File E28476
Project 10ME02756

August 13, 2010

REPORT

on

COMPONENT - Connectors for Use in Data, Signal, Control and Power Applications

Tyco Electronics Corp
Harrisburg, PA

DESCRIPTION

PRODUCT COVERED:

USR - Amp Power Double Lock Component Connectors - Cat Nos. 179838-x, 177898-x, 179463-x.

USR, CNR - Amp Power Double Lock Component Connectors - Cat Nos. 179838-X, 179839-X, 179846-X, 1-179846-X, 917745-X (where X can be 1, 2, 4, 6, or 9)

179840-X, 1-179840-X, 917845-X, 179843-X, 179848-X, 1-179848-X, 179849-X, 1-179849-X (where X can be 1, 4, or 6)

179841-X, 179844-x, 1-179844-x (where X can be 1, 2, 4, or 6)

177898-x, 179938-x, 177899-x.

USR, CNR - Amp Power Double Lock Component Connectors, Cat. Nos. 179847-1, 179847-4, 179847-6, 1-179847-1, 1-179847-4, 1-179847-6. 179939-1, 179939-4, 179939-6, 179939-9, 9-179839-1, 917353-1, 1-917353-1, 3-917353-1, 177900-X, 177901-X, 177902-X, 177905-X, 179861-X, 179862-X, 917354-X, 1827197-1, **9-179844-1,9-179844-6.**

USR, CNR – Amp Power Double Lock Component Connectors, Cat. Nos. 2404330-X, 2404331-X, 2404332-X, 2404333-X (Where X = 1, 2, 4 or 6).

GENERAL:

These devices are multi-pole connectors employing contacts of the solder and crimp termination type for use with printed circuit board.

USR indicates investigation to United States Standards as referenced in the Test Record.

CNR indicates investigation to Canadian National Standards as referenced in the Test Record.

Note:
Where prefixes are identified, they represent the following:

1- Denotes packaging variation
3- Denotes header is provided without boss feature on terminal end
9- Denotes straight solder pin terminal (unkinked version)

Where suffixes are identified, they represent the following colors:

-1 - Natural
-2 - Red
-4 - Yellow
-6 – Blue
-9 - Black

RATINGS: Cat Nos. 179838-x, 179839-X, 9-179839-1, 177898-x, 179463-x, 179846, 179846-X, 179844-x, 1-179844-x 9-179844-1,9-179844-6, 177899, 179847-1, 179847-4, 179847-6, 1-179847-1, 1-179847-4, 1-179847-6. 179939-1, 179939-4, 179939-6, 179939-9 179839-1, 179840-1, 179840-X, 1-179840-X, 179841-X, 179849-X, 1-179849-X, 917845-X, 179843-X, 179848-X, 179849-1, 1827197-1, 917353-1, 1-917353-1, 3-917353-1, 177900-X, 177901-X, 177902-X, 177905-X, 179861-X, 179862-X, 917354-X, 1827197-1, 917745-X are rated for 300V See “Conditions of Acceptability” For Current Ratings

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

*Use - For use only in or with complete equipment where the acceptability of the combination is determined by **UL LLC.**

Conditions of Acceptability - The following are among the considerations to be made when evaluating the device in the end-use product.

Interruption of Current
1. These devices are not suitable for interrupting the flow of current by connecting or disconnecting the mating connector.

2. Current-Carrying Capability and Current Ratings

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

Cat Nos	Current (A)		Wire Size (AWG)	Maximum Temperature °C	Maximum Temperature Rise, °C
179838-x(Header) 5-179863-2 (Contact)	14	USR, CNR	16	51.2	26.2
177898-x (plug) 177915-X (Contact)					
179838-x(Header) 5-179863-2 (Contact)	13	USR	18	55.9	30.9
177898-x (plug) 177915-X (Contact)					
179838-x(Header) 5-179863-2 (Contact)	11	USR	20	58.3	33.3
177898-x (plug) 177915-X (Contact)					
179838-x(Header) 5-179863-2 (Contact)	8	USR, CNR	22	54.0	29.0
177898-x (plug) 177915-X (Contact)					
179838-x(Header) 5-179863-2 (Contact)	6	USR, CNR	24	45.7	20.7
177898-x (plug) 177915-X (Contact)					
179838-x(Header) 5-179863-2 (Contact)	4	USR, CNR	26	39.8	14.8
177898-x (plug) 177915-X (Contact)					

Current-Carrying Capability and Current Ratings Cont.

