# Component Specification

**Kona**  
**KA1 Series 8.5mm Pitch High Power Connectors**  
**May 2023**

<table>
<thead>
<tr>
<th>SECTION</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Description of Connector System</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Ratings</td>
<td>2</td>
</tr>
<tr>
<td>Appendix 1</td>
<td>Contact Numbering</td>
<td>4</td>
</tr>
<tr>
<td>Appendix 2</td>
<td>De-Rating Graph</td>
<td>5</td>
</tr>
<tr>
<td>Appendix 3</td>
<td>Creepage and Clearance Locations</td>
<td>6</td>
</tr>
</tbody>
</table>
1. **DESCRIPTION OF CONNECTOR SYSTEM**

The Kona range consists of male and female high-reliability mating connectors, based on an 8.5mm pitch single row format – part numbers start with the series code KA1. These connectors are designed for higher power applications with a rugged or durable requirement. Each contact on both male and female connectors is individually shrouded and recessed. Polarization and contact 1 identification marks are also incorporated into the housing designs.

The male contact is designed to provide the spring force inside the female contact for positive engagement. Both contacts are plated with a hard acid gold finish at 98% purity for high performance and long life. Cable contacts are solder style (compatible with 8AWG cable) and are removable & replaceable inside housings.

Connector housings are fitted with stainless steel screw-lock fixings, capable of mate-before-lock for easy connection and faster fixing. Options include thumbscrews for manual assembly, board or panel mount studs for connector retention, and reverse fix style for floating screw on the male. Metal backshells are available to provide mechanical, RF and EMC protection.

For detailed test results on the below specifications, please see Test Summary Report HT076XX (latest revision).

2. **RATINGS**

2.1. **Materials**

- Contact: Beryllium Copper, Gold over Nickel
- Contact latching collar: Cupro-Nickel, 100% Tin over Nickel
- Housing & Cap: 40% Glass-Filled Thermoplastic, UL94V-0
- Screw fixings: Stainless Steel
- Potting Compound: Stycast 2651MM with Catalyst 9
- Backshell: Aluminium 6061-T6, High Phosphorus Nickel finish

2.2. **Electrical Characteristics**

- Current Rating (EIA-364-70A: 1998): 60A max per contact
- Dielectric Withstanding Voltage (EIA-364-20C, Method B):
  - Sea Level: 3,000V AC for 1 minute
  - Altitude 70,000ft: 500V AC for 1 minute
- Voltage Rating: 1,500V DC or AC peak
- Contact Resistance (EIA-364-23B, pre- and post-conditioning): 2mΩ max
- Insulation Resistance (EIA-364-21C): 10GΩ min at 1,000V
- Creepage Distance (see Appendix 3): Male PCB Vertical: 5.5mm, Female & Male Cable: 17.54mm
- Clearance Distance (see Appendix 3): Male PCB Vertical: 3.64mm, Female & Male Cable: 2.7mm

2.3. **Environmental Characteristics**

- Operating Temperature Range: -65°C to +150°C
- Vibration (EIA-364-28D, Condition IV): 10Hz to 2,000Hz, 1.52mm pk-pk displacement or 20gn pk (whichever is less), 198m/s² (20G), 12 cycles per axis, 20 minutes per cycle
- Mechanical Shock (EIA-364-27B, Condition C): 981m/s² (100G) for 6ms in all axes
  - It is recommended that back-potting compound is applied to cable assemblies.
- Thermal Shock (EIA-364-32C, Condition IV): -65°C to +150°C, 10 cycles, 30 mins each extreme
- Temperature Life (EIA-364-17B, Method A): +150°C for 1,000 hours
- Humidity (EIA-364-31B, Condition A): 90-95% RH at +40°C, 96 hours
- Salt Spray (EIA-364-26B): 24 hours at +35°C, concentration 5%
2.4. Mechanical Characteristics

Durability (EIA-364-09C) ................................................................. 250 operations

Insertion Force (per contact EIA-364-13C *):

Initial ........................................................................................................... 50N max

Post Conditioning .................................................................................... 70N max

Withdrawal Force (per contact EIA-364-13C * ) .................................... 3N min

* per contact when fully assembled connector is being mated and un-mated.

Contact Retention Force (EIA-364-29C) ............................................... 35N min per contact

Screw-lock Torque ................................................................................... 22-25cmN
APPENDIX 1 – CONTACT NUMBERING

Female Connector

- Contact 1
- Contact 4
- Contact 1 Ident

Male Connector

- Contact 1
- Contact 4
- Contact 1 Ident

Female Shielded Connector

- Contact 1
- Contact 3
- Wing Feature

Male Shielded Connector

- Contact 1
- Contact 3
- Contact 1 Ident
APPENDIX 2 – DE-RATING GRAPH

De-Rating Curve - KA1 Each Size Pre-Conditioned

Temperature (°C) vs. Current (A)

- KA1-2010298F1 & KA1-MV10205M1
- KA1-2010498F1 & KA1-MV10405M1
- KA1-3010298M1 & KA1-2010298F1
- KA1-3010398M1 & KA1-2010398F1
- KA1-3010498M1 & KA1-2010498F1
- PRE-CONDITIONED AVG OF ALL SIZES
APPENDIX 3 – CREEPAGE AND CLEARANCE LOCATIONS

Male Vertical PCB Throughboard:

Male & Female Cable: