File E28476
Project 95ME14640

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REPORT

on

*CONNECTORS FOR USE IN DATA, SIGNAL, CONTROL AND POWER APPLICATIONS

TYCO ELECTRONICS CORP
MIDDLETOWN PA 17057-3170

DESCRIPTION

PRODUCT COVERED:

USR, CNR - Component Connectors, Series Faston Connectors.

USR/CNR - Component Connectors, Faston Connector, Cat. Nos. 1969725-1, 1969387-1, 1969639-1, 1969640-1, 1969656-1, 1969657-1, 1969843-1, 1-1969186-1, 1969897-1, 1969898-1, 1969899-1, 1969900-1, 2-176498-6, 2133857-1, 2133857-3 and 2133857-4, 521701-x, 521702-x, and 521787-x, 1-520987-4, 521869-1, 521869-2, 2364484-1, 2364485-1, 2238270, 2238271, 2394343-1 and 2394569-1, **521785-3**, **521785-4**, **2360486-1**.

USR, CNR – Component Connector, Series Faston Dual Tab Connector, Cat. No. 1969375-1.

USR – Component Connectors, Series Faston, Cat. Nos. 1969632-1, 2390747-1, 2390748-1, 2390748-2, 2390748-3,.

GENERAL:

These devices are single-pole or multi-pole connectors employing contacts of the crimp termination type for use in electrical equipment where the acceptability of the combinations is determined by UL LLC.

ELECTRICAL RATINGS:

Cat. No.	Current (A)/ Voltage	Wire AWG (or Wire Cross-sectional area)
Housing 8-735075-0 and 6-735075-0 with Contacts 444334-x	3 /240V AC/DC	22
Housing 8-735075-0 and 6-735075-0 with Contacts 444334-x	6 /240V AC/DC	18
Housing 8-735075-0 and 6-735075-0 with Contacts 444335-x	8 /240V AC/DC	1.0 mm^2
Housing 8-735075-0 and 6-735075-0 with Contacts 444335-x	14 /240V AC/DC	2.5 mm^2
1969387-1 with Contacts 63306	230 V AC/DC	14, 16, 18 AWG
Housings 1969507-2, 1969507-3 with FASTON 250 Series Quick Connect Connectors (E66717 report issued 1982-01-28)	No Electrical Ratings	10 – 22 AWG str
Housings 1969538-1, 1969547-1 with FASTON 250 Series Quick Connect Connectors - Cat. No. 63009 (E66717 report issued 1982-01-28)	No Electrical Ratings	14 – 18 AWG str
Housings 2-480435-1, 2-480435-2 with FASTON 187 Series (budget and premier) Quick Connect Connectors (E66717 report issued 1982-01-28)	No Electrical Ratings	16 – 22 AWG str
Housings 1969632-1 with FASTON 250 Series Quick-Connect Connectors - Cat. No. 1742198-1 (E66717 report issued 1978-07-19)	No Electrical Ratings	18 – 14 AWG str
Housings 1969655-1 and 521053-1 with Listed Tyco FASTON terminals as shown in Ill. 87	No Electrical Ratings	Refer to Ill. 87

ELECTRICAL RATING: (Cont)

Cat. No.	Current (A)/ Voltage	Wire AWG (str)
Housing 1969656-1 (representing Housing 1969900-1) with Contacts 63009-1	7 /600V AC/DC	18
	10 /600V AC/DC	16
	15 /600V AC/DC	14
Housing 1969657-1 (representing Housing 1969899-1)with Contacts 63010-1	7 /600V AC/DC	18
	10 /600V AC/DC	16
	15 /600V AC/DC	14

Housings 1969705-1, 1969706-1 with FASTON 250 Series Quick Connect Connectors - Cat. No. 63009 (E66717 report issued 1982-01-28)	No Electrical Ratings	14 – 18 AWG str

