



Series 79 Micro-Crimp Section C: General Information and Reference

MATERIALS AND FINISHES

Size #23 contacts	Beryllium copper alloy, plated gold over nickel
Size #16 and #12 contacts	Copper alloy
Insulators	Liquid crystal polymer, 30% glass-reinforced
Shell	Aluminum alloy. See ordering info for finish options
Interfacial seal and grommet	Fluorosilicone
Contact and insert retention clips	Beryllium copper, heat-treated, unplated
Jackposts and guide pins	Stainless steel, passivated
EMI Shroud for right angle PCB	Aluminum alloy
Trays for right angle PCB	Thermoplastic
Spring, EMI (plug)	Stainless steel or beryllium copper alloy, gold plated

BASIC SPECIFICATIONS

Current rating	Contact size #23 5 Amps, size #16 13 Amps, size #12 23 Amps maximum
Voltage rating (DWV)	Contact size #23 500 VAC rms. Size #16 and #12 1800 VAC rms. Sea level.
Insulation resistance	5000 megohms minimum
Operating temperature	-65° C. to +150° C.
Contact resistance	5 milliohms maximum
Water ingress protection	IP67
Shielding effectiveness	>75 dB attenuation from 100 MHz to 1000MHz, >60dB 1GHz to 4GHz, >40dB 4GHz to 10GHz.

DETAILED PERFORMANCE SPECIFICATIONS

DESCRIPTION	REQUIREMENT	PROCEDURE																																	
Contact Resistance	SAE AS39029 Table V <table border="0" style="margin-left: 20px;"> <tr> <td style="text-align: right;">Max</td> <td></td> <td></td> </tr> <tr> <td style="text-align: right;">Wire</td> <td style="text-align: center;">Test</td> <td style="text-align: center;">Voltage</td> </tr> <tr> <td style="text-align: right;">Size</td> <td style="text-align: center;">Current</td> <td style="text-align: center;">Drop</td> </tr> <tr> <td style="text-align: right;">12</td> <td style="text-align: center;">23</td> <td style="text-align: center;">42</td> </tr> <tr> <td style="text-align: right;">14</td> <td style="text-align: center;">17</td> <td style="text-align: center;">40</td> </tr> <tr> <td style="text-align: right;">16</td> <td style="text-align: center;">13</td> <td style="text-align: center;">49</td> </tr> <tr> <td style="text-align: right;">20</td> <td style="text-align: center;">7.5</td> <td style="text-align: center;">55</td> </tr> <tr> <td style="text-align: right;">22</td> <td style="text-align: center;">5</td> <td style="text-align: center;">73</td> </tr> <tr> <td style="text-align: right;">24</td> <td style="text-align: center;">3</td> <td style="text-align: center;">45</td> </tr> <tr> <td style="text-align: right;">26</td> <td style="text-align: center;">2</td> <td style="text-align: center;">52</td> </tr> <tr> <td style="text-align: right;">28</td> <td style="text-align: center;">1.5</td> <td style="text-align: center;">54</td> </tr> </table>	Max			Wire	Test	Voltage	Size	Current	Drop	12	23	42	14	17	40	16	13	49	20	7.5	55	22	5	73	24	3	45	26	2	52	28	1.5	54	EIA-364-06 IEC 60512-2-1 Test current in amperes. Voltage drop in millivolts. Silver-coated copper wire, +25°C.
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Low Level Contact Resistance	<table border="0" style="margin-left: 20px;"> <tr> <td style="text-align: right;">Wire</td> <td style="text-align: center;">Max.</td> </tr> <tr> <td style="text-align: right;">Size</td> <td style="text-align: center;">Milliohms</td> </tr> <tr> <td style="text-align: right;">16</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: right;">20</td> <td style="text-align: center;">9</td> </tr> <tr> <td style="text-align: right;">22</td> <td style="text-align: center;">15</td> </tr> <tr> <td style="text-align: right;">24</td> <td style="text-align: center;">20</td> </tr> <tr> <td style="text-align: right;">26</td> <td style="text-align: center;">31</td> </tr> <tr> <td style="text-align: right;">28</td> <td style="text-align: center;">50</td> </tr> </table>	Wire	Max.	Size	Milliohms	16	5	20	9	22	15	24	20	26	31	28	50	EIA-364-23 100 milliamperes maximum and 20 millivolts maximum open circuit voltage																	
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Size	Milliohms																																		
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Insulation Resistance	5000 megohms minimum	EIA-364-21 IEC-60512-3-1 500 volts DC ± 50 volts. Test between adjacent contacts and contacts to shell.																																	

Dimensions in inches (millimeters) and are subject to change without notice.

