

File E28476  
Project 02ME06829

April 30, 2002

REPORT

on

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

Tyco Electronics  
Harrisburg, PA

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D E S C R I P T I O N

PRODUCT COVERED:

USR/CNR Component Connector, 5.0 mm Power Key Connector Series. Specific Cat. Nos. may be provided Prefix and/or Suffixes for commercial purposes only".

USR/CNR Component Connector, 5.0 mm Power Key Connector Series, Cat. Nos. 1376382-5, 5-1376382-1, 5-1376383-1, 5-1376386-1, 5-1376387-1, 6-1376383-2, 6-1376387-2, 7-1376382-3, 7-1376383-3, 7-1376387-3, 8-1376382-4, 1376382-6, 1376383-6, 1376384-6.

USR/CNR Component Connector, 5.0 mm Power Key Connector Series, Cat. Nos. X-1376384-Y, X-1376385-Y.

USR/CNR Component Connector, 5.0 mm Power Key Connector Series, Cat. Nos. 2333614-2, 2333620-2, 2-1376382-6, 1-1376383-6, 1376386-6, 2-1376386-6.

USR/CNR Component Connector, 5.0 mm Power Key Connector Series 2407038-3, 2407038-4, 2408508-6.

USR/CNR Component Connector, 5.0 mm Power Key Connector Series, Cat. Nos. 2371335-X, 2371336-X, X-2371337-Y, X-2371224-Y.

**USR/CNR Component Connector, 5.0 mm Power Key Connector Series X-2174298-6, X-2452765-6, X-2174299-Y.**

GENERAL:

These devices are multi-pole header and plug connectors employing contacts of the solder termination and crimp termination respectively.

USR - Indicates investigation to United States requirements as noted in the Test Record.

CNR - Indicates investigation to Canadian National Standards requirements as noted in the Test Record.

RATINGS:

Cat. No.	No. of Poles	Wire Size	Contact	Max Voltage (V)	Max Current (A)
		<u>(AWG)</u>	<u>Cat. No.</u>		
1376388	2	24	1376348	300V	3
1376388	2	20	1376348	300V	7
1376388	2	20	1376347	300V	7
1376388	2	16	1376347	300V	10
1376393	6	24	1376348	300V	2
1376393	6	20	1376348	300V	5
1376393	6	20	1376347	300V	5
1376393	6	16	1376347	300V	8

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## DESCRIPTION

## RATINGS: (CONT'D)

Cat. No.	No. of Poles	Wire Size (AWG)	Contact Cat. No.	Max Voltage (V)	Max Current (A)
2333145-4, 2333145-3, 2333145-2, 2333145-1, 1376382-6	2	-	-	300V	@1
2333140-1, 2333140-6	6	-	-	300V	@1
2333147-4, 2333147-3, 2333147-2, 2333147-1	2	24	1376348	300V	3
	2	20	1376348	300V	7
	2	20	1376347	300V	7
	2	16	1376347	300V	10
2333143-1	6	24	1376348	300V	2
	6	20	1376348	300V	5
	6	20	1376347	300V	5
	6	16	1376347	300V	8
X-1376384-Y	Up to 4	16	1376347	300V	8
		20	1376347 or 1376348	300V	5
		24	1376348	300V	2
X-1376385-Y	Up to 6	16	1376347	300V	8
		20	1376347 or 1376348	300V	5
		24	1376348	300V	2
2407038-3, 2407038-4, 2408508-6	2407038-3 (3 poles), 2407038-4 (4 poles), 2408508-6 (6 poles)	16	177917-1	300V	9
		18	177917-1	300V	7
		20	177917-1	300V	6
		20	177916-1	300V	6
		20	2323853-1	300V	6
2-1376382-6	2	16	1376347-1 or 1376348-1	300V	15
		18			12
1-1376383-6	3	16	1376347-1 or 1376348-1	300V	14
		18			11.5
1376386-6, 2-1376386-6	4	16	1376347-1 or 1376348-1	300V	10
		18			8.5
<b>X-2452765-6</b>	<b>2</b>	<b>14</b>	-	<b>300</b>	<b>15</b>
<b>X-2174298-6</b>	<b>3</b>	<b>14</b>	-	<b>300</b>	<b>15</b>
<b>X-2174299-Y</b>	<b>3</b>	<b>14</b>	<b>2446270-1</b>	<b>300</b>	<b>15</b>

