Molex 42819-3233 PDF

深圳创唯电子有限公司

http://www.molex-connect.com

molex **PRODUCT SPECIFICATION**

MINI-FIT SR. CONNECTOR SYSTEM

Female Terminal	Male Terminal
	
Series: 42815	Series: 42817

Receptacle (Single Row)	Plug (Single Row)
	
Series: 42816	Series: 42818

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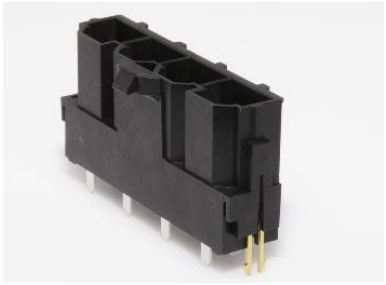
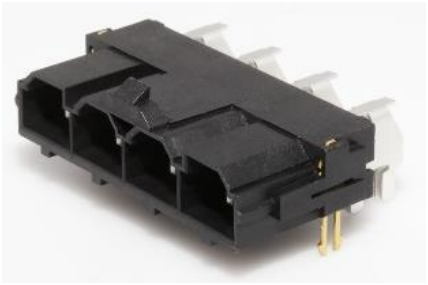
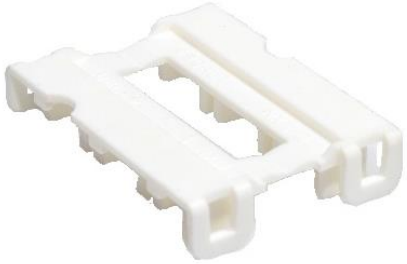
REVISION:	ECM INFORMATION:	TITLE:	SHEET No.
C	EC No: 623199 DATE: 08/28/2019	PRODUCT SPECIFICATION FOR MINI-FIT SR. CONNECTOR SYSTEM	1 of 24

DOCUMENT NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
PS-42815-001	PS	001	sgangadhardo	ishwarg	ishwarg

Vertical Header (Single Row)	Right Angle Header (Single Row)
	
Series: 42819	Series: 42820

Receptacle (Dual Row)	TPA (Dual Row)
	
Series: 43914	Series: 43980

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Vertical Header (Dual Row)	Panel Mount Plug (Dual Row)
	
Series: 43915	Series: 43938

Right Angle Header (Single Row)

Series: 46984

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1.0 SCOPE

This specification covers the 10.00 mm / (.394 in.) centerline tin and gold, silver plated connector series, single and dual row versions in wire to wire and wire to printed circuit board applications. This product performance is optimized for stranded tinned wire termination.

2.0 PRODUCT DESCRIPTION

2.1 DESCRIPTION, SERIES NUMBER, AND LINKS

DESCRIPTION	SERIES NUMBER
Female Terminal	42815
Male Terminal	42817
Receptacle (single row)	42816
Plug (single row)	42818
Vertical Header (single row)	42819
Right Angle Header (single row)	42820
Receptacle (dual row)	43914
TPA (dual row)	43980
Vertical Header (dual row)	43915
Panel mount Plug (dual row)	43938
Right Angle Header (single row, 260° C reflow capable (with gold and silver plating only))	46984
Vertical Header (single row, 260° C reflow capable (with gold and silver plating only))	46986

2.2 DIMENSIONS, MATERIALS, PLATINGS

Dimensions & Plating: See individual sales drawings.

2.3 ENVIRONMENTAL CONFORMANCE

To find product compliance information:
a. Go to molex.com
b. Enter the part number in the search field.
c. At the bottom of the page go to “Environmental” to see compliance status.

2.4 SAFETY AGENCY LISTINGS

UL File #E29179
CSA Certificate #LR 19980-555
TUV Certificate #R 72131193

3.0 APPLICABLE DOCUMENTS AND SPECIFICATION

3.1 MOLEX DOCUMENTS

Mini-Fit Sr. Connectors Test summary TS-42815-001
Mini-Fit Sr. Connectors Application Specification AS-42815-001
Molex Quality Crimping Handbook Order No. 63800-0029
Molex Solderability Specification SMES-152
Molex Heat Resistance Specification AS-40000-5013
Molex Moisture Technical Advisory AS-45499-001
Molex Package Handling Specification 454990100-PK
ATS – Application Tooling Specification*

**Application Tooling Specification for terminals is not provided in this document. ATS for terminals can be available from respective terminal part number page in Molex.com*

3.2 INDUSTRY DOCUMENTS

EIA-364-1000
UL-60950-1
CSA STD. C22.2 NO. 182.3-M1987

4.0 ELECTRICAL PERFORMANCE RATINGS

4.1 VOLTAGE AND SAFETY AGENCY RATINGS

600V AC (RMS) or DC

	Voltage (VAC (RMS) / VDC)			Current (A)				
Series	UL	CSA	TUV	UL	CSA		TUV	
				14AWG	12 AWG	10AWG	12AWG	10AWG
42818, 43914	600V	600V	600V	N/A	23A	30A	23A	33A
42816, 42819, 42820	600V	600V	250V	17A	23A	30A	23A	33A
43915	600V	600V	None	N/A	23A	30A	None	None
43938	None	600V	600V	N/A	23A	30A	23A	33A

4.2 MAXIMUM CURRENT RATING

Molex rating is established based on MIL-W-5088 max. current capacity guidelines for copper conductors and test data summary TS-42815-001 section 5.3.7. Test data is based on 30 deg. C temperature rise using UL 1015 tinned stranded copper wire.

Single Row Product

	2ckt. W to W	2ckt. W to PCB**	4ckt. W to W	4ckt. W to PCB**	6ckt W to W	6ckt. W to PCB**
8 AWG	50A	48A	46A	44A	45A	37A
10 AWG	33A	33A	33A	33A	33A	33A
12 AWG	23A	23A	23A	23A	23A	23A
14 AWG	17A	17A	17A	17A	17A	17A
16 AWG	13A	13A	13A	13A	13A	13A

	2ckt. W to W	2ckt. W to PCB**	4ckt. W to W	4ckt. W to PCB**	6ckt W to W	6ckt. W to PCB**
6mm^2	35A	-	-	-	-	-
5mm^2	35A	-	-	-	-	-

	2ckt. W to W	2ckt. W to PCB**	4ckt. W to W	4ckt. W to PCB**	6ckt W to W	6ckt. W to PCB**
12AWG Double Crimp	40A (20A per wire)	40A (20A per wire)	-	-	-	-

Dual Row Product

	6ckt. W to W	6ckt. W to PCB**	10ckt. W to W	10ckt. W to PCB**	14ckt W to W	14ckt. W to PCB**
8 AWG	43A	37A	40A	36.5A	38A	36A
10 AWG	32A	31A	31.5A	29.5A	29A	28A
12 AWG	23A	23A	23A	22.5A	23A	22A
14 AWG	17A	17A	17A	16.5A	17A	16A
16 AWG	13A	13A	13A	12.5A	13A	12A

**PCB trace design may greatly affect temperature rise results.

Ratings shown represent MAXIMUM current carrying capacity of a fully loaded connector with all circuits powered. Ratings are based on a 30°C maximum temperature rise limit over ambient (room temperature). Testing conducted with tinned copper conductor stranded wire. Above charts are intended as a guideline. Current rating is application dependent. Appropriate de-rating is required depending on factors such as higher ambient temperature, smaller copper weight of PCB traces, gross heating from adjacent modules or components and other factors that influence connector performance.

4.3 TEMPERATURE

Operating: -40 Degrees C to +105 Degrees C
Non-operating: -40 Degrees C to +105 Degrees C
(Including 30 degrees C terminal temperature at full current)

4.4 DURABILITY

Tin plated: 30 mating cycles
Gold plated: 100 mating cycles
Silver plated: 30 mating cycles

As tested in accordance with EIA-364-1000 test method (see sec 6.2 of this specification). Durability per EIA-364-09

5.0 QUALIFICATION

Laboratory condition, sample selection and test sequences are in accordance with EIA-364-1000.

6.0 PERFORMANCE

6.1 ELECTRICAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.1.1	Initial Contact Resistance (low level)	Mate connectors, measure by dry circuit, 20mV max., 100mA. Wire resistance shall be removed from the measured value.	1.5 mOhm max. (tin) 1.0 mOhm max. (gold) 1.5 mOhm max. (silver)
6.1.2	Insulation Resistance	Mate connectors, apply 500V DC between adjacent terminal or ground	1000 M Ohm min.
6.1.3	Dielectric Strength	Mate connectors, apply 2200V AC for 1 minute between adjacent terminal or ground.	No breakdown
6.1.4	Contact Resistance (rated)	Measure contact resistance at rated current.	1.5 mOhm max. (tin) 1.0 mOhm max. (gold) 1.5 mOhm max. (silver)
6.1.5	Contact Resistance on Crimp	Crimp the wire to the terminal, measure crimp resistance by dry circuit, 20mV max., 100mA	1.0 mOhm max.

