	TYPE	PRODUCT SPECIFICATION		NUMBER	BUS-12-098	
	TITLE			PAGE	REVISION	
Crimp to Wire Male Pin Electrical Contact			1 of 6	E		
			AUTHORIZED BY	DATE		
			H.T. Brewbaker	2-Jun-06		
			CLASSIFICATION			
			UNRESTRICTED			

1.0 SCOPE:

- 1.1 This specification sets forth the physical and performance parameters for the crimp to wire pin when mated with a Mini PV™ contact.

2.0 APPLICABLE DOCUMENTS:

- 2.1 The following documents and specifications form part of this specification to the extent specified herein:

MIL-C-45204-Gold Plating: Electro deposited.
MIL-STD-202-Test Methods for electronic parts.
ASTM B-36-71, Alloy 260-Brass
UNS-C26000-Brass

3.0 PHYSICAL PARAMETERS:

3.1 Qualifications

- 3.1.1 The pin furnished under this specification shall be a product which has been tested and passed the qualification test specified herein.

3.2 Definitions

- 3.2.1 Crimp To Wire Pin: A crimp to wire pin is a metallic .025 square contact normally crimped to wire and intended to mate with a Mini PV™ contact. The pin, incorporating wire and insulation barrels, can be crimped to 18 to 32 AWG wire.

3.3 Materials


- 3.3.1 Contact Material: The pin shall be fabricated from brass conforming to ASTM B-36-71, Alloy 260, 3/4 hard, Federal Spec. QQ-B-613 A and UNS-C26000.

3.4 Finish

- 3.4.1 All contact surfaces shall have a smooth finish and be free of die marks and burrs. The inside of the wire and insulation crimp barrels shall have a fine pitch knurl.

- 3.4.2 Contact Body Plating - the contact body will be supplied with any of three plating specifications.

- 3.4.2.1 The pin contact area plating shall be .000050 inch thick gold over .000050 inch thick nickel underplate. Gold plating conforming to MIL-G-45204.
- 3.4.2.2 The pin contact area plating shall be .000100 inch thick 60/40 tin-lead.
- 3.4.2.3 The pin contact area plating shall be .000100 inch to .000160 inch hot dip tin.

	TYPE	PRODUCT SPECIFICATION		NUMBER	BUS-12-098			
	TITLE	Crimp to Wire Male Pin Electrical Contact			PAGE	2 of 6	REVISION	E
				AUTHORIZED BY	H.T. Brewbaker		DATE	2-Jun-06
				CLASSIFICATION	UNRESTRICTED			

3.5 Banned/Restricted Substances

All product where the part number ends in "LF" meet the European Union directives and other country regulations as described in GS-22-008. The part numbers that do not end in "LF" meet all regulations except for Pb in SnPb plating, if available. Tin plated "LF" product has 100% tin plating in the interface and has not been tested for whisker growth in all interconnect environments.

3.6 Manufacturing Processability

This product is not designed to be exposed to manufacturing solder processes.

4.0 PERFORMANCE PARAMETERS:

The crimp to wire pin shall meet the mechanical, electrical and environmental parameters specified herein when mated with a Mini PV™ contact. Test shall be performed in accordance with MIL-STD-202 where applicable.

4.1 Mechanical

4.1.1 Crimp Tensile Strength: Pins crimped to wires shall be placed in a standard tensile testing machine, and an axial load applied. The wire shall not pull out of the wire barrel, nor break, nor become distorted to such an extent that it is unusable before the minimum strength is reached. Minimum tensile strength being 75% of wire tensile strength.

4.2 Electrical


4.2.1 Initial Contact Resistance: D.C. resistance shall be measured using the four point Voltage Current Method. The ohmmeter used must have an accuracy of at least +/- 0.5 milliohms. The digital readout shall be capable of 3 digit display with accuracy of +/- 1 in the last digit. the probe shall provide suitable metal-to-metal contact. The contact resistance, when measured as described above and mated with a Mini PV,™ shall be 3.0 milliohms maximum initial and 5.0 milliohms maximum after aging.

4.2.2 Current Carrying Capacity: A pin mated with a Mini PV™ contact and subjected to 3 Amperes continuous load shall show no more than 30°C temperature rise above ambient.


4.2.3 Wear Test: All pins cycled 100 times with a Mini PV™ contact shall meet the initial contact resistance as described in 4.2.1.

4.2.4 Temperature Cycling: All pins submitted to temperature cycling test MIL-STD-202C Method 102A shall be tested and shall meet contact resistance as described in 4.2.1.

4.2.5 Flowers of Sulphur Aging Test: Unmated pins shall be placed in an enclosure containing flowers of sulphur and water for 10 days. Temperature within the enclosure shall be 150°F +/- 10°F and 80% relative humidity. After aging, terminals shall be stabilized at room temperature and subjected to 5 cycles of mating with Mini PV's™. Pins shall then be tested for and meet contact resistance as described in 4.2.1.

