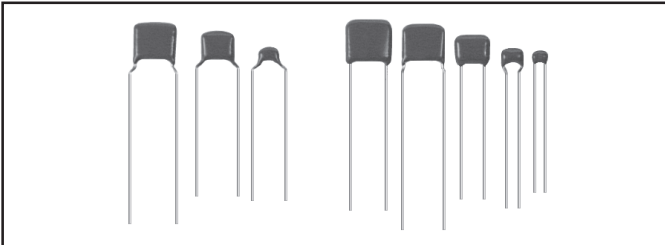




# Ceramic Capacitors

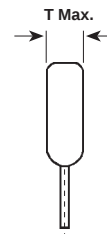
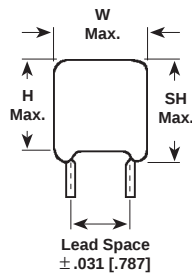
## Monolythic®, Conformal-Coated, Radial Lead



### FEATURES

- EIA characteristics C0G, X7R, Z5U
- Capacitance range 10pF to 4.7μF
- Voltage ratings 50 WVDC to 100 WVDC
- Wide choice of lead spacing

### DIMENSIONAL CONFIGURATIONS [Numbers in brackets indicate millimeters]



Drawing for dimensional purposes only. Exact outline and lead form may vary depending on size and lead spacing.

| TYPE | W<br>(Max.)      | H<br>(Max.)      | T<br>(Max.)     | LEAD SIZE |                | LEAD SPACING (S) |            |            |            |            |             |
|------|------------------|------------------|-----------------|-----------|----------------|------------------|------------|------------|------------|------------|-------------|
|      |                  |                  |                 | AWG NO.   | DIA.           | .10 [2.54]       | .20 [5.08] | .25 [6.35] | .30 [7.62] | .37 [9.40] | .40 [10.16] |
| 9C   | .138<br>[3.505]  | .120<br>[3.048]  | .100<br>[2.540] | 26        | .016<br>[.406] | X                | —          | —          | —          | —          | —           |
| 1C   | .200<br>[5.080]  | .250<br>[6.350]  | .125<br>[3.175] | 24        | .020<br>[.508] | X                | X          | X          | X          | —          | —           |
| 2C   | .300<br>[7.620]  | .300<br>[7.620]  | .157<br>[3.988] | 24        | .020<br>[.508] | —                | X          | X          | X          | X          | X           |
| 3C   | .400<br>[10.160] | .400<br>[10.160] | .157<br>[3.988] | 24        | .020<br>[.508] | —                | X          | X          | X          | X          | X           |
| 5C   | .500<br>[12.700] | .500<br>[12.700] | .200<br>[5.080] | 24        | .020<br>[.508] | —                | X          | X          | X          | X          | X           |