6.2 MECHANICAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.2.1	Contact Insertion and Withdrawal	Insert and withdraw a contact at a speed rate of 25 +/- 6mm / minute	Max. Insertion =3Kg Min. Withdrawal = 0.25Kg
6.2.2	Connector Insertion and Withdrawal	Insert and withdraw a connector at a rate of 25 +/- 6mm / minute	Max. Insertion =3.0Kg/ckt. Min. Withdrawal =0.25Kg/ckt.
6.2.3	Terminal Insertion Force	Insert the crimped terminal into the housing.	Max. Insertion =7.0Kg
6.2.4	Crimp Terminal Retention Force	Apply axial pull out force at a speed rate of 25 +/- 6mm / minute on the terminal assembled in the housing and with the TPA cover installed.	Min. Retention =10Kg
6.2.5	Header Terminal Retention Force	Apply axial pull out force at a speed rate of 25 +/- 6mm / minute on the terminal assembled in the housing.	Min. Retention =2.0Kg
6.2.6	Wire Pull Out Force	Mount the crimped terminal, apply an axial pull out force on the wire at a speed rate of 25 +/- 6mm / minute.	16AWG = 14Kg 14AWG = 23Kg 12AWG = 31Kg 10AWG = 36Kg 8AWG = 40Kg
6.2.7	Normal Force	Apply a perpendicular force at a speed rate of 25 +/- 6mm minute	200 g min.
6.2.8	PCB Insertion and Withdrawal Force	Apply force perpendicular to the housing at a speed rate of 25 +/- 6mm minute as shown.	Insertion = 2Kg max. Withdrawal = 1Kg min.
6.2.9	Panel Insertion & Withdrawal	Insert and withdraw a connector at a speed rate of 25 +/- 6mm / minute	Insertion = 5Kg max. Withdrawal = 10Kg min.

6.2 MECHANICAL PERFORMANCE CONTINUED

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.2.10	Latch Yield Strength (only 43914 receptacle w/ 43938 plug)	Insert and withdraw connector housings (30 times) and pull apart at a speed rate of 25 +/- 6mm / minute	Yield = 7.0Kg min.
6.2.11	Latch Yield Strength (all other)	Insert and withdraw connector housings (30 times) and pull apart at a speed rate of 25 +/- 6mm / minute	Yield = 10.0Kg min.
6.2.12	Durability (tin)	Insert and withdraw connectors (30 times) at a maximum rate of 10 cycles per minute prior to environmental tests.	Contact Res. Change = 1.0mOhm max.
6.2.13	Durability (gold)	Insert and withdraw connectors (100 times) at a maximum rate of 10 cycles per minute prior to environmental tests.	Contact Res. change = 1.0mOhm max.
6.2.14	Durability (silver)	Insert and withdraw connectors (30 times) at a maximum rate of 10 cycles per minute prior to environmental tests.	Contact Res. Change = 1. 0 mOhm max.
6.2.15	Vibration with lubrication (tin) (Nyogel 760G)	10-500HZ with a G Level of 10 Duration: 9 hours.	Contact Res change =. 1.0mOhm max Discontinuity not greater than 1 microsecond
6.2.16	Vibration without lubrication (gold)	10-500HZ with a G Level of 10 Duration: 9 hours.	Contact Res change =. 1.0mOhm max Discontinuity not greater than 1 microsecond

6.2 MECHANICAL PERFORMANCE CONTINUED

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.2.17	Vibration with lubrication (silver)	10-500HZ with a G Level of 10 Duration: 9 hours.	Contact Res change = 1.0 mOhm max Discontinuity not greater than 1 microsecond
6.2.18	Mechanical Shock	50 G, 11ms, Half-Sine Shock Pulse.	Contact Res. change = 1.0mOhm max. Discontinuity not greater than 1 microsecond

* NOTE: Thermal cycling, vibration and other factors can cause micro-motion within a mated connection. Micro-motion without lubricant could lead to fretting corrosion on tin plating. Due to the many factors that may be present in an application, Molex highly recommends the use of lubrication with Mini-Fit Sr tin-plated terminals for reliability assurance. See AS-42815-001 for more information