Cat. No.	Current(A)/Voltage (V)
Housings 480416-1,-2; 2-480416-4, 2-480416-4, 1969507-2,-3 with Recognized Component (RFWV2) FASTON 250 Series Quick Connect Connectors; 480435-1,-2, 2-480435-2 with Recognized Component (RFWV2) FASTON 187 Series Quick Connect Connectors	No Electrical Ratings
1-1969186-1 with Recognized Component (RFWV2) Cat. Nos. 62092-1, 61399-1, 63677-1	No Electrical Ratings
2-176498-6 with Recognized Component (RFWV2) Quick-Connect Faston Series 187 tabs	No Electrical Ratings
1-520987-4, 1-520987-6 Housing	No Electrical Ratings
Housings 2-480416-5, 1969507-9, 1969295-4,-5, 1-1969141-1,-2; 1969199-2, 1969201-2, 1969202-2, 2364484-1, 2364485-1, 1-1969232-1,-2,-3,-4; 1969422-2, 1-1969705-1, 1-1969706-1, 1969437-2, 2-521498-0,-1,-2;, 1-520212-3, 521358-2, 2-521498-7,-8,-9, 1-521771-1, 521869-1, 521869-2, 1-521785-1 with Recognized Component (RFWV2) FASTON 250 Series Quick Connect Connectors; 3-480435-1 with Recognized Component (RFWV2) FASTON 187 Series Quick Connect Connectors	No Electrical Ratings
521787-x employing housing 521787-x with Recognized Component (RFWV2) FASTON 187 Series Quick Connect Connectors	600V AC/DC
521701-x, 521702-x employing housings 521701-x, 521702-x respectively with Recognized Component (RFWV2) FASTON 250 Series Quick Connect Connectors	600V AC/DC
Faston Series Component Connector 1969897-1 and 1969898-1	600V AC/DC
Cat. Nos. 2238270, and 2238271	600V AC/DC
Cat. Nos. 2394343-1 and 2394569-1	600 V AC/DC

Cat. Nos. 2133857-1, 2133857-3 and 2133857-4 – No electrical ratings.

ELECTRICAL RATINGS: (Cont)

Cat. No.	Current (A)/ Voltage (V)	Wire AWG (str)
1969136	600V	24-10
1969186	600V	18-10
520212	600V	20-16
521053	600V	24-10
521065	600V	24-10
521066	600V	24-10
521140	600V	24-10
2390747-1, 2390748-1, 2390748-2, 2390748-3, with contact 63577	3A/250V AC/DC	22
2390747-1, 2390748-1, 2390748-2, 2390748-3, with contact 63577	5A/250V AC/DC	20
2390747-1, 2390748-1, 2390748-2, 2390748-3, with contact 63577	7A/250V AC/DC	18
2390747-1, 2390748-1, 2390748-2, 2390748-3, with contact 63577	10A/250V AC/DC	16
2390747-1, 2390748-1, 2390748-2, 2390748-3, with contact 2238197	7A/250V AC/DC	18
2390747-1, 2390748-1, 2390748-2, 2390748-3, with contact 2238197	10A/250V AC/DC	16
2390747-1, 2390748-1, 2390748-2, 2390748-3, with contact 2238197	15A/250V AC/DC	12 - 14
521785-3, -4 with contact 63435-1	**600V**	**10**
521785-3, -4 with contact 63306-1	**600V**	**14**
2360486-1 with contact 2238207-3	**10A/250VAC**	**16**

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.

* USR – Products designated USR have been investigated using US requirements as noted in the Test Record.
* CNR – Products designated CNR have been investigated using Canadian requirements as noted in the Test Record

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. These devices have not been tested for current-carrying capability except below devices have been subjected to the Temperature test with the rated currents and maximum temperature rise values tabulated below.