### HOW TO ORDER

| 1C                              | 10                              | Z5U                                                                                                                                                                                                                                                                                                           | 104                                                                                                                                                                                                                                       | M                     | 050                                                                                              | B                                                                      |                  |              |     |                   |       |     |                   |              |     |  |  |  |
|---------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------|--------------|-----|-------------------|-------|-----|-------------------|--------------|-----|--|--|--|
| TYPE                            | LEAD SPACING CODE               | EIA TEMPERATURE CHARACTERISTIC                                                                                                                                                                                                                                                                                | CAPACITANCE CODE                                                                                                                                                                                                                          | CAPACITANCE TOLERANCE | DC VOLTAGE RATING                                                                                | LEAD LENGTH*                                                           |                  |              |     |                   |       |     |                   |              |     |  |  |  |
| See Dimensional Configurations. | See Dimensional Configurations. |                                                                                                                                                                                                                                                                                                               | This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.                                                                                                            |                       | This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating. | B = Bulk<br>R = Tape and Reel<br><br>* 1.0 [25.4] minimum lead length. |                  |              |     |                   |       |     |                   |              |     |  |  |  |
|                                 |                                 |                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                           |                       |                                                                                                  |                                                                        |                  |              |     |                   |       |     |                   |              |     |  |  |  |
|                                 |                                 |                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                           |                       |                                                                                                  |                                                                        |                  |              |     |                   |       |     |                   |              |     |  |  |  |
|                                 |                                 |                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                           |                       |                                                                                                  |                                                                        |                  |              |     |                   |       |     |                   |              |     |  |  |  |
|                                 |                                 | <table><tr><th>CODE</th><th>TEMPERATURE RANGE</th><th>MAX. CAP. CHANGE OVER TEMP. RANGE</th></tr><tr><td>Z5U</td><td>+ 10°C to + 85°C</td><td>- 56%, + 22%</td></tr><tr><td>X7R</td><td>- 55°C to + 125°C</td><td>± 15%</td></tr><tr><td>C0G</td><td>- 55°C to + 125°C</td><td>0 ± 30PPM/°C</td></tr></table> | CODE                                                                                                                                                                                                                                      | TEMPERATURE RANGE     | MAX. CAP. CHANGE OVER TEMP. RANGE                                                                | Z5U                                                                    | + 10°C to + 85°C | - 56%, + 22% | X7R | - 55°C to + 125°C | ± 15% | C0G | - 55°C to + 125°C | 0 ± 30PPM/°C |     |  |  |  |
| CODE                            | TEMPERATURE RANGE               | MAX. CAP. CHANGE OVER TEMP. RANGE                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                           |                       |                                                                                                  |                                                                        |                  |              |     |                   |       |     |                   |              |     |  |  |  |
| Z5U                             | + 10°C to + 85°C                | - 56%, + 22%                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                           |                       |                                                                                                  |                                                                        |                  |              |     |                   |       |     |                   |              |     |  |  |  |
| X7R                             | - 55°C to + 125°C               | ± 15%                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                           |                       |                                                                                                  |                                                                        |                  |              |     |                   |       |     |                   |              |     |  |  |  |
| C0G                             | - 55°C to + 125°C               | 0 ± 30PPM/°C                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                           |                       |                                                                                                  |                                                                        |                  |              |     |                   |       |     |                   |              |     |  |  |  |
| See Dimensional Configurations. |                                 |                                                                                                                                                                                                                                                                                                               | <table><tr><th>EIA CODE</th><th>TOLERANCE</th><th>AVAILABLE IN EIA CHARACTERISTIC</th></tr><tr><td>J</td><td>± 5%</td><td>C0G</td></tr><tr><td>K</td><td>± 10%</td><td>X7R</td></tr><tr><td>M</td><td>± 20%</td><td>Z5U</td></tr></table> | EIA CODE              | TOLERANCE                                                                                        | AVAILABLE IN EIA CHARACTERISTIC                                        | J                | ± 5%         | C0G | K                 | ± 10% | X7R | M                 | ± 20%        | Z5U |  |  |  |
|                                 | EIA CODE                        | TOLERANCE                                                                                                                                                                                                                                                                                                     | AVAILABLE IN EIA CHARACTERISTIC                                                                                                                                                                                                           |                       |                                                                                                  |                                                                        |                  |              |     |                   |       |     |                   |              |     |  |  |  |
|                                 | J                               | ± 5%                                                                                                                                                                                                                                                                                                          | C0G                                                                                                                                                                                                                                       |                       |                                                                                                  |                                                                        |                  |              |     |                   |       |     |                   |              |     |  |  |  |
|                                 | K                               | ± 10%                                                                                                                                                                                                                                                                                                         | X7R                                                                                                                                                                                                                                       |                       |                                                                                                  |                                                                        |                  |              |     |                   |       |     |                   |              |     |  |  |  |
| M                               | ± 20%                           | Z5U                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                           |                       |                                                                                                  |                                                                        |                  |              |     |                   |       |     |                   |              |     |  |  |  |

