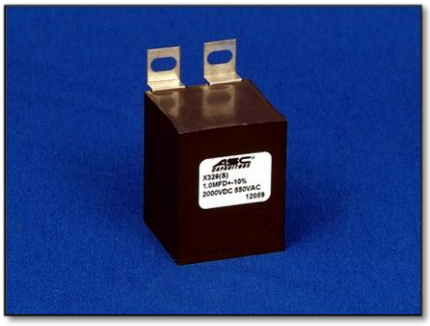
# Type 329/X329
# IGBT Snubber Capacitor

ASC™ 329/X329 (IGBT Snubber Capacitors) are designed for high demand environments as well as lower current applications.



The 329 is a hybrid design combining self healing metallized film and foil to maintain very high peak and RMS currents. The X329 design utilizes only metallized film for applications that require more moderate peak currents and RMS currents but higher capacitance values.

Our new standard terminal style (W) meets the latest IGBT products with respect to terminal spacing. Custom voltage, capacitance values and terminal designs are available.



## General Specifications

* Capacitance ratings are dependent upon voltage levels and total current
** Terminal to case test is only completed on a validation basis as the case is composed of nonconductive materials

| Parameter | Value |
|---|---|
| Capacitance | 0.1µF – 10.0µF* |
| Tolerance | ±5%, ±10% – Special tolerance on request |
| Rated Voltage | 600 – 2000 VDC, 250 – 500 Vrms |
| Temperature Range (operational) | -40/85C (custom ratings available) |
| Temperature Range (storage) | -40/95C |
| RMS Current | Up to 25 Arms |
| Standards | IEC61071** |
| Case | Flame retardant molded plastic case and UL94-V0 epoxy |
| Terminals | Tin plated brass tabs slotted for 20-29 or 33-42 mm bolt spacing |
| Tan δ | 2 x $10^{-4}$ Polypropylene |
| Terminal to Terminal Test | 1.5 x Undc 10 seconds |
| Terminal to Case Test | $U_{T\text{-}CASE} = 2U_I$ +1000V or 3000V whichever is highest value** |
| Reliability | 100 FIT |
| Insulation Resistance | 10,000 MΩ·µF at 100V after 2 minutes |

