

# Aluminum Capacitors + 85 °C, Tubular, Axial Lead, General Purpose


**FEATURES**

- General purpose capacitor
- Rugged construction
- Largest CV ratings in axial lead capacitor
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



QUICK REFERENCE DATA	
DESCRIPTION	VALUE
Nominal case size Ø D x L in mm	0.75" x 1.125" [19.05 x 28.575] to 1.375" x 4.125" [34.925 x 104.775]
Operating temperature	- 40 °C to + 85 °C
Rated capacitance range, C <sub>R</sub>	15 µF to 220 000 µF
Tolerance on C <sub>R</sub>	- 10 %, + 50 %; - 10 %, + 75 %
Rated voltage range, U <sub>R</sub>	6.3 WV <sub>DC</sub> to 450 WV <sub>DC</sub>
Termination	Axial leads
Life validation test at 85 °C	1000 h: ΔCAP ≤ 15 % from initial measurement. ΔESR ≤ 1.5 x initial specified limit. ΔDCL ≤ initial specified limit.
Shelf life at 85 °C	500 h: ΔCAP ≤ 10 % from initial measurement. ΔESR ≤ 1.3 x initial specified limit. ΔDCL ≤ 2.0 x initial specified limit.
DC leakage current	$I = K\sqrt{CV}$ K = 6.0 at + 25 °C; 36.0 at + 85 °C I in µA, C in µF, V in Volts

RIPPLE CURRENT MULTIPLIERS			
TEMPERATURE			
AMBIENT TEMPERATURE		MULTIPLIERS	
+ 75 °C		1.4	
+ 65 °C		1.7	
+ 45 °C and below		2.0	
FREQUENCY (Hz)			
WV <sub>DC</sub>	50 TO 60	300 TO 400	1000 AND UP
0 to 50	0.85	1.10	1.15
51 to 299	0.85	1.15	1.20
300 to up	0.80	1.30	1.40

LOW TEMPERATURE PERFORMANCE	
CAPACITANCE RATIO C <sup>-40 °C</sup> /C <sup>+25 °C</sup> MINIMUM AT 120 Hz	
Rated Voltage (WV <sub>DC</sub> )	Capacitance Remaining
0 to 40	35
41 to 63	45
64 to 100	60
101 to 350	20
351 to 450	15
ESR RATIO ESR <sup>-40 °C</sup> /ESR <sup>+25 °C</sup> MAXIMUM AT 120 Hz	
Rated Voltage (WV <sub>DC</sub> )	Multiplier
0 to 40	60
41 to 63	55
64 to 100	65
101 to 350	180
351 to 450	190

DIMENSIONS in inches [millimeters]							
CASE CODE	STYLE 6 AND 7		TYPICAL WEIGHT	CASE CODE	STYLE 6 AND 7		TYPICAL WEIGHT
	D	L			D	L	
GE	0.760 ± 0.020 [19.3 ± 0.51]	1.141 ± 0.062 [29.0 ± 1.58]	0.46 oz. (13 g)	GL	0.760 ± 0.020 [19.3 ± 0.51]	2.141 ± 0.062 [54.4 ± 1.58]	0.74 oz. (21 g)
GJ	0.760 ± 0.020 [19.3 ± 0.51]	1.641 ± 0.062 [41.7 ± 1.58]	0.67 oz. (19 g)	GP	0.760 ± 0.020 [19.3 ± 0.51]	2.641 ± 0.062 [67.1 ± 1.58]	0.88 oz. (25 g)
GS	0.760 ± 0.020 [19.3 ± 0.51]	3.141 ± 0.062 [79.8 ± 1.58]	1.16 oz. (33 g)	KS	1.135 ± 0.020 [28.8 ± 0.51]	3.141 ± 0.062 [79.8 ± 1.58]	2.54 oz. (72 g)
GT	0.760 ± 0.020 [19.3 ± 0.51]	3.641 ± 0.062 [92.5 ± 1.58]	1.34 oz. (38 g)	KT	1.135 ± 0.020 [28.8 ± 0.51]	3.641 ± 0.062 [92.5 ± 1.58]	2.96 oz. (84 g)
HE	0.885 ± 0.020 [22.5 ± 0.51]	1.141 ± 0.062 [29.0 ± 1.58]	0.63 oz. (18 g)	KD	1.135 ± 0.020 [28.8 ± 0.51]	4.141 ± 0.062 [105.2 ± 1.58]	3.35 oz. (95 g)

