△C/C	Within+50%, -20% of the initial value (ETPH220MABC)		
		△C/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		
		△C/C	Within±5% of the initial value		
		DF	Within the initial limit		
		LC	≤ 3 times of the initial limit		

Marking and dimensions

		6TPH100MAEA Rated capacitance ^{※2} Rated voltage ^{※1}	※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
		A09	1.6	1.4 1.0
		A14	1.6	1.4 1.0

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 (mΩmax) 100kHz/20°C	Maximum allowable ripple current (mArms) 100kHz ^{※1}		
										Reflow temp. ≤ 260°C	Reflow temp. ≤ 250°C	
A09	ATPH33MAHA	10	85	33	10	85	10	33.0	150	510	3	3
	6TPH100MAEA	6.3	85	100	6.3	85	10	63.0	100	670	3	3
	6TPH47MHA	6.3	105	47	6.3	105	10	29.6	150	510	3	3
	4TPH68MHA	4.0	105	68	4.0	105	10	27.2	150	510	3	3
	ETPH100MHA	2.5	105	100	2.5	105	10	25.0	150	510	3	3
A14	6TPH100MABC	6.3	85	100	6.3	85	10	126.0	70	740	3	3
	4TPH150MABC	4.0	85	150	4.0	85	10	120.0	70	740	3	3
	ETPH220MABC	2.5	85	220	2.5	85	10	110.0	70	740	3	3

※1 100k to 500kHz, 45°C

Size list

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

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Panasonic:](#)

[6TPH47MHA](#)