

# Dipped Radial Capacitors

## TAP Series

### SOLID TANTALUM RESIN DIPPED CAPACITORS

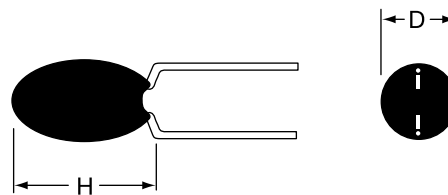


TAP is a professional grade device manufactured with a flame retardant coating and featuring low leakage current and impedance, very small physical sizes and exceptional temperature stability. It is designed and conditioned to operate to +125°C (see page 261 for voltage derating above 85°C) and is available loose or taped and reeled for auto insertion. The 15 case sizes with wide capacitance and working voltage ranges means the TAP can accommodate almost any application.

#### MAXIMUM CASE DIMENSIONS:

millimeters (inches)

| Wire Case | C, F, G, H<br>H | B, S, D<br>*H <sub>1</sub> | D            |
|-----------|-----------------|----------------------------|--------------|
| A         | 8.50 (0.330)    | 7.00 (0.280)               | 4.50 (0.180) |
| B         | 9.00 (0.350)    | 7.50 (0.300)               | 4.50 (0.180) |
| C         | 10.0 (0.390)    | 8.50 (0.330)               | 5.00 (0.200) |
| D         | 10.5 (0.410)    | 9.00 (0.350)               | 5.00 (0.200) |
| E         | 10.5 (0.410)    | 9.00 (0.350)               | 5.50 (0.220) |
| F         | 11.5 (0.450)    | 10.0 (0.390)               | 6.00 (0.240) |
| G         | 11.5 (0.450)    | 10.0 (0.390)               | 6.50 (0.260) |
| H         | 12.0 (0.470)    | 10.5 (0.410)               | 7.00 (0.280) |
| J         | 13.0 (0.510)    | 11.5 (0.450)               | 8.00 (0.310) |
| K         | 14.0 (0.550)    | 12.5 (0.490)               | 8.50 (0.330) |
| L         | 14.0 (0.550)    | 12.5 (0.490)               | 9.00 (0.350) |
| M         | 14.5 (0.570)    | 13.0 (0.510)               | 9.00 (0.350) |
| N         | 16.0 (0.630)    |                            | 9.00 (0.350) |
| P         | 17.0 (0.670)    |                            | 10.0 (0.390) |
| R         | 18.5 (0.730)    |                            | 10.0 (0.390) |



#### HOW TO ORDER

**TAP**

Type

**475**

Capacitance Code  
pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)

**M**

Capacitance Tolerance  
K = ±10%  
M = ±20%  
(For J = ±5% tolerance, please consult factory)

**035**

Rated DC Voltage

**SCS**

Suffix indicating wire form and packaging (see page 225)

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### TECHNICAL SPECIFICATIONS

|                               |  |     |     |    |    |    |    |    |
|-------------------------------|--|-----|-----|----|----|----|----|----|
| Technical Data:               | All technical data relate to an ambient temperature of +25°C   |     |     |    |    |    |    |    |
| Capacitance Range:            | 0.10 $\mu$ F to 330 $\mu$ F  |     |     |    |    |    |    |    |
| Capacitance Tolerance:        | $\pm$ 20%; $\pm$ 10% ( $\pm$ 5% consult your representative for details)   |     |     |    |    |    |    |    |
| Rated Voltage DC ( $V_R$ )    | $\leq$ +85°C:  | 6.3 | 10  | 16 | 20 | 25 | 35 | 50 |
| Category Voltage ( $V_C$ )    | $\leq$ +125°C:   | 4   | 6.3 | 10 | 13 | 16 | 23 | 33 |
| Surge Voltage ( $V_S$ )       | $\leq$ +85°C:  | 8   | 13  | 20 | 26 | 33 | 46 | 65 |
| Surge Voltage ( $V_S$ )       | $\leq$ +125°C:   | 5   | 9   | 12 | 16 | 21 | 28 | 40 |
| Temperature Range:            | -55°C to +125°C  |     |     |    |    |    |    |    |
| Environmental Classification: | 55/125/56 (IEC 68-2)   |     |     |    |    |    |    |    |
| Dissipation Factor:           | $\leq$ 0.04 for $C_R$ 0.1-1.5 $\mu$ F<br>$\leq$ 0.06 for $C_R$ 2.2-6.8 $\mu$ F<br>$\leq$ 0.08 for $C_R$ 10-68 $\mu$ F<br>$\leq$ 0.10 for $C_R$ 100-330 $\mu$ F |     |     |    |    |    |    |    |
| Reliability:                  | 1% per 1000 hrs. at 85°C with 0.1 $\Omega$ /V series impedance, 60% confidence level.  |     |     |    |    |    |    |    |

### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

| Capacitance |      | Rated Voltage DC ( $V_R$ ) |     |     |     |     |     |     |
|-------------|------|----------------------------|-----|-----|-----|-----|-----|-----|
| $\mu$ F     | Code | 6.3V                       | 10V | 16V | 20V | 25V | 35V | 50V |
| 0.10        | 104  |                            |     |     |     |     | A   | A   |
| 0.15        | 154  |                            |     |     |     |     | A   | A   |
| 0.22        | 224  |                            |     |     |     |     | A   | A   |
| 0.33        | 334  |                            |     |     |     |     | A   | A   |
| 0.47        | 474  |                            |     |     |     |     | A   | A   |
| 0.68        | 684  |                            |     |     |     |     | A   | B   |
| 1.0         | 105  |                            |     |     | A   | A   | A   | C   |
| 1.5         | 155  |                            |     | A   | A   | A   | A   | D   |
| 2.2         | 225  |                            | A   | A   | A   | A   | B   | E   |
| 3.3         | 335  | A                          | A   | A   | B   | B   | C   | F   |
| 4.7         | 475  | A                          | A   | B   | C   | C   | E   | G   |
| 6.8         | 685  | A                          | B   | C   | D   | D   | F   | H   |
| 10          | 106  | B                          | C   | D   | E   | E   | F   | J   |
| 15          | 156  | C                          | D   | E   | F   | F   | H   | K   |
| 22          | 226  | D                          | E   | F   | H   | H   | K   | L   |
| 33          | 336  | E                          | F   | F   | J   | J   | M   |     |
| 47          | 476  | F                          | G   | J   | K   | M   | N   |     |
| 68          | 686  | G                          | H   | L   | N   | N   |     |     |
| 100         | 107  | H                          | K   | N   | N   |     |     |     |
| 150         | 157  | K                          | N   | N   |     |     |     |     |
| 220         | 227  | M                          | P   | R   |     |     |     |     |
| 330         | 337  | P                          | R   |     |     |     |     |     |

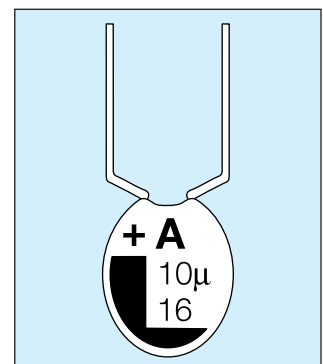
Values outside this standard range may be available on request.

KYOCERA AVX reserves the right to supply capacitors to a higher voltage rating, in the same case size, than that ordered.

### MARKING

Polarity, capacitance, rated DC voltage, and an "A" (KYOCERA AVX logo) are laser marked on the capacitor body which is made of flame retardant gold epoxy resin with a limiting oxygen index in excess of 30 (ASTM-D-2863).

- Polarity
- Capacitance
- Voltage
- KYOCERA AVX logo
- Tolerance code:  
 $\pm$ 20% = Standard (no marking)  
 $\pm$ 10% = "K" on reverse side of unit  
 $\pm$ 5% = "J" on reverse side of unit



