## SABRE .125(3.18) X .020 (0.51) FLAT BLADE SYSTEM WITH TPA

### 1.0 SCOPE

This Product Specification covers the 7.50 mm (.295 inch) centerline connector series with 18 to 14 AWG wire using crimp technology with tin plating.

### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND SERIES NUMBER(S)

| PRODUCT NAME | PART NUMBER |
|---|---|
| Plug Housing, 2 circuit | 43680-1002, -2002, -3002 |
| Plug Housing, 3 circuit | 43680-1003, -2003, -3003 |
| Plug Housing, 4 circuit | 43680-1004, -2004, -3004 |
| Plug Housing, 5 circuit | 43680-1005, -2005, -3005 |
| Plug Housing, 6 circuit | 43680-1006, -2006, -3006 |
| Right Angle Header, 2 circuit | (see SDA-43160-****) |
| Right Angle Header, 3 circuit | (see SDA-43160-****) |
| Right Angle Header, 4 circuit | (see SDA-43160-****) |
| Right Angle Header, 5 circuit | (see SDA-43160-****) |
| Right Angle Header, 6 circuit | (see SDA-43160-****) |
| Right Angle Header, 8 circuit | (see SDA-43160-****) |
| Vertical Header, 2 circuit | (see SDA-43160-****) |
| Vertical Header, 3 circuit | (see SDA-43160-****) |
| Vertical Header, 4 circuit | (see SDA-43160-****) |
| Vertical Header, 5 circuit | (see SDA-43160-****) |
| Vertical Header, 6 circuit | (see SDA-43160-****) |
| Vertical Header, 8 circuit | (see SDA-43160-****) |
| Receptacle Housing, 2 circuit | 44441-1002, -2002, -3002 |
| Receptacle Housing, 3 circuit | 44441-1003, -2003, -3003 |
| Receptacle Housing, 4 circuit | 44441-1004, -2004, -3004 |
| Receptacle Housing, 5 circuit | 44441-1005, -2005, -3005 |
| Receptacle Housing, 6 circuit | 44441-1006, -2006, -3006 |
| Receptacle Housing, 8 circuit | 44441-1008, -2008, -3008 |
| Male Tab Crimp Terminal, Small | 43178-1002 |
| Male Tab Crimp Terminal, Large | 43178-2002 |
| Male Tab Crimp Terminal, Side by Side | 43178-3002 |
| Receptacle Terminal, Small | 43375-0001 |
| Receptacle Terminal, Large | 43375-1001 |

### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS
See the appropriate sales drawings for information on dimensions, materials, platings and markings.

### 2.3 SAFETY AGENCY APPROVALS
UL File #E29179
CSA File #LR19980
TUV Certificate #R72130381

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS
See the appropriate sales drawings for necessary referenced documents and specifications.

## 4.0 RATINGS

### 4.1 VOLTAGE
600 Volts AC (RMS)

### 4.2 CURRENT AND APPLICABLE WIRES

| Circuit Size | Wire Gauge | Configuration | Current Rating (Amps) |
|---|---|---|---|
| 2 | 14 | Wire To Wire | 18 |
| | 16 | | 13 |
| | 18 | | 12 |
| 4 | 14 | | 16 |
| | 16 | | 14 |
| | 18 | | 11 |
| 6 | 14 | | 16 |
| | 16 | | 13 |
| | 18 | | 10 |
| 2 | 14 | Wire To Board | 18 |
| | 16 | | 15 |
| | 18 | | 13 |
| 6 | 14 | | 16 |
| | 16 | | 14 |
| | 18 | | 11 |
| 8 | 14 | | 14 |
| | 16 | | 13 |
| | 18 | | 12 |

NOTE: The current capacity is based on each circuit position being loaded with the given wire size, and the rated current applied. The capacity for other applications may be higher.

### 4.3 TEMPERATURE
Operating: - 40°C to + 75°C
Nonoperating: - 40°C to + 100°C

## 5.0 PERFORMANCE

### 5.1 ELECTRICAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|---|---|---|---|
| 1 | **Contact Resistance (Low Level)** | Mate connectors: apply a maximum voltage of **20** mV and a current of **100** mA. (Measurement locations in Section 7.0) | **30** milliohms MAXIMUM [initial] |
| 2 | **Insulation Resistance** | Unmate & unmount connectors: apply a voltage of **500** VDC between adjacent terminals and between terminals to ground. | **1000** Megohms MINIMUM |
| 3 | **Dielectric Withstanding Voltage** | Mate connectors: apply a voltage of 5000 VAC for **1** minute between adjacent terminals and between terminals to ground. | No breakdown; current leakage < **5** mA |
| 4 | **Temperature Rise (via Current Cycling)** | Mate connectors: measure the temperature rise at the rated current after **96** hours, Followed by 500 hours of current cycling (**45** minutes ON and **15** minutes OFF perhour). | Temperature rise: **+30**°C MAXIMUM |

