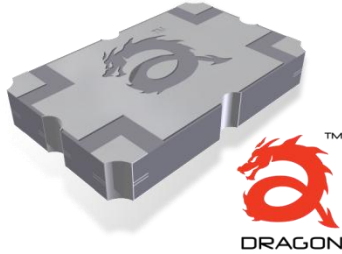


# DRAGON™ SMT COUPLERS

SURFACE MOUNT 3dB 90° HYBRID COUPLERS

REV 1.1.4



## APPLICATIONS

- Signal Splitting/Combining
- Balanced Amplifier Circuit
- I/Q Modulators/Demodulators
- Analog Phase Shifters
- Analog Variable Attenuators
- Microwave Mixers
- Image Reject Mixers
- Integrated Circuits
- And More...

## FEATURES

- Excellent RF performance; low insertion loss, tight coupling, low amplitude balance, close phase tracking
- Compact and low profile
- Industry standard sizes and footprint
- Optimized for thermal and RF performance
- Dimensionally stable materials for best CTE match

## SPECIFICATIONS

TABLE 1: TYPICAL SPECIFICATIONS\*

| FREQ (MHz) | SIZE L x W (in) | POWER (W) | PART NUMBER | INSERTION LOSS (dB) | AMPLITUDE BALANCE (dB) | ISOLATION (dB) | VSWR | PHASE BALANCE |
|------------|-----------------|-----------|-------------|---------------------|------------------------|----------------|------|---------------|
| 380-520    | .650 x .480     | 175       | Q3XD-450R   | 0.20                | ± 0.30                 | 25             | 1.18 | ± 2°          |
| 470-860    | .650 x .480     | 175       | Q3XD-665R   | 0.20                | ± 0.50                 | 23             | 1.18 | ± 2°          |
| 800-1000   | .560 x .350     | 175       | Q3XG-900R   | 0.12                | ± 0.20                 | 25             | 1.15 | ± 2°          |
| 960-1215   | .560 x .350     | 175       | Q3XG-1088R  | 0.12                | ± 0.20                 | 25             | 1.15 | ± 2°          |
| 1000-2000  | .560 x .350     | 85        | Q3XG-1500R  | 0.18                | ± 0.55                 | 24             | 1.18 | ± 3°          |
| 1500-2200  | .560 x .350     | 165       | Q3XG-1850R  | 0.10                | ± 0.20                 | 28             | 1.15 | ± 2°          |
| 2000-4000  | .560 X .350     | 50        | Q3XG-3000R  | 0.22                | ± 0.55                 | 24             | 1.18 | ± 3°          |
| 2300-2700  | .250 x .200     | 80        | Q3XA-2500R  | 0.14                | ± 0.30                 | 23             | 1.17 | ± 2°          |
| 2700-3200  | .250 x .200     | 20        | Q3XA-2950R  | 0.14                | ± 0.30                 | 21             | 1.20 | ± 3°          |
| 3200-3800  | .250 x .200     | 20        | Q3XA-3500R  | 0.22                | ± 0.20                 | 24             | 1.20 | ± 3°          |
| 4000-6000  | .250 x .200     | 20        | Q3XA-5000R  | 0.20                | ± 0.60                 | 21             | 1.25 | ± 3°          |

\* Units tested with small signal using Electro-Photonics testboard at 25°C. Specifications subject to change without notice.

† Please consult sales ([sales@electro-photonics.com](mailto:sales@electro-photonics.com)) for custom footprints, sizes, and/or specifications.