# Types 1C - 9C

Vishay Sprague



| STANDARD PART NUMBERS |                 |                 |
|-----------------------|-----------------|-----------------|
| 1C10 SERIES           |                 |                 |
| 1C10C0G100J050B       | 1C10C0G220J050B | 1C10C0G330J050B |
| 1C10C0G100J050R       | 1C10C0G220J050R | 1C10C0G330J050R |
| 1C10C0G100J100B       | 1C10C0G220J100B | 1C10C0G330J100B |
| 1C10C0G100J100R       | 1C10C0G220J100R | 1C10C0G330J100R |
| 1C10C0G101J050B       | 1C10C0G221J050B | 1C10C0G331J050B |
| 1C10C0G101J050R       | 1C10C0G221J050R | 1C10C0G331J050R |
| 1C10C0G101J100B       | 1C10C0G221J100B | 1C10C0G331J100B |
| 1C10C0G101J100R       | 1C10C0G221J100R | 1C10C0G331J100R |
| 1C10C0G102J050B       | 1C10C0G222J050B | 1C10C0G332J050B |
| 1C10C0G102J050R       | 1C10C0G222J050R | 1C10C0G332J050R |
| 1C10C0G102J100B       | 1C10C0G222J100B | 1C10C0G332J100B |
| 1C10C0G102J100R       | 1C10C0G222J100R | 1C10C0G332J100R |
| 1C10C0G470J050B       | 1C10X7R222K100B | 1C10Z5U103M050R |
| 1C10C0G470J050R       | 1C10X7R222K100R | 1C10Z5U103M100B |
| 1C10C0G470J100B       | 1C10X7R223K050B | 1C10Z5U103M100R |
| 1C10C0G470J100R       | 1C10X7R223K050R | 1C10Z5U104M050B |
| 1C10C0G471J050B       | 1C10X7R223K100B | 1C10Z5U104M050R |
| 1C10C0G471J050R       | 1C10X7R223K100R | 1C10Z5U104M100B |
| 1C10C0G471J100B       | 1C10X7R332K050B | 1C10Z5U104M100R |
| 1C10C0G471J100R       | 1C10X7R332K050R | 1C10Z5U223M050B |
| 1C10C0G472J050B       | 1C10X7R332K100B | 1C10Z5U223M050R |
| 1C10C0G472J050R       | 1C10X7R332K100R | 1C10Z5U223M100B |
| 1C10X7R102K050B       | 1C10X7R333K050B | 1C10Z5U223M100R |
| 1C10X7R102K050R       | 1C10X7R333K050R | 1C10Z5U224M050B |
| 1C10X7R102K100B       | 1C10X7R333K100B | 1C10Z5U224M050R |
| 1C10X7R102K100R       | 1C10X7R333K100R | 1C10Z5U333M050B |
| 1C10X7R103K050B       | 1C10X7R472K050B | 1C10Z5U333M050R |
| 1C10X7R103K050R       | 1C10X7R472K050R | 1C10Z5U333M100B |
| 1C10X7R103K100B       | 1C10X7R472K100B | 1C10Z5U333M100R |
| 1C10X7R103K100R       | 1C10X7R472K100R | 1C10Z5U334M050B |
| 1C10X7R104K050B       | 1C10X7R473K050B | 1C10Z5U334M050R |
| 1C10X7R104K050R       | 1C10X7R473K050R | 1C10Z5U473M050B |
| 1C10X7R104K100B       | 1C10X7R473K100B | 1C10Z5U473M050R |
| 1C10X7R104K100R       | 1C10X7R473K100R | 1C10Z5U473M100B |
| 1C10X7R222K050B       | 1C10Z5U103M050B | 1C10Z5U473M100R |
| 1C10X7R222K050R       |                 |                 |
| 1C20 SERIES           |                 |                 |
| 1C20C0G100J050B       | 1C20C0G470J050B | 1C20X7R333K100B |
| 1C20C0G100J050R       | 1C20C0G470J050R | 1C20X7R333K100R |
| 1C20C0G100J100B       | 1C20C0G470J100B | 1C20X7R472K050B |
| 1C20C0G100J100R       | 1C20C0G470J100R | 1C20X7R472K050R |
| 1C20C0G101J050B       | 1C20C0G471J050B | 1C20X7R472K100B |
| 1C20C0G101J050R       | 1C20C0G471J050R | 1C20X7R472K100R |
| 1C20C0G101J100B       | 1C20C0G471J100B | 1C20X7R473K050B |
| 1C20C0G101J100R       | 1C20C0G471J100R | 1C20X7R473K050R |
| 1C20C0G102J050B       | 1C20C0G472J050B | 1C20X7R473K100B |
| 1C20C0G102J050R       | 1C20C0G472J050R | 1C20X7R473K100R |
| 1C20C0G102J100B       | 1C20X7R102K050B | 1C20Z5U103M050B |
| 1C20C0G102J100R       | 1C20X7R102K050R | 1C20Z5U103M050R |
| 1C20C0G220J050B       | 1C20X7R102K100B | 1C20Z5U103M100B |
| 1C20C0G220J050R       | 1C20X7R102K100R | 1C20Z5U103M100R |
| 1C20C0G220J100B       | 1C20X7R103K050B | 1C20Z5U104M050B |
| 1C20C0G220J100R       | 1C20X7R103K050R | 1C20Z5U104M050R |
| 1C20C0G221J050B       | 1C20X7R103K100B | 1C20Z5U104M100B |
| 1C20C0G221J050R       | 1C20X7R103K100R | 1C20Z5U104M100R |
| 1C20C0G221J100B       | 1C20X7R104K050B | 1C20Z5U104M100R |
| 1C20C0G221J100R       | 1C20X7R104K050R | 1C20Z5U223M050B |
| 1C20C0G222J050B       | 1C20X7R104K100B | 1C20Z5U223M050R |