DETAILED PERFORMANCE SPECIFICATIONS

DESCRIPTION	REQUIREMENT	PROCEDURE								
Dielectric Withstanding Voltage	No breakdown or flashover	EIA-364-20 IEC-60512-4-1 Sea level AC rms 50 or 60 Hz. One minute dwell. #23 contacts 500 volts #16 contacts 1800 volts #12 contacts 1800 volts								
Current Carrying Capacity	<table border="1"> <thead> <tr> <th>Contact Size</th> <th>Max Current</th> </tr> </thead> <tbody> <tr> <td>12</td> <td>23</td> </tr> <tr> <td>16</td> <td>13</td> </tr> <tr> <td>23</td> <td>5</td> </tr> </tbody> </table>	Contact Size	Max Current	12	23	16	13	23	5	EIA-364-70 Method 1 IEC-60512-5 Test 9b
Contact Size	Max Current									
12	23									
16	13									
23	5									
Shell-to-shell Resistance (connectors with ground springs)	2.5 millivolt drop maximum	EIA-364-83 IEC-60512-2-6 Electroless nickel plated connectors.								
Shielding Effectiveness	>75 dB attenuation from 100 MHz to 1000MHz, >60dB 1GHz to 4GHz, >40dB 4GHz to 10GHz.	EIA-364-66 IEC-60512-23-3								
Water Immersion	No evidence of water penetration into mated connectors. No evidence of water penetration into an unmated panel mounted PCB receptacle. $\geq 100 \text{ M}\Omega$ insulation resistance.	MIL-STD-810F Method 512.4 1 meter immersion 1 hour								
Ingress Protection	IP67 rating	IEC-60529								
Vibration, Sine	No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after vibration test.	EIA-364-28 Test Condition IV IEC-60512-6-4 100 milliamp test current 10- 2,000 Hz 20 g, 196 m/s ²								
Vibration, Random	No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after vibration test.	EIA-364-28 Test Condition VI Letter J IEC-60512-6-4 100 milliamp test current 50- 2,000 Hz 43.92 g rms								

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DETAILED PERFORMANCE SPECIFICATIONS

DESCRIPTION	REQUIREMENT	PROCEDURE
Mechanical Shock	No discontinuity of greater than 1 microsecond, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after shock test.	EIA-364-27 Condition D IEC-60512-6-3 3 shocks X 3 axes X 2 directions = 18 shocks 2941 m/s ² (300 g's), 3 ms, half-sine
Thermal Shock	No mechanical damage or loosening of parts. Following thermal shock, connector shall meet contact resistance, DWV, insulation resistance and shell-to-shell resistance requirements.	EIA-364-32 Test Condition IV IEC-60512-11-4 5 cycles consisting of -65° C 30 minutes, +25° C 5 minutes max., +150° C 30 minutes, +25° C 5 minutes max.
Humidity, Cyclic (Damp Heat, Cyclic) (Moisture Resistance)	No deterioration which will adversely affect the connector. 100 megohms minimum insulation resistance during the final cycle. Following the recovery period, connectors shall meet contact resistance, shell-to-shell resistance and DWV requirements.	EIA-364-31 Condition B Method III IEC-60512-11-12 80-98% RH 10 cycles (10 days) +25° C to +65° C Step 7b vibration deleted. 24 hour recovery period.
21 Day Humidity (Damp heat, Long Term)	No deterioration which will adversely affect the connector. Following the drying period, connectors shall meet 100 megohms minimum, contact resistance, shell-to-shell resistance, DWV, mating and unmating requirements.	EIA-364-31 Condition C Method II IEC-60512-11-3 Severity C 90-95% RH 40° C Apply 100 volts DC during test. 4 hours drying time at ambient temperature prior to final measurements.
Mechanical Durability, at Ambient Temperature	No deterioration which will adversely affect the connector after 2000 cycles of mating and unmating. Connectors shall meet contact resistance, insulation resistance, shell-to-shell resistance, DWV, and mating and unmating force.	EIA-364-09 IEC-60512-5 Test 9a
Corrosion (Salt Mist)	No exposure of base metal. Connectors shall meet DWV and contact resistance requirements following the test.	EIA-364-26 IEC 60512-11-6 5% salt solution 35° C Unmated connectors Code MT: Ni-PTFE 500 hours Code M: electroless nickel 48 hours Code NF: Cadmium 500 hours Code ZNU: Black zinc nickel 500 hours

Dimensions in inches (millimeters) and are subject to change without notice.