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## TAP Series



### RATINGS AND PART NUMBER REFERENCE

| Part Number                              | Case Size | Capacitance (µF) | DCL (µA) Max. | DF % Max. | ESR Max. (Ω) @ 100 kHz |
|--|-----------|------------------|---------------|-----------|------------------------|
| <b>6.3 volt @ 85°C (4 volt @ 125°C)</b>  |           |                  |               |           |                        |
| TAP 335(*)006                            | A         | 3.3              | 0.5           | 6         | 13.0                   |
| TAP 475(*)006                            | A         | 4.7              | 0.5           | 6         | 10.0                   |
| TAP 685(*)006                            | A         | 6.8              | 0.5           | 6         | 8.0                    |
| TAP 106(*)006                            | B         | 10               | 0.5           | 8         | 6.0                    |
| TAP 156(*)006                            | C         | 15               | 0.8           | 8         | 5.0                    |
| TAP 226(*)006                            | D         | 22               | 1.1           | 8         | 3.7                    |
| TAP 336(*)006                            | E         | 33               | 1.7           | 8         | 3.0                    |
| TAP 476(*)006                            | F         | 47               | 2.4           | 8         | 2.0                    |
| TAP 686(*)006                            | G         | 68               | 3.4           | 8         | 1.8                    |
| TAP 107(*)006                            | H         | 100              | 5.0           | 10        | 1.6                    |
| TAP 157(*)006                            | K         | 150              | 7.6           | 10        | 0.9                    |
| TAP 227(*)006                            | M         | 220              | 11.0          | 10        | 0.9                    |
| TAP 337(*)006                            | P         | 330              | 16.6          | 10        | 0.7                    |
| <b>10 volt @ 85°C (6.3 volt @ 125°C)</b> |           |                  |               |           |                        |
| TAP 225(*)010                            | A         | 2.2              | 0.5           | 6         | 13.0                   |
| TAP 335(*)010                            | A         | 3.3              | 0.5           | 6         | 10.0                   |
| TAP 475(*)010                            | A         | 4.7              | 0.5           | 6         | 8.0                    |
| TAP 685(*)010                            | B         | 6.8              | 0.5           | 6         | 6.0                    |
| TAP 106(*)010                            | C         | 10               | 0.8           | 8         | 5.0                    |
| TAP 156(*)010                            | D         | 15               | 1.2           | 8         | 3.7                    |
| TAP 226(*)010                            | E         | 22               | 1.7           | 8         | 2.7                    |
| TAP 336(*)010                            | F         | 33               | 2.6           | 8         | 2.1                    |
| TAP 476(*)010                            | G         | 47               | 3.7           | 8         | 1.7                    |
| TAP 686(*)010                            | H         | 68               | 5.4           | 8         | 1.3                    |
| TAP 107(*)010                            | K         | 100              | 8.0           | 10        | 1.0                    |
| TAP 157(*)010                            | N         | 150              | 12.0          | 10        | 0.8                    |
| TAP 227(*)010                            | P         | 220              | 17.6          | 10        | 0.6                    |
| TAP 337(*)010                            | R         | 330              | 20.0          | 10        | 0.5                    |
| <b>16 volt @ 85°C (10 volt @ 125°C)</b>  |           |                  |               |           |                        |
| TAP 155(*)016                            | A         | 1.5              | 0.5           | 4         | 10.0                   |
| TAP 225(*)016                            | A         | 2.2              | 0.5           | 6         | 8.0                    |
| TAP 335(*)016                            | A         | 3.3              | 0.5           | 6         | 6.0                    |
| TAP 475(*)016                            | B         | 4.7              | 0.6           | 6         | 5.0                    |
| TAP 685(*)016                            | C         | 6.8              | 0.8           | 6         | 4.0                    |
| TAP 106(*)016                            | D         | 10               | 1.2           | 8         | 3.2                    |
| TAP 156(*)016                            | E         | 15               | 1.9           | 8         | 2.5                    |
| TAP 226(*)016                            | F         | 22               | 2.8           | 8         | 2.0                    |
| TAP 336(*)016                            | F         | 33               | 4.2           | 8         | 1.6                    |
| TAP 476(*)016                            | J         | 47               | 6.0           | 8         | 1.3                    |
| TAP 686(*)016                            | L         | 68               | 8.7           | 8         | 1.0                    |
| TAP 107(*)016                            | N         | 100              | 12.8          | 10        | 0.8                    |
| TAP 157(*)016                            | N         | 150              | 19.2          | 10        | 0.6                    |
| TAP 227(*)016                            | R         | 220              | 20.0          | 10        | 0.5                    |
| <b>20 volt @ 85°C (13 volt @ 125°C)</b>  |           |                  |               |           |                        |
| TAP 105(*)020                            | A         | 1.0              | 0.5           | 4         | 10.0                   |
| TAP 155(*)020                            | A         | 1.5              | 0.5           | 4         | 9.0                    |
| TAP 225(*)020                            | A         | 2.2              | 0.5           | 6         | 7.0                    |
| TAP 335(*)020                            | B         | 3.3              | 0.5           | 6         | 5.5                    |
| TAP 475(*)020                            | C         | 4.7              | 0.7           | 6         | 4.5                    |
| TAP 685(*)020                            | D         | 6.8              | 1.0           | 6         | 3.6                    |
| TAP 106(*)020                            | E         | 10               | 1.6           | 8         | 2.9                    |
| TAP 156(*)020                            | F         | 15               | 2.4           | 8         | 2.3                    |
| TAP 226(*)020                            | H         | 22               | 3.5           | 8         | 1.8                    |
| TAP 336(*)020                            | J         | 33               | 5.2           | 8         | 1.4                    |
| TAP 476(*)020                            | K         | 47               | 7.5           | 8         | 1.2                    |
| TAP 686(*)020                            | N         | 68               | 10.8          | 8         | 0.9                    |
| TAP 107(*)020                            | N         | 100              | 16.0          | 10        | 0.6                    |