6.3 ENVIRONMENTAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.3.1	Cold Resistance	-40 +/- 3 degrees C for 96 hrs.	Appearance: No damage Contact Res. change = 1.0mOhm max.
6.3.2	Thermal Shock	Mate connectors, expose to 25 cycles of: -40 +0/-3 deg. C for 30 minutes +25 +/- 10 deg. C for 5 minutes max. +105 +3/-0 deg. C for 30 minutes +25 +/- 10 deg. C for 5 minutes max.	Appearance: No damage Contact Res. change = 1.0mOhm max.
6.3.3	Thermal Aging	Mate connectors, expose to 240 hours at 105 +/- 2 deg. C	Appearance: No damage Contact Res. change = 1.0mOhm max
6.3.4	Humidity (Steady State)	Mate connectors, expose to a temperature of 40 +/- 2 deg. C with a relative humidity of 90% to 95% for 96 hours.	Appearance: No damage Contact Res. change = 1.0mOhm max Dielectric withstanding voltage: No breakdown Insul. res: 1000M Ohm min.
6.3.5	Humidity (cyclic) (Tin and Gold Plated parts)	Mate connectors, expose to 25 cycles at 90% to 95% relative humidity with a transition time of 2.5 hrs. between extremes. +25 +/- 10 deg. C for 5 minutes max. +65 +3/-0 deg. C for 30 minutes	Appearance: No damage Contact Res. change = 2.0mOhm max Dielectric withstanding voltage: No breakdown Insul. res: 1000M Ohm min.

6.3 ENVIRONMENTAL PERFORMANCE CONTINUED

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.3.6	Cyclic Temperature & Humidity- Silver	Mate connectors: cycle per EIA-36431: 24 cycles at temperature 25 ± 3°C at 80 ± 5% relative humidity and 65 ± 3°C at 50 ± 5% relative humidity; dwell time of 1.0 hour; ramp time of 0.5 hours.	Appearance: No damage Contact Res. change = 1.0 mOhm max Dielectric withstanding voltage: No breakdown Insul. res: 1000M Ohm min.
6.3.7	Immunity to Fretting Corrosion with lubrication. (tin) (Nyogel 760G)	Mate connectors, expose to 500 cycles with a max. transition time of 5 minutes between extremes. +25 +/- 10 deg. C for 30 minutes +70 +3/-0 deg. C for 30 minutes	Appearance: No damage Contact Res. change = 1.0mOhm max
6.3.8	Immunity to Fretting Corrosion with lubrication. Silver	Mate connectors, expose to 500 cycles with a max. transition time of 5 minutes between extremes. +15 +/- 3 deg. C for 30 minutes +85 +/-3 deg. C for 30 minutes	Appearance: No damage Contact Res. change = 1.0mOhm max
6.3.9	Temp. Rise & Current Cycling	Mate the connectors and measure the temperature rise at the rated current for 96 hrs., 45 minutes ON and 15 minutes OFF for 240 hrs., and an additional 96 hrs. of steady-state current.	Max. Temp. Rise = 30deg. C Per EIA 364 and CSA requirement
6.3.10	Solderability**	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)

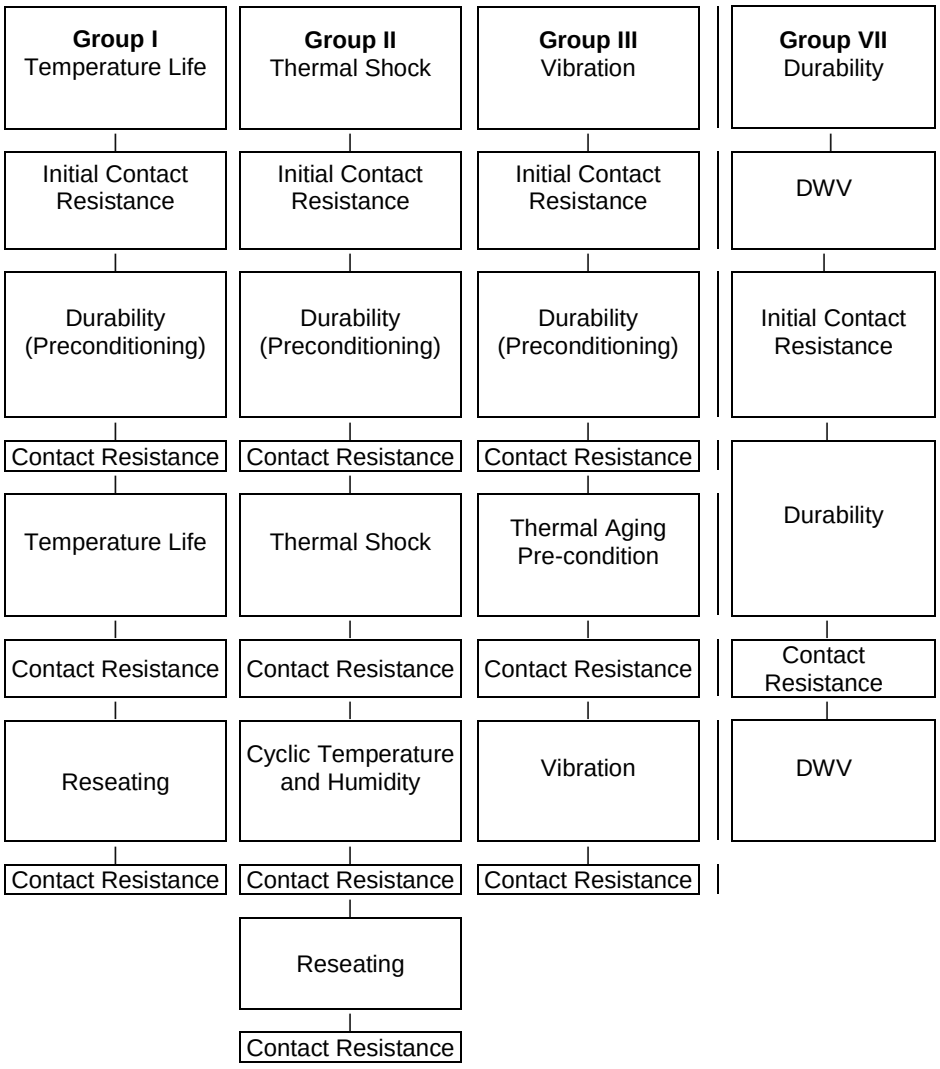
6.3 ENVIRONMENTAL PERFORMANCE CONTINUED

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.3.11	Reflow Solder Heat Resistance	Reflow solder process: 235°C max per AS-40000-5013	Appearance: No damage Dimensional: Conformance to sales drawing requirements.
6.3.12	Reflow Solder Heat Resistance: applicable to 46984 & 46986 with gold & Silver plating ONLY	Reflow solder process: 260°C max per AS-40000-5013	Appearance: No damage Dimensional: Conformance to sales drawing requirements.
6.3.13	Wave Solder Heat Resistance **	Dip header terminal tails in solder: Solder Duration: 3 +/- 0.5 seconds Solder Temperature.: 260 +/- 5 deg. C Per AS-40000-5013	Appearance: No damage
6.3.14	Resistance to Solvents	Solvent: flourinert FC-70 (3M Corp.) Solvent temp: Boiling temp. Immersion time: 120 +/- 5 seconds Solvent: Alpha 1003 (Alpha Metal) Solvent: Isopropyl Alcohol Solvent Temp.: Boiling temp. Immersion time: 240 +/- 5 seconds Repeat in solvent 5 times. Rinse with deionized water between cycles.	Appearance: No damage

**NOTE: This product is compatible with lead-free hand soldering temperatures.
Always mate header to receptacle or plug to receptacle only with like metal plating option.
(Ex: Silver- Silver, Gold to Gold and Tin-Tin)

7.0 TEST SEQUENCE GROUPS

Reliability Test Sequences per EIA-364-1000



Temperature Rise

T-Rise Profiling

Steady State Temperature Rise

Individual Tests

- Contact Insertion / withdrawal Force
- Connector Mating / Unmating Force
- Terminal Insertion force
- Terminal Retention force
- Header Terminal Retention force
- Wire Pullout force (Axial)
- Normal force
- PCB Insertion & Withdrawal Force
- Panel insertion & withdrawal
- Latch Yield strength

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8.0 SOLDER INFORMATION

Per SMES-152 and AS-40000-5013
*These specifications establish standard solderability test methods used to evaluate a products ability to accept molten solder. Solder Process Temperatures and Reflow Solder Profiles will vary based on application, equipment, solder paste, PCB thickness, etc.