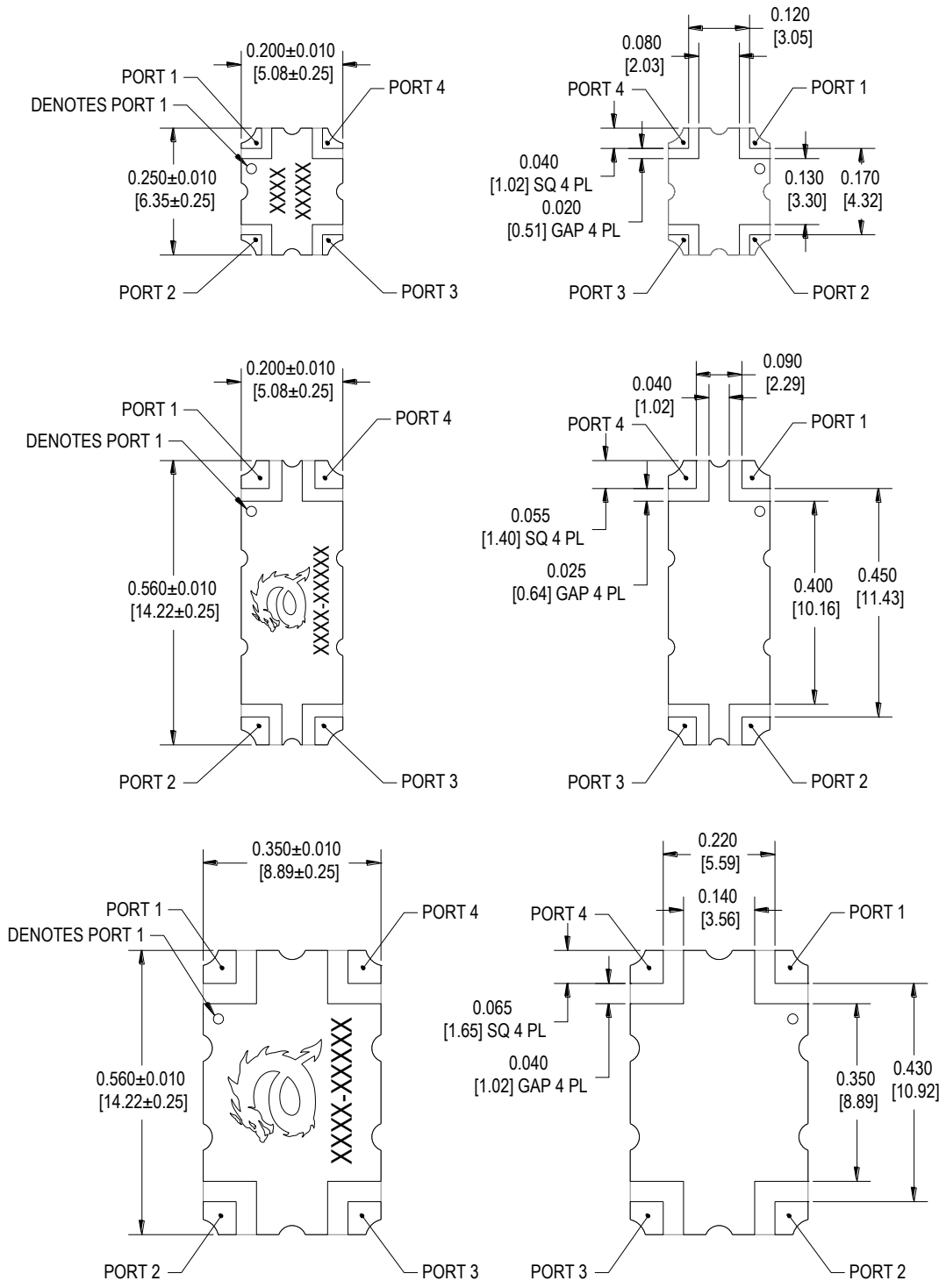
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REV 1.1.4