| Part Number                             | Case Size | Capacitance (µF) | DCL (µA) Max. | DF % Max. | ESR Max. (Ω) @ 100 kHz |
|---|-----------|------------------|---------------|-----------|------------------------|
| <b>25 volt @ 85°C (16 volt @ 125°C)</b> |           |                  |               |           |                        |
| TAP 105(*)025                           | A         | 1.0              | 0.5           | 4         | 10.0                   |
| TAP 155(*)025                           | A         | 1.5              | 0.5           | 4         | 8.0                    |
| TAP 225(*)025                           | A         | 2.2              | 0.5           | 6         | 6.0                    |
| TAP 335(*)025                           | B         | 3.3              | 0.6           | 6         | 5.0                    |
| TAP 475(*)025                           | C         | 4.7              | 0.9           | 6         | 4.0                    |
| TAP 685(*)025                           | D         | 6.8              | 1.3           | 6         | 3.1                    |
| TAP 106(*)025                           | E         | 10               | 2.0           | 8         | 2.5                    |
| TAP 156(*)025                           | F         | 15               | 3.0           | 8         | 2.0                    |
| TAP 226(*)025                           | H         | 22               | 4.4           | 8         | 1.5                    |
| TAP 336(*)025                           | J         | 33               | 6.6           | 8         | 1.2                    |
| TAP 476(*)025                           | M         | 47               | 9.4           | 8         | 1.0                    |
| TAP 686(*)025                           | N         | 68               | 13.6          | 8         | 0.8                    |
| <b>35 volt @ 85°C (23 volt @ 125°C)</b> |           |                  |               |           |                        |
| TAP 104(*)035                           | A         | 0.1              | 0.5           | 4         | 26.0                   |
| TAP 154(*)035                           | A         | 0.15             | 0.5           | 4         | 21.0                   |
| TAP 224(*)035                           | A         | 0.22             | 0.5           | 4         | 17.0                   |
| TAP 334(*)035                           | A         | 0.33             | 0.5           | 4         | 15.0                   |
| TAP 474(*)035                           | A         | 0.47             | 0.5           | 4         | 13.0                   |
| TAP 684(*)035                           | A         | 0.68             | 0.5           | 4         | 10.0                   |
| TAP 105(*)035                           | A         | 1.0              | 0.5           | 4         | 8.0                    |
| TAP 155(*)035                           | A         | 1.5              | 0.5           | 4         | 6.0                    |
| TAP 225(*)035                           | B         | 2.2              | 0.6           | 6         | 5.0                    |
| TAP 335(*)035                           | C         | 3.3              | 0.9           | 6         | 4.0                    |
| TAP 475(*)035                           | E         | 4.7              | 1.3           | 6         | 3.0                    |
| TAP 685(*)035                           | F         | 6.8              | 1.9           | 6         | 2.5                    |
| TAP 106(*)035                           | F         | 10               | 2.8           | 8         | 2.0                    |
| TAP 156(*)035                           | H         | 15               | 4.2           | 8         | 1.6                    |
| TAP 226(*)035                           | K         | 22               | 6.1           | 8         | 1.3                    |
| TAP 336(*)035                           | M         | 33               | 9.2           | 8         | 1.0                    |
| TAP 476(*)035                           | N         | 47               | 10.0          | 8         | 0.8                    |
| <b>50 volt @ 85°C (33 volt @ 125°C)</b> |           |                  |               |           |                        |
| TAP 104(*)050                           | A         | 0.1              | 0.5           | 4         | 26.0                   |
| TAP 154(*)050                           | A         | 0.15             | 0.5           | 4         | 21.0                   |
| TAP 224(*)050                           | A         | 0.22             | 0.5           | 4         | 17.0                   |
| TAP 334(*)050                           | A         | 0.33             | 0.5           | 4         | 15.0                   |
| TAP 474(*)050                           | A         | 0.47             | 0.5           | 4         | 13.0                   |
| TAP 684(*)050                           | B         | 0.68             | 0.5           | 4         | 10.0                   |
| TAP 105(*)050                           | C         | 1.0              | 0.5           | 4         | 8.0                    |
| TAP 155(*)050                           | D         | 1.5              | 0.6           | 4         | 6.0                    |
| TAP 225(*)050                           | E         | 2.2              | 0.8           | 6         | 3.5                    |
| TAP 335(*)050                           | F         | 3.3              | 1.3           | 6         | 3.0                    |
| TAP 475(*)050                           | G         | 4.7              | 1.8           | 6         | 2.5                    |
| TAP 685(*)050                           | H         | 6.8              | 2.7           | 6         | 2.0                    |
| TAP 106(*)050                           | J         | 10               | 4.0           | 8         | 1.6                    |
| TAP 156(*)050                           | K         | 15               | 6.0           | 8         | 1.2                    |
| TAP 226(*)050                           | L         | 22               | 8.8           | 8         | 1.0                    |

(\*) Insert capacitance tolerance code; M for ±20%, K for ±10% and J for ±5%  
 NOTE: Voltage ratings are minimum values. KYOCERA AVX reserves the right to supply higher voltage ratings in the same case size.

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