8.1 SOLDER PROCESS TEMPERATURES *

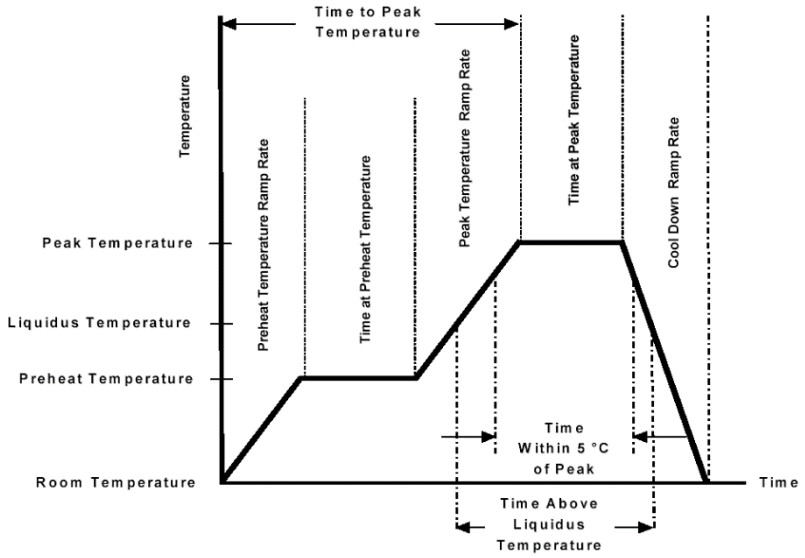
Wave Solder Temperature: 245°C Maximum
Reflow Solder Temperature: 260°C Maximum

Molex Solderability Specification SMES-152
(Click Here)

8.2 REFLOW SOLDERING PROFILE

(This profile is per AS-40000-5013 and is provided as a guideline only. Please see notes for additional information)

Molex Connector Heat Resistance Specification AS-40000-5013
(Click Here)



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Description	Requirement
Average Ramp Rate	3°C/sec Max
Preheat Temperature	150°C Min to 200°C Max
Preheat Time	60 to 180 sec
Ramp to Peak	3°C/sec Max
Time over Liquidus (217°C)	60 to 150 sec
Peak Temperature	260 +0/-5°C
Time within 5°C of Peak	20 to 40 sec
Ramp - Cool Down	6°C/sec Max
Time 25°C to Peak	8 min Max

Notes:

1. Temperature indicated refers to the PCB surface temperature at solder tail area.

2. Connector can withstand 3 reflow cycle.

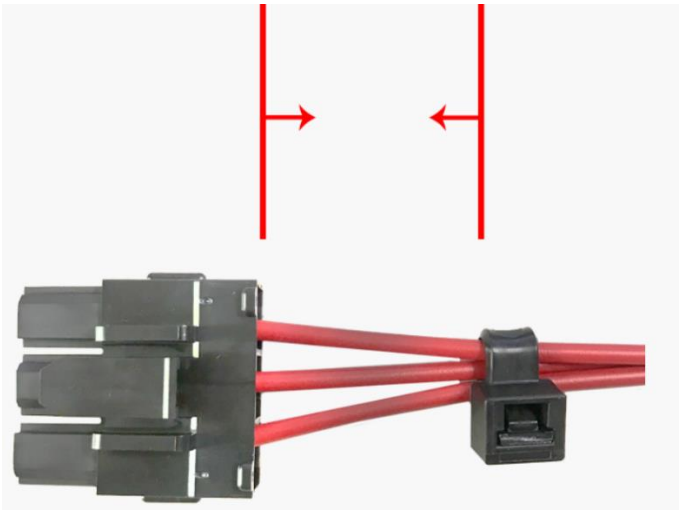
3. Actual reflow profile also depends on equipment, solder paste, PCB thickness, and other components on the board. Please consult your solder paste & reflow equipment manufacturer for their recommendations to adopt a suitable process.

9.0 PACKAGING

Parts shall be packaging to protect the parts from damage during standard shipping, storage, and handling. Refer Molex.com specific part number webpage to get the exact packaging document for that item.

