

ATC Q-BRIDGE THERMAL CONDUCTOR

ATC Q-Bridge Thermal Conductor

ATC's new Q-Bridge Thermal Conductor is manufactured with the highest quality materials for reliable and repeatable performance providing a cost effective thermal management solution. These devices are constructed with Aluminum Nitride (AlN) or Beryllium Oxide (BeO) and are available in standard EIA form factors.

Q-Bridge provides the designer with the ability to manage thermal conditions by directing heat to a thermal ground plane, heat sink or any other specific thermal point of interest. The inherently low capacitance makes this device virtually transparent at RF / microwave frequencies. This device has the added benefit of offering additional layers of protection to adjacent components from hot spot thermal loads.

Q-Bridge provides the benefit of increased overall circuit reliability. ATC's Q-Bridge is manufactured using one-piece construction, providing a RoHS compliant SMT package that is fully compatible with high speed automated pick-and-place processing. It is available in various EIA case sizes. Custom configurations are also available.

Features:

- High Thermal Conductivity
- Low Thermal Resistance
- Low Capacitance
- Increases Circuit Reliability
- RoHS Compliant
- More efficient thermal management





Applications:

- GaN Power Amplifiers
- High RF Power Amplifiers
- Filters
- Synthesizers
- Industrial Computers
- Switch Mode Power Supplies
- Pin & Laser Diodes

Functional Applications:

- Between active device and adjacent ground planes
- Specific contact pad to case
- Contact pad to contact pad
- Direct component contact to via pad or trace
- Edges fully metalized

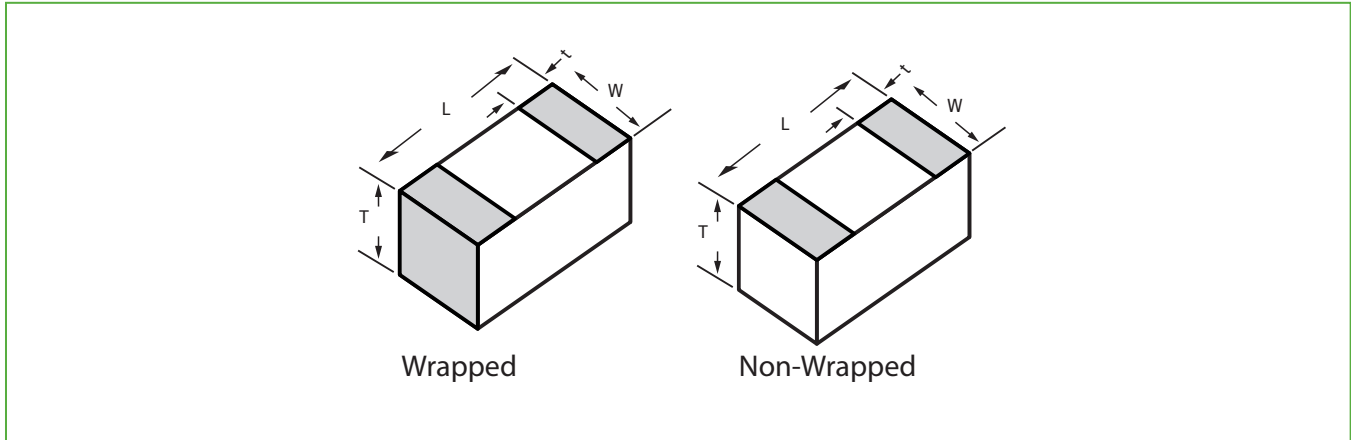
Termination Materials

| ATC Termination Code | Termination Materials | |
|----------------------|--|---|
| Y | Silver Platinum Non-Magnetic Termination |  |
| S | Silver over Magnetic Termination |  |

Note: Non-edge wrapped style in all case sizes is supplied with S termination
Edge wrapped style in case sizes 0302 through 1111 is supplied with Y termination
Edge wrapped style in case sizes 2010 through 3737 are supplied with S termination