**STANDARD PART NUMBERS**

**1C20 SERIES (Continued)**

|                 |                 |                 |
|-----------------|-----------------|-----------------|
| 1C20C0G222J050R | 1C20X7R104K100R | 1C20Z5U223M100B |
| 1C20C0G222J100B | 1C20X7R222K050B | 1C20Z5U223M100R |
| 1C20C0G222J100R | 1C20X7R222K050R | 1C20Z5U224M050B |
| 1C20C0G330J050B | 1C20X7R222K100B | 1C20Z5U224M050R |
| 1C20C0G330J050R | 1C20X7R222K100R | 1C20Z5U333M050B |
| 1C20C0G330J100B | 1C20X7R223K050B | 1C20Z5U333M050R |
| 1C20C0G330J100R | 1C20X7R223K050R | 1C20Z5U333M100B |
| 1C20C0G331J050B | 1C20X7R223K100B | 1C20Z5U333M100R |
| 1C20C0G331J050R | 1C20X7R223K100R | 1C20Z5U334M050B |
| 1C20C0G331J100B | 1C20X7R332K050B | 1C20Z5U334M050R |
| 1C20C0G331J100R | 1C20X7R332K050R | 1C20Z5U473M050B |
| 1C20C0G332J050B | 1C20X7R332K100B | 1C20Z5U473M050R |
| 1C20C0G332J050R | 1C20X7R332K100R | 1C20Z5U473M100B |
| 1C20C0G332J100B | 1C20X7R333K050B | 1C20Z5U473M100R |
| 1C20C0G332J100R | 1C20X7R333K050R |                 |

**1C25 SERIES**

|                 |                 |                 |
|-----------------|-----------------|-----------------|
| 1C25C0G100J050B | 1C25C0G470J050B | 1C25X7R333K100B |
| 1C25C0G100J100B | 1C25C0G470J100B | 1C25X7R472K050B |
| 1C25C0G101J050B | 1C25C0G471J050B | 1C25X7R472K100B |
| 1C25C0G101J100B | 1C25C0G471J100B | 1C25X7R473K050B |
| 1C25C0G102J050B | 1C25C0G472J050B | 1C25X7R473K100B |
| 1C25C0G102J100B | 1C25X7R102K050B | 1C25Z5U103M050B |
| 1C25C0G220J050B | 1C25X7R102K100B | 1C25Z5U103M100B |
| 1C25C0G220J100B | 1C25X7R103K050B | 1C25Z5U104M050B |
| 1C25C0G221J050B | 1C25X7R103K100B | 1C25Z5U104M100B |
| 1C25C0G221J100B | 1C25X7R104K050B | 1C25Z5U223M050B |
| 1C25C0G222J050B | 1C25X7R104K100B | 1C25Z5U223M100B |
| 1C25C0G222J100B | 1C25X7R222K050B | 1C25Z5U224M050B |
| 1C25C0G330J050B | 1C25X7R222K100B | 1C25Z5U333M050B |
| 1C25C0G330J100B | 1C25X7R223K050B | 1C25Z5U333M100B |
| 1C25C0G331J050B | 1C25X7R223K100B | 1C25Z5U334M050B |
| 1C25C0G331J100B | 1C25X7R332K050B | 1C25Z5U473M050B |
| 1C25C0G332J050B | 1C25X7R332K100B | 1C25Z5U473M100B |
| 1C25C0G332J100B | 1C25X7R333K050B |                 |