DIMENSIONS in inches [millimeters]							
CASE CODE	STYLE 6 AND 7		TYPICAL WEIGHT	CASE CODE	STYLE 6 AND 7		TYPICAL WEIGHT
	D	L			D	L	
HJ	0.885 ± 0.020 [22.5 ± 0.51]	1.641 ± 0.062 [41.7 ± 1.58]	0.95 oz. (27 g)	LE	1.260 ± 0.020 [32.0 ± 0.51]	1.141 ± 0.062 [29.0 ± 1.58]	1.13 oz. (32 g)
HL	0.885 ± 0.020 [22.5 ± 0.51]	2.141 ± 0.062 [54.4 ± 1.58]	1.02 oz. (29 g)	LJ	1.260 ± 0.020 [32.0 ± 0.51]	1.641 ± 0.062 [41.7 ± 1.58]	1.62 oz. (46 g)
HP	0.885 ± 0.020 [22.5 ± 0.51]	2.641 ± 0.062 [67.1 ± 1.58]	1.38 oz. (39 g)	LL	1.260 ± 0.020 [32.0 ± 0.51]	2.141 ± 0.062 [54.4 ± 1.58]	2.11 oz. (60 g)
HS	0.885 ± 0.020 [22.5 ± 0.51]	3.141 ± 0.062 [79.8 ± 1.58]	1.73 oz. (49 g)	LP	1.260 ± 0.020 [32.0 ± 0.51]	2.641 ± 0.062 [67.1 ± 1.58]	2.65 oz. (75 g)
HT	0.885 ± 0.020 [22.5 ± 0.51]	3.641 ± 0.062 [92.5 ± 1.58]	2.08 oz. (59 g)	LS	1.260 ± 0.020 [32.0 ± 0.51]	3.141 ± 0.062 [79.8 ± 1.58]	3.14 oz. (89 g)
JE	1.010 ± 0.020 [25.7 ± 0.51]	1.141 ± 0.062 [29.0 ± 1.58]	0.81 oz. (23 g)	LT	1.260 ± 0.020 [32.0 ± 0.51]	3.641 ± 0.062 [92.5 ± 1.58]	3.63 oz. (103 g)
JJ	1.010 ± 0.020 [25.7 ± 0.51]	1.641 ± 0.062 [41.7 ± 1.58]	1.02 oz. (29 g)	LD	1.260 ± 0.020 [32.0 ± 0.51]	4.141 ± 0.062 [105.2 ± 1.58]	4.16 oz. (118 g)
JL	1.010 ± 0.020 [25.7 ± 0.51]	2.141 ± 0.062 [54.4 ± 1.58]	1.55 oz. (44 g)	ME	1.375 ± 0.020 [34.9 ± 0.51]	1.141 ± 0.062 [29.0 ± 1.58]	1.38 oz. (39 g)
JP	1.010 ± 0.020 [25.7 ± 0.51]	2.641 ± 0.062 [67.1 ± 1.58]	1.87 oz. (53 g)	MJ	1.375 ± 0.020 [34.9 ± 0.51]	1.641 ± 0.062 [41.7 ± 1.58]	1.98 oz. (56 g)
JS	1.010 ± 0.020 [25.7 ± 0.51]	3.141 ± 0.062 [79.8 ± 1.58]	2.22 oz. (63 g)	ML	1.375 ± 0.020 [34.9 ± 0.51]	2.141 ± 0.062 [54.4 ± 1.58]	2.57 oz. (73 g)
JT	1.010 ± 0.020 [25.7 ± 0.51]	3.641 ± 0.062 [92.5 ± 1.58]	2.54 oz. (72 g)	MP	1.375 ± 0.020 [34.9 ± 0.51]	2.641 ± 0.062 [67.1 ± 1.58]	3.21 oz. (91 g)
KE	1.135 ± 0.020 [28.8 ± 0.51]	1.141 ± 0.062 [29.0 ± 1.58]	0.92 oz. (26 g)	MS	1.375 ± 0.020 [34.9 ± 0.51]	3.141 ± 0.062 [79.8 ± 1.58]	3.81 oz. (108 g)
KJ	1.135 ± 0.020 [28.8 ± 0.51]	1.641 ± 0.062 [41.7 ± 1.58]	1.31 oz. (37 g)	MT	1.375 ± 0.020 [34.9 ± 0.51]	3.641 ± 0.062 [92.5 ± 1.58]	4.44 oz. (126 g)
KL	1.135 ± 0.020 [28.8 ± 0.51]	2.141 ± 0.062 [54.4 ± 1.58]	1.73 oz. (49 g)	MD	1.375 ± 0.020 [34.9 ± 0.51]	4.141 ± 0.062 [105.2 ± 1.58]	5.04 oz. (143 g)
KP	1.135 ± 0.020 [28.8 ± 0.51]	2.641 ± 0.062 [67.1 ± 1.58]	2.15 oz. (61 g)	-	-	-	-