## MECHANICAL OUTLINE

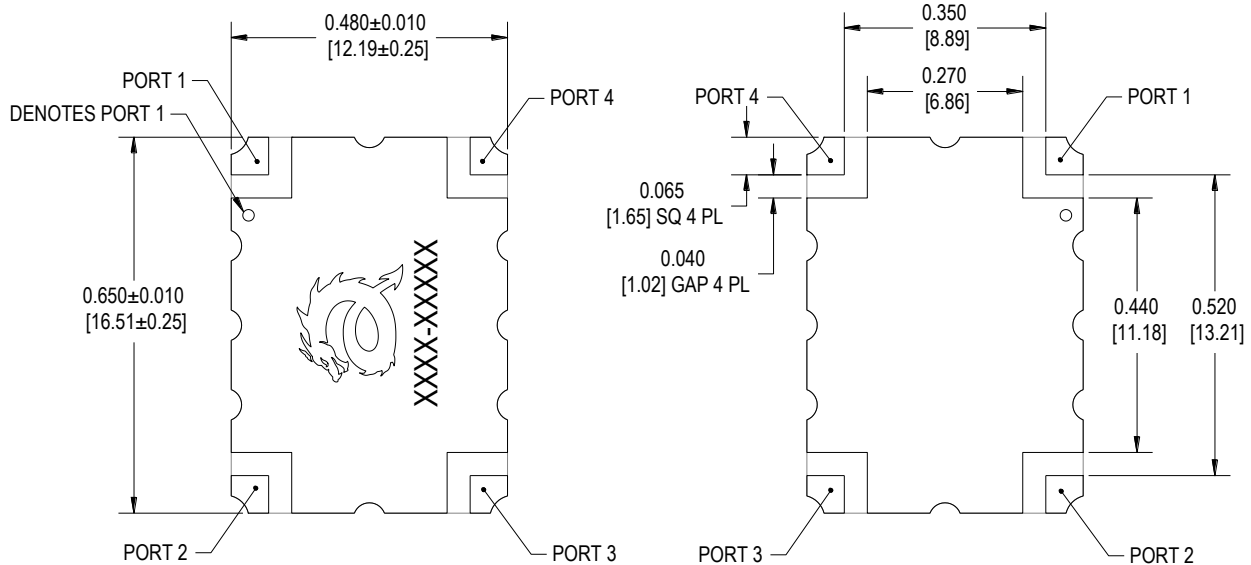
\* Dimensions are *inches [millimeters]*. Actual part may differ; additional vias may be added and markings may vary.



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SURFACE MOUNT 3dB 90° HYBRID COUPLERS

REV 1.1.4



## PIN CONFIGURATION

TABLE 2: SPLITTER CONFIGURATION\*

| PORT 1 | PORT 2 | PORT 3 | PORT 4 |
|--------|--------|--------|--------|
| IN     | ISO    | -90°   | 0°     |
| ISO    | IN     | 0°     | -90°   |
| -90°   | 0°     | IN     | ISO    |
| 0°     | -90°   | ISO    | IN     |

\* Signals will split into -3dB amplitude in quadrature. A small fraction of the signal will appear at the isolated port due to non-ideal isolation.

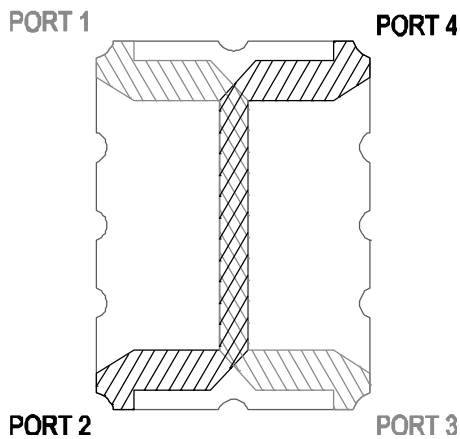


TABLE 3: COMBINER CONFIGURATION†

| PORT 1 | PORT 2 | PORT 3 | PORT 4 |
|--------|--------|--------|--------|
| -90°   | 0°     | ISO    | OUT    |
| 0°     | -90°   | OUT    | ISO    |
| ISO    | OUT    | -90°   | 0°     |
| OUT    | ISO    | 0°     | -90°   |

† Combining signals are applied in quadrature with equal amplitude. Unequal amplitude signals will generate small signal appearing at the isolated port.

