INFORMATION NOTIFICATION

Tantalum Capacitor Division. December 23, 2014

Adding of Halogen Free Identification for automotive products.

DESCRIPTION OF CHANGE:

Data sheet are updated to show that parts meet the definition of halogen free and “Green”.

CLASSIFICATION OF CHANGE: Data sheet update

REASON FOR CHANGE:

Since customers approved usage of halogen free mold compound, it has been decided to reflect this change in the respective data sheets in order to show that parts meet the definition of halogen free and “Green”.

EXPECTED INFLUENCE ON QUALITY/RELIABILTY/PERFORMANCE: N/A

PRODUCT CATEGORY: Tantalum Capacitors

PART NUMBERS/SERIES/FAMILIES AFFECTED: TH3,TH4,TP3, 293D and 593D with special suffix

VISHAY BRAND(s): Vishay Sprague

TIME SCHEDULE:

In accordance with product change notifications.

PRODUCT IDENTIFICATION:

Reel labels will contain “H/F” symbol

ISSUED BY: Sahar Eitan, Director Process engineering, Tantalum Capacitors (Eitan.Sahar@vishay.com)

For further information, please contact your regional Vishay office.

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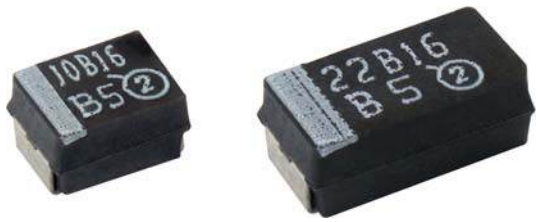
Solid Tantalum Surface Mount Chip Capacitors
TANTAMOUNT® Molded Case, High Temperature 175 °C, Automotive Grade



FEATURES

- Operating temperature up to 175 °C with 50 % voltage derating
- AEC-Q200 qualified
- 100 % surge current tested
- RoHS-compliant terminations available: matte tin (all cases), gold (D / E cases)
- Standard EIA 535BAAC case sizes
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE

Pb-free

RoHS COMPLIANT

HALOGEN FREE

GREEN (5-2008)

PERFORMANCE / ELECTRICAL CHARACTERISTICS

www.vishay.com/doc?40088

Operating Temperature: -55 °C to +175 °C

Capacitance Range: 10 µF to 47 µF

Capacitance Tolerance: ± 10 %, ± 20 %

Voltage Rating: 6.3 V_{DC} to 35 V_{DC}

APPLICATIONS

- Automotive
- Industrial
- High temperature

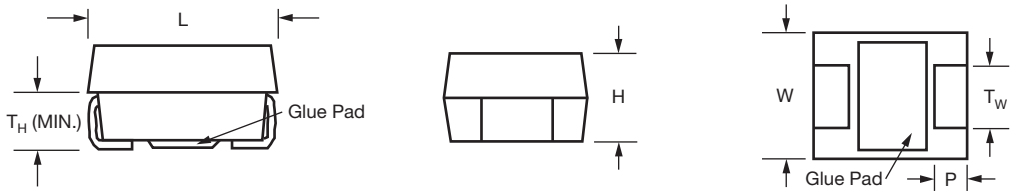
ORDERING INFORMATION

TH4	C	226	K	016	C	1000
TYPE	CASE CODE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT +85 °C	TERMINATION AND PACKAGING	ESR
	See Ratings and Case Codes table	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow	K = ± 10 % M = ± 20 %	This is expressed in V. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an "R" (6R3 = 6.3 V)	C: matte tin / 7" (178 mm) reels D: matte tin / 13" (330 mm) reels	Maximum 100 kHz ESR 0500 = 500 mΩ 5000 = 5.0 Ω 10R0 = 10.0 Ω

Note

- We reserve the right to supply higher voltage ratings and tighter capacitance tolerance capacitors in the same case size. Voltage substitutions will be marked with the higher voltage rating.

