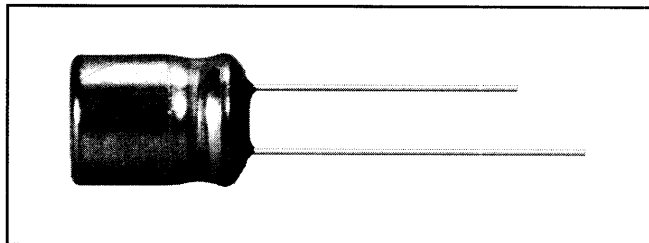




# Aluminum Capacitors

## + 105°C, Miniature, Radial Lead

**PERFORMANCE CHARACTERISTICS**

Operating Temperature: - 55°C to + 105°C.

Capacitance Range: 4.7μF to 3300μF.

Capacitance Tolerance: - 10%, + 50%.

Voltage Rating: 6.3 WVDC to 250 WVDC.

Case Size Range: .394" x .472" [10.0 x 12.0] to .709" x 1.575" [18.0 x 40.0].

Termination: 2 and 3 radial leads and axial mount.

**Life Validation Test:**

4000 hours @ + 105°C (&gt; .394" [10.0] diameter):

3000 hours @ + 105°C (&gt; .394" [10.0] diameter):

Δ CAP ≤ 20% from individual measurements.

Δ ESR ≤ 1.15 x initial specified limit.

Δ DCL ≤ initial specified limit.

**FEATURES**

- Original SMPS output capacitors
- Minimal ESR change
- High ripple current capability

**Shelf Test:** 500 hours @ + 105°C:

Δ CAP ≤ 10% from initial measurement.

Δ ESR ≤ 1.15 x initial specified limit.

Δ DCL ≤ 2 x initial specified limit,

(6.3 WVDC to 100 WVDC);

≤ 3 x initial specified limit

(150 WVDC to 250 WVDC).

**DC Leakage Current:**

6.3 WVDC to 100 WVDC 150 WVDC to 250 WVDC

 $I = 0.03 \sqrt{CV}$  $I = 0.01 \text{ WVDC}$ 

I in μA, C in μF, V in Volts.

RIPPLE CURRENT MULTIPLIERS				
TEMPERATURE				
Ambient Temperature		Multipliers		
+ 105°C		0.5		
+ 85°C		1.0		
≤ + 75°C		1.25		
FREQUENCY (Hz)				
WVDC	50 - 60	100 - 120	300 - 400	1k - 19k
0 - 75	0.60	0.70	0.75	0.80
76 - 100	0.45	0.55	0.70	0.80
101 - 250	0.25	0.35	0.45	0.65

LOW TEMPERATURE PERFORMANCE				
CAPACITANCE RATIO C - 55°C/C + 25°C MINIMUM @ 120Hz				
MAXIMUM CAPACITANCE CHANGE	Voltage		Multiplier	
	6.3 V - 100 V		0.75	
	150 V - 250 V		0.70	
MAXIMUM IMPEDANCE CHANGE	Voltage		Multiplier	
	6.3 V - 100 V		2.5	
	150 V - 250 V		2.0	
ESL (TYPICAL VALUES @ 1MHz TO 10MHz)				
NOMINAL DIAMETER	.394 [10.0]	.512 [13.0]	.630 [16.0]	.709 [18.0]
TYPICAL ESL (nH)	4.0	7.0	10.0	12.0