Series 79 Micro-Crimp

Section C: General Information and Reference



DETAILED PERFORMANCE SPECIFICATIONS

DESCRIPTION	REQUIREMENT	PROCEDURE															
Solderability, PC Tail Contacts	95% solder coverage. Smooth, bright and even finish.	EIA-364-52 Category 3 IEC-60512-12-1 IEC-68-2-20 Test Ta, method 1 8 hours steam aging prior to test 245° C 4-5 sec. dwell 10X magnification															
Resistance To Soldering Heat	No damage to connector. Connectors shall meet insulation resistance and waterproof sealing requirements.	EIA-364-56 IEC-60512-12-5 Test 12e 260° C, 10 seconds (PC tail)															
Impact, Cable Connectors	No impairment of function. Connector shall meet contact resistance, insulation resistance and waterproof sealing.	EIA-364-42 IEC-60512-5 test 7b 1 meter 8 drops															
Fluid Immersion	No damage from immersion in various fuels and oils. Connector shall meet mating/unmating force and dielectric withstanding voltage.	EIA-364-10															
Altitude Immersion	No evidence of moisture on connector interface or contacts. Connector shall meet dielectric withstanding voltage.	EIA-364-03 Wired connectors with supplemental potting.															
Contact Retention	<table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Contact Size</th> <th>Min. Pounds</th> <th>Min. Newtons</th> </tr> </thead> <tbody> <tr> <td>23</td> <td>6</td> <td>27</td> </tr> <tr> <td>20</td> <td>15</td> <td>67</td> </tr> <tr> <td>16</td> <td>25</td> <td>111</td> </tr> <tr> <td>12</td> <td>25</td> <td>111</td> </tr> </tbody> </table>	Contact Size	Min. Pounds	Min. Newtons	23	6	27	20	15	67	16	25	111	12	25	111	EIA-364-29
Contact Size	Min. Pounds	Min. Newtons															
23	6	27															
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Contact Separation Force	<table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Contact Size</th> <th>Min. Ounces</th> <th>Min. Newtons</th> </tr> </thead> <tbody> <tr> <td>23</td> <td>0.5</td> <td>0.14</td> </tr> <tr> <td>20</td> <td>0.7</td> <td>0.19</td> </tr> <tr> <td>16</td> <td>2.0</td> <td>0.56</td> </tr> <tr> <td>12</td> <td>3.0</td> <td>0.83</td> </tr> </tbody> </table>	Contact Size	Min. Ounces	Min. Newtons	23	0.5	0.14	20	0.7	0.19	16	2.0	0.56	12	3.0	0.83	SAE AS39029
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23	0.5	0.14															
20	0.7	0.19															
16	2.0	0.56															
12	3.0	0.83															
Mating and Unmating Force	Maximum mating/unmating force: (6 pounds) + (# of size 23 contacts X .40) + (# of size 12 or #16 contacts X 1.8)	EIA-364-13															
Residual Magnetism	2 μ maximum.	EIA-364-54															

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About Series 79 Micro-Crimp Shell Plating Options



Micro-D connector shells are made of aluminum alloy and are coated to improve corrosion resistance. Electroless nickel plating is used for instrumentation, avionics and space applications where corrosion protection is not critical. Cadmium plating provides superior corrosion protection, but the United States Department of Defence (DOD) has mandated the elimination of cadmium from DOD weapons systems because of toxicity concerns. The European Union has also restricted the use of cadmium on electronics equipment (RoHS).

Glenair's **1000 Hour Grey™** nickel-PTFE plating meets the need for a high-performance cadmium replacement with excellent corrosion resistance, durability and excellent conductivity. In this catalog you will find three standard shell coatings: electroless nickel, Nickel-PTFE and black zinc-nickel. The table below shows additional plating options that are also available on any Series 79 Micro-Crimp connector.

MICRO-CRIMP SHELL PLATING CODES

Shell Plating	Plating Code	Salt Fog* (Hours)	Cadmium Free	Hexavalent Chromium Free	Conductivity	Compatible with EMI Spring	Typical Applications
Electroless Nickel	M	48	Yes	Yes	Excellent	Yes	Space vehicles, missiles, avionics, unmanned vehicles, instrumentation
Nickel-PTFE	MT	500	Yes	Yes	Excellent	Yes	Harsh environment, soldier systems, communications equipment
Zinc-Nickel with Olive-Drab Chromate	ZN	500	Yes	No	Good	No	Harsh environment, soldier systems, unmanned and manned vehicles
Zinc-Nickel with Black Chromate	ZNU	500	Yes	No	Good	No	Harsh environment, soldier systems, unmanned and manned vehicles
Cadmium with Olive-Drab Chromate	N	500	No	No	Excellent	No	Harsh environment, military equipment
Cadmium with Yellow Chromate	J	500	No	No	Excellent	No	General purpose military equipment
Black Anodize	C	336	Yes	Yes	Non-Conductive	N/A	Applications where EMI shielding is not required
Gold	Z2	48	Yes	Yes	Excellent	Yes	Space
Chem Film	E	48	Yes	No	Excellent	Yes	Avionics

* Salt spray test in accordance with ASTM B117

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