DIMENSIONS in inches [millimeters]



CASE CODE	EIA SIZE	L	W	H	P	T_W	T_H (MIN.)
B	3528-21	0.138 ± 0.008 [3.5 ± 0.20]	0.110 ± 0.008 [2.8 ± 0.20]	0.075 ± 0.008 [1.9 ± 0.20]	0.031 ± 0.012 [0.80 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.028 [0.70]
C	6032-28	0.236 ± 0.012 [6.0 ± 0.30]	0.126 ± 0.012 [3.2 ± 0.30]	0.098 ± 0.012 [2.5 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.039 [1.0]
D	7343-31	0.287 ± 0.012 [7.3 ± 0.30]	0.169 ± 0.012 [4.3 ± 0.30]	0.110 ± 0.012 [2.8 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.094 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]

Note

- Glue pad (non-conductive, part of molded case) is dedicated for glue attachment (as user option).

Solid Tantalum Surface Mount Capacitors
TANTAMOUNT® Molded Case, High Temperature 150 °C

FEATURES

- Operating temperature up to 150 °C with 50 % voltage derating
- AEC-Q200 qualified
- 100 % surge current tested (B, C, D, E case sizes)
- RoHS-compliant terminations available: matte tin (all cases), gold (A, C, D, and E cases)
- Standard EIA 535BAAC case size (A through E)
- Compliant terminations
- Moisture sensitivity level 1
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE

Pb-free Available

RoHS* Available

HALOGEN FREE GREEN (5-2008) Available

Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details.

PERFORMANCE CHARACTERISTICS

www.vishay.com/doc?40088

Operating Temperature: -55 °C to +150 °C
Capacitance Range: 0.33 µF to 220 µF
Capacitance Tolerance: ± 10 %, ± 20 %
Voltage Rating: 6.3 V_{DC} to 50 V_{DC}

APPLICATIONS

- Automotive
- Industrial
- High temperature sensors

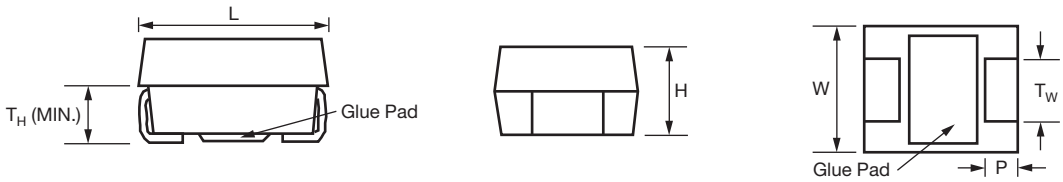
ORDERING INFORMATION

TH3	D	106	K	035	C	0700
TYPE	CASE CODE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT +85 °C	TERMINATION AND PACKAGING	ESR
	See Ratings and Case Codes table.	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	K = ± 10 % M = ± 20 %	This is expressed in V. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an "R". (6R3 = 6.3 V)	A: gold / 7" (178 mm) reels B: gold / 13" (330 mm) reels C: matte tin / 7" (178 mm) reels D: matte tin / 13" (330 mm) reels E: tin / lead / 7" (178 mm) reels F: tin / lead / 13" (330 mm) reels	Maximum 100 kHz ESR 0500 = 500 mΩ 5000 = 5.0 Ω 10R0 = 10.0 Ω

Note

- We reserve the right to supply higher voltage ratings and tighter capacitance tolerance capacitors in the same case size. Voltage substitutions will be marked with the higher voltage rating.

DIMENSIONS in inches [millimeters]

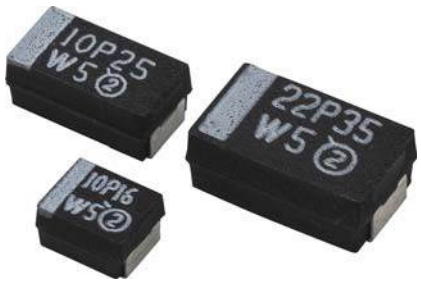


CASE CODE	EIA SIZE	L	W	H	P	T_W	T_H (MIN.)
A	3216-18	0.126 ± 0.008 [3.2 ± 0.20]	0.063 ± 0.008 [1.6 ± 0.20]	0.063 ± 0.008 [1.6 ± 0.20]	0.031 ± 0.012 [0.80 ± 0.30]	0.047 ± 0.004 [1.2 ± 0.10]	0.028 [0.70]
B	3528-21	0.138 ± 0.008 [3.5 ± 0.20]	0.110 ± 0.008 [2.8 ± 0.20]	0.075 ± 0.008 [1.9 ± 0.20]	0.031 ± 0.012 [0.80 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.028 [0.70]
C	6032-28	0.236 ± 0.012 [6.0 ± 0.30]	0.126 ± 0.012 [3.2 ± 0.30]	0.098 ± 0.012 [2.5 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.039 [1.0]
D	7343-31	0.287 ± 0.012 [7.3 ± 0.30]	0.169 ± 0.012 [4.3 ± 0.30]	0.110 ± 0.012 [2.8 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.094 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]
E	7343-43	0.287 ± 0.012 [7.3 ± 0.30]	0.169 ± 0.012 [4.3 ± 0.30]	0.157 ± 0.012 [4.0 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.094 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]

Note

- Glue pad (non-conductive, part of molded case) is dedicated for glue attachment (as user option).

Solid Tantalum Surface Mount Chip Capacitors
TANTAMOUNT® Molded Case, High Performance, Automotive Grade



FEATURES

- AEC-Q200 qualified
- Low ESR
- 100 % surge current tested (B, C, D, and E case sizes)
- High ripple current carrying capability
- Molded case available in five case codes
- Terminations: 100 % matte tin, standard, tin / lead available
- Compatible with “high volume” automatic pick and place equipment
- Meets EIA-535-BAAC mechanical and performance requirements
- Compliant terminations
- Moisture sensitivity level 1
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE

Pb-free Available

RoHS* Available

HALOGEN FREE GREEN (5-2008) Available

Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details.

PERFORMANCE / ELECTRICAL CHARACTERISTICS

www.vishay.com/doc?40088

Operating Temperature: -55 °C to +125 °C (above 85 °C, voltage derating is required)
Capacitance Range: 0.10 µF to 470 µF
Capacitance Tolerance: ± 10 %, ± 20 %
Voltage Rating: 4 V_{DC} to 50 V_{DC}

APPLICATIONS

- Automotive
- Industrial
- General purpose

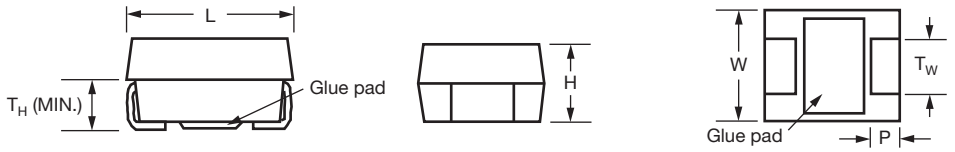
ORDERING INFORMATION

TP3	D	226	K	035	C	0500	AS
TYPE	CASE CODE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT +85 °C	TERMINATION / PACKAGING	ESR	SPECIFICATION OPTION
	See Ratings and Case Codes table.	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	K = ± 10 % M = ± 20 %	This is expressed in V. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an “R” (6R3 = 6.3 V)	C = matte tin / 7" (178 mm) reels D = matte tin / 13" (330 mm) reels E = tin / lead / 7" (178 mm) reels F = tin / lead / 13" (330 mm) reels	Maximum 100 kHz ESR 0500 = 500 mΩ 5000 = 5.0 Ω 10R0 = 10.0 Ω	AS = standard

Note

- We reserve the right to supply higher voltage ratings and tighter capacitance tolerance capacitors in the same case size. Voltage substitutions will be marked with the higher voltage rating.