**DIMENSIONS** [Numbers in brackets indicate millimeters]

CASE CODE	NOMINAL		STYLES 2 AND 4		STYLES 3 AND 5		LEAD SPACING		LEAD DIAMETER	
	D	L	D (Max.)	L (Max.)	D (Max.)	L (Max.)	S ± .024 [.60]	T ± .02 [.50]	NOMINAL	AWG NO.
CC	.394 [10.0]	.512 [13.0]	.413 [10.5]	.563 [14.3]	.413 [10.5]	.630 [16.0]	.197 [5.0]	N/A	.025 [0.63]	22
CD	.394 [10.0]	.630 [16.0]	.413 [10.5]	.669 [17.0]	.413 [10.5]	.740 [18.8]	.197 [5.0]	N/A	.025 [0.63]	22
CG	.394 [10.0]	.787 [20.0]	.413 [10.5]	.846 [21.5]	.413 [10.5]	.906 [23.0]	.197 [5.0]	N/A	.025 [0.63]	22
DG	.492 [12.5]	.787 [20.0]	.512 [13.0]	.846 [21.5]	.512 [13.0]	.906 [23.0]	.197 [5.0]	.098 [2.5]	.032 [0.81]	20
DK	.492 [12.5]	.984 [25.0]	.512 [13.0]	1.043 [26.5]	.512 [13.0]	1.142 [29.0]	.197 [5.0]	.098 [2.5]	.032 [0.81]	20
DM	.492 [12.5]	1.043 [26.5]	.512 [13.0]	1.102 [28.0]	.512 [13.0]	1.161 [29.5]	.197 [5.0]	.098 [2.5]	.032 [0.81]	20
DT	.492 [12.5]	1.319 [33.5]	.512 [13.0]	1.346 [34.2]	.512 [13.0]	1.417 [36.0]	.197 [5.0]	.098 [2.5]	.032 [0.81]	20
DS	.492 [12.5]	1.673 [42.5]	.512 [13.0]	1.720 [43.7]	.512 [13.0]	1.791 [45.5]	.197 [5.0]	.098 [2.5]	.032 [0.81]	20
EK	.630 [16.0]	.984 [25.0]	.650 [16.5]	1.031 [26.2]	.650 [16.5]	1.098 [27.9]	.295 [7.5]	.150 [3.8]	.032 [0.81]	20
EN	.630 [16.0]	1.260 [32.0]	.650 [16.5]	1.319 [33.5]	.650 [16.5]	1.417 [36.0]	.295 [7.5]	.150 [3.8]	.032 [0.81]	20
ER	.630 [16.0]	1.417 [36.0]	.650 [16.5]	1.476 [37.5]	.650 [16.5]	1.575 [40.0]	.295 [7.5]	.150 [3.8]	.032 [0.81]	20
EU	.630 [16.0]	1.575 [40.0]	.650 [16.5]	1.642 [41.7]	.650 [16.5]	1.669 [42.4]	.295 [7.5]	.150 [3.8]	.032 [0.81]	20
FR	.709 [18.0]	1.417 [36.0]	.728 [18.5]	1.476 [37.5]	.728 [18.5]	1.575 [40.0]	.295 [7.5]	.150 [3.8]	.032 [0.81]	20
FV	.709 [18.0]	1.575 [40.0]	.728 [18.5]	1.653 [42.0]	.728 [18.5]	1.693 [43.0]	.295 [7.5]	.150 [3.8]	.032 [0.81]	20