## Applications

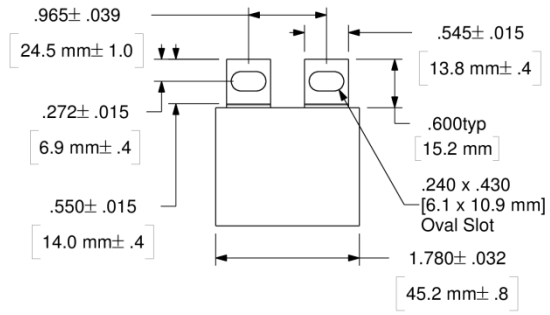
IGBT Snubbers for inverters

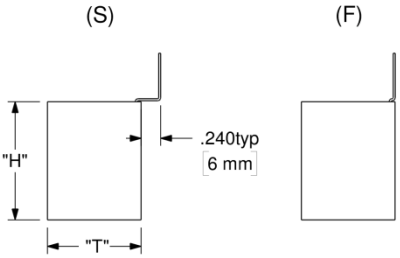
## 329 Specifications

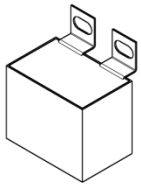
| | 600VDC – 250VAC – 800Vpeak | | | | | | 1200VDC – 500VAC – 1600Vpeak | | | | | | 2000VDC – 500VAC – 2600Vpeak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap [µF] | $I_{RMS}$ [$A_{RMS}$] | $I_{PEAK}$ [A] | ESR (100kHz) [mΩ] | $T_{MAX}$ [in] | $H_{MAX}$ [in] | Case | $I_{RMS}$ [$A_{RMS}$] | $I_{PEAK}$ [A] | ESR (100kHz) [mΩ] | $T_{MAX}$ [in] | $H_{MAX}$ [in] | Case | $I_{RMS}$ [$A_{RMS}$] | $I_{PEAK}$ [A] | ESR (100kHz) [mΩ] | $T_{MAX}$ [in] | $H_{MAX}$ [in] | Case |
| 0.10 | | | | | | | | | | | | | 2.7 | 202 | 16.2 | 0.860 | 1.113 | A |
| 0.12 | | | | | | | | | | | | | 3.1 | 242 | 10.5 | 0.860 | 1.113 | A |
| 0.15 | | | | | | | 2.9 | 200 | 11.9 | 0.860 | 1.113 | A | 3.8 | 302 | 8.4 | 0.860 | 1.113 | A |
| 0.18 | | | | | | | 3.3 | 240 | 9.9 | 0.860 | 1.113 | A | 4.3 | 363 | 7.0 | 0.860 | 1.113 | A |
| 0.22 | 3.3 | 218 | 10.5 | 0.860 | 1.113 | A | 3.9 | 293 | 8.1 | 0.860 | 1.113 | A | 5.1 | 443 | 5.7 | 0.860 | 1.113 | B |
| 0.27 | 3.8 | 268 | 8.6 | 0.860 | 1.113 | A | 4.6 | 360 | 6.6 | 0.860 | 1.113 | A | 6.0 | 544 | 4.7 | 0.860 | 1.113 | B |
| 0.33 | 4.5 | 327 | 7.0 | 0.860 | 1.113 | A | 5.4 | 440 | 5.4 | 0.860 | 1.113 | A | 7.0 | 665 | 3.8 | 1.160 | 1.463 | B |
| 0.39 | 5.1 | 386 | 6.0 | 0.860 | 1.113 | A | 6.1 | 520 | 4.6 | 0.860 | 1.113 | A | 7.9 | 786 | 3.2 | 1.160 | 1.463 | B |
| 0.47 | 5.9 | 466 | 4.9 | 0.860 | 1.113 | A | 7.1 | 626 | 3.8 | 1.160 | 1.463 | B | 9.3 | 947 | 2.9 | 1.160 | 1.463 | C |
| 0.56 | 6.8 | 555 | 4.1 | 0.860 | 1.113 | A | 8.2 | 746 | 3.2 | 1.160 | 1.463 | B | 10.7 | 1129 | 2.9 | 1.160 | 1.463 | C |
| 0.68 | 7.8 | 674 | 3.4 | 0.860 | 1.113 | A | 9.6 | 906 | 2.9 | 1.160 | 1.463 | B | 12.5 | 1371 | 2.9 | 1.460 | 1.863 | C |
| 0.82 | 9.2 | 812 | 2.9 | 1.160 | 1.463 | B | 11.0 | 1092 | 2.9 | 1.160 | 1.463 | B | 14.7 | 1653 | 2.9 | 1.460 | 1.863 | D |
| 1.00 | 10.8 | 991 | 2.9 | 1.160 | 1.463 | B | 13.1 | 1332 | 2.9 | 1.460 | 1.863 | C | 17.2 | 2016 | 2.9 | 1.760 | 2.263 | D |
| 1.20 | 12.4 | 1189 | 2.9 | 1.160 | 1.463 | B | 15.1 | 1599 | 2.9 | 1.460 | 1.863 | C | | | | | | |
| 1.50 | 14.7 | 1486 | 2.9 | 1.160 | 1.463 | B | 18.0 | 1998 | 2.9 | 1.460 | 1.863 | C | | | | | | |
| 1.75 | 16.9 | 1734 | 2.9 | 1.460 | 1.863 | C | 20.6 | 2331 | 2.9 | 1.760 | 2.263 | D | | | | | | |
| 2.00 | 18.8 | 1981 | 2.9 | 1.460 | 1.863 | C | 23.0 | 2665 | 2.9 | 1.760 | 2.263 | D | | | | | | |
| 2.20 | 20.3 | 2179 | 2.9 | 1.460 | 1.863 | C | 24.8 | 2931 | 2.9 | 1.760 | 2.263 | D | | | | | | |
| 2.50 | 22.4 | 2477 | 2.9 | 1.460 | 1.863 | C | | | | | | | | | | | | |