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Mechanical Configurations



Typical Characteristics

| Case Size | Length (L) | Width (W) | Thickness (T) | Terminal (t) | Thermal Resistance ($^{\circ}\text{C}/\text{W}$) | | Thermal Conductivity ($\text{mW}/^{\circ}\text{C}$) | | Available Configurations | |
|-----------|--------------------------------------|--------------------------------------|------------------------|--------------|--|-----|---|-----|--------------------------|-------------|
| | | | | | AlN | BeO | AlN | BeO | Style | Termination |
| 0302 | .030 \pm .002 (.77 \pm .051) | .020 \pm .002 (0.51 \pm .051) | 20 (0.51 \pm .05) | 10 (0.25) | 19 | 12 | 53 | 81 | W | Y |
| | | | | | | | | | E | S |
| 0402 | .040 \pm .002 (1.02 \pm .051) | .020 \pm .002 (0.51 \pm .051) | 20 (0.51 \pm .05) | 10 (0.25) | 25 | 16 | 40 | 61 | W | Y |
| | | | | | | | | | E | S |
| 0505 | .050 \pm .002 (1.27 \pm .051) | .050 \pm .002 (1.27 \pm .051) | 25 (0.64 \pm .05) | 15 (0.38) | 10 | 7 | 100 | 153 | W | Y |
| | | | | | | | | | E | S |
| 0603 | .060 \pm .002 (1.52 \pm .051) | .030 \pm .002 (.76 \pm .051) | 25 (0.64 \pm .05) | 15 (0.38) | 20 | 13 | 50 | 76 | W | Y |
| | | | | | | | | | E | S |
| 0805 | .080 \pm .002 (2.03 \pm .051) | .050 \pm .002 (1.27 \pm .051) | 40 (1.02 \pm .05) | 20 (0.51) | 10 | 7 | 100 | 153 | W | Y |
| | | | | | | | | | E | S |
| 1005 | .100 \pm .002 (2.54 \pm .051) | .050 \pm .002 (1.27 \pm .051) | 40 (1.02 \pm .05) | 20 (0.51) | 13 | 8 | 77 | 122 | W | Y |
| | | | | | | | | | E | S |
| 1020 | .100 \pm .002 (2.54 \pm .051) | .200 \pm .002 (5.08 \pm .051) | 40 (1.02 \pm .05) | 20 (0.51) | 3 | 2 | 320 | 508 | W | Y |
| | | | | | | | | | E | S |
| 1111 | .110 \pm .002 (2.79 \pm .051) | .110 \pm .002 (2.79 \pm .051) | 40 (1.02 \pm .05) | 20 (0.51) | 7 | 4 | 153 | 240 | W | Y |
| | | | | | | | | | E | S |
| 2010 | .195 \pm .010 (4.95 \pm .254) | .095 \pm .010 (2.41 \pm .254) | 60 (1.52 \pm .05) | 30 (0.77) | 10 | 6 | 100 | 159 | W | S |
| | | | | | | | | | E | S |
| 2525 | .240 \pm .010 (6.10 \pm .254) | .250 \pm .010 (6.35 \pm .254) | 60 (1.52 \pm .05) | 40 (1.02) | 4 | 3 | 240 | 380 | W | S |
| | | | | | | | | | E | S |
| 3725 | .370 \pm .010 (9.40 \pm .254) | .245 \pm .010 (6.22 \pm .254) | 60 (1.52 \pm .05) | 50 (1.27) | 6 | 4 | 160 | 254 | W | S |
| | | | | | | | | | E | S |
| 3737 | .365 \pm .010 (9.27 \pm .254) | .375 \pm .010 (9.53 \pm .254) | 60 (1.52 \pm .05) | 50 (1.27) | 4 | 3 | 240 | 380 | W | S |
| | | | | | | | | | E | S |

inches (mm)

