

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

Technical Data ZK series



Device Solution Business Division  
Automotive & Industrial Systems Company, Panasonic Co., Ltd.



---

# Technical Data

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

### V type ZK series



EEHZK1E470R	25V47 $\mu$ F	$\phi$ 5x5.8	... ZK-2
EEHZK1E680P	25V68 $\mu$ F	$\phi$ 6.3x5.8	... ZK-3
EEHZK1E151XP	25V150 $\mu$ F	$\phi$ 6.3x7.7	... ZK-4
EEHZK1E271P	25V270 $\mu$ F	$\phi$ 8x10.2	... ZK-5
EEHZK1E471P	25V470 $\mu$ F	$\phi$ 10x10.2	... ZK-6
EEHZK1V330R	35V33 $\mu$ F	$\phi$ 5x5.8	... ZK-7
EEHZK1V560P	35V56 $\mu$ F	$\phi$ 6.3x5.8	... ZK-8
EEHZK1V101XP	35V100 $\mu$ F	$\phi$ 6.3x7.7	... ZK-9
EEHZK1V181P	35V180 $\mu$ F	$\phi$ 8x10.2	... ZK-10
EEHZK1V331P	35V330 $\mu$ F	$\phi$ 10x10.2	... ZK-11

# Technical Data

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

### V type ZK series

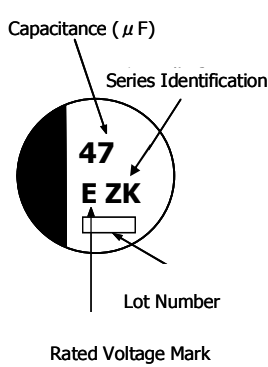
Part Number: **EEHZK1E470R**

$\phi 5 \times 5.8$  mm / 25 V / 47  $\mu$ F / 125 °C, 4000 h

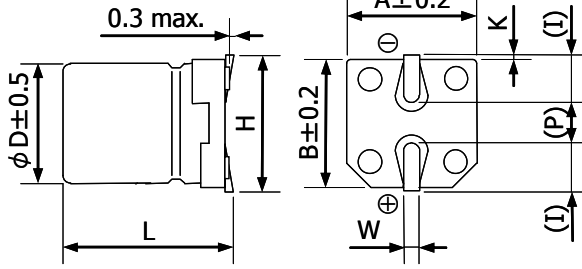
Category Temperature Range	-55 to 125 °C
Rated W.V. Range	DC 25 V
Nominal Capacitance Range	47 $\mu$ F (at 120 Hz)
Capacitance Tolerance	$\pm 20$ %

$\tan \delta$	0.14 max. (at 120 Hz)
DC Leakage Current	11.5 $\mu$ A (0.01CV) max. (at W.V., After 2 min)
ESR	80 m $\Omega$ max. (at 100 kHz)
Ripple Current	660 mArms max. (at 100 kHz, 125 °C)
Endurance	125 °C, 4000 h

### Marking, Dimensions in mm (not to scale)



Size Code: C

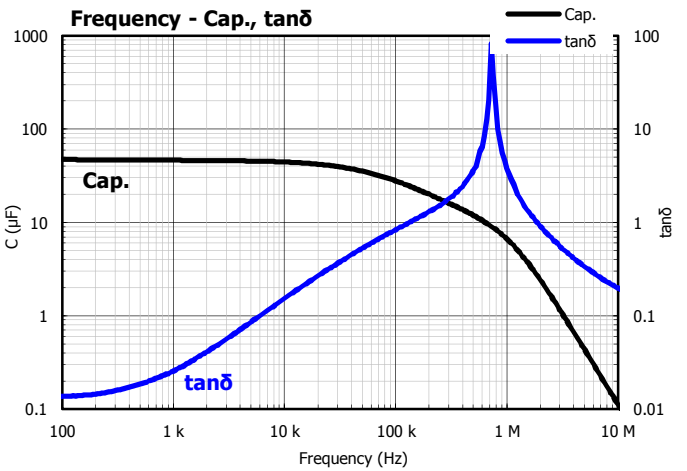
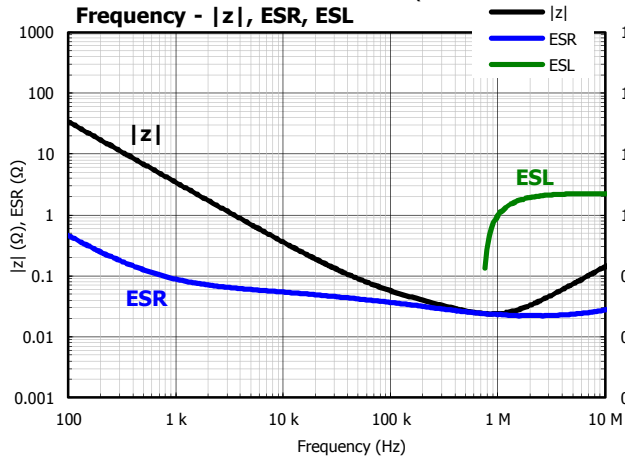


	(mm)
D	5.0
L	5.8 $\pm$ 0.3
A, B	5.3
H	6.5 max.
I	2.2
W	0.65 $\pm$ 0.1
P	1.5
K	0.35+0.15/-0.20

( ): Reference Size

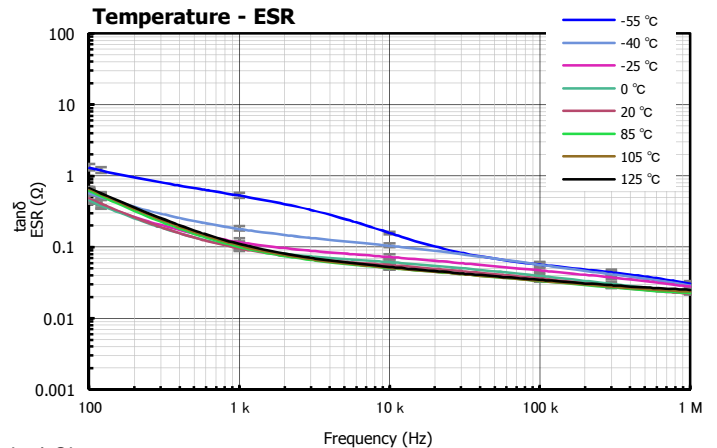
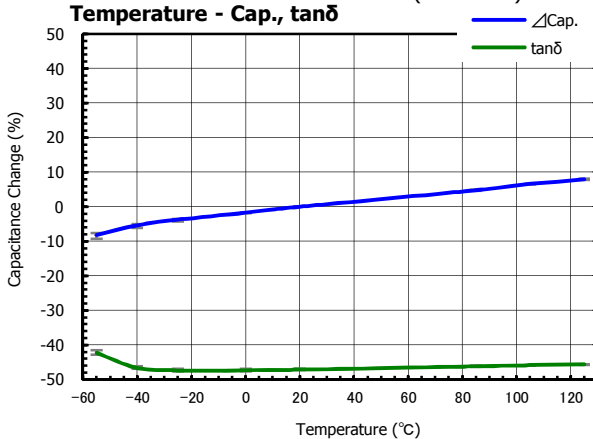
### Frequency - $|z|$ , ESR, ESL, Capacitance, $\tan \delta$ Characteristics

Osc. Level: 0.5 Vrms (at no load)



### Temperature - Capacitance, $\tan \delta$ , ESR Characteristics

Osc. Level: 1.0 Vrms (at no load)