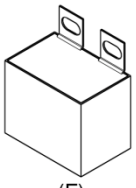
## Dimensions:

(20 - 29 mm Bolt Spacing)

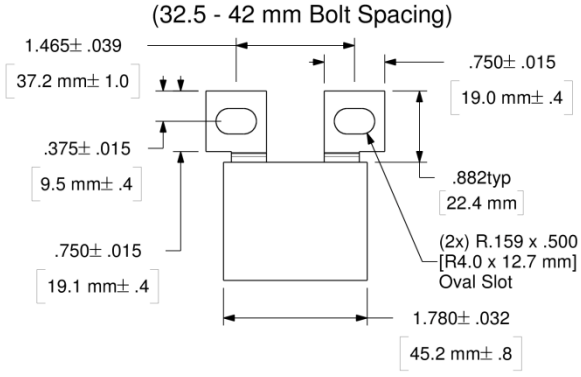


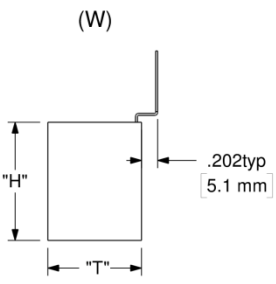



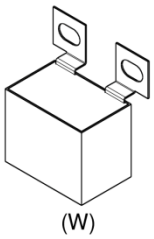




(32.5 - 42 mm Bolt Spacing)