STANDARD RATINGS [Numbers in brackets indicate millimeters]						
CAPACITANCE ( $\mu$ F)	PART NUMBER	NOMINAL CASE SIZE D x L	Max. ESR @ + 25°C (m $\Omega$ )		Max. RIPPLE @ + 85°C (A) 20kHz - 100kHz	Max. IMPEDANCE @ + 25°C (m $\Omega$ ) 100Hz
			120Hz	20kHz		
6.3 WVDC @ + 105°C, SURGE = 9 V						
150.0	672D157F6R3CD5D	.394 x .630 [10.0 x 1.06]	1.10	0.70	0.50	0.60
220.0	672D227F6R3CG5D	.394 x .787 [10.0 x 20.0]	0.75	0.40	0.70	0.33
1000.0	672D108F6R3EK5D	.630 x .984 [16.0 x 25.0]	0.16	0.09	2.05	0.085
1500.0	672D158F6R3ET5D	.630 x 1.319 [16.0 x 33.5]	0.105	0.06	2.90	0.055
3300.0	672D338F6R3FV5D	.709 x 1.575 [18.0 x 40.0]	0.075	0.045	3.40	0.045
12 WVDC @ + 105°C, SURGE = 16 V						
100.0	672D107F012CC5D	.394 x .512 [10.0 x 13.0]	1.60	0.90	0.40	0.70
470.0	672D477F012DM5D	.492 x 1.043 [12.5 x 26.5]	0.31	0.16	1.35	0.12
1000.0	672D108F012DS5D	.492 x 1.673 [12.5 x 42.5]	0.15	0.08	2.35	0.06
2200.0	672D228F012FV5D	.709 x 1.575 [18.0 x 40.0]	0.08	0.05	3.30	0.05
15 WVDC @ + 105°C, SURGE = 20 V						
100.0	672D107F015CD5D	.394 x .630 [10.0 x 16.0]	1.35	0.70	0.50	0.50
470.0	672D477F015DT5D	.492 x 1.319 [12.5 x 33.5]	0.25	0.12	1.75	0.11
1000.0	672D108F015ET5D	.630 x 1.319 [16.0 x 33.5]	0.12	0.06	2.90	0.055
20 WVDC @ + 105°C, SURGE = 30 V						
100.0	672D107F020CG5D	.394 x .787 [10.0 x 20.0]	1.25	0.40	0.70	0.35
470.0	672D477F020EK5D	.630 x .984 [16.0 x 25.0]	0.24	0.09	2.00	0.085
1500.0	672D158F020FV5D	.709 x 1.575 [18.0 x 40.0]	0.09	0.05	3.25	0.05
25 WVDC @ + 105°C, SURGE = 35 V						
47.0	672D476F025CC5D	.394 x .512 [10.0 x 13.0]	2.35	0.90	0.40	0.85
330.0	672D337F025DT5D	.492 x 1.319 [12.5 x 33.5]	0.29	0.12	1.75	0.10
470.0	672D477F025DS5D	.492 x 1.673 [12.5 x 42.5]	0.22	0.08	2.35	0.07
1200.0	672D128F025FV5D	.709 x 1.575 [18.0 x 40.0]	0.10	0.05	3.20	0.055
40 WVDC @ + 105°C, SURGE = 55 V						
220.0	672D227F040EK5D	.630 x .984 [16.0 x 25.0]	0.48	0.14	1.65	0.12
330.0	672D337F040ET5D	.630 x 1.319 [16.0 x 33.5]	0.32	0.12	2.25	0.08
50 WVDC @ + 105°C, SURGE = 75 V						
100.0	672D107F050DT5D	.492 x 1.319 [12.5 x 33.5]	0.80	0.26	1.15	0.22
150.0	672D157F050EK5D	.630 x .984 [16.0 x 25.0]	0.55	0.22	1.30	0.18
220.0	672D227F050ET5D	.630 x 1.319 [16.0 x 33.5]	0.40	0.15	1.85	0.12
470.0	672D477F050FV5D	.709 x 1.575 [18.0 x 40.0]	0.25	0.09	2.40	0.095
60 WVDC @ + 105°C, SURGE = 85 V						
15.0	672D156F060CD5D	.394 x .512 [10.0 x 13.0]	7.00	2.00	0.28	1.70
22.0	672D226F060CG5D	.394 x .787 [10.0 x 20.0]	4.60	1.20	0.40	1.00
100.0	672D107F060EK5D	.630 x .984 [16.0 x 25.0]	0.90	0.28	1.20	0.24
150.0	672D157F060ET5D	.630 x 1.319 [16.0 x 33.5]	0.60	0.18	1.65	0.15
75 WVDC @ + 105°C, SURGE = 100 V						
12.0	672D126F075CD5D	.394 x .512 [10.0 x 13.0]	8.50	2.20	0.26	1.75
120.0	672D127F075ET5D	.630 x 1.319 [16.0 x 33.5]	0.68	0.18	1.50	0.16
100 WVDC @ + 105°C, SURGE = 125 V						
10.0	672D106F100CD5D	.394 x .630 [10.0 x 16.0]	10.00	2.30	0.26	1.80
33.0	672D336F100DM5D	.492 x 1.043 [12.5 x 26.5]	2.55	0.55	0.72	0.39
120.0	672D127F100ET5D	.630 x 1.319 [16.0 x 33.5]	0.68	0.19	1.50	0.17
200 WVDC @ + 105°C, SURGE = 250 V						
4.7	672D475F200CG5D	.394 x .787 [10.0 x 20.0]	22.50	1.95	0.31	1.75
15.0	672D156F200DT5D	.492 x 1.319 [12.5 x 33.5]	7.00	0.58	0.76	0.55
47.0	672D476F200FV5D	.709 x 1.575 [18.0 x 40.0]	2.30	0.18	1.90	0.165
250 WVDC @ + 105°C, SURGE = 300 V						
10.0	672D106F250DT5D	.492 x 1.319 [12.5 x 33.5]	12.00	1.50	0.48	1.60