DIMENSIONS in inches [millimeters]

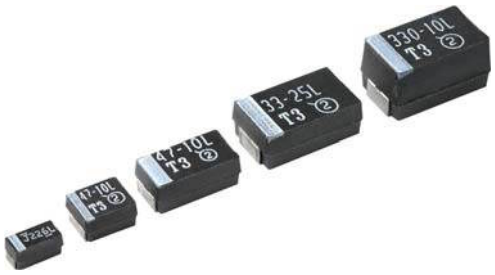


CASE CODE	EIA SIZE	L	W	H	P	T_W	T_H (MIN.)
A	3216-18	0.126 ± 0.008 [3.2 ± 0.20]	0.063 ± 0.008 [1.6 ± 0.20]	0.063 ± 0.008 [1.6 ± 0.20]	0.031 ± 0.012 [0.80 ± 0.30]	0.047 ± 0.004 [1.2 ± 0.10]	0.028 [0.70]
B	3528-21	0.138 ± 0.008 [3.5 ± 0.20]	0.110 ± 0.008 [2.8 ± 0.20]	0.075 ± 0.008 [1.9 ± 0.20]	0.031 ± 0.012 [0.80 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.028 [0.70]
C	6032-28	0.236 ± 0.012 [6.0 ± 0.30]	0.126 ± 0.012 [3.2 ± 0.30]	0.098 ± 0.012 [2.5 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.039 [1.0]
D	7343-31	0.287 ± 0.012 [7.3 ± 0.30]	0.169 ± 0.012 [4.3 ± 0.30]	0.110 ± 0.012 [2.8 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.094 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]
E	7343-43	0.287 ± 0.012 [7.3 ± 0.30]	0.169 ± 0.012 [4.3 ± 0.30]	0.157 ± 0.012 [4.0 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.094 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]

Note

- Glue pad (non-conductive, part of molded case) is dedicated for glue attachment (as user option).

Solid Tantalum Surface Mount Chip Capacitors
TANTAMOUNT®, Molded Case, Standard Industrial Grade



FEATURES

- Molded case available in six case codes
- Terminations: 100 % matte tin, standard, tin / lead available
- Compatible with “high volume” automatic pick and place equipment
- Meets EIA-535-BAAC mechanical and performance requirements
- Qualified to EIA-717
- Moisture sensitivity level 1
- Optical character recognition qualified
- Compliant terminations
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free Available

RoHS* Available

HALOGEN FREE GREEN (5-2008) Available

Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details.

PERFORMANCE / ELECTRICAL CHARACTERISTICS

www.vishay.com/doc?40088

Operating Temperature: -55 °C to +125 °C (above 85 °C, voltage derating is required)

Capacitance Range: 0.10 µF to 1000 µF

Capacitance Tolerance: ± 5 %, ± 10 % , ± 20 %

100 % Surge Current Tested (D and E Case Codes)

Voltage Rating: 4 V_{DC} to 75 V_{DC}

APPLICATIONS

- Industrial
- Telecom infrastructure
- General purpose

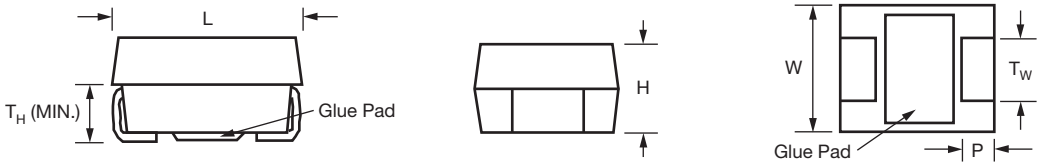
ORDERING INFORMATION

293D	107	X9	010	D	2WE3
TYPE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT +85 °C	CASE CODE	TERMINATION AND PACKAGING
	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	X0 = ± 20 % X9 = ± 10 % X5 = ± 5 % (special order)	This is expressed in V. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an “R” (6R3 = 6.3 V).	See Ratings and Case Codes table	2TE3: matte tin, 7" (178 mm) reel 2WE3: matte tin, 13" (330 mm) reel 8T: tin / lead, 7" (178 mm) reel 8W: tin / lead, 13" (330 mm) reel

Notes

- We reserve the right to supply higher voltage ratings and tighter capacitance tolerance capacitors in the same case size. Voltage substitutions will be marked with the higher voltage rating.
- We reserve the right to supply better series with more extensive screening.
- Dry pack is available per request, contact regional marketing.

