

CERTIFICATE OF COMPLIANCE

Certificate Number 20140728-E28476
Report Reference E28476-19961119
Issue Date 2014-JULY-28

Issued to: TYCO ELECTRONICS CORP
2901 FULLING MILL RD
MIDDLETOWN PA 17057-3170

**This is to certify that
representative samples of**

COMPONENT - CONNECTORS FOR USE IN DATA, SIGNAL,
CONTROL AND POWER APPLICATIONS

Component Connectors - FFC (Flexible Flat Cable) and FPC
(Flexible Printed Circuit) Connector Series

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.



Standard(s) for Safety:

UL 1977 – Component Connectors for Use in Data, Signal,
Control and Power Applications; C22.2 No.182.3 - Special Use
Attachment Plugs, Receptacles and Connectors; UL 746C -
Polymeric Materials - Use in Electrical Equipment Evaluations

Additional Information:

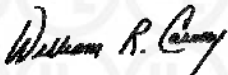
See the UL Online Certifications Directory at
www.ul.com/database for additional information

Only those products bearing the UL Recognized Component Marks for the U.S. and Canada should be considered as being covered by UL's Recognition and Follow-Up Service and meeting the appropriate U.S. and Canadian requirements.

The UL Recognized Component Mark for the U.S. generally consists of the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark: , may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual recognitions. The UL Recognized Component Mark for Canada consists of the UL Recognized Mark for Canada:  and the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Recognized Component Mark on the product.



William R. Carney, Director, North American Certification Programs

UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at www.ul.com/contactus



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DESCRIPTION

PRODUCT COVERED:

Component Connectors - FFC (Flexible Flat Cable) and FPC (Flexible Printed Circuit) Connector Series.

RATINGS:

| Series | Current (A) | Voltage (V) |
|--|-------------|-------------|
| FPC Series Type 0.50 mm Centerline Surface Mount | 0.5 | 50 |

GENERAL:

These devices are multi-pole connectors employing contacts of the solder, insulation displacement, crimp and pressure-connection termination types for use with printed circuit boards, cable, ribbon cable and discrete wire where the acceptability of the combinations is determined by Underwriters Laboratories Inc.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

Use - For use only in complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

Conditions of Acceptability - In order to be judged acceptable as a component of electrical equipment, the following conditions should be met.

1. These devices should be used only where they will not interrupt the current.
2. Contacts 86556-4 and 86565-2 have been investigated for current of 3.45 Amperes through each pole with a maximum temperature rise of 30°C. Other device contacts have not been tested for current-carrying capability.
3. The suitability of the mounting means shall be determined in the end use.
4. The electrical and mechanical suitability of the wiring terminals shall be determined in the end use. These devices have not been evaluated for Conductor Secureness testing.

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5. The placement of these devices within the equipment enclosure should be such that spacings between the live parts and the equipment are suitable for the particular application.

6. The suitability of the minimum 0.381 mm (0.015 in) spacings between live parts of opposite polarity (including adjacent poles) and between live parts and exposed dead metal parts shall be determined in the end use. Dielectric *testing has not been performed with the exception of the 1.25 FFC product line.

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7. The electrical and mechanical contact between the connector and the printed circuit board is to be judged in the end-use equipment.

8. The electrical and mechanical contact between the connector and the ribbon cable is to be judged in the end-use equipment.

9. The suitability of the insulating materials used in the molded bodies shall be judged in the end-use equipment.

10. The operating temperature of these devices should not exceed the temperature ratings of the insulating materials. These materials may be used interchangeably at a maximum temperature of 65°C.

11. Accessories such as: detent windows, keying plug, locking catch, narrow and wide mounting ears, mounting ears, cable strain relief, polarizing features, wire strain relief, zero insertion force hardware, etc. have not been evaluated and should be judged in the end-use application.

12. Dielectric-Voltage Withstand testing has been conducted between adjacent poles at a potential of 1400 V ac of the 1.25 FFC connectors without the use of mating flexible print for a voltage rating of 200 V. The interface between the connector and the flex print should be evaluated in the end product.

13. These devices employ insulating materials with properties as tabulated below at the minimum thickness employed in the connector housing, the suitability of the insulating materials based on the documented values shall be determined in the end-use application. Please note the values specified in the table when multiple materials are indicated represent the minimum values for the group of materials.

| Cat. No. | Insulating Material (#) | Measured Minimum Thickness | Flame Class | HWI | HAI | RTI Elec | Max Operating Temp, °C |
|--|-------------------------|----------------------------|-------------|-----|-----|----------|------------------------|
| RCPT,DBL ROW W/ DETENTS, .100, FFC | A | 0.48 mm | HB | 3 | 0 | 130 | 130 |

(#) - Code for Insulating Body Material.

- A. Tyco RM# 1573524-3
1. Dielectric strength (kV/mm): 21
2. CTI: 1

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| Cat. No. | Insulating Material (#) | Measured Minimum Thickness | Flame Class | HWI | HAI | RTI Elec | Max Operating Temp, °C |
|---|-------------------------|----------------------------|-------------|----------|----------|-----------------|------------------------|
| FPC Series Type 0.50mm Centerline Surface Mount (housing) | B | 0.30 mm | V-0 | - | - | 130 | 130 |
| FPC Series 0.50mm Centerline Surface Mount Type (actuator) | C | 0.31 mm | V-0 | 0 | 0 | 150 | 130 |
| FPC Series 0.50mm Centerline Surface Mount Type (actuator) | D | 0.31mm | (Note 1) | - | - | 140 (Note 2) | 120 |
| FLEXIBLE PRINTED CIRCUIT CONNECTOR SERIES 1.00 MM [0.039 IN] CENTERLINE HORIZONTAL ZIF | B | 0.75mm | V0 | - | - | 130 | 130 |

(#) - Code for Insulating Body Material.

- B. Tyco RM# 1573013
1. Dielectric strength (kV/mm): -
2. CTI: -
- C. Tyco RM# 1573267
1. Dielectric strength (kV/mm): -
2. CTI: 1
- D. TE RM# 704412
1. Dielectric strength (kV/mm): 13
2. CTI: 2

Note: 1. The 12 mm end product flame testing per UL 746C conducted since thickness is less than the minimum Recognized material thickness.

Note: 2. The RTIs are based on the established values at the smallest thickness.

14. These devices have been subjected to the Temperature test with the rated currents and maximum temperature value tabulated below.

| Series | Current, A | Maximum Temperature, rise °C |
|--|------------|------------------------------|
| FPC Connector Series Type 0.50mm Centerline Surface Mount | 0.5 | 9.6 |