ORIGINAL RATINGS*					
CAPACITANCE ( $\mu$ F)	CASE CODE	PART NUMBER	CAPACITANCE ( $\mu$ F)	CASE CODE	PART NUMBER
6.3 WVDC @ + 105°C, SURGE = 9 V			7.5 WVDC @ + 105°C, SURGE = 10 V		
150.0	CD	672D157H6R3CD5C	100.0	CC	672D107H7R5CC5C
220.0	CG	672D227H6R3CG5C	150.0	CD	672D157H7R5CD5C
680.0**	DM	672D687H6R3DM5C	680.0	DT	672D687H7R5DT5C
1000.0	EK	672D108H6R3EK5C	1000.0	ET	672D108H7R5ET5C
1200.0	DS	672D128H6R3DS5C	2700.0	FV	672D278H7R5FV5C
1500.0	ET	672D158H6R3ET5C			
3300.0	FV	672D338H6R3FV5C			
12 WVDC @ + 105°C, SURGE = 16 V			15 WVDC @ + 105°C, SURGE = 20 V		
100.0	CC	672D107H012CC5C	100.0	CD	672D107H015CD5C
150.0	CG	672D157H012CG5C	150.0	CG	672D157H015CG5C
470.0**	DM	672D477H012DM5C	470.0	DT	672D477H015DT5C
680.0	DT	672D687H012DT5C	680.0	EK	672D687H015EK5C
1000.0	DS	672D108H012DS5C	820.0	DS	672D827H015DS5C
2200.0	FV	672D228H012FV5C	1000.0**	ET	672D108H015ET5C
			1800.0	FV	672D188H015FV5C
20 WVDC @ + 105°C, SURGE = 30 V			25 WVDC @ + 105°C, SURGE = 35 V		
68.0	CD	672D686H020CD5C	47.0**	CC	672D476H025CC5C
100.0**	CG	672D107H020CG5C	68.0**	CD	672D686H025CD5C
330.0**	DM	672D337H020DM5C	330.0	DT	672D337H025DT5C
470.0**	EK	672D477H020EK5C	470.0**	DS	672D477H025DS5C
560.0	DS	672D567H020DS5C	680.0	EU	672D687H025EU5C
680.0	ET	672D687H020ET5C	1200.0	FV	672D128H025FV5C
1500.0	FV	672D158H020FV5C			
40 WVDC @ + 105°C, SURGE = 55 V			50 WVDC @ + 105°C, SURGE = 75 V		
47.0**	CD	672D476H040CD5C	22.0**	CD	672D226H050CD5C
220.0**	EK	672D227H040EK5C	100.0	DT	672D107H050DT5C
330.0**	ET	672D337H040ET5C	150.0	EK	672D157H050EK5C
390.0**	DS	672D397H040DS5C	180.0	DS	672D187H050DS5C
820.0	FV	672D827H040FV5C	220.0	ET	672D227H050ET5C
			470.0	FV	672D477H050FV5C
60 WVDC @ + 105°C, SURGE = 85 V			75 WVDC @ + 105°C, SURGE = 100 V		
15.0	CD	672D156H060CD5C	12.0	CD	672D126H075CD5C
22.0	CG	672D226H060CG5C	18.0	CG	672D186H075CG5C
68.0**	DM	672D686H060DM5C	82.0**	EK	672D826H075EK5C
100.0	EK	672D107H060EK5C	120.0	ET	672D127H075ET5C
120.0	DS	672D127H060DS5C	270.0	FV	672D277H075FV5C
150.0	ET	672D157H060ET5C			
390.0	FV	672D397H060FV5C			
100 WVDC @ + 105°C, SURGE = 125 V			150 WVDC @ + 105°C, SURGE = 200 V		
8.2	CC	672D825H100CC5C	6.8	CG	672D685H150CG5C
10.0	CD	672D106H100CD5C	22.0	DT	672D226H150DT5C
33.0	DM	672D336H100DM5C	39.0	ET	672D396H150ET5C
68.0	EK	672D686H100EK5C	68.0	FV	672D686H150FV5C
120.0	ET	672D127H100ET5C			
180.0	FV	672D187H100FV5C			
200 WVDC @ + 105°C, SURGE = 250 V			250 WVDC @ + 105°C, SURGE = 300 V		
4.7**	CG	672D475H200CG5C	8.2	DM	672D825H250DM5C
15.0	DT	672D156H200DT5C	10.0	DT	672D106H250DT5C
27.0	ET	672D276H200ET5C	22.0	ET	672D226H250ET5C
47.0	FV	672D476H200FV5C	39.0	FV	672D396H250FV5C

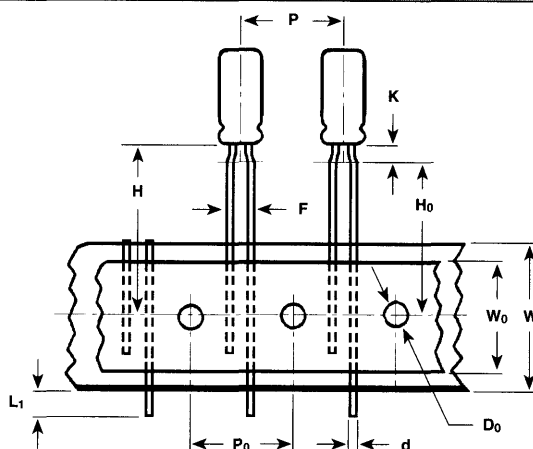
\* Standard Capacitance Tolerance Code H, - 10%, + 100%; Lead Code C, cut leads. C Lead = Negative Lead: .281" [7.1mm],  $\pm$  .062" [1.6mm]; Positive Lead: .375" [9.5mm],  $\pm$  .062" [1.6mm]. D Lead = 1.0" [25.4mm] minimum.