10.0 CABLE TIE AND/OR WIRE TWIST LOCATION

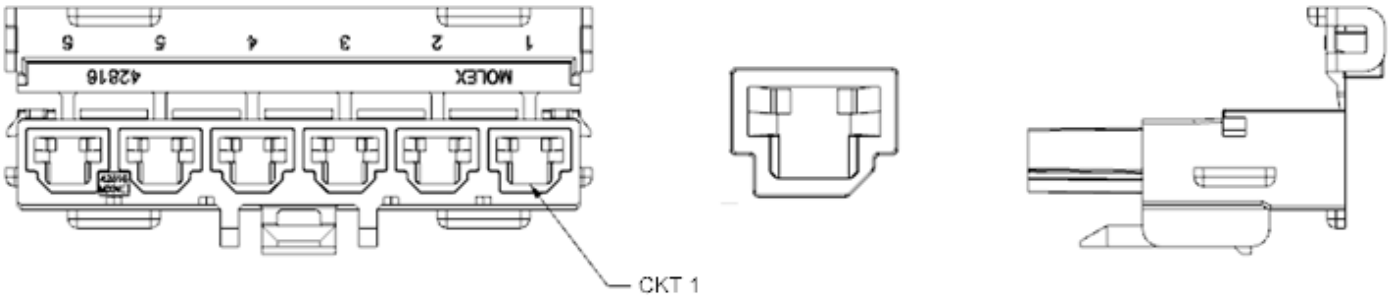
Circuit Sizes			Dimension T Minimum
2, 3	4, 5	6	0.50” (12.7mm)
8			0.75” (19.1mm)
10		12	1.00” (25.40mm)
14			1.25” (31.75mm)



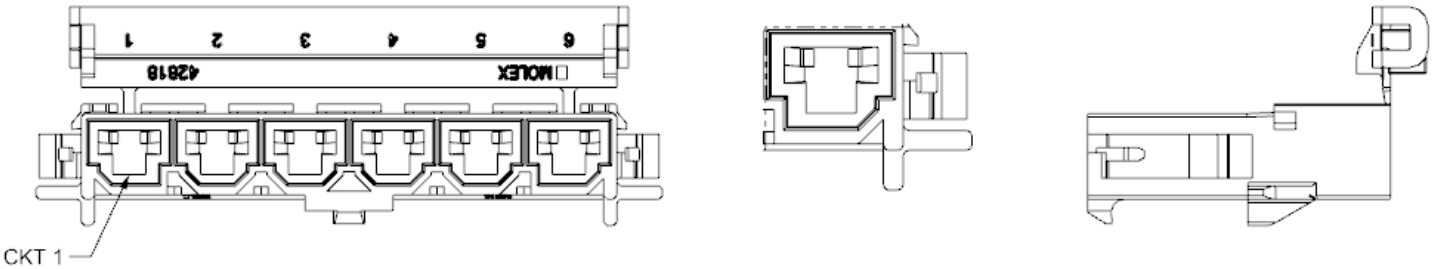
The “T” dimension defines a “free” length of wire, or a length of wire that is not subject to significant bias by external factors such as a wire tie, wire twisting, or other means of bending or deforming of the wires that repositions them from their natural relaxed state or location where they enter the housing. Wires are to be dressed in such a manner to allow the terminals to float freely in the pocket. This dimension is general recommendation and may need to be adjusted for different wire gauges and wire type and insulation thickness and insulation material.

11.0 POLARIZATION AND KEYING OPTIONS

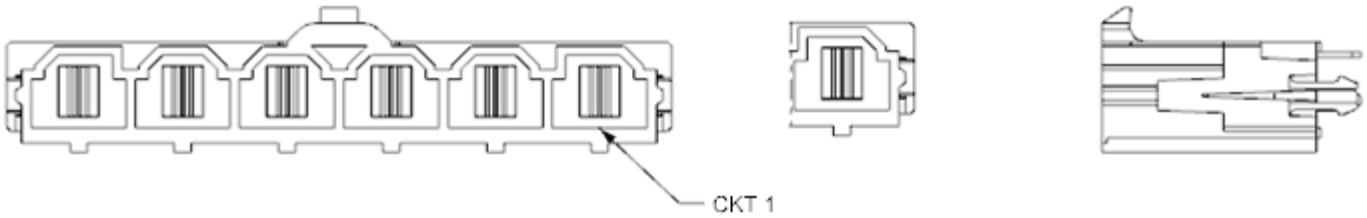
11.1 Receptacle (Series: 42816)