Typical Curve

# Technical Data

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

### V type ZK series

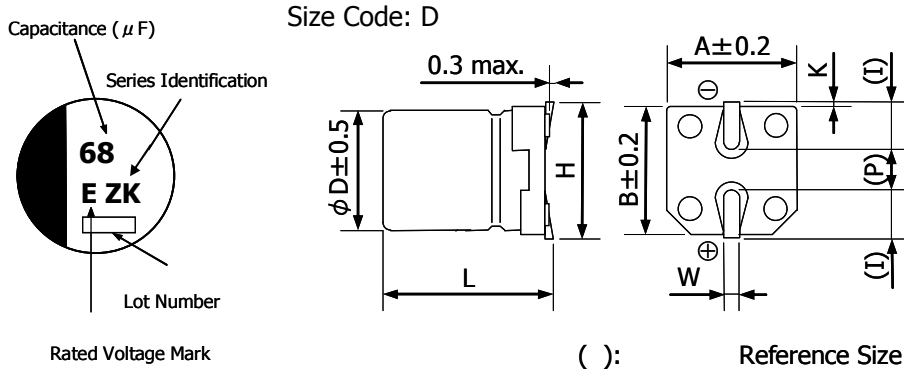
Part Number: **EEHZK1E680P**

φ6.3×5.8 mm / 25 V / 68 μF / 125 °C, 4000 h

Category Temperature Range	-55 to 125 °C
Rated W.V. Range	DC 25 V
Nominal Capacitance Range	68 μF (at 120 Hz)
Capacitance Tolerance	±20 %

tanδ	0.14 max. (at 120 Hz)
DC Leakage Current	17.0 μA (0.01CV) max. (at W.V., After 2 min)
ESR	50 mΩ max. (at 100 kHz)
Ripple Current	1080 mArms max. (at 100 kHz, 125 °C)
Endurance	125 °C, 4000 h

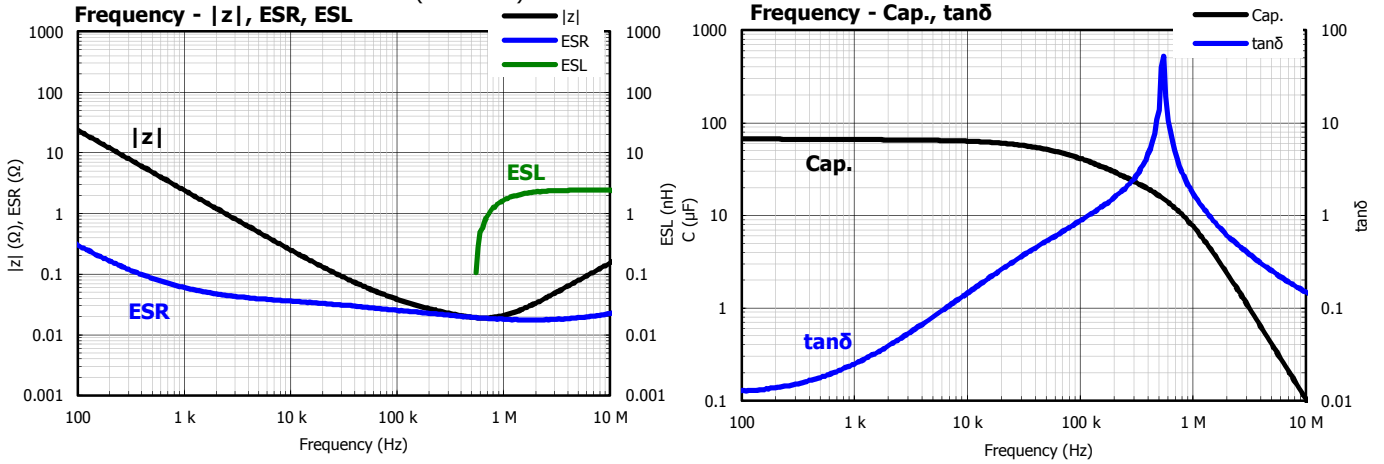
### Marking, Dimensions in mm (not to scale)



	(mm)
D	6.3
L	5.8±0.3
A, B	6.6
H	7.8 max.
I	2.6
W	0.65±0.1
P	1.8
K	0.35+0.15/-0.20

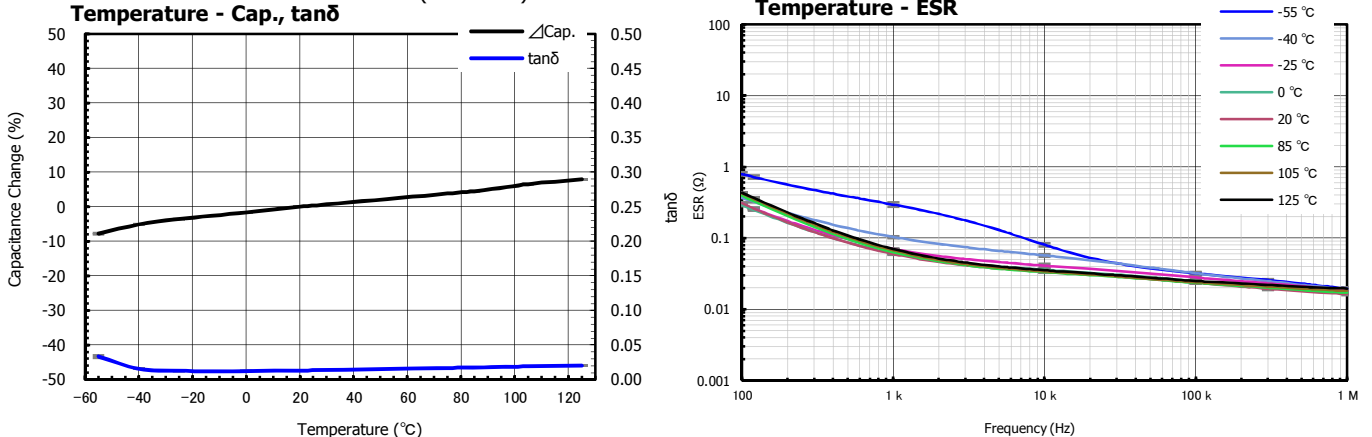
### Frequency - |z|, ESR, ESL, Capacitance, tanδ Characteristics

Osc. Level: 0.5 Vrms (at no load)



### Temperature - Capacitance, tanδ, ESR Characteristics

Osc. Level: 1.0 Vrms (at no load)



Typical Curve

# Technical Data

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

V type ZK series

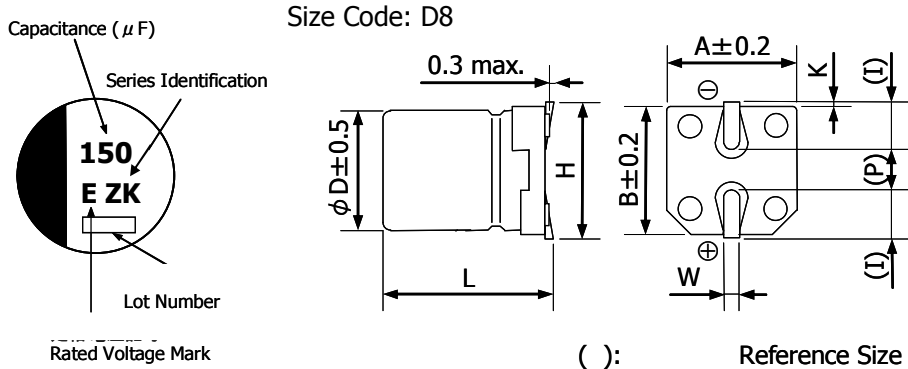
Part Number: EEHZK1E151XP

φ6.3×7.7 mm / 25 V / 150 μF / 125 °C, 4000 h

Category Temperature Range	-55 to 125 °C
Rated W.V. Range	DC 25 V
Nominal Capacitance Range	150 μF (at 120 Hz)
Capacitance Tolerance	±20 %

tanδ	0.14 max. (at 120 Hz)
DC Leakage Current	37.5 μA (0.01CV) max. (at W.V., After 2 min)
ESR	30 mΩ max. (at 100 kHz)
Ripple Current	1680 mArms max. (at 100 kHz, 125 °C)
Endurance	125 °C, 4000 h

