

# Conductive Polymer Aluminum Solid Capacitor –SMD Type

PECH Series

MERITEK

## FEATURE

- Rated voltage: 2.0 ~ 2.5VDC
- Endurance 2000hours at 105°C
- Low ESR surface mount device
- Suitable for DC-DC converters, voltage regulators applications
- RoHS Compliant



## PART NUMBERING SYSTEM

PECH 2R5 471 M 4R5  
 (1) (2) (3) (4) (5)



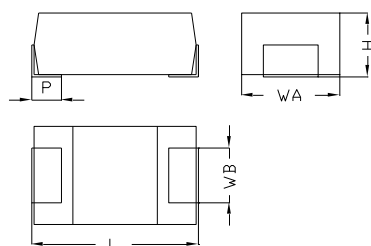
No	Item	Digit	Description	Series Reference
(1)	Meritek Series	PECH	Conductive Polymer Aluminum Solid Cap	Surface Mount Type
(2)	Rated Voltage	2R5	2R5: 2.5VDC	2R0: 2.0VDC
(3)	Capacitance	471	471: 470μF	471: 470μF
(4)	Tolerance	M	M: ±20%	Y: -35~+10%
(5)	ESR Max.	4R5	4R5: 4.5mΩ	06: 6.0mΩ, 05: 5.0 mΩ, 09: 9.0mΩ

## ELECTRICAL SPECIFICATIONS

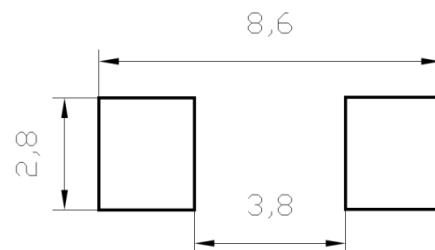
Item	Characteristics
Operating Temperature Range	-55°C ~ +105°C
Rated Working Voltage	2.0VDC ~ 2.5VDC
Capacitance	470 μF
Capacitance Tolerance	M: ±20%; Y: +10 ~ -35% at 120Hz 20°C
Equivalent Series Resistance	4.5mΩ, 5.0mΩ, 6.0mΩ, 9.0mΩ
Leakage Current	$I \leq 0.06CV$ (2.0VDC to 4.0VDC at 20°C after 2 minutes) *Whichever is less I: DC Leakage Current (μA) C: Nominal Capacitance (μF) V: Rated Voltage (WV.DC)
Surge Voltage	Rated Voltage x 1.25 -55°C ~ +105°C
Dissipation Factor (tanδ)	$\leq 0.06$ (Max.) at 20°C, 120Hz

## DIMENSION

L	WA	WB	H	P
7.3±0.3	4.3±0.3	2.4±0.2	1.9±0.2	1.3±0.2



## RECOMMENDED PAD LAYOUT



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## ELECTRICAL CHARACTERISTICS

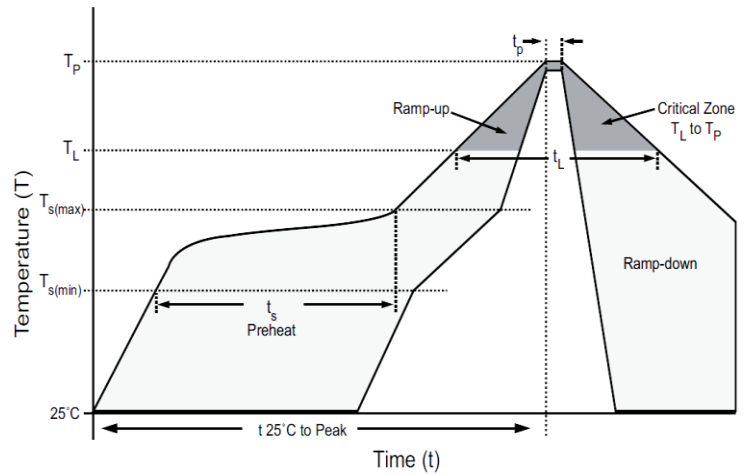
WV (VDC)	Part No.	Cap (μF)@120Hz	tanδ Max. @120Hz	Leakage Current Max. (μA)	ESR Max. (mΩ) @100kHz	Ripple Current (A r.m.s) @100kHz
2	PECH2R0471M09	470	0.06	94.0	9.0	3.0
	PECH2R0471Y09	470	0.06	94.0	9.0	3.0
	PECH2R0471M06	470	0.06	94.0	6.0	3.5
	PECH2R0471M05	470	0.06	94.0	5.0	3.8
	PECH2R0471M4R5	470	0.06	94.0	4.5	3.8
2.5	PECH2R5471M09	470	0.06	117.5	9.0	3.0
	PECH2R5471Y09	470	0.06	117.5	9.0	3.0
	PECH2R5471M06	470	0.06	117.5	6.0	3.5
	PECH2R5471M4R5	470	0.06	117.5	4.5	3.8

## RIPPLE CURRENT

Temperature Compensation Multipliers for Ripple Current		
≤ 45°C	45°C < T ≤ 85°C	85°C < T ≤ 105°C
1.0	0.7	0.25

## RECOMMENDED SOLDERING PROFILES

Reflow Condition		
Average Ramp-up Rate $T_L$ to $T_P$		3°C/second max.
Pre Heat	Temp. Min $T_{s(min)}$	140°C
	Tempe. Max $T_{s(max)}$	160°C
	Time (min. to max.) ( $t_s$ )	60-120 seconds
Ramp-up Rate $T_{s(max)}$ to $T_L$		3°C/second max.
Reflow	Temp. ( $T_L$ )	217°C
	Time ( $t_L$ )	90 seconds
Peak Temperature ( $T_P$ )		260 <sup>-0/+5</sup> °C
Time within 5°C of actual peak Temperature ( $t_p$ )		10 seconds
Ramp-down Rate		1~4°C/second



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## RELIABILITY

Item	Characteristics		
Endurance	Appearance	No significant damage	105°C, rated voltage applied, 2000 hours
	Capacitance Change	±20% of the initial value	
	Dissipation Factor	≤ 200% of the initial specified value	
	Leakage Current	≤ 300% of the initial specified value	
Damp Heat, Steady State	Appearance	No significant damage	60°C, 90 to 95%RH, 500 hours
	Capacitance Change	(2V.DC, 2.5V.DC) +70%, -20% of the initial value	
	Dissipation Factor	≤ 200% of the initial specified value	
	Leakage Current	within the initial specified value	
Damp Heat, Steady State, Applied Voltage	Appearance	No significant damage	60°C, 90 to 95%RH, rated voltage, 500 hrs
	Capacitance Change	(2V.DC, 2.5V.DC) +70%, -20% of the initial value	
	Dissipation Factor	≤ 200% of the initial specified value	
	Leakage Current	within the initial specified value	
Surge Voltage	Appearance	No significant damage	The capacitors shall be subjected to 1000 cycles each consisting of charge with the surge voltages, 125% rated voltage, at 15°C to 3°C for 30 seconds through a protective resistor(R=1KΩ) and discharge for 5min 30 seconds.
	Capacitance Change	±10% of the initial value	
	Dissipation Factor	within the initial specified value	
	Leakage Current	within the initial specified value	
Solderability	More than 75% of outer terminal surface to be covered		Pb-free solder Around 25% rosin melted ethanol or isopropylalcohol Temperature: 230 ± 5°C Immersing time : 2 ± 0.5 s
Resistance to Solvents	Solvent : isopropylalcohol Immersing time : 30 ± 5 s Room temperature		No significant damage and marking readable
Resistance to Soldering Heat	Appearance	No significant damage	Heating temperature: 235±5°C Holding time: 200±10 s Measure the performance after test and cools to room temperature
	Capacitance Change	±10% of the initial value	
	Dissipation Factor	within the initial specified value	
	Leakage Current	within the initial specified value	
Vibration	Appearance	No significant damage	Test for 2 hours each in the directions of X-Y-Z at the frequency of 10 to 2000 Hz and amplitude of 1.5mm (10-2000-10).
	Capacitance Change	±10% of the initial value	
	Dissipation Factor	within the initial specified value	
	Leakage Current	within the initial specified value	
Shear Force	Side push direction Force: 5N Holding time: 10±0.5s		No significant damage in appearance

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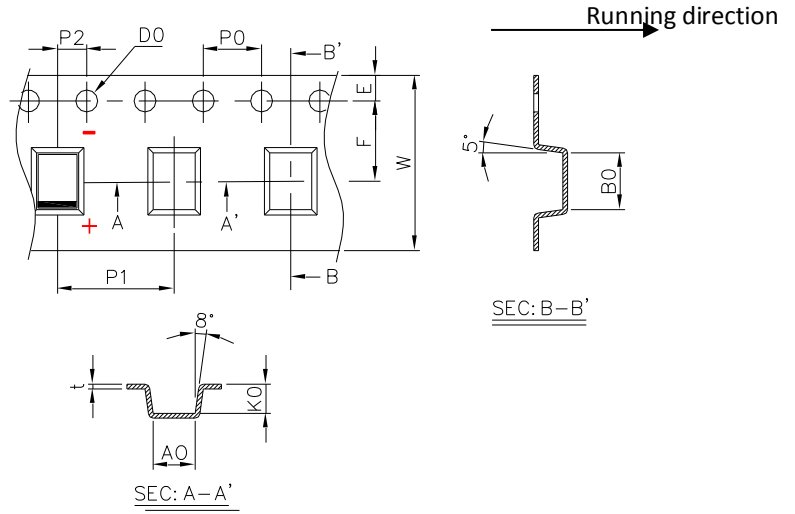
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## PACKAGING SPECIFICATIONS

unit : mm

Item	Dimensions
W	12.00±0.10
P1	8.00±0.10
E	1.75±0.10
F	5.50±0.10
D0	1.50+0.10,-0.00
P0	4.00±0.10
P2	2.00±0.10
A0	5.00±0.10
B0	7.60±0.10
K0	2.30±0.10
t	0.24±0.10



Reel Dimension (mm)		
A	B	C
13.2±0.3	330±1.0	13.5±0.5