@1: The current rating of Header assembly is according to the mating plugs showed in ILL. 4

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## D E S C R I P T I O N

RATINGS: (CONT'D)

Cat. No.	No. of Poles	Wire Size (AWG)	Contact Cat. No.	Max Voltage (V)	Max Current (A)
2371335-X	4	16	-	300V	8
		20			5
		24			2
2371336-X	6	16	-	300V	8
		20			5
		24			2
X-2371337-Y	2	16	-	300V	10
		20			7
		24			3
X-2371224-Y	2	16	1376347	300V	10
		20	1376347 or 1376348	300V	7
		24	1376348	300V	3

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NOMENCLATURE:

The **Cat.** Nos. 2371335-X & 2371336-X are designated as follows:

Example:  $\frac{X}{I}$

I: - X can be equal to 1-4, and represents keying and color.

The **Cat.** Nos. X-2371337-Y & X-2371224-Y are designated as follows:

Example:  $\frac{X}{I}$        $\frac{Y}{II}$

I: - X can be equal to 1, or be omitted, and represents keying and color.

II: - Y can be equal to 0-9, and represents keying and color.

The **Cat. No. X-2174298-6** is designated as follows:

Example:  $\frac{X}{I}$

I: - X can be equal to 0-3, and represents keying and color.

The **Cat. No. X-2452765-6** is designated as follows:

Example:  $\frac{X}{I}$

I: - X can be equal to 0-2, and represents keying and color.

The **Cat. No. X-2174299-Y** is designated as follows:

Example:  $\frac{X}{I}$        $\frac{Y}{II}$

I: - X can be equal to 0-3, and represents keying and color.

II: - Y can be equal to 1-4, and represents keying and color.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

Use - For use only in or with 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 have not been tested for interrupting the flow of current by connecting or disconnecting the mating connector. These devices should be used only where they will not interrupt the current.

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\*2. When subjected to the Temperature test described in UL 1977, the Standard for Component Connectors for Use in Data, Signal, Control and Power Applications and Canadian National Standards C22.2 No.182.3, these devices exhibited a maximum temperature rise as tabulated below. The conductors terminated by the device and other associated components are to be reviewed in the end-use to determine whether the temperature rise from the connector exceeds their maximum operating temperature ratings

Cat. No.	Poles	Wire Size (AWG)/Contact	Current (A)	Max Temp (°C)	Max Rise (°C)
1376388	2	24/Cat. No. 1376348	3		26.3
5.5					
1376388	2	20/Cat. No. 1376348	7	36.2	15.4
1376388	2	20/Cat. No. 1376347	7	36.2	15.4
1376388	2	16/Cat. No. 1376347	10	42.5	21.7
1376393	6	24/Cat. No. 1376348	2	26.8	6.0
1376393	6	20/Cat. No. 1376348	5	38.1	17.6
1376393	6	20/Cat. No. 1376347	5	37.1	16.6
1376393	6	16/Cat. No. 1376347	8	44.1	23.2
2-1376382-6	2	16/Cat. No. 1376347	15	53.6	28.6
2-1376382-6	2	18/Cat. No. 1376348	12	48.5	23.5
1-1376383-6	3	16/Cat. No. 1376347	14	53.3	28.3
1-1376383-6	3	18/Cat. No. 1376348	11.5	47.8	22.8
1376386-6	4	16/Cat. No. 1376347	10	40.1	15.1
1376386-6	4	18/Cat. No. 1376348	8.5	38.3	13.3

Cat. No.	Poles	Contact PN	Wire Size (AWG)	Current (A)	Max Temp (°C)	Max Rise (°C)
<b>X-2174298-6 (Representing X-2452765-6)</b>	<b>3</b>	-	<b>14</b>	<b>15</b>	<b>53.1</b>	<b>28.1</b>
<b>X-2174299-Y</b>	<b>3</b>	<b>2446270-1</b>	<b>14</b>	<b>15</b>	<b>48.4</b>	<b>23.4</b>
2407038-4 (representing 2407038-3)	4	177917-1	16	9	40.6	15.6
	4	177917-1	18	7	38	13
	4	177917-1	20	6	39.6	14.6
	4	177916-1	20	6	37.4	12.4
	4	2323853-1	20	6	38.8	13.8
2408508-6	6	177917-1	16	9	42.7	17.7
	6	177917-1	18	7	42.5	17.5
	6	177917-1	20	6	43.7	18.7
	6	177916-1	20	6	45	20
	6	2323853-1	20	6	42.9	17.9