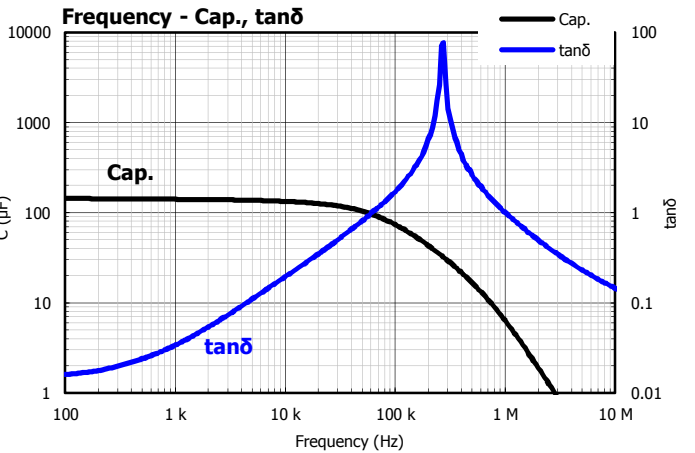
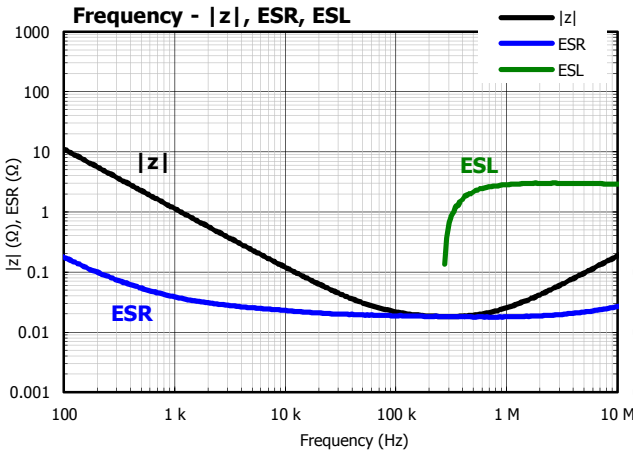
### Marking, Dimensions in mm (not to scale)



	(mm)
D	6.3
L	7.7±0.3
A, B	6.6
H	7.8 max.
I	2.6
W	0.65±0.1
P	1.8
K	0.35+0.15/-0.20

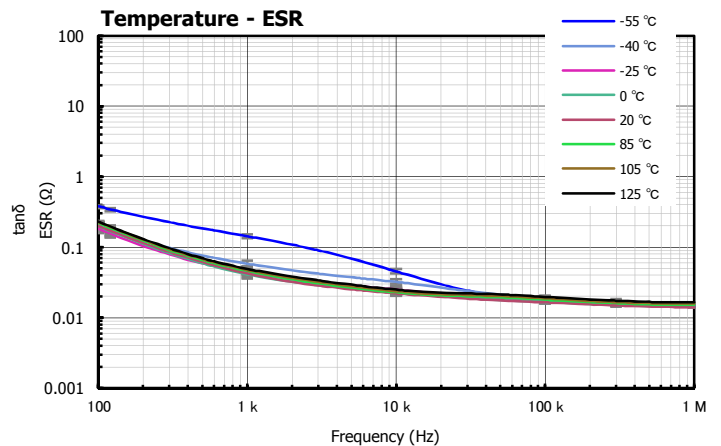
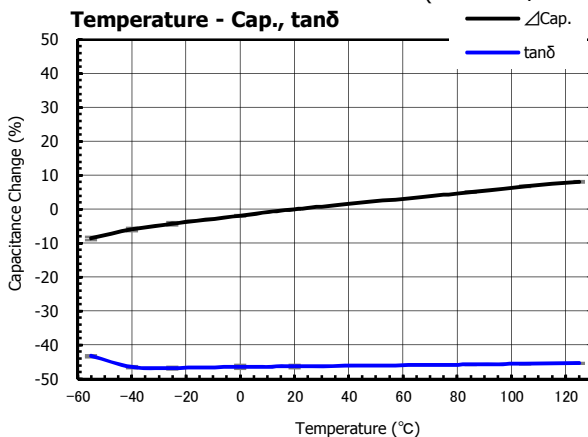
### Frequency - |z|, ESR, ESL, Capacitance, tanδ Characteristics

Osc. Level: 0.5 Vrms (at no load)



### Temperature - Capacitance, tanδ, ESR Characteristics

Osc. Level: 1.0 Vrms (at no load)



Typical Curve

# Technical Data

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

### V type ZK series

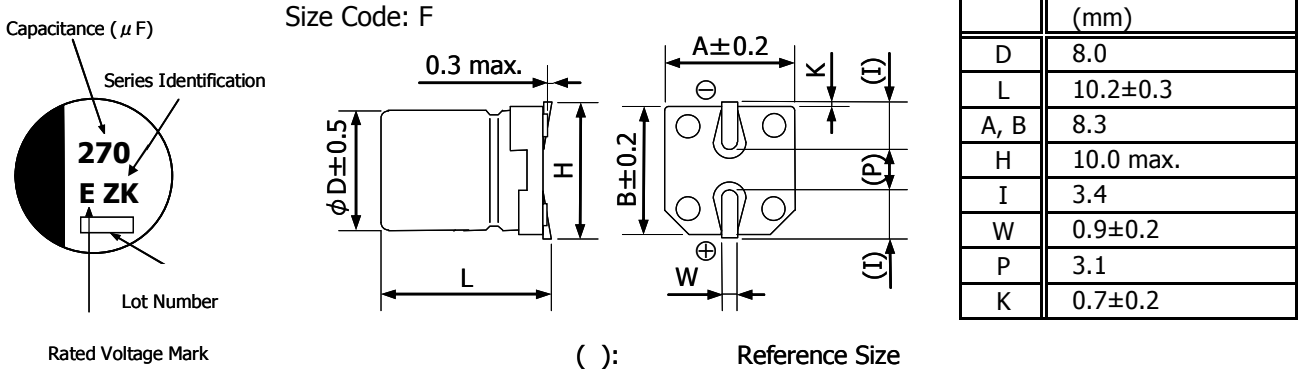
Part Number: **EEHZK1E271P**

φ8.0×10.2 mm / 25 V / 270 μF / 125 °C, 4000 h

Category Temperature Range	-55 to 125 °C
Rated W.V. Range	DC 25 V
Nominal Capacitance Range	270 μF (at 120 Hz)
Capacitance Tolerance	±20 %

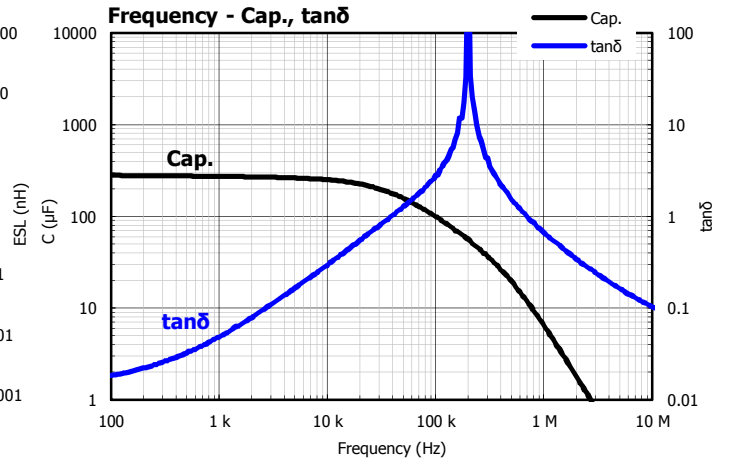
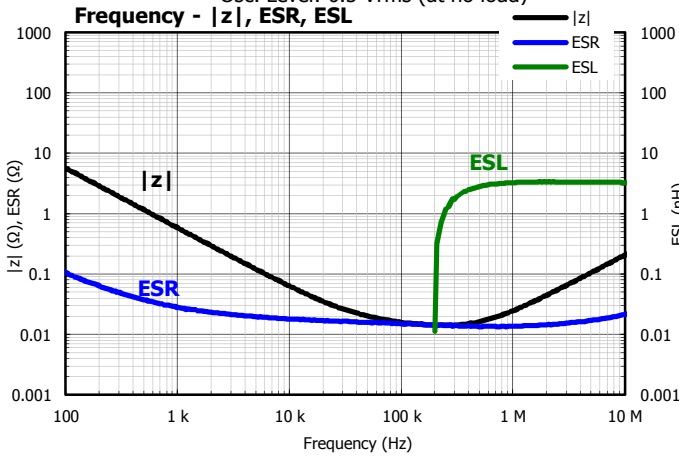
tanδ	0.14 max. (at 120 Hz)
DC Leakage Current	67.5 μA (0.01CV) max. (at W.V., After 2 min)
ESR	27 mΩ max. (at 100 kHz)
Ripple Current	1920 mArms max. (at 100 kHz, 125 °C)
Endurance	125 °C, 4000 h