Cat Nos	Current (A)		Wire Size (AWG)	Maximum Temperature °C	Maximum Temperature Rise, °C
179463-x(Cap) 177917-x (Contact) 177898-x(Plug) 177915-X (Contact)	14	USR	16	57.6	32.6
179463-x(Cap) 177917-x (Contact) 177898-x(Plug) 177915-X (Contact)	13	USR	18	58.5	33.5
179463-x(Cap) 177917-x (Contact) 177898-x(Plug) 177915-X (Contact)	11	USR	20	60.0	35
179463-x(Cap) 177916-x (Contact) 177898-x(Plug) 177914-X (Contact)	8	USR, CNR	**20-22**	52.8	27.8
179463-x(Cap) 177916-x (Contact) 177898-x(Plug) 177914-X (Contact)	6	USR, CNR	24	44.5	19.5
179463-x(Cap) 177916-x (Contact) 177898-x(Plug) 177914-X (Contact)	4	USR, CNR	26	38.0	13
179846-x(Header) 5-179863-2(Contact) 179938-x(Plug) 177915-x (Contact)	14	USR, CNR	16	50.9	25.9
179844-x(Header) 5-179863-2(Contact) 177899-x(Plug) 177915-x (Contact)	14	USR, CNR	16	49.0	24

Header	Mating Connector
179846	917745

Current-Carrying Capability and Current Ratings Cont.

Cat Nos	Current (A)		Wire Size (AWG)	Maximum Temperature °C	Maximum Temperature Rise, °C
179847-1	7	USR and CNR	18	54.9	29.9
179939-1					
179847-1	9	USR and CNR	16	45.4	20.4
179939-1					
179847-1	6	USR and CNR	20	41.7	16.7
179939-1					
179847-1	4	USR and CNR	22	35.5	10.5
179939-1					
179847-1	3	USR and CNR	24	32.6	7.6
179939-1					
179847-1	2	USR and CNR	26	30.6	5.1
179939-1					

Current-Carrying Capability and Current Ratings Cont.

Cat Nos	Current (A)		Wire Size (AWG)	Maximum Temperature °C	Maximum Temperature Rise, °C
*x-179843-x with contact 5-179863-2 177905-x with contact 177914-1	4	USR and CNR	20-26	53.8	28.8
*x-179843-x with contact 5-179863-2 177905-x with contact 177914-2	4	USR and CNR	20-26	21.9	26.9
x-179843-x with contact 5-179863-2 177905-x with contact 2232902-x	4	USR and CNR	22-26	54.5	29.5
x-179843-x with contact 5-179863-2 177905-x with contact 177915-1	9	USR and CNR	16	51.9	26.9
x-179843-x with contact 5-179863-2 177905-x with contact 177915-1	9	USR and CNR	16	48.3	23.3
x-179843-x with contact 5-179863-2 177905-x with contact 2232901-x	7	USR and CNR	16	45.3	20.3

The above Cat. Nos. are representative of the following connector combinations with the same contacts described above:

Header	Mating Connector
179839	177899
179840	177900
179841	177901
917845	177902

Current-Carrying Capability and Current Ratings Cont.

Cat Nos	Current (A)		Wire Size (AWG)	Maximum Temperature °C	Maximum Temperature Rise, °C
*917353 with contact 5-179863-2 x-917354-x with contact 177914-1	4	USR and CNR	**20-26**	47.4	22.4
*917353 with contact 5-179863-2 x-917354-x with contact 177914-2	4	USR and CNR	**20-26**	46.8	21.8
917353 with contact 5-179863-2 x-917354-x with contact 2232902-x	4	USR and CNR	22-26	48.6	23.6
917353 with contact 5-179863-2 x-917354-x with contact 177915-1	9	USR and CNR	16	46.2	21.2
917353 with contact 5-179863-2 x-917354-x with contact 177915-2	9	USR and CNR	16	45.5	20.5
917353 with contact 5-179863-2 x-917354-x with contact 2232901-x	9	USR and CNR	16	52.9	27.9
1827197-1 with contact 5-179863-2 1827196 with contact 177915-1	9	USR and CNR	16	45.2	20.2
1827197-1 with contact 5-179863-2 1827196 with contact 177915-2	9	USR and CNR	16	44.3	19.3

The above Cat. Nos. are representative of the following connector combinations with the same contacts described above:

Header	Mating Connector
179848	179861
179849	179862

Current-Carrying Capability and Current Ratings Cont.

Cat Nos	Current (A)		Wire Size (AWG)	Maximum Temperature °C	Maximum Temperature Rise, °C
1827197-1 with contact 5-179863-2 1827196 with contact 2232901-x	9	USR and CNR	16	50.9	25.9
*1827197-1 with contact 5-179863-2 1827196 with contact 177914-1	4	USR and CNR	20-26	23.3	18.3
*1827197-1 with contact 5-179863-2 1827196 with contact 177914-2	4	USR and CNR	20-26	44.0	19.0
1827197-1 with contact 5-179863-2 1827196 with contact 2232902-x	4	USR and CNR	22-26	44.8	19.8

The above Cat. Nos. are representative of the following connector combinations with the same contacts described above:

Header	Mating Connector
179848	179861
179849	179862

Current-Carrying Capability and Current Ratings Cont.