Connector Cat. No. [1]	Contact Cat. No.	Wire Gauge	Investigated Current	Maximum Temp Rise
Housing 8-735075-0	444334-x	22	3	3.5
Housing 8-735075-0	444334-x	18	6	7.0
Housing 8-735075-0	444335-x	1.0 mm2	8	19.6
Housing 8-735075-0	444335-x	2.5 mm2	14	27.1
2390747-1, 2390748-1, 2390748-2, 2390748-3	63577	22	3	4.1
2390747-1, 2390748-1, 2390748-2, 2390748-3	63577	20	5	6.8
2390747-1, 2390748-1, 2390748-2, 2390748-3	63577	18	7	8.7
2390747-1, 2390748-1, 2390748-2, 2390748-3	63577	16	10	12.4
2390747-1, 2390748-1, 2390748-2, 2390748-3	2238197	18	7	12.0
2390747-1, 2390748-1, 2390748-2, 2390748-3	2238197	16	10	13.1
2390747-1, 2390748-1, 2390748-2, 2390748-3	2238197	14	15	14.9

Note [1] - Housing 8-735075-0 represents Housing 6-735075-0

Connector Cat. No. [1]	Contact Cat. No.	Wire Gauge	Investigated Current	Maximum Temp Rise
1969657-1 (representing 1969656-1, 1969899-1, 1969900-1)	63010-1 (representing 63009-1)	18	7	8.6
		16	10	11.4
		14	15	19.1
2360486-1	**2238207-3**	**16**	**10**	**15.0**

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.

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 spacings between adjacent poles and the associated voltage rating shall be determined in the end use. (Dielectric testing has not been performed.)

Dielectric testing was performed on below connectors:

Cat. No.
Housing 8-735075-0 with Contacts 444334-x
Housing 8-735075-0 with Contacts 444335-x
Model 1969387-1 with Contacts 63306
Models 1969897-1, 1969898-1 with Contacts 63306
2390747-1, 2390748-1, 2390748-2, 2390748-3, with contact 63577
2390747-1, 2390748-1, 2390748-2, 2390748-3, with contact 2238197

Note - Housing 8-735075-0 represents Housing 6-735075-0

7. The electrical and mechanical contact between the connector and the discreet wire is to be determined in the end use equipment.

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

9. For all devices except for Cat. Nos. 1969387-1, 1969507-2, 1969507-3, 1969538-1, 1969547-1, 2-480435-1, 2-480435-2 and Series Faston Dual Tab Connector, Cat. No. 1969375-1, the materials may be used interchangeably at a max operating temperature of 65°C. For Series Faston Dual Tab Connector, Cat. No. 1969375-1, the materials may be used interchangeably at a max operating temperature of 120°C. Cat. Nos. 1969507-2, 2-480435-1 may be used at 150°C, Cat. No. 1969507-3 may be used at 130°C, Cat. Nos. 1969538-1, 1969547-1 may be used at 120°C, Cat. No. 2-480435-2 may be used at 140°C, and Cat. No. 1969632-1 may be used at 240°C.

10. The max operating temperature of Model 1969387-1 is 120°C.

11. The factory assembled contacts have been investigated for the following wire ranges and maximum tensile forces.

Part No.	Wire Ranges (AWG)	Tensile Force (lbs)
Contacts 444334-x	22	8
Contacts 444334-x	18	20
Contacts 444335-x	1.0 mm2	20
Contacts 444335-x	2.5 mm2	20
Contacts 63306	14	25
Contacts 63306	16	20
Contacts 63306	18	20
Contacts 63010-1, 63009-1	18	20
Contacts 63010-1, 63009-1	14	25
Contact 63577	22	8
Contact 63577	16	20
Contact 2238197	18	20
Contact 2238197	12	20
Contact 63435-1	**10**	**40**
Contact 63435-1	**14**	**25**
Contact 2238207-3	**16**	**20**
Contact 2238207-3	**20**	**10**