DIMENSIONS in inches [millimeters]



CASE CODE	EIA SIZE	L	W	H	P	T_W	T_H (MIN.)
A	3216-18	0.126 ± 0.008 [3.2 ± 0.20]	0.063 ± 0.008 [1.6 ± 0.20]	0.063 ± 0.008 [1.6 ± 0.20]	0.031 ± 0.012 [0.80 ± 0.30]	0.047 ± 0.004 [1.2 ± 0.10]	0.028 [0.70]
B	3528-21	0.138 ± 0.008 [3.5 ± 0.20]	0.110 ± 0.008 [2.8 ± 0.20]	0.075 ± 0.008 [1.9 ± 0.20]	0.031 ± 0.012 [0.80 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.028 [0.70]
C	6032-28	0.236 ± 0.012 [6.0 ± 0.30]	0.126 ± 0.012 [3.2 ± 0.30]	0.098 ± 0.012 [2.5 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.039 [1.0]
D	7343-31	0.287 ± 0.012 [7.3 ± 0.30]	0.169 ± 0.012 [4.3 ± 0.30]	0.110 ± 0.012 [2.8 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.094 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]
E	7343-43	0.287 ± 0.012 [7.3 ± 0.30]	0.169 ± 0.012 [4.3 ± 0.30]	0.157 ± 0.012 [4.0 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.094 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]
V	7343-20	0.287 ± 0.012 [7.3 ± 0.30]	0.169 ± 0.012 [4.3 ± 0.30]	0.079 max [2.0 max]	0.051 ± 0.012 [1.3 ± 0.30]	0.094 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]

Note

- Glue pad (non-conductive, part of molded case) is dedicated for glue attachment (as user option).

Solid Tantalum Surface Mount Chip Capacitors
TANTAMOUNT®, Molded Case, Low ESR

Effective September 2005, new capacitor ratings will not be added to the 593D series. All new ratings are available in the TR3 series. The TR3 series offers state-of-the-art low ESR for switch mode power supplies and DC/DC converters.

PERFORMANCE CHARACTERISTICS

www.vishay.com/doc?40088

Operating Temperature: -55 °C to +125 °C
(above +85 °C voltage derating is required)

Capacitance Range: 0.47 µF to 680 µF

Capacitance Tolerance: ± 5 %, ± 10 %, ± 20 %

100 % Surge Current Tested (C, D and E Case Sizes)

Voltage Rating: 4 V_{DC} to 50 V_{DC}

FEATURES

- Low ESR
- Molded case available in five case codes
- Terminations: 100 % matte tin, standard, tin / lead available
- High ripple current carrying capability
- Compatible with “high volume” automatic pick and place equipment
- Qualified to EIA-717
- Moisture sensitivity level 1
- Compliant terminations
- Meets EIA-535-BAAC mechanical and performance requirements
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free Available

RoHS* Available

HALOGEN FREE GREEN (5-2008) Available

Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details.

APPLICATIONS

- Industrial
- Telecom infrastructure
- General purpose

ORDERING INFORMATION

593D	107	X9	010	D	2WE3
TYPE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT +85 °C	CASE CODE	TERMINATION AND PACKAGING
	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow	X0 = ± 20 % X9 = ± 10 % X5 = ± 5 % (special order)	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 V)	See Ratings and Case Codes table	2TE3: matte tin, 7" (178 mm) reel 2WE3: matte tin, 13" (330 mm) reel 8T: tin / lead, 7" (178 mm) reel 8W: tin / lead, 13" (330 mm) reel

Notes

- We reserve the right to supply higher voltage ratings and tighter capacitance tolerance capacitors in the same case size. Voltage substitutions will be marked with the higher voltage rating.
  Effective July 15, 2008, part numbers with solderable termination codes 2T and 2W may have either matte or tin / lead terminations. Codes 2TE3 and 2WE3 specify only matte tin terminations. Codes 8T and 8W specify only tin / lead terminations.
  Low ESR solid tantalum chip capacitors allow delta ESR of 1.25 times the datasheet limits after mounting.
- Dry pack is available per request, contact regional marketing.