\*\* These values are normally stocked.

HOW TO ORDER						
672D	157	F	6R3	CD	5	D
TYPE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING	CASE CODE	LEAD CODE	TERMINATION
This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.		F = - 10%, + 50%	This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an "R" (6R3 = 6.3 volts).	See Dimensions.	5 = Polyester sleeve with resin end seal.	D = Straight leads. Standard.

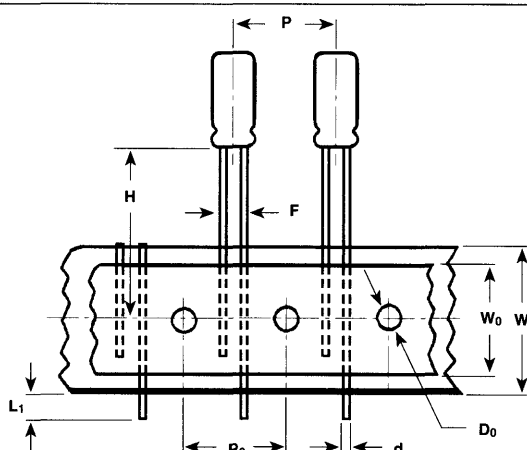
## TAPE AND REEL, SPECIFICATIONS TO EIA-468D [Numbers in brackets indicate millimeters]

### Formed Leads



CASE SIZE	F LEAD SPACING	STD. QTY/REEL
.236 x .453 [6.0 x 11.0]	.197 [5.0]	800
.315 x .472 [8.0 x 12.0]	.197 [5.0]	700

### Unformed (Straight) Leads



CASE SIZE	F LEAD SPACING	STD. QTY/REEL
.236 x .453 [6.0 x 11.0]	.098 [2.5]	800
.315 x .472 [8.0 x 12.0]	.140* [3.5]	700
.394 x .512 [10.0 x 13.0]	.197 [5.0]	500
.394 x .630 [10.0 x 16.0]	.197 [5.0]	500
.394 x .787 [10.0 x 20.0]	.197 [5.0]	500

\* Available as special order.



	CASE SIZE (Diameter x Length)				
	.236 x .433 [6.0 x 11.0]	.315 x .472 [8.0 x 12.0]	.394 x .512 [10.0 x 13.0]	.394 x .630 [10.0 x 16.0]	.394 x .787 [10.0 x 20.0]
d - Lead-wire Diameter	.025 [0.63]	.025 [0.63]	.025 [0.63]	.025 [0.63]	.025 [0.63]
P - Pitch of Component	.500 [12.7]	.500 [12.7]	.500 [12.7]	.500 [12.7]	.500 [12.7]
P0 - Feed Hole Pitch	.500 [12.7]	.500 [12.7]	.500 [12.7]	.500 [12.7]	.500 [12.7]
F - Lead-to-lead Distance	.197 [5.0]	.197 [5.0]	.197 [5.0]	.197 [5.0]	.197 [5.0]
K - Clinch Height	.098 [2.5]	.157 [4.0]	N/A	N/A	N/A
H - Height of Component from Tape Center	.728 [18.5]	.787 [20.0]	.906 [23.0]	.906 [23.0]	.906 [23.0]
H0 - Lead-wire Clinch Height	.630 [16.0]	.630 [16.0]	N/A	N/A	N/A
W - Tape Width	.709 [18.0]	.709 [18.0]	.709 [18.0]	.709 [18.0]	.709 [18.0]
W0 - Hold Down Tape Width	.591 [15.0]	.591 [15.0]	.591 [15.0]	.591 [15.0]	.591 [15.0]
D0 - Feed Hole Diameter	.157 [4.0]	.157 [4.0]	.157 [4.0]	.157 [4.0]	.157 [4.0]
f - Total Tape Thickness	.028 [0.7]	.028 [0.7]	.028 [0.7]	.028 [0.7]	.028 [0.7]
L1 - Maximum Lead Protrusion	.118 [3.0]	.118 [3.0]	.118 [3.0]	.118 [3.0]	.118 [3.0]

**NOTE:** Terminal Code "I" = Tape and Reel. Terminal Code "+" = Tape and Ammo.  
Positive leader is standard. Negative leader is available by special order.

# Mouser Electronics

Authorized Distributor

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Vishay:

[672D128H6R3DS5C](#)