## DIMENSIONS AND AVAILABLE FORMS



Lead diameter  
No. 18 AWG (0.040" [1.016 mm] Dia.)

## ORDERING EXAMPLE

Electrolytic capacitor 53D series: 53D 282 G 025 GJ 6

DESCRIPTION	
CODE	EXPLANATION
53D	Product type
282	Capacitance value (2800 µF)
G	Tolerance (G = - 10 %/+ 75 %; F = - 10 %/+ 50 %)
025	Voltage rating at 85 °C (025 = 25 V)
GJ	Can size (see Dimensions table)
6	Sleeve and sealing (6 = P.V.C. sleeve)

### Note

- For lead (Pb)-free/RoHS compliant products add suffix "E3" to part number.  
Example: 53D282G025GJ6E3



<b>ELECTRICAL DATA AND ORDERING INFORMATION</b>				
<b>CAPACITANCE (<math>\mu</math>F)</b>	<b>CASE CODE</b>	<b>PART NUMBER</b>	<b>MAX. ESR AT + 25 °C 120 Hz (m<math>\Omega</math>)</b>	<b>MAX. RMS RIPPLE AT + 85 °C 120 Hz (mA)</b>
<b>16 WV<sub>DC</sub> AT + 85 °C, SURGE = 18 V</b>				
6900.0	HJ	53D692G016HJ6	73	2150
10 000.0	HL	53D103G016HL6	52	2840
<b>25 WV<sub>DC</sub> AT + 85 °C, SURGE = 35 V</b>				
2800.0	GJ	53D282G025GJ6	103	1650
4300.0	HJ	53D432G025HJ6	72	2170
6200.0	HL	53D622G025HL6	51	2870
11 000.0	JP	53D113G025JP6	33	4230
<b>35 WV<sub>DC</sub> AT + 85 °C, SURGE = 45 V</b>				
1100.0	GE	53D112G035GE6	219	980
2100.0	GJ	53D212G035GJ6	111	1590
3200.0	HJ	53D322G035HJ6	77	2090
4700.0	HL	53D472G035HL6	54	2780
8300.0	JP	53D832G035JP6	34	4110
<b>50 WV<sub>DC</sub> AT + 85 °C, SURGE = 70 V</b>				
1000.0	GE	53D102G050GE6	231	950
1300.0	GJ	53D132G050GJ6	131	1470
1900.0	HJ	53D192G050HJ6	94	1900
2800.0	HL	53D282G050HL6	65	2540
3800.0	JL	53D382G050JL6	51	3090
5000.0	JP	53D502G050JP6	40	3810
<b>63 WV<sub>DC</sub> AT + 85 °C, SURGE = 80 V</b>				
1000.0	GJ	53D102G063GJ6	145	1400
2200.0	HL	53D222G063HL6	86	2210
<b>200 WV<sub>DC</sub> AT + 85 °C, SURGE = 250 V</b>				
350.0	JL	53D351F200JL6	499	1000
460.0	JP	53D461F200JP6	379	1250
<b>250 WV<sub>DC</sub> AT + 85 °C, SURGE = 300 V</b>				
56.0	GE	53D560F250GE6	3035	263
100.0	GJ	53D101F250GJ6	1593	420
130.0	HJ	53D131F250HJ6	1238	520
<b>400 WV<sub>DC</sub> AT + 85 °C, SURGE = 450 V</b>				
100.0	JL	53D101F400JL6	1524	560
140.0	JS	53D141F400JS6	1084	790
150.0	JS	53D151F400JS6	1011	820



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**