## X329 Specifications

| | 600VDC – 250VAC – 800Vpeak | | | | | | 1200VDC – 500VAC – 1600Vpeak | | | | | | 2000VDC – 500VAC – 2600Vpeak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap [µF] | $I_{RMS}$ [$A_{RMS}$] | $I_{PEAK}$ [A] | ESR (100kHz) [mΩ] | $T_{MAX}$ [in] | $H_{MAX}$ [in] | Case | $I_{RMS}$ [$A_{RMS}$] | $I_{PEAK}$ [A] | ESR (100kHz) [mΩ] | $T_{MAX}$ [in] | $H_{MAX}$ [in] | Case | $I_{RMS}$ [$A_{RMS}$] | $I_{PEAK}$ [A] | ESR (100kHz) [mΩ] | $T_{MAX}$ [in] | $H_{MAX}$ [in] | Case |
| 0.10 | | | | | | | | | | | | | 2.2 | 42 | 28.1 | 0.860 | 1.113 | A |
| 0.12 | | | | | | | | | | | | | 2.5 | 50 | 23.4 | 0.860 | 1.113 | A |
| 0.15 | | | | | | | | | | | | | 3.0 | 62 | 18.7 | 0.860 | 1.113 | A |
| 0.18 | | | | | | | | | | | | | 3.4 | 75 | 15.6 | 0.860 | 1.113 | A |
| 0.22 | | | | | | | 2.9 | 60 | 18.7 | 0.860 | 1.113 | A | 4.0 | 91 | 12.8 | 0.860 | 1.113 | A |
| 0.27 | | | | | | | 3.4 | 74 | 15.3 | 0.860 | 1.113 | A | 4.7 | 112 | 10.4 | 0.860 | 1.113 | A |
| 0.33 | 2.7 | 35 | 30.5 | 0.860 | 1.113 | A | 4.0 | 91 | 12.5 | 0.860 | 1.113 | A | 5.5 | 137 | 8.5 | 1.160 | 1.463 | B |
| 0.39 | 3.0 | 41 | 25.8 | 0.860 | 1.113 | A | 4.5 | 107 | 10.6 | 0.860 | 1.113 | A | 6.3 | 162 | 7.2 | 1.160 | 1.463 | B |
| 0.47 | 3.5 | 50 | 21.4 | 0.860 | 1.113 | A | 5.2 | 129 | 8.8 | 0.860 | 1.113 | A | 7.3 | 195 | 6.0 | 1.160 | 1.463 | B |
| 0.56 | 4.0 | 59 | 18.0 | 0.860 | 1.113 | A | 6.0 | 154 | 7.4 | 0.860 | 1.113 | A | 8.3 | 232 | 5.0 | 1.160 | 1.463 | B |
| 0.68 | 4.7 | 72 | 14.8 | 0.860 | 1.113 | A | 7.0 | 187 | 6.1 | 1.160 | 1.463 | B | 9.8 | 282 | 4.1 | 1.460 | 1.863 | C |
| 0.82 | 5.4 | 86 | 12.3 | 0.860 | 1.113 | A | 8.1 | 225 | 5.0 | 1.160 | 1.463 | B | 11.5 | 340 | 3.4 | 1.460 | 1.863 | C |
| 1.00 | 6.3 | 105 | 10.1 | 0.860 | 1.113 | A | 9.6 | 274 | 4.1 | 1.160 | 1.463 | B | 13.5 | 415 | 2.9 | 1.760 | 2.263 | D |
| 1.20 | 4.6 | 76 | 14.4 | 0.860 | 1.113 | A | 11.0 | 329 | 3.4 | 1.160 | 1.463 | B | 15.6 | 498 | 2.9 | 1.760 | 2.263 | D |
| 1.50 | 5.4 | 95 | 11.5 | 0.860 | 1.113 | A | 13.2 | 412 | 2.9 | 1.460 | 1.863 | C | 18.6 | 623 | 2.9 | 1.760 | 2.263 | D |
| 1.75 | 6.1 | 111 | 9.9 | 0.860 | 1.113 | A | 15.1 | 480 | 2.9 | 1.460 | 1.863 | C | | | | | | |
| 2.00 | 6.8 | 127 | 8.6 | 0.860 | 1.113 | A | 16.6 | 549 | 2.9 | 1.460 | 1.863 | C | | | | | | |
| 2.20 | 7.4 | 140 | 7.8 | 0.860 | 1.113 | A | 18.1 | 604 | 2.9 | 1.760 | 2.263 | D | | | | | | |
| 2.50 | 8.1 | 159 | 6.9 | 0.860 | 1.113 | A | 20.1 | 686 | 2.9 | 1.760 | 2.263 | D | | | | | | |
| 3.00 | 9.3 | 191 | 5.7 | 1.160 | 1.463 | B | 23.3 | 823 | 2.9 | 1.760 | 2.263 | D | | | | | | |
| 4.00 | 11.7 | 254 | 4.3 | 1.160 | 1.463 | B | | | | | | | | | | | | |
| 5.00 | 14.1 | 318 | 3.4 | 1.160 | 1.463 | B | | | | | | | | | | | | |
| 6.00 | 16.2 | 381 | 2.9 | 1.460 | 1.863 | C | | | | | | | | | | | | |
| 7.00 | 18.4 | 445 | 2.9 | 1.460 | 1.863 | C | | | | | | | | | | | | |
| 8.00 | 20.7 | 508 | 2.9 | 1.460 | 1.863 | C | | | | | | | | | | | | |
| 10.0 | 24.7 | 636 | 2.9 | 1.460 | 1.863 | C | | | | | | | | | | | | |

## Ordering Information:

| Type | Terminal Style | Capacitance | Tolerance | Voltage |
|---|---|---|---|---|
| 329 | (S) = 20-29 mm Step | 0.1 | 5 = ±5% | 600 |
| X329 | (F) = 20-29 mm Flush | ↕ | 10 = ±10% | ↕ |
| | (W) = 33-42 mm Wide | 10 | | 2000 |

| Examples: | Order Code |
|---|---|
| Type 329, Step Terminal, 0.68uF ±5%, 600 VDC | 329(S) 0.68-5-600 |
| Type X329, Wide Terminal, 10uF ±10%, 2000 VDC | X329(W) 10-10-2000 |