### Marking, Dimensions in mm (not to scale)



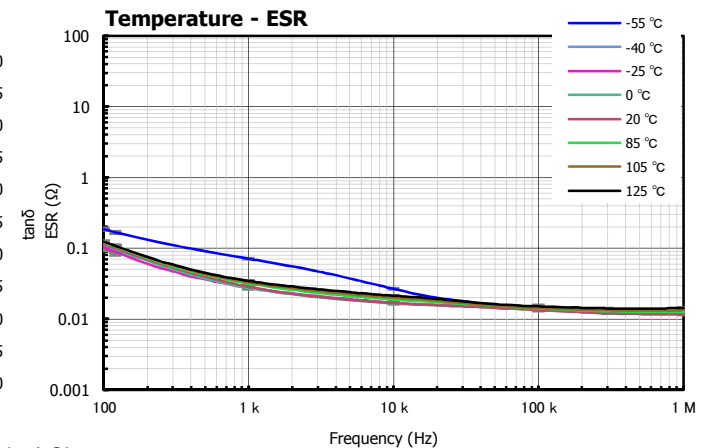
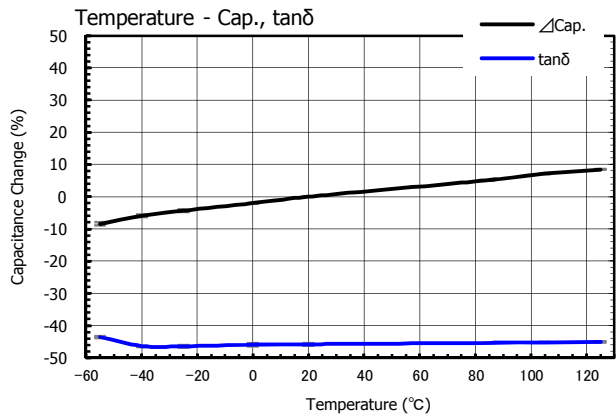
### Frequency - |z|, ESR, ESL, Capacitance, tanδ Characteristics

Osc. Level: 0.5 Vrms (at no load)



### Temperature - Capacitance, tanδ, ESR Characteristics

Osc. Level: 1.0 Vrms (at no load)



Typical Curve

# Technical Data

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

V type ZK series

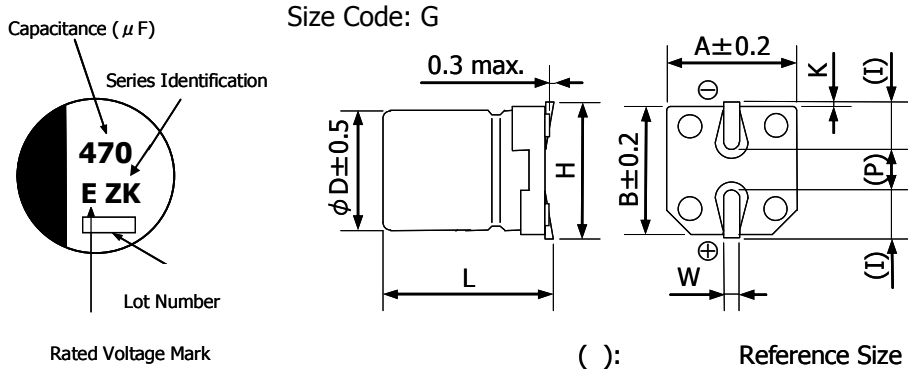
Part Number: EEHZK1E471P

φ10.0×10.2 mm / 25 V / 470 μF / 125 °C, 4000 h

Category Temperature Range	-55 to 125 °C
Rated W.V. Range	DC 25 V
Nominal Capacitance Range	470 μF (at 120 Hz)
Capacitance Tolerance	±20 %

tanδ	0.14 max. (at 120 Hz)
DC Leakage Current	117.5 μA (0.01CV) max. (at W.V., After 2 min)
ESR	20 mΩ max. (at 100 kHz)
Ripple Current	2800 mArms max. (at 100 kHz, 125 °C)
Endurance	125 °C, 4000 h

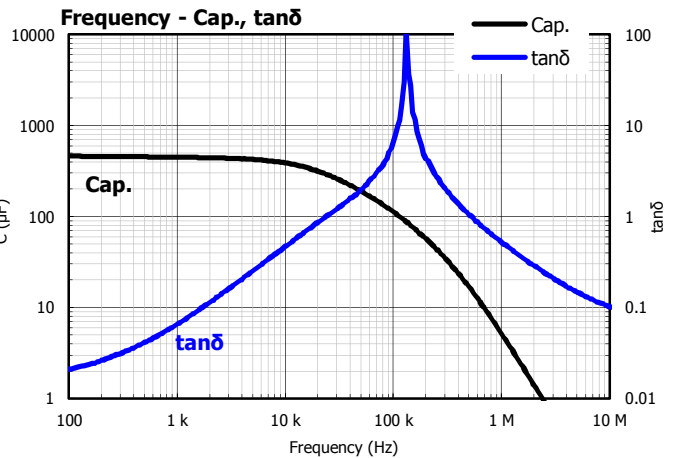
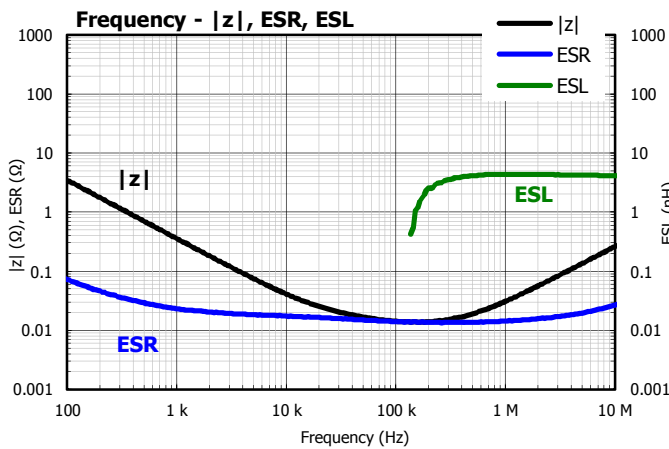
### Marking, Dimensions in mm (not to scale)



	(mm)
D	10.0
L	10.2±0.3
A, B	10.3
H	12.0 max.
I	3.5
W	0.9±0.2
P	4.6
K	0.7±0.2

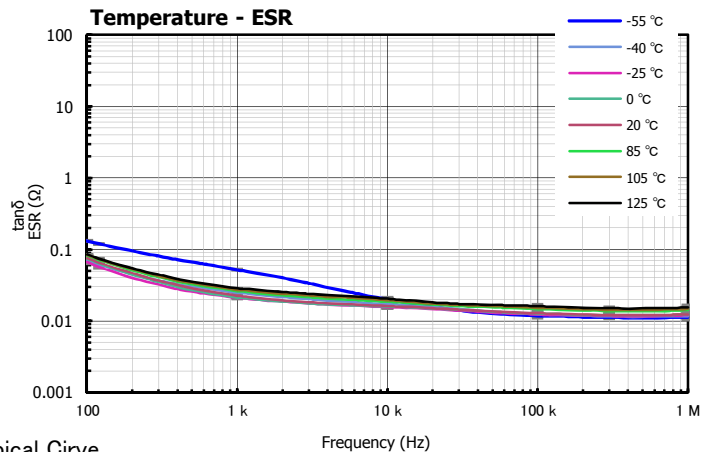
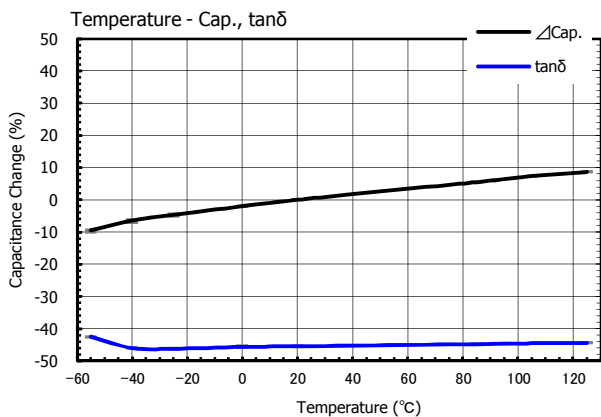
### Frequency - |z|, ESR, ESL, Capacitance, tanδ Characteristics