# DRAGON™ SMT COUPLERS

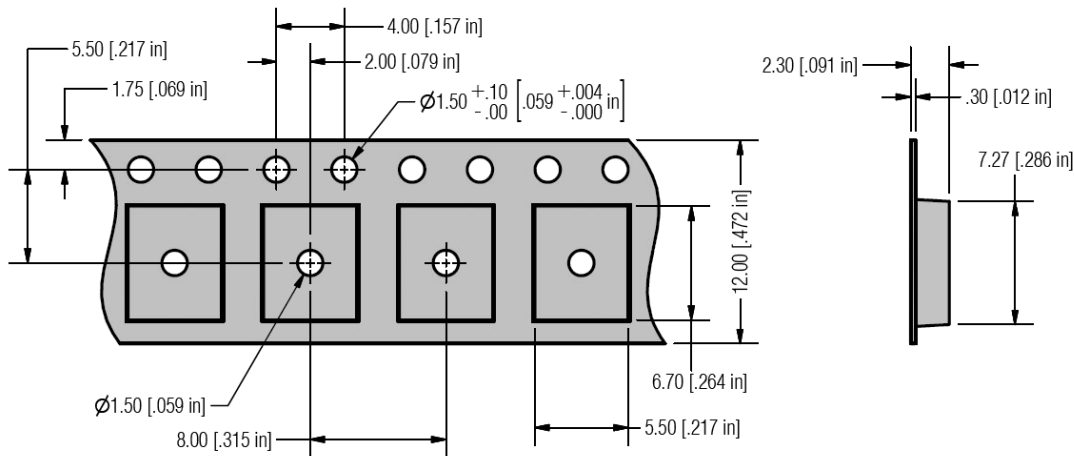
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REV 1.1.4

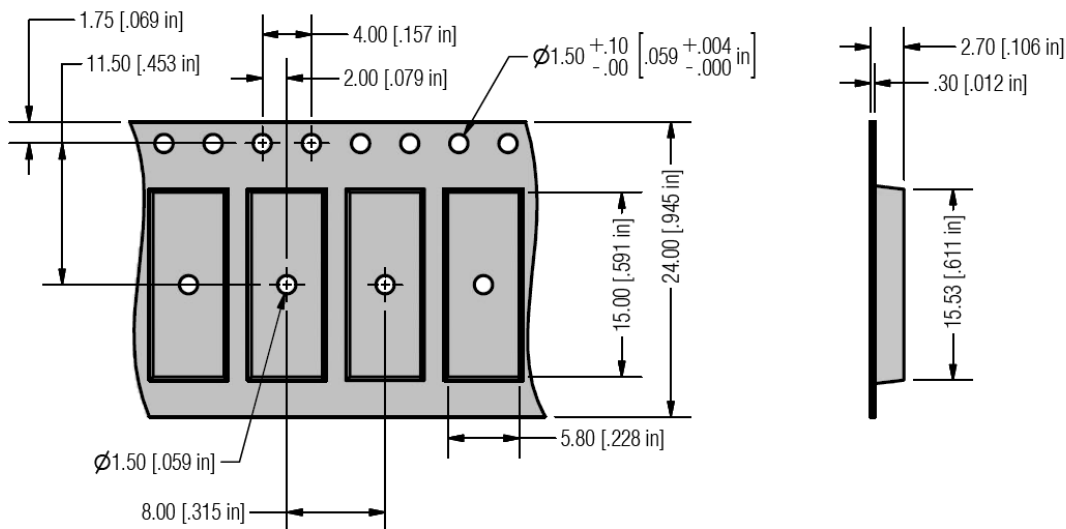
## TAPE AND REEL

Dragon couplers are available as loose parts in a bag or in a reel. Tape and reel dimensions as show below. Minimum order quantities are 2000 per reel.