12. 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.	Raw Material Designation	Measured Minimum Thickness	Flame Class	HWI	HAI	RTI Elec	Max Operating Temp, °C
Housing 735075	1573119 A	0.48 mm	V-2	-	-	65	65
Overmold 1969375-1	705287 B	2.34 mm	V-0	4	0	120	120
Housing 1969422-1	17066 C	0.45 mm	V-0	-	-	65	65
Housing 1969437-1	17066 C	0.72 mm	V-0	0	0	130	130
Housing 1969507-2, 2-480435-1	705264 D	0.76 mm	V-0	4	2	150	150
Housing 1969507-3	17066 E	0.76 mm	V-0	0	0	130	130
Housings 1969538-1, 1969547-1	705287 F	0.76 mm	V-0	4	0	120	120
Housing 2-480435-2	1573697 G	0.76 mm	V-0	4	0	140	140
Housing 2-480435-3	704022 H	0.76 mm	--(+)	1(++)	4(++)	240	240
connector Cat. Nos. 1969656-1, 1969657-1, 1969899-1, 1969900-1	705264 D	0.76 mm	V-0	4	2	150	150
Housing 1969632-1	704105 I		V-0	-	-	240	240
Connector Cat. Nos. 1969639-1 and 1969640-1	705287 F	0.76 mm	V0	4	0	120	120
Housings 1969705-1, 1969706-1	1-17066-1 J	0.76 mm	V-0	0	0	130	130
Housings 1969725-1, 1969843-1	705264 D	0.64 mm	V-0	4	2	150	150
2133857-1	2136324 K	0.6mm	V2	4	0	105	105
2133857-3	703809 L	0.6mm	V2 (++)	--(++)	-- (++)	130 (++)	130 (++)
2133857-4	1573119-1 M	0.6mm	V2	--	--	65 (GENERIC)	65 (GENERIC)
Housings 1969843-1, 1969725-1	2136682 N	0.64mm	V-0	0	0	150	150
Housing PNs 2-480416-4, 1969507-2,3; 2-480435-2	2136682 N	0.2mm	V-0	--	--	150	150
Housings 2238270, 2238271, 2394343-1	2136682 N	0.64mm	V-0	4	0	150	150
Housing 2394569-1 (##)	2136682 N	0.64mm	V-0	4	0	150	150

Cat. No./Series	Raw Material Designation		Measured Minimum Thickness	Flame Class	HWI	HAI	RTI Elec	Max Operating Temp, °C
2-480416-5,1-480416-7, 3-480435-1, 1969507-9. 1969295-1,-2,-4,-5; x-521498-x; 1-1969141-1,-2; 1969141-1,-2; 1969199-1,-2, 1969201-1,-2, 1969202-1,-2, 2364484-1, 2364485-1, 1-1969232-1,-2,-3,-4; 1969232-1,-2,-3,-4; 1969422-1,-2, 1-1969705-1,1969705-1,1-1969706-1, 1969706-1, 1-520212-3, 520212-3, 2-521498-7,-8,-9,521498-7,-8,-9, 1-521771-1, 521771-1, 1-521785-1,521785-1, 1969437-1,-2, 521701-x, 521702-x, 521787-x	2136700	O	0.4	V0	0	0	130	130
1-1969186-1, 2-176498-6	2136700	O	0.5	V0	0	0	130	130
Housing PNs 480416-1,-2, 1-480416-0,-1, 480435-1,-2; 1-480435-0,-3; 521358-1,-2, 521869-2,1969897-1, 1969898-1	2136597	P	0.45	V0	4	0	130	130
Housing Cat. No. 1-520987-4	2136700	O	0.38	V-0	0	0	130	130
521869-1	702925	Q	0.72	V-2	4	0	130	130
1969136, 1969186, 520212, 521053, 521065, 521066, 521140	2136597	R	0.38	V0	4	0	130	130
2390747-1(##), 2390748-1(##), 2390748-2(##), 2390748-3(##)	2136700	O	0.53	V-0	0	0	130	130
521785-3 (Natural only) 521785-4 (##)	**2136682**	**N**	**0.43**	**V-0**	**4**	**0**	**150**	**150**
2360486-1	2136700	O	0.64	V-0	0	0	130	130