**1C30 SERIES**

|                 |                 |                 |
|-----------------|-----------------|-----------------|
| 1C30C0G100J050B | 1C30C0G470J050B | 1C30X7R333K100B |
| 1C30C0G100J100B | 1C30C0G470J100B | 1C30X7R472K050B |
| 1C30C0G101J050B | 1C30C0G471J050B | 1C30X7R472K100B |
| 1C30C0G101J100B | 1C30C0G471J100B | 1C30X7R473K050B |
| 1C30C0G102J050B | 1C30C0G472J050B | 1C30X7R473K100B |
| 1C30C0G102J100B | 1C30X7R102K050B | 1C30Z5U103M050B |
| 1C30C0G220J050B | 1C30X7R102K100B | 1C30Z5U103M100B |
| 1C30C0G220J100B | 1C30X7R103K050B | 1C30Z5U104M050B |
| 1C30C0G221J050B | 1C30X7R103K100B | 1C30Z5U104M100B |
| 1C30C0G221J100B | 1C30X7R104K050B | 1C30Z5U223M050B |
| 1C30C0G222J050B | 1C30X7R104K100B | 1C30Z5U223M100B |
| 1C30C0G222J100B | 1C30X7R222K050B | 1C30Z5U224M050B |
| 1C30C0G330J050B | 1C30X7R222K100B | 1C30Z5U333M050B |
| 1C30C0G330J100B | 1C30X7R223K050B | 1C30Z5U333M100B |
| 1C30C0G331J050B | 1C30X7R223K100B | 1C30Z5U334M050B |
| 1C30C0G331J100B | 1C30X7R332K050B | 1C30Z5U473M050B |
| 1C30C0G332J050B | 1C30X7R332K100B | 1C30Z5U473M100B |
| 1C30C0G332J100B | 1C30X7R333K050B |                 |

**2C20 SERIES**

|                 |                 |                 |
|-----------------|-----------------|-----------------|
| 2C20C0G103J050B | 2C20X7R224K050R | 2C20Z5U105M050B |
| 2C20C0G103J050R | 2C20X7R334K050B | 2C20Z5U105M050R |
| 2C20X7R105K050B | 2C20X7R334K050R | 2C20Z5U474M050B |
| 2C20X7R105K050R | 2C20X7R474K050B |                 |
| 2C20X7R224K050B | 2C20X7R474K050R | 2C20Z5U474M050R |