### A - Size



### B - Size

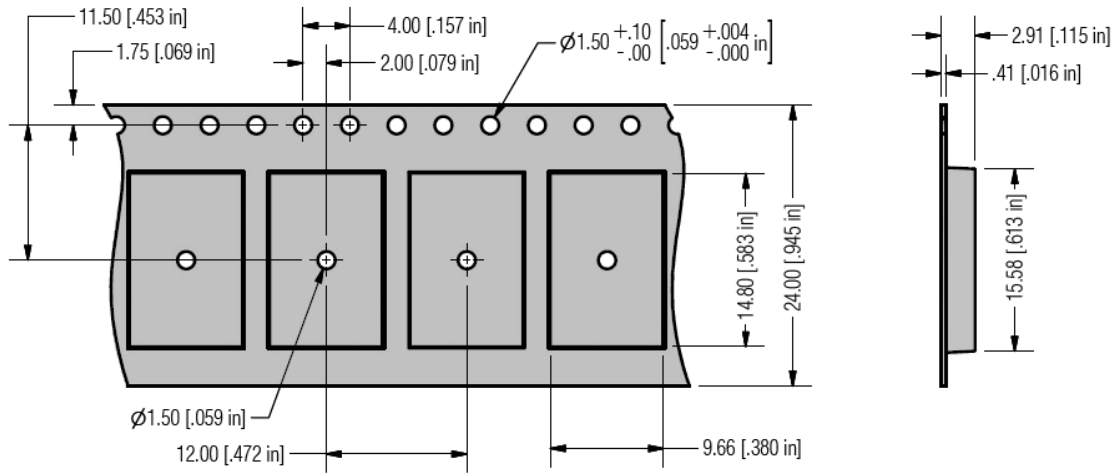


# DRAGON™ SMT COUPLERS

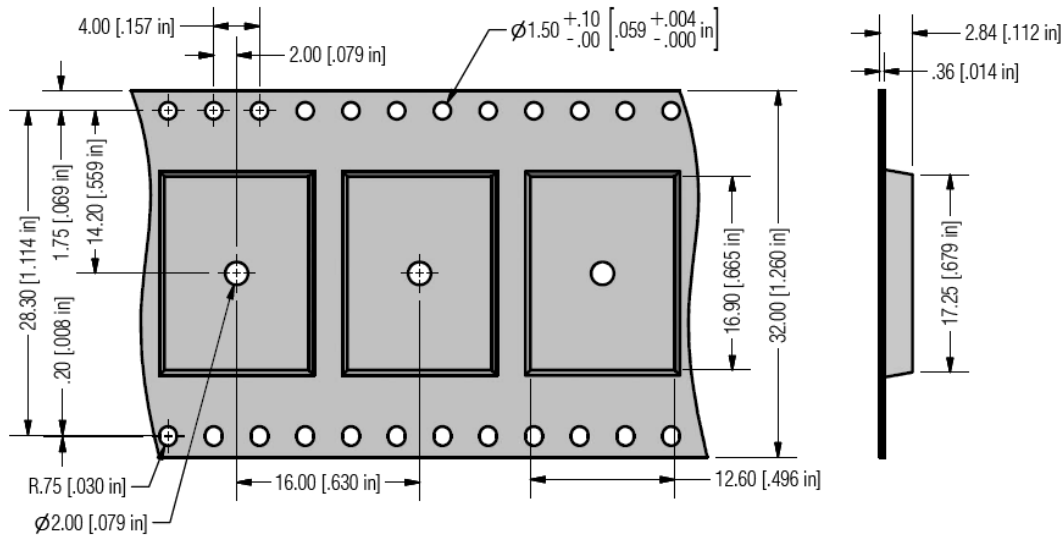
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REV 1.1.4

## G - Size



## D - Size



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REV 1.1.4

## ORDERING INFO\*

\* Consult sales ([sales@electro-photonics.com](mailto:sales@electro-photonics.com)) for custom configuration, size, footprint, and/or specifications. Tape & Reel available upon request (with minimum order quantities).

**Q 3 X G - 1 5 0 0 R**  
①
②
③
④

| ①                                  | ②  | ③                    | ④   |
|------------------------------------|--|----------------------|---|
| PRODUCT CODE                       | SIZE   | FREQUENCY            | PLATING   |
| QUADRATURE 3dB<br>CROSSOVER HYBRID | A = .250 X .200<br>B = .560 X .200<br>G = .560 X .350<br>D = .650 X .480 | MHz<br>(SEE TABLE 1) | R = IMMERSION TIN<br><br>E = ENIG<br>(Electroless nickel<br>immersion gold) |



The Dragon stm couplers are lead free, RoHS compliant products.