**5.2 MECHANICAL REQUIREMENTS**

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|---|---|---|---|
| **5** | **Connector Mate and Unmate Forces** | Mate and unmate connector (male to female) at a rate of **25 ± 6** mm (**1 ± ¼** inch) per minute. (Gage dimensions in Section 7.0) | **13.3** N (**3** lbf) MAXIMUM insertion force & **2.2** N (**.5** lbf) MINIMUM withdrawal force |
| **6** | **Terminal Retention Force from Housing** (Receptacle Terminal) | Axial pullout force on the terminal in the housing at a rate of **25 ± 6** mm (**1 ± ¼** inch) per minute. | **67** N (**15** lbf) MINIMUM retention force w/ TPA not activated; **125** N (**25** lbf) MINIMUM retention force w/ TPA activated |
| **7** | **Terminal Retention Force from Housing** (Male Tab Terminal) | Axial pullout force on the terminal in the housing at a rate of **25 ± 6** mm (**1 ± ¼** inch) per minute. | **67** N (**15** lbf) MINIMUM retention force w/ TPA not activated; **100** N (**22.5** lbf) MINIMUM retention force w/ TPA activated |
| **8** | **Durability** | Mate connectors up to **25** cycles at a maximum rate of **10** cycles per minute prior to Environmental Tests. | **3** milliohms MAXIMUM (change from initial) |
| **9** | **Vibration (Random)** | Subject mated connectors to vibration with an amplitude of **1.52** mm (**.060** inch) peak to peak; a sweep of 10-55-10 hertz in 1.0 min.; and a duration of 2.0 hours in the ±X,±Y,±Z axes. | **5** milliohms MAXIMUM (change from initial) & Discontinuity < **1** microsecond |
| **10** | **Shock (Mechanical)** | Mate connectors and shock at **50** g's with ½ sine wave (11 milliseconds) shocks in the ±X,±Y,±Z axes (**18** shocks total). | **5** milliohms MAXIMUM (change from initial]) & Discontinuity < **1** microsecond |
| **11** | **Wire Pullout Force (Axial)** | Apply an axial pullout force on the wire at a rate of **25 ± 6** mm (**1 ± ¼** inch). | 14 AWG: **222** N (**50** lbf) 16 AWG: **200** N (**45** lbf) 18 AWG: **133** N (**30** lbf) MINIMUM pullout force |
| **12** | **Wire Pullout Force (Right Angle)** | Apply a right angle pullout force on the wire at a rate of **25 ± 6** mm (**1 ± ¼** inch). | ******* N (******* lbf) MINIMUM pullout force **{**Recommended minimum value: 75% of tensile strength of the wire**}** |
| **13** | **Terminal Insertion Force (into Housing)** | Apply an axial insertion force on the terminal at a rate of **25 ± 6** mm (**1 ± ¼** inch). | **4.4** N (**1.0** lbf) MAXIMUM insertion force |

### 5.3 ENVIRONMENTAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|---|---|---|---|
| **14** | **Shock (Thermal)** | Mate connectors; expose to **10** cycles of:<br>Temperature °C — Duration (Minutes)<br>**-40 +0/-3** — **30**<br>**+105 +3/-0** — **30** | **3** milliohms MAXIMUM (change from initial);<br>Visual: No Damage |
| **15** | **Thermal Aging** | Mate connectors; expose to:<br>**240** hours at **105 ± 2°**C | **5** milliohms MAXIMUM (change from initial]);<br>Visual: No Damage |
| **16** | **Humidity (Steady State)** | Mate connectors: expose to a temperature of **40 ± 2°**C with a relative humidity of **90-95**% for **96** hours. | **5** milliohms MAXIMUM (change from initial)<br>&<br>Dielectric Withstanding Voltage:<br>No Breakdown at **500** VAC<br>&<br>Insulation Resistance:<br>**1000** Megohms MINIMUM<br>&<br>Visual: No Damage |
| **17** | **Humidity (Cyclic)** | Mate connectors: cycle per EIA-364-31: **24** cycles at temperature between **25 ± 3°**C and **65 ± 3°**C at **95 ± 5**% relative humidity and **25 ± 3°**C and **-10 ± 3°**C with humidity not controlled. Dwell time of **1.0** hour; ramp time of **0.5** hours. | **5** milliohms MAXIMUM (change from initial)<br>&<br>Dielectric Withstanding Voltage:<br>No Breakdown at **500** VAC<br>&<br>Insulation Resistance:<br>**1000** Megohms MINIMUM<br>&<br>Visual: No Damage |
| **18** | **Solderability** | Solder time 3±0.5 seconds @ 230**±5°**C (A-43160-**** only) | Solder coverage:<br>**95**% MINIMUM (per **SMES-152**) |
| **19** | **Salt Spray** | Mate connectors:<br>Duration: **48** hours exposure;<br>Atmosphere: salt spray from a **5**% solution;<br>Temperature: **35 +1/-2°**C | **10** milliohms MAXIMUM (change from initial)<br>&<br>Visual: No Damage |
| **20** | **IR Process Soldering** | Molex IR Profile | Dimensional: Conformance to Sales Drawing requirements;<br>Visual: No Damage |

### 6.0 PACKAGING

See the appropriate sales drawings for information related to packaging requirements.