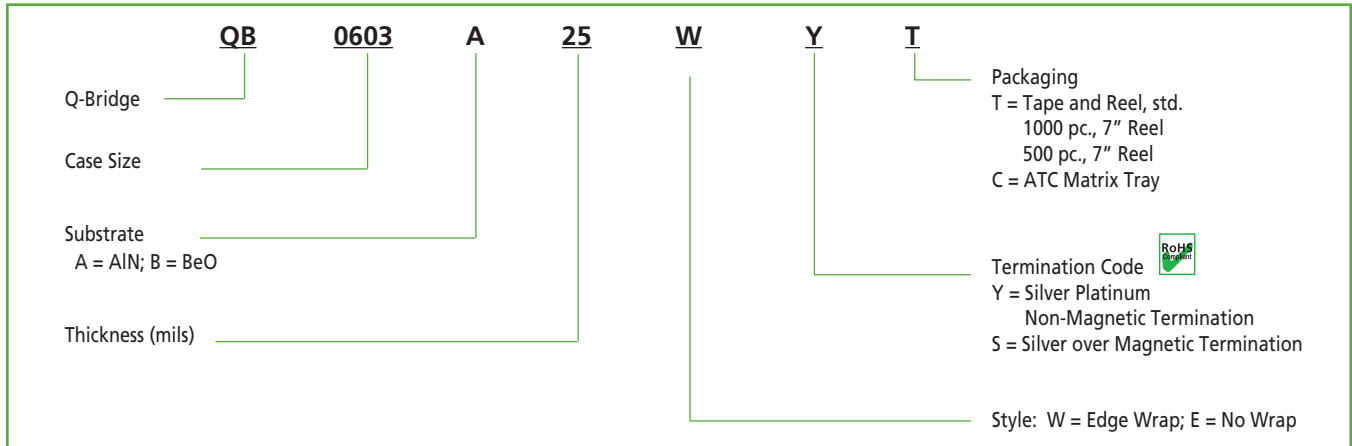
Note: Thermal conductivity is normalized to chip size. All values are approximate. Consult factory for extended thermal conductivity options.

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Capacitance

| Case Size | Part Number | Capacitance (pF) | Case Size | Part Number | Capacitance (pF) |
|-----------|-------------|------------------|-----------|-------------|------------------|
| 0302 | QB0302A20WY | 0.039 | 1020 | QB1020A40WY | 0.204 |
| | QB0302A20ES | 0.011 | | QB1020A40ES | 0.121 |
| | QB0302B20WY | 0.028 | | QB1020B40WY | 0.158 |
| | QB0302B20ES | 0.006 | | QB1020B40ES | 0.092 |
| 0402 | QB0402A20WY | 0.028 | 1111 | QB1111A40WY | 0.096 |
| | QB0402A20ES | 0.018 | | QB1111A40ES | 0.042 |
| | QB0402B20WY | 0.025 | | QB1111B40WY | 0.078 |
| | QB0402B20ES | 0.009 | | QB1111B40ES | 0.031 |
| 0505 | QB0505A25WY | 0.070 | 2010 | QB2010A60WS | 0.070 |
| | QB0505A25ES | 0.032 | | QB2010A60ES | 0.042 |
| | QB0505B25WY | 0.061 | | QB2010B60WS | 0.055 |
| | QB0505B25ES | 0.027 | | QB2010B60ES | 0.086 |
| 0603 | QB0603A25WY | 0.035 | 2525 | QB2525A60WS | 0.156 |
| | QB0603A25ES | 0.007 | | QB2525A60ES | 0.114 |
| | QB0603B25WY | 0.029 | | QB2525B60WS | 0.122 |
| | QB0603B25ES | 0.007 | | QB2525B60ES | 0.075 |
| 0805 | QB0805A40WY | 0.081 | 3725 | QB3725A60WS | 0.105 |
| | QB0805A40ES | 0.018 | | QB3725A60ES | 0.076 |
| | QB0805B40WY | 0.055 | | QB3725B60WS | 0.080 |
| | QB0805B40ES | 0.015 | | QB3725B60ES | 0.058 |
| 1005 | QB1005A40WY | 0.046 | 3737 | QB3737A60WS | 0.164 |
| | QB1005A40ES | 0.008 | | QB3737A60ES | 0.130 |
| | QB1005B40WY | 0.038 | | QB3737B60WS | 0.126 |
| | QB1005B40ES | 0.007 | | QB3737B60ES | 0.099 |

ATC Part Number Code



The above part number refers to a Q-Bridge, (EIA case size 0603), Aluminum Nitride (AlN) substrate, Thickness 25 mils., Style W, Y Termination (Silver Platinum Non-Magnetic Termination), with Tape and Reel Packaging.

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For additional information and catalogs contact your ATC representative or call direct at +1-631-622-4700.

Consult factory for additional performance data.

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