Cat. Nos.	Current (A)	Voltage, V	USR / CNR	Wire Size (AWG)	Maximum Temperature °C	Maximum Temperature Rise, °C
2404330-X with contact 2369500-1	10	300	USR, CNR	16	53.9	28.9
2404332-X with contact 2369500-1 (representing 2404331-X with contact 2369500-1)	9	50	USR, CNR	16	42.1	17.1
2404333-X with contact 2369500-1	8	50	USR, CNR	16	52.5	27.5

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

4. 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.

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

6. Optional accessories such as lock plates have not been evaluated and should be judged in the end-use application.

Insulating Materials

*7. 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 **105**°C.

8. The insulating materials used in these devices comply with the direct support requirements of UL 746C, the Standard for Polymeric Materials - Use in Electrical Equipment Evaluations.

9. 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, ^{0}C
179838-X,	B	##	V-0	0	0	130	105
179838-1, 179846-X, **179846-1, 179844-X, 179844-1, 1-179844-1, 9-179844-1**	D	##	V-0	0	0	130	105
177898-1, 177899-1, 179463-1, and 179938-1	C	###	V-0	4	1	130	105
179847-1, 179847-4, 179847-6, 1-179847-1, 1-179847-4, 1-179847-6, 179839-1, **9-179839-1,** 179840-1, **1-179840-1,** 179841-1, 917845-1, 179843-1, 179848-1, **1-179848-1,** 179849-1, **1-179849-1, 1827197-1,** 917353-1, **1-917353-1, 3-917353-1,**	D	##	V-0	0	0	130	105
179939-1, 179939-4, 179939-6, 179939-9	C	##	V-0	4	1	130	105
177898-X, 177899-X, 179938-X, 179939-X, 177900-X, 177901-X, 177902-X, 177905-X, 179861-X, 179862-X, 917354-X.	E(####)	0.5mm	V-0	4	3	130	105

Cat. No.	Insulating Material (#)	Measured Minimum Thickness	Flame Class	HWI	HAI	RTI Elec	Max Operating Temp, °C
177900-1, 177901-1, 177902-1, 177905-1, 179861-1, 179862-1, 917354-1.	C	0.5mm	V-0	4	1	130	105
179838-2, 179838-4, 179838-6, 179838-9, 179846-2, 179846-4, 179846-6, 179846-9, 1-179846-2, 1-179846-4, 1-179846-6, 1-179846-9, 179844-2, 179844-4, 179844-6 1-179844-2, 1-179844-4, 1-179844-6	B(####)	##	(+)	-	-	130	105
	D(####)	##	(+)	-	-	130	105
179839-2, 179839-4, 179839-6, 179839-9, 179840-4, 179840-6, 1-179840-4, 1-179840-6, 179841-2, 179841-4, 179841-6, 179847-1, 179847-4, 179847-6, 1-179847-1, 1-179847-4, 1-179847-6, 917845-4, 917845-6, 179843-4, 179843-6, 179848-4, 179848-6, 1-179848-4, 1-179848-6, 179849-4, 179849-6, 1-179849-4, 1-179849-6,	D(####)	##	(+)	-	-	130	105

(+) 12 mm end product flame test was performed.

Cat. No.	Insulating Material (#)	Measured Minimum Thickness	Flame Class	HWI	HAI	RTI Elec, ^{0}C	Max Operating Temp, ^{0}C
2404330-X, 2404331-X, 2404332-X, 2404333-X	F	0.4mm	V-0	4	3	130	105

(#) – Code for Insulating Body Material.

(##) - Minimum thickness of insulating material
Cat. No. 179463-X, 179846-X, 177898-X, 179847-1, 179847-4, 179847-6, 1-179847-1, 1-179847-4, 1-179847-6, 179939-1, 179939-4, 179939-6, 179939-9 - 0.55 mm
Cat. No. 179844-X, 179838-X – 0.62 mm
Cat. No. 179844-X – 0.8 mm
Cat. No. 177899-X – 0.5 mm
Cat. No. 179839-X, 179848-X, 179849-X, 917353-X – 0.40 mm
Cat. No. 179840-X, 179841-X, 917845-X, 179843-X - 0.35 mm
(###) - Minimum thickness of insulating material
Cat. No. 179463-X, 177898-X - 0.55 mm
Cat. No. 179938-1 – 0.8 mm
Cat. No. 177899-X – 0.5 mm

(####)- Material may be mixed with colorant as per table below.

Colorant Grade	Colorant Manufacturer	Maximum Let Down Ratio	Colors
[redacted]			

B. Tyco RM 704063
1. Dielectric strength (kV/mm): -
2. CTI: 2

C. Tyco RM 2136278
1. Dielectric strength (kV/mm): 25
2. CTI: 0

D. Tyco RM 704924
1. Dielectric strength (kV/mm): -
2. CTI: 2

E. Tyco RM 1573672
1. Dielectric strength (kV/mm): -
2. CTI: 0

F. Tyco RM 2401706
1. Dielectric strength (kV/mm): 28
2. CTI: 2