# Types 1C - 9C

Vishay Sprague



| STANDARD PART NUMBERS       |                 |                 |                 |                 |                 |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 2C25 SERIES                 |                 |                 |                 |                 |                 |
| 2C25C0G103J050B             | 2C25X7R105K050B | 2C25X7R224K050B | 2C25X7R334K050B | 2C25Z5U105M050B | 2C25Z5U474M050B |
| 2C30 SERIES                 |                 |                 |                 |                 |                 |
| 2C30C0G103J050B             | 2C30X7R105K050B | 2C30X7R224K050B | 2C30X7R334K050B | 2C30Z5U105M050B | 2C30Z5U474M050B |
| 2C37 SERIES                 |                 |                 |                 |                 |                 |
| 2C37C0G103J050B             | 2C37X7R104K050B | 2C37X7R224K050B | 2C37X7R334K050B | 2C37Z5U224M050B | 2C37Z5U334M050B |
| 2C37X7R105K050B             | 2C37Z5U104M050B | 2C37Z5U105M050B | 2C37Z5U105M050B | 2C37Z5U474M050B |                 |
| 2C40 SERIES                 |                 |                 |                 |                 |                 |
| 2C40C0G103J050B             | 2C40X7R104K050B | 2C40X7R224K050B | 2C40X7R334K050B | 2C40Z5U224M050B | 2C40Z5U334M050B |
| 2C40X7R105K050B             | 2C40Z5U104M050B | 2C40Z5U105M050B | 2C40Z5U105M050B | 2C40Z5U474M050B |                 |
| 3C20 SERIES                 |                 |                 |                 |                 |                 |
| 3C20C0G223J050B             | 3C20Z5U225M050B | 3C20Z5U225M050R | 3C20Z5U225M050B | 3C20Z5U335M050B | 3C20Z5U335M050R |
| 3C25 SERIES                 |                 |                 |                 |                 |                 |
| 3C25C0G223J050B             | 3C25Z5U225M050B |                 | 3C25Z5U225M050B | 3C25Z5U333M050B |                 |
| 3C30 SERIES                 |                 |                 |                 |                 |                 |
| 3C30C0G223J050B             | 3C30Z5U225M050B |                 | 3C30Z5U225M050B | 3C30Z5U335M050B |                 |
| 3C37 SERIES                 |                 |                 |                 |                 |                 |
| 3C37C0G223J050B             | 3C37Z5U225M050B |                 | 3C37Z5U225M050B | 3C37Z5U335M050B |                 |
| 3C37XR5105K050B             |                 |                 |                 |                 |                 |
| 3C40 SERIES                 |                 |                 |                 |                 |                 |
| 3C40C0G223J050B             | 3C40Z5U225M050B |                 | 3C40Z5U225M050B | 3C40Z5U335M050B |                 |
| 3C40X7R105K050B             |                 |                 |                 |                 |                 |
| 5C SERIES                   |                 |                 |                 |                 |                 |
| 5C20C0G473J050B             | 5C37C0G473J050B | 5C40C0G473J050B | 5C37Z5U475M050B | 5C40Z5U475M050B |                 |
| 5C25C0G473J050B             |                 |                 |                 |                 |                 |
| 5C30C0G473J050B             |                 |                 |                 |                 |                 |
| 9C SERIES                   |                 |                 |                 |                 |                 |
| 9C10C0G100J050B             | 9C10C0G331J100B | 9C10X7R223K050B | 9C10C0G470J050B | 9C10X7R332K050B | 9C10X7R332K100B |
| 9C10C0G100J100B             | 9C10C0G471J050B | 9C10X7R333K050B | 9C10C0G471J100B | 9C10X7R472K050B | 9C10X7R472K100B |
| 9C10C0G101J050B             | 9C10X7R102K050B | 9C10Z5U103M050B | 9C10X7R102K100B | 9C10Z5U103M100B | 9C10Z5U223M050B |
| 9C10C0G101J100B             | 9C10X7R103K050B | 9C10Z5U333M050B | 9C10X7R103K100B | 9C10Z5U473M050B |                 |
| 9C10C0G102J050B             | 9C10X7R222K050B |                 | 9C10X7R222K100B |                 |                 |
| 9C10C0G220J050B             |                 |                 |                 |                 |                 |
| 9C10C0G220J100B             |                 |                 |                 |                 |                 |
| 9C10C0G221J050B             |                 |                 |                 |                 |                 |
| 9C10C0G330J050B             |                 |                 |                 |                 |                 |
| 9C10C0G330J100B             |                 |                 |                 |                 |                 |
| 9C10C0G331J050B             |                 |                 |                 |                 |                 |
| STANDARD PACKAGE INCREMENTS |                 |                 |                 |                 |                 |
| B = BULK                    | MINIMUM         | PER PACKAGE     | R = T & R       | MINIMUM         | PER REEL        |
| 1C                          | 2000            | 500             | 1C              | 2500            | 2500            |
| 2C                          | 500             | 500             | 2C              | 2000            | 2000            |
| 3C                          | 500             | 500             | 3C              | 1500            | 1500            |
| 5C                          | 250             | 250             | 5C              | Not Available   | —               |
| 9C                          | 1500            | 1500            | 9C              | Not Available   | —               |