Osc. Level: 0.5 Vrms (at no load)



### Temperature - Capacitance, tanδ, ESR Characteristics

Osc. Level: 1.0 Vrms (at no load)



Typical Curve



# Technical Data

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

V type ZK series

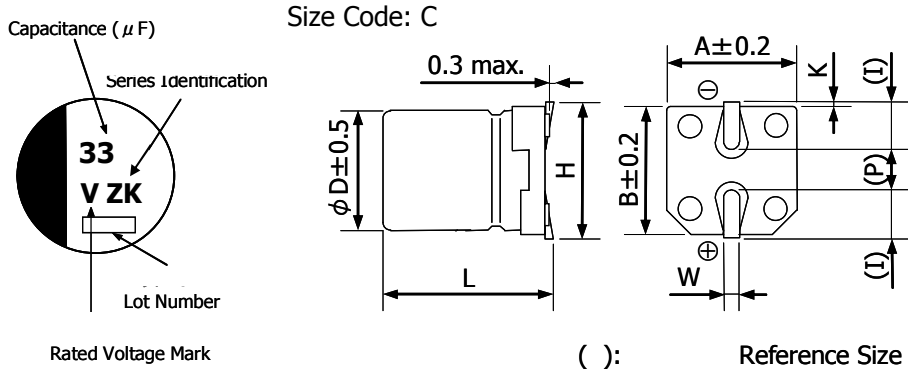
Part Number: EEHZK1V330R

φ5×5.8 mm / 35 V / 33 μF / 125 °C, 4000 h

Category Temperature Range	-55 to 125 °C
Rated W.V. Range	DC 35 V
Nominal Capacitance Range	33 μF (at 120 Hz)
Capacitance Tolerance	±20 %

tanδ	0.12 max. (at 120 Hz)
DC Leakage Current	11.5 μA (0.01CV) max. (at W.V., After 2 min)
ESR	100 mΩ max. (at 100 kHz)
Ripple Current	660 mArms max. (at 100 kHz, 125 °C)
Endurance	125 °C, 4000 h

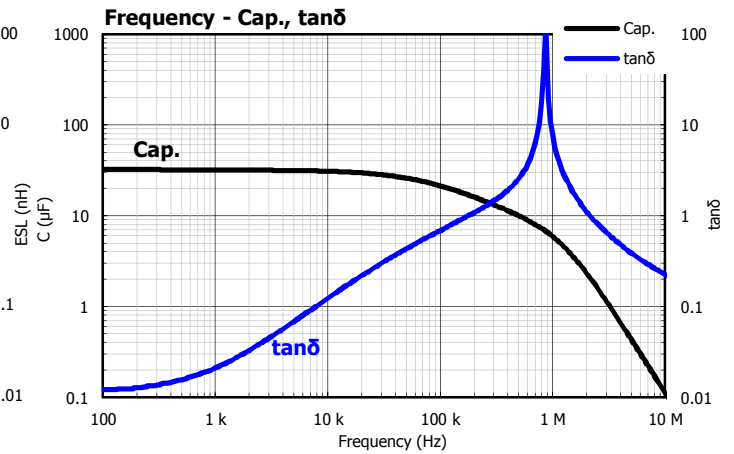
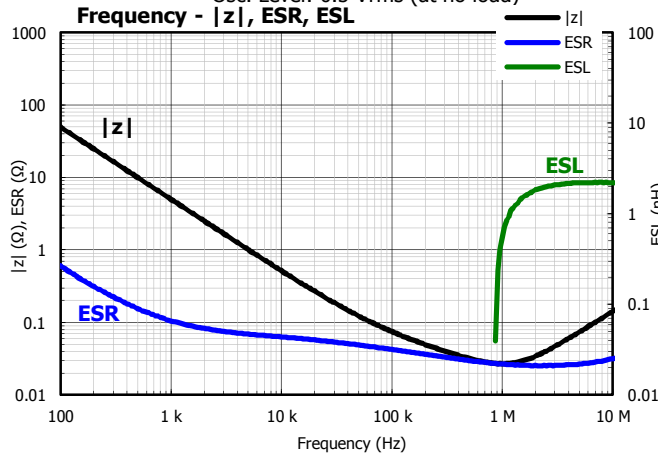
### Marking, Dimensions in mm (not to scale)



	(mm)
D	5.0
L	5.8±0.3
A, B	5.3
H	6.5 max.
I	2.2
W	0.65±0.1
P	1.5
K	0.35+0.15/-0.20

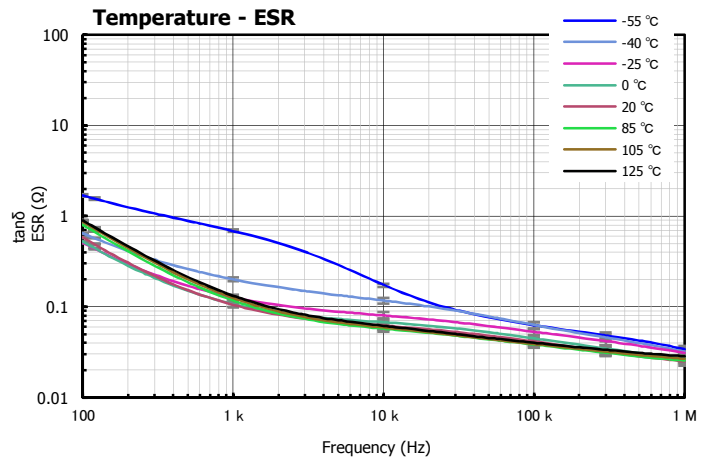
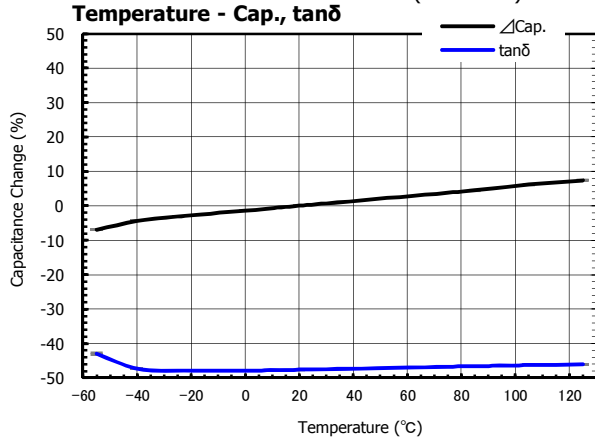
### Frequency - |z|, ESR, ESL, Capacitance, tanδ Characteristics

Osc. Level: 0.5 Vrms (at no load)



### Temperature - Capacitance, tanδ, ESR Characteristics

Osc. Level: 1.0 Vrms (at no load)



Typical Curve

# Technical Data

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

### V type ZK series

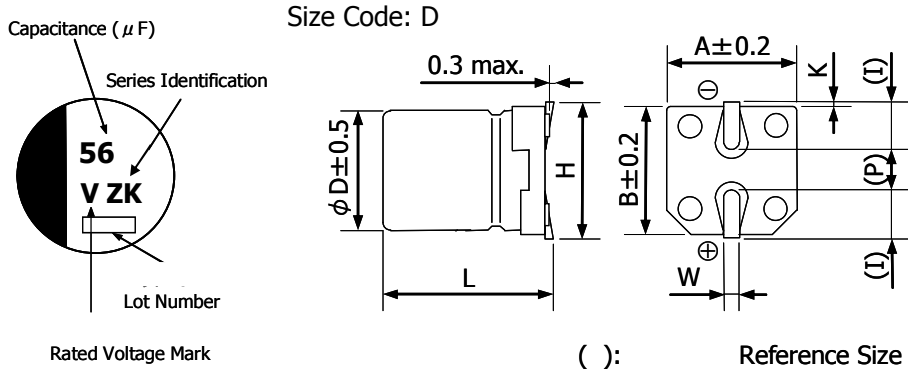
Part Number: **EEHZK1V560P**

$\phi 6.3 \times 5.8$  mm / 35 V / 56  $\mu$ F / 125 °C, 4000 h

Category Temperature Range	-55 to 125 °C
Rated W.V. Range	DC 35 V
Nominal Capacitance Range	56 $\mu$ F (at 120 Hz)
Capacitance Tolerance	$\pm 20$ %