Note

(+): Thickness is less than the minimum Recognized material thickness, as such no assigned Flame class. UL746C 12mm Flammability test conducted.
(++): These PLCs are based on the minimum Recognized material thickness.
(##): May be used with the Recognized Component Colorant Concentrate (QMQS2) noted below, at the let down ratio indicated:

Raw Material Code	Color Concentrate	Color	Let Down Ratio	Comment
2136700 O	ABXXXXXXXX by Avient Colorants USA LLC, E73454	Blue	1:33.3	
2136700 O	ABXXXXXXXX by Avient Colorants USA LLC, E73454	Red	1:25	
2136682 N	ABXXXXXXXX, ACXXXXXXXX, OXXXXXXXXX by Avient Colorants USA LLC, E73454	All	1:25	Cat. Nos. 2390747-1, 2390748-1, 2390748-2, 2390748-3 only
2136682 N	**ABXXXXXXXX, ACXXXXXXXX, OXXXXXXXXX by Avient Colorants USA LLC, E73454**	**Black**	**1:50**	**Cat. Nos. 521785-4 only**

A - 1. Dielectric strength (kV/mm): -
2. CTI: 2

B - 1. Dielectric strength (kV/mm): -
2. CTI: 0

C - 1. Dielectric strength (kV/mm): - 26
2. CTI: 1

D - 1. Dielectric strength (kV/mm): - 14
2. CTI: 0

E - 1. Dielectric strength (kV/mm): - 26
2. CTI: 1

F - 1. Dielectric strength (kV/mm): - --
2. CTI: 0

G - 1. Dielectric strength (kV/mm): - --
2. CTI: 2

H - 1. Dielectric strength (kV/mm): - 21
2. CTI: 3

I - 1. Dielectric strength (kV/mm): - 21
2. CTI: 3

J - 1. Dielectric strength (kV/mm): - 26
2. CTI: 1

K - 1. Dielectric strength (kV/mm): - --
2. CTI: 0

L - 1. Dielectric strength (kV/mm): - 18
2. CTI: 1

M - 1. Dielectric strength (kV/mm): - --
2. CTI: 2

N - 1. Dielectric strength (kV/mm): - 20
2. CTI: 0

O - 1. Dielectric strength (kV/mm): 17
2. CTI: 2

P - 1. Dielectric strength (kV/mm): 13
2. CTI: 0

Q - 1. Dielectric strength (kV/mm): 26
2. CTI: 0

R - 1. Dielectric strength (kV/mm): 13
2. CTI: 0

13. For Housings 8-735075-0 and 6-735075-0 with Contacts 444334-x or Contacts 444335-x, when conducting temperature test, each mating male contact was connected with two connectors, six connectors were tested in series and there are 40 in conductor lengths between each connector assembly. Repeat of temperature test shall be considered in the end product.

14. The Series Faston Dual Tab Connector, Cat. No. 1969375-1, is intended for use with mating connectors size .250 in.

15. Cat. Nos. 1969725-1, 1969843-1 employs the following contacts and intended tooling:

Contact	Wire Range – Cu str	Tooling
63477-1	16 – 20 AWG	Tooling: Ocean Applicator PN 2150007 Crimp height(in)(min/max wire range):16AWG - .060 +-.002; 20AWG - .049+-.002
1742975-1	18 – 22 AWG	Tooling: Ocean Applicator 2150325 Crimp Height(in)(min/max wire range): 18AWG - .049+-.002; 22AWG - .039+-.002

The suitability of any other tooling shall be an end product consideration.

16. Housing Cat. No. 1-520987-4 shall be subjected to the dielectric test in accordance with the end product standard.