	TYPE	PRODUCT SPECIFICATION		NUMBER	BUS-12-098			
	TITLE	Crimp to Wire Male Pin Electrical Contact			PAGE	3 of 6	REVISION	E
				AUTHORIZED BY	H.T. Brewbaker		DATE	2-Jun-06
				CLASSIFICATION	UNRESTRICTED			

- 4.2.6 Setup for Flowers of Sulphur Test using an enclosure with a volume of approximately 32000 cubic centimeters, 100 grams of sulphur and 500 milliliters of distilled water. A quantity of 345 grams of anhydrous sodium carbonate shall be added to the distilled water. Arrangement of material during test shall be as follows:
- 4.2.6.1 Water on the bottom in a 150 millimeter diameter by 75 millimeter high beaker.
 - 4.2.6.2 Sulphur in a 150 milliliter beaker placed inside 150 millimeter x 75 millimeter beaker.
 - 4.2.6.3 Test samples placed on a rack suspended over the sulphur and facing the water.
- 4.2.7 Aging Test: After the initial contact resistance test, contaminate each pin with one of the following contaminants:
- a. synthetic dust - formulation II
 - b. artificial perspiration
- Contacts contaminated with a and b must be tested in the unmated condition and subjected to 50 cycles in the following environment.
1. 50⁰ +_ 10⁰F 50% maximum R.H. 4 hours
 2. 170⁰ +_ 10⁰F 92% +_ 3% R.H. 4 hours
 3. 170⁰ +_ 10⁰F 50% R.H. 16 hours
- After the 50 cycles have been completed, the pins shall be stabilized to room temperature (70⁰F +_ 10⁰F). Pins shall then be subjected to 15 cycles (one cycle equals one insertion and one withdrawal) with a Mini PV™ contact. Resistance shall not exceed 5.0 milliohms when measured as described in 4.2.1.

	TYPE	PRODUCT SPECIFICATION		NUMBER	BUS-12-098		
	TITLE Crimp to Wire Male Pin Electrical Contact			PAGE	4 of 6	REVISION	E
			AUTHORIZED BY	H.T. Brewbaker		DATE	2-Jun-06
			CLASSIFICATION UNRESTRICTED				


4.2.8 Test Method for 4-4-16 aging test:

a. A synthetic Dust II is applied to contacts with a 1/2 inch (maximum) wide brush. After application, samples shall be tapped with fingers to remove excess dust.

1. Synthetic Dust II formation:

	<u>Parts</u>
KNO ₃	1.81
KCl	2.48
KF	1.48
NH ₄ Cl	4.46
NH ₄ NO ₃	6.67
Mg(NO ₃) .2.6H ₂ O	2.64
MgSO ₄ .7H ₂ O	38.1
CaSO ₄	3.39
CaO.Al ₂ O ₃ .S1O ₂	20.7
TiO ₂	0.33
V ₂ O ₅	0.089
MnO ₂	0.10
Fe ₂ O ₃	9.42
Cu SO ₄ .5H ₂ O	1.57
ZnO	1.25
Hg Cl ₂	0.136
Pb Cl ₂	2.69
Pb SO ₄	1.47
Card Dust *	17.2

*NOTE: Paper fiber 100% pass 80 mesh screen. Estimated 50% by volume consisting of fibers larger and 50% smaller than 75 +/- 25 microns measured on long dimension.

	TYPE	PRODUCT SPECIFICATION		NUMBER	BUS-12-098	
	TITLE			PAGE	REVISION	
Crimp to Wire Male Pin Electrical Contact			5 of 6	E		
			AUTHORIZED BY	DATE		
			H.T. Brewbaker	2-Jun-06		
			CLASSIFICATION			
			UNRESTRICTED			

75 micron fiber having average width of 15 microns.

b) Artificial perspiration formulation

KCl	10%
NaCl	10%
NaH ₂ PO ₄	.005%

Lactic Acid .005%
Balance Distilled Water
Adjusted to PH of 4 with 10% sulfuric acid as required.

4.2.9 Salt Spray: All pins submitted to salt spray erosion tests MIL-STD-202C method 101B shall be tested for an exhibit contact resistance as described in 4.2.1.


5.0 QUALITY ASSURANCE PROVISIONS:

5.1 Test Conditions: Unless otherwise specified tests and examinations shall be conducted under any combination of conditions within the following ranges:

Temperature: 20 - 30°C
Relative Humidity: 80% maximum
Barometric Pressure: 24 to 31 inches mercury

5.2 Test Samples: The samples shall consist of 25 crimped pins and 25 Mini PV™ contacts representative of production.

5.3 Samples of production pins shall be examined to insure that all requirements of Section 3 have been met, except performance. Final examination of product shall include a thorough examination to insure that the pin is free from mechanical defects and that there are no cracks around the crimp area. Inspection shall be made with a device having magnification power of approximately 3 diameters.

	TYPE	PRODUCT SPECIFICATION		NUMBER	BUS-12-098	
	TITLE			PAGE	REVISION	
Crimp to Wire Male Pin Electrical Contact			6 of 6		E	
			AUTHORIZED BY		DATE	
			H.T. Brewbaker		2-Jun-06	
			CLASSIFICATION			
			UNRESTRICTED			

REVISION SHEET

<u>REV</u>	<u>PAGE</u>	<u>DESCRIPTION</u>	<u>EC #</u>	<u>DATE</u>
A	All	RELEASED.	V01294	10/26/90
B	All	Remove "Male" from spec, add "Trade Work" to PV callouts and correct Chemical callouts.	V01722	07/27/00
C	All	Revised format to be consistent with GS-01-001, and change BERG, Dupont, etc. references to FCI.	V01904	08/02/00
D	1, 2	Add sections 3.4.2.3, 3.5 and 3.6 for lead free Information.	V05-1113	12/14/05
E	All	Change logo	V06-0526	06/02/06