$\tan \delta$	0.12 max. (at 120 Hz)
DC Leakage Current	19.6 $\mu$ A (0.01CV) max. (at W.V., After 2 min)
ESR	60 m $\Omega$ max. (at 100 kHz)
Ripple Current	1080 mArms max. (at 100 kHz, 125 °C)
Endurance	125 °C, 4000 h

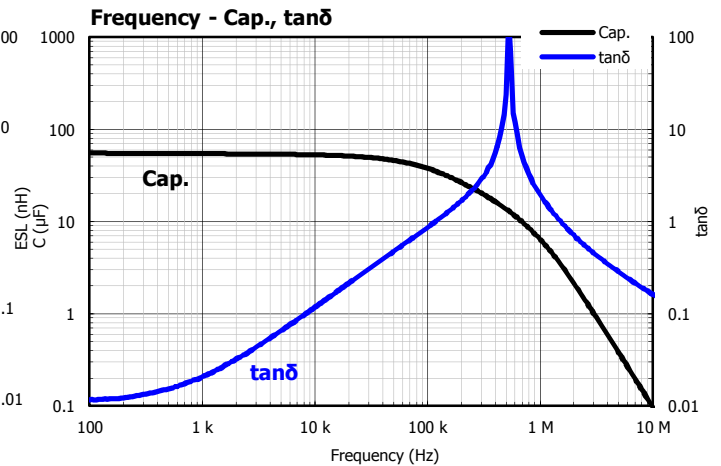
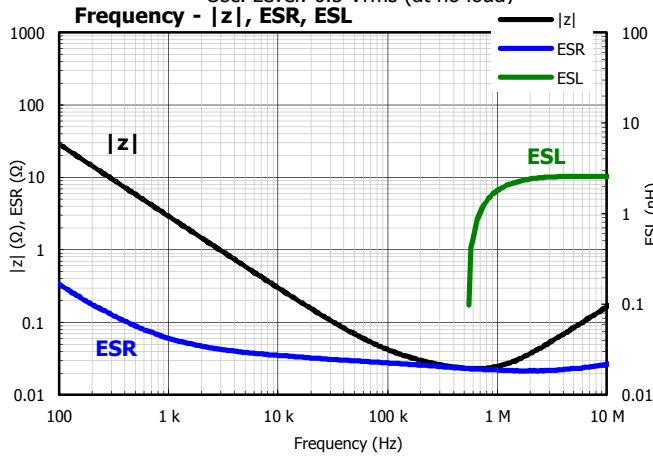
### Marking, Dimensions in mm (not to scale)



	(mm)
D	6.3
L	5.8 $\pm$ 0.3
A, B	6.6
H	7.8 max.
I	2.6
W	0.65 $\pm$ 0.1
P	1.8
K	0.35+0.15/-0.20

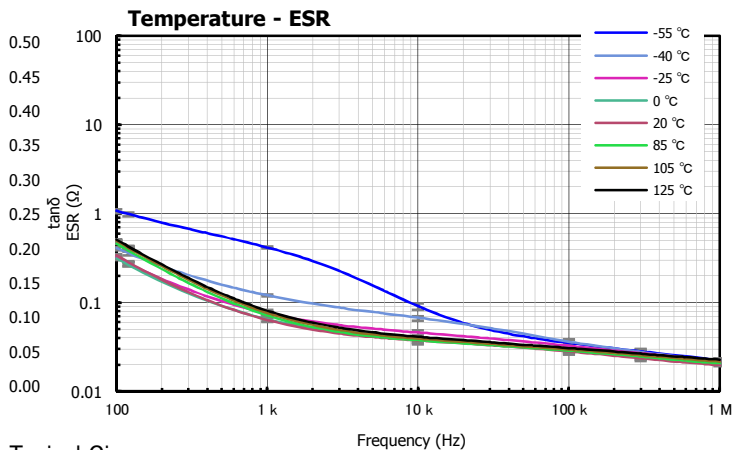
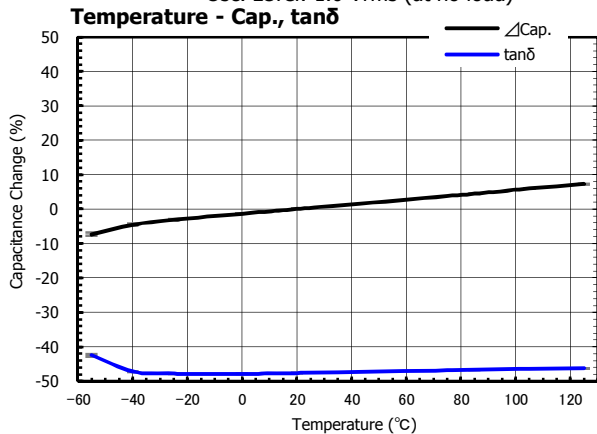
### Frequency - $|z|$ , ESR, ESL, Capacitance, $\tan \delta$ Characteristics

Osc. Level: 0.5 Vrms (at no load)



### Temperature - Capacitance, $\tan \delta$ , ESR Characteristics

Osc. Level: 1.0 Vrms (at no load)



Typical Curve

# Technical Data

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

### V type ZK series

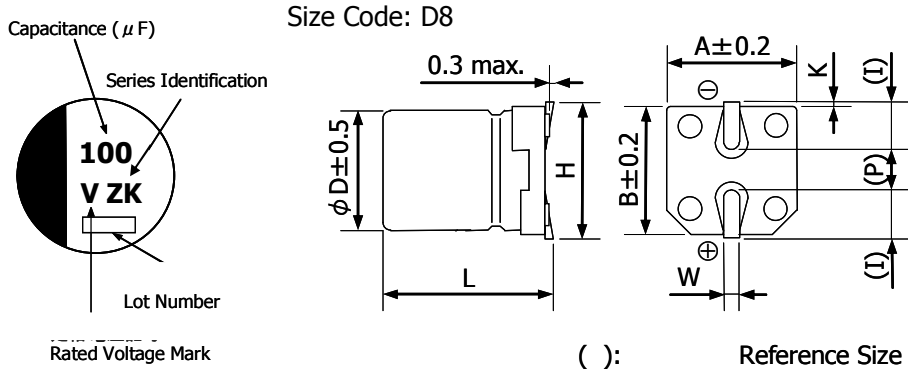
Part Number: EEHZK1V101XP

φ6.3×7.7 mm / 35 V / 100 μF / 125 °C, 4000 h

Category Temperature Range	-55 to 125 °C
Rated W.V. Range	DC 35 V
Nominal Capacitance Range	100 μF (at 120 Hz)
Capacitance Tolerance	±20 %

tanδ	0.12 max. (at 120 Hz)
DC Leakage Current	35.0 μA (0.01CV) max. (at W.V., After 2 min)
ESR	35 mΩ max. (at 100 kHz)
Ripple Current	1680 mArms max. (at 100 kHz, 125 °C)
Endurance	125 °C, 4000 h

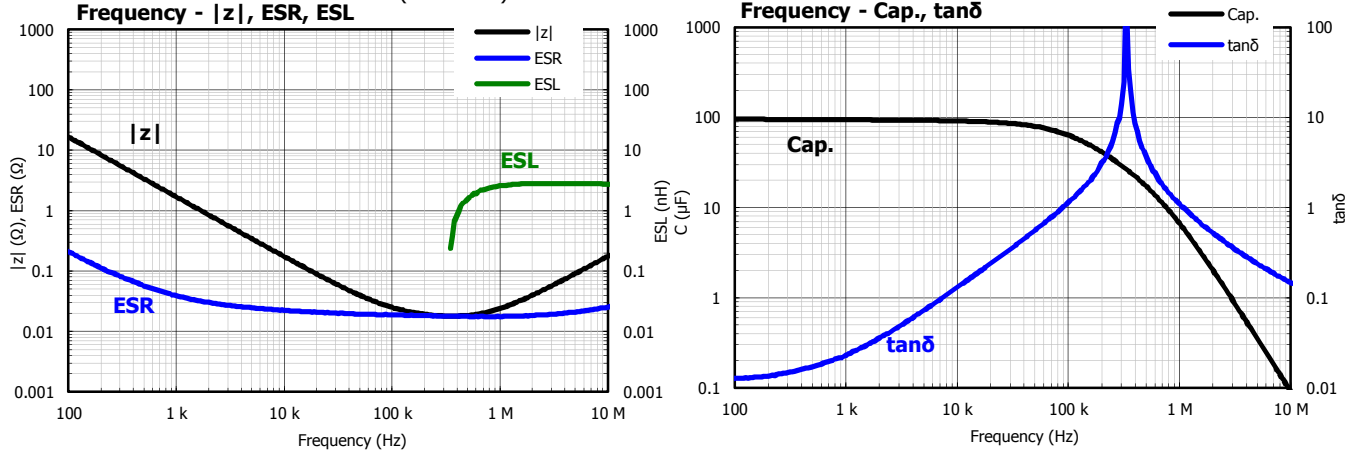
### Marking, Dimensions in mm (not to scale)