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Cat. No.	Poles	Contact PN	Wire Size (AWG)	Current (A)	Max Temp (°C)	Max Rise (°C)
2371336-1, representing series 2371335-X and 2371336-X	6	-	16	8	105	<u>11.6</u>
	6		20	5	105	<u>9.6</u>
	6		24	2	105	<u>3.8</u>
2371337-1, representing series X-2371337-Y	2	-	16	10	105	<u>14.9</u>
	2		20	7	105	<u>12.6</u>
	2		24	3	105	<u>4.7</u>
2371224-1, representing series X-2371224-Y	2	1376347-1	16	10	105	<u>15.2</u>
	2	1376347-1	20	7	105	<u>11.2</u>
	2	1376348-1	20	7	105	<u>12.8</u>
	2	1376348-1	24	3	105	<u>4.9</u>

3. These devices may be used at potentials not exceeding 300 V based on Dielectric Voltage-Withstand testing conducted at 1600 V ac in accordance with UL 1977, the Standard for Component Connectors for Use in Data, Signal, Control and Power Applications.

\* 4. Mold Stress Relief testing was conducted at a temperature of 130°C, with exception of series 2371335-X, 2371336-X, X-2371337-Y, and X-2371224-Y which were subjected to Mold Stress Relief testing at **115°C, as well as . connector Cat. Nos. X-2452765-6, X-2174298-6, and X-2174299-Y which were subjected to Mold Stress Relief testing conducted at a temperature of 105°C.**

\* 5. 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.

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6. The factory assembled contacts have been subjected to the Conductor Secureness test from UL 1977, the Standard for Component Connectors for Use in Data, Signal, Control and Power Applications, when wired by the connector manufacturer on the following wire ranges:

Part No.	Wire Range (AWG)	Force (lbs)
1376348-1	20-24	8
1376347-1	20	8
1376347-1	16	20
2446270-1	14	25

7. These devices employ leads which are not suitable for field wiring.

8. The suitability of the mounting means shall be determined in the end-use.

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9. 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.

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

11. The need to provide additional mounting hardware to mechanically secure the connector to the printed wiring board is to be determined in the end-use

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12. The following 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 Temperature, °C
2407038-3, 2407038-4, 2408508-6	A	0.7 mm	V-0	-	-	130
*						

Cat. No.	Insulating Material (#)	Measured Minimum Thickness	Flame Class	HWI	HAI	Mold Stress Temperature, °C
2371335-X, 2371336-X	B	0.7 mm	V-0	0	2	115
X-2371337-Y	B	0.56 mm	V-0	0	2	115
X-2371224-Y	C	0.54 mm	V-0	0	0	115
<b>2452765-6, 2174298-6, 2174299-1</b>	<b>B</b>	<b>0.7 mm</b>	<b>- (##)</b>	<b>4</b>	<b>1</b>	<b>95</b>
<b>1-2174299-2, 1-2174298-6, 2-2174298-6, 2-2174299-3, 2-2452765-6, 3-2174299-4, 3-2174298-6</b>	<b>C (###)</b>	<b>0.7 mm</b>	<b>- (##)</b>	<b>4</b>	<b>1</b>	<b>95</b>

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Note:

(#) - Code for Insulating Body Material.

(##) - Thickness is less than the minimum Recognized material thickness, as such has no assigned Flame class. UL746C End-product 12mm Flammability test conducted.

(###) - Similar to RM No. 704031, but with a R/C (QMOS2) specific colorant as detailed below.

Colorant Grade	Manufacturer	Associated Colors	Max Let Down Ratio	Flame Class
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	V-0

- A. RM No. 2407190
  - 1. Dielectric strength (kV/mm): 26
  - 2. CTI: 0
- B. RM No. 2136398
  - 1. Dielectric strength (kV/mm): -
  - 2. CTI: 0
- C. RM No. 2136919
  - 1. Dielectric strength (kV/mm): 18
  - 2. CTI: 1
- D. RM No. 704031
  - 1. Dielectric strength (kV/mm): 31
  - 2. CTI: 0
- E. RM No. 704442
  - 1. Dielectric strength (kV/mm): 31
  - 2. CTI: 0