	(mm)
D	6.3
L	7.7±0.3
A, B	6.6
H	7.8 max.
I	2.6
W	0.65±0.1
P	1.8
K	0.35+0.15/-0.20

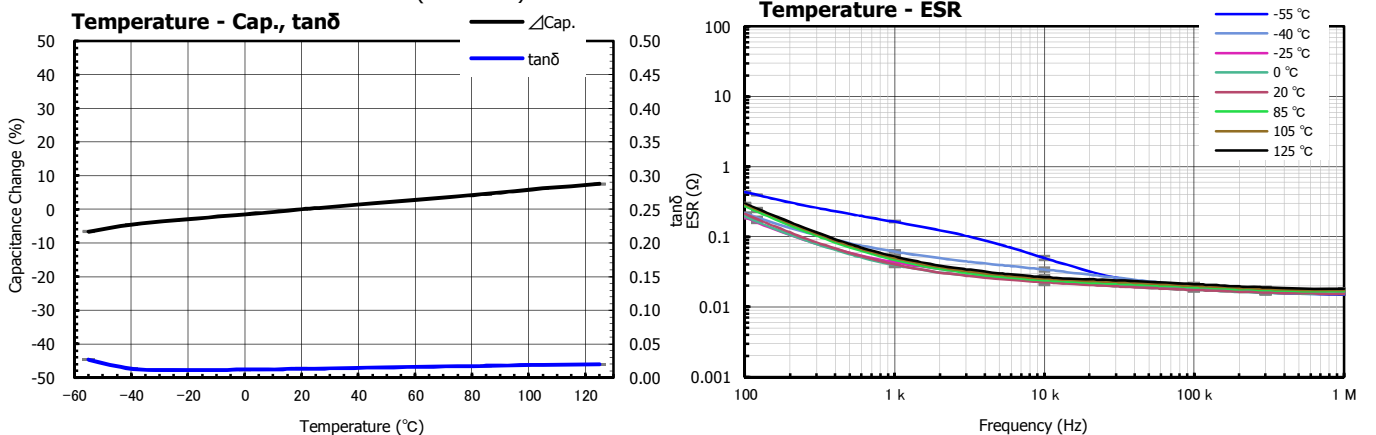
### Frequency - |z|, ESR, ESL, Capacitance, tanδ Characteristics

Osc. Level: 0.5 Vrms (at no load)



### Temperature - Capacitance, tanδ, ESR Characteristics

Osc. Level: 1.0 Vrms (at no load)



Typical Curve

# Technical Data

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

V type ZK series

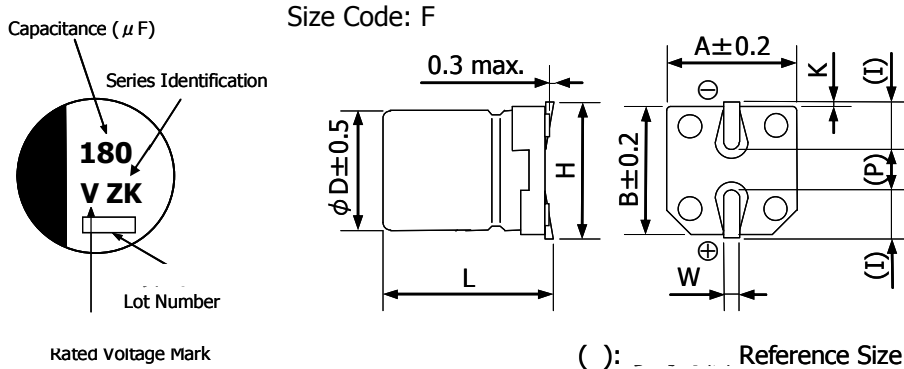
Part Number: EEHZK1V181P

φ8.0×10.2 mm / 35 V / 180 μF / 125 °C, 4000 h

Category Temperature Range	-55 to 125 °C
Rated W.V. Range	DC 35 V
Nominal Capacitance Range	180 μF (at 120 Hz)
Capacitance Tolerance	±20 %

tanδ	0.12 max. (at 120 Hz)
DC Leakage Current	63.0 μA (0.01CV) max. (at W.V., After 2 min)
ESR	27 mΩ max. (at 100 kHz)
Ripple Current	1920 mArms max. (at 100 kHz, 125 °C)
Endurance	125 °C, 4000 h

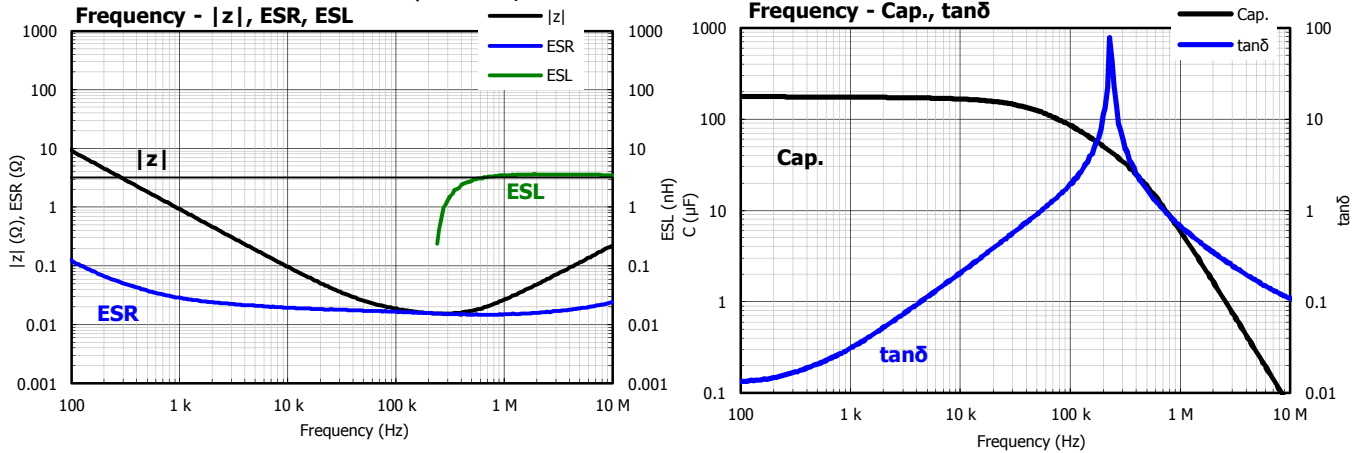
### Marking, Dimensions in mm (not to scale)



	(mm)
D	8.0
L	10.2±0.3
A, B	8.3
H	10.0 max.
I	3.4
W	0.9±0.2
P	3.1
K	0.7±0.2

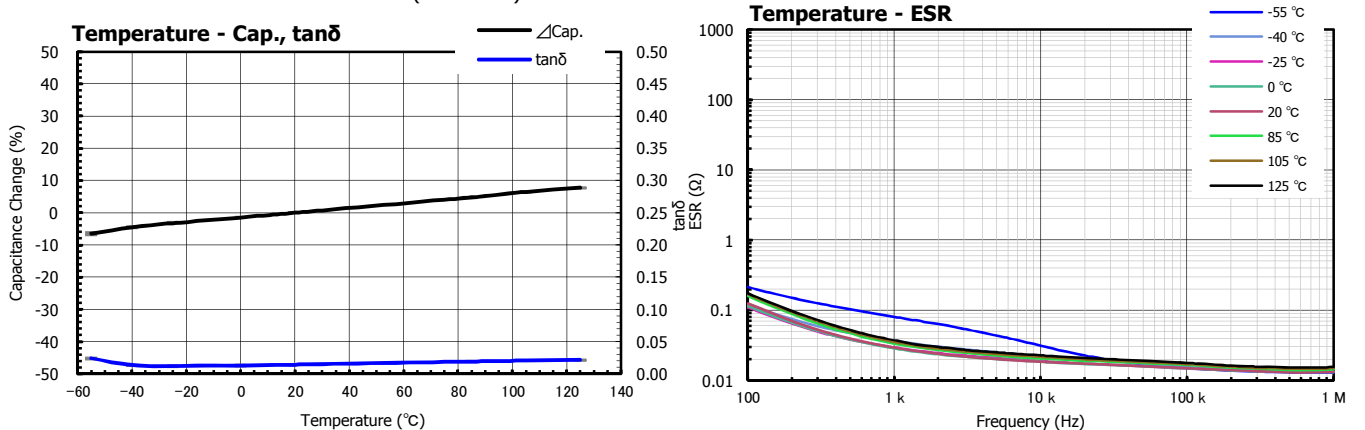
### Frequency - |z|, ESR, ESL, Capacitance, tanδ Characteristics

Osc. Level: 0.5 Vrms (at no load)



### Temperature - Capacitance, tanδ, ESR Characteristics

Osc. Level: 1.0 Vrms (at no load)



Typical Curve

# Technical Data

## Conductive Polymer Hybrid Aluminum Electrolytic Capacitor

### V type ZK series

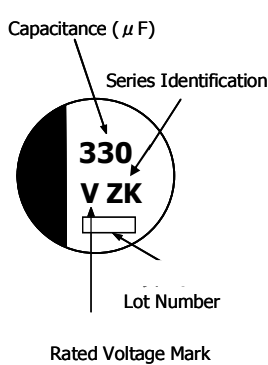
Part Number: **EEHZK1V331P**

$\phi 10.0 \times 10.2$  mm / 35 V / 330  $\mu$ F / 125 °C, 4000 h

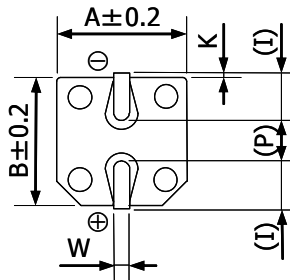
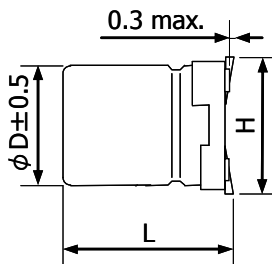
Category Temperature Range	-55 to 125 °C
Rated W.V. Range	DC 35 V
Nominal Capacitance Range	330 $\mu$ F (at 120 Hz)
Capacitance Tolerance	$\pm 20$ %

$\tan \delta$	0.12 max. (at 120 Hz)
DC Leakage Current	115.5 $\mu$ A (0.01CV) max. (at W.V., After 2 min)
ESR	20 m $\Omega$ max. (at 100 kHz)
Ripple Current	2800 mArms max. (at 100 kHz, 125 °C)
Endurance	125 °C, 4000 h

### Marking, Dimensions in mm (not to scale)



Size Code: G



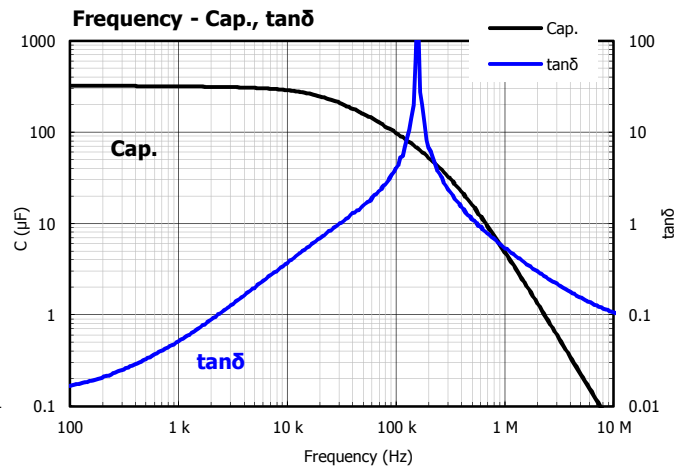
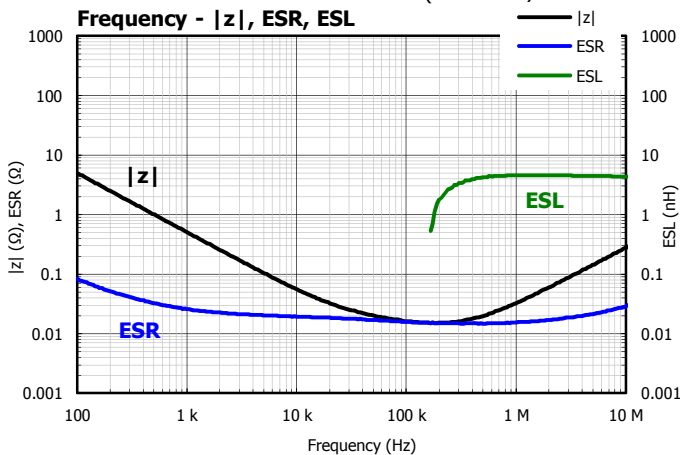
	(mm)
D	10.0
L	10.2 $\pm$ 0.3
A, B	10.3
H	12.0 max.
I	3.5
W	0.9 $\pm$ 0.2
P	4.6
K	0.7 $\pm$ 0.2

Rated Voltage Mark

( ): Reference Size

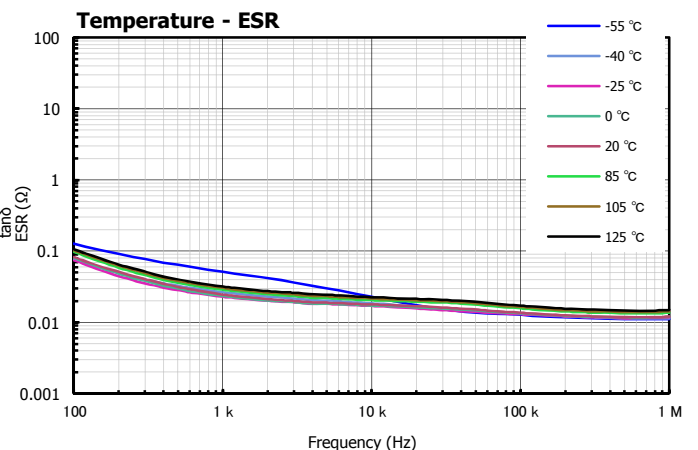
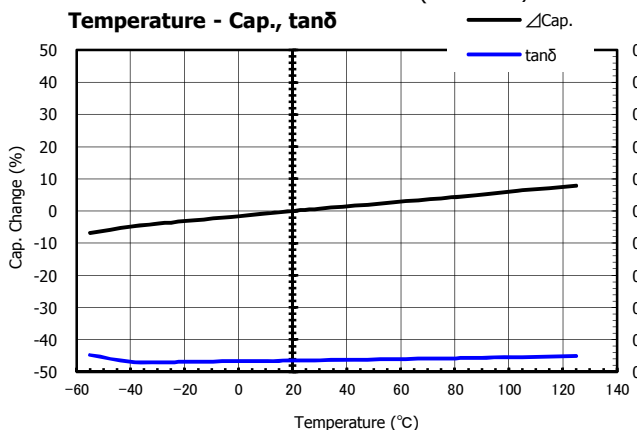
### Frequency - $|z|$ , ESR, ESL, Capacitance, $\tan \delta$ Characteristics

Osc. Level: 0.5 Vrms (at no load)



### Temperature - Capacitance, $\tan \delta$ , ESR Characteristics

Osc. Level: 1.0 Vrms (at no load)



Typical Curve

M E M O



**Technical Data of Conductive Polymer Hybrid  
Aluminum Electrolytic Capacitors  
The first edition : Oct.1st 2016**

Yamaguchi Plant, Device Solutions Business Division  
Issued by Automotive & Industrial Systems Company Panasonic Co., Ltd.

**Device Solutions Business Division**

**Tel : +81-83-922-8121**

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.