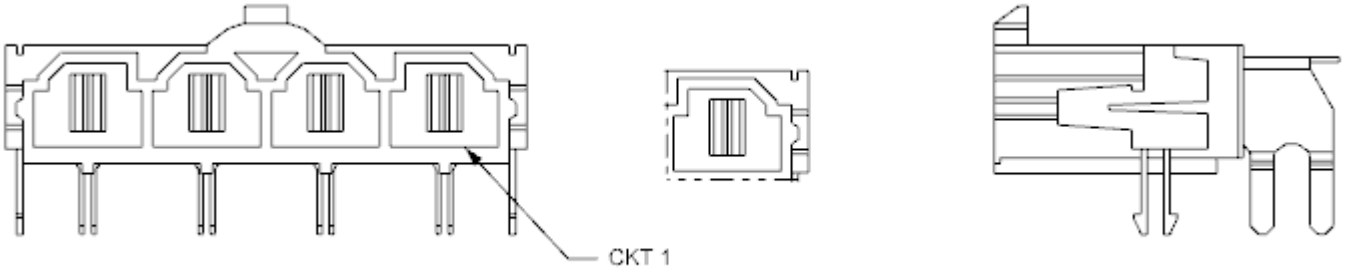
11.2 Plug (Single Row) (Series: 42818)



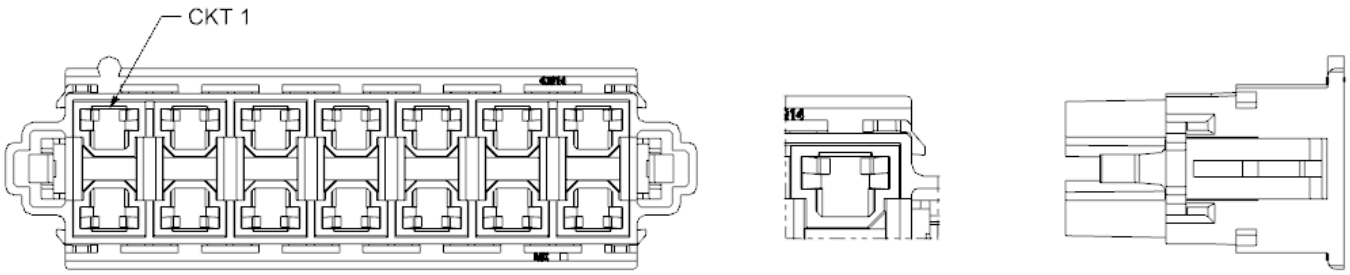
11.3 Vertical Header (Single row) (Series: 42819)



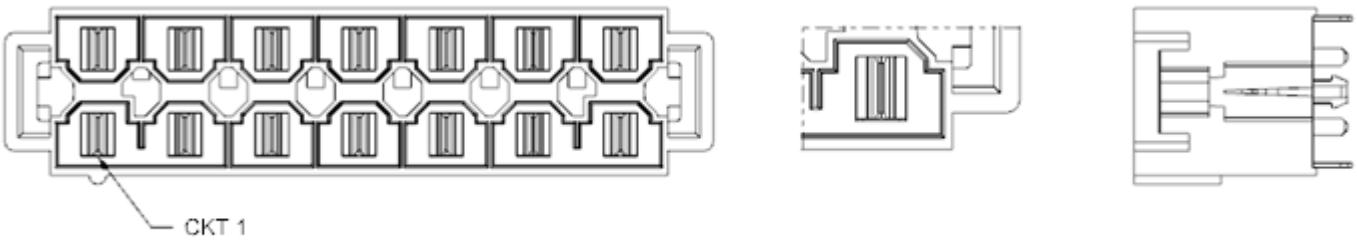
11.4 Right Angle Header (Single Row) (Series: 42820)



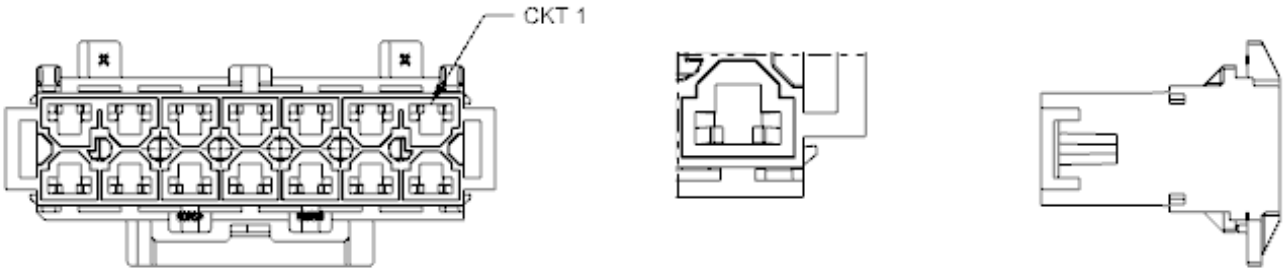
11.5 Receptacle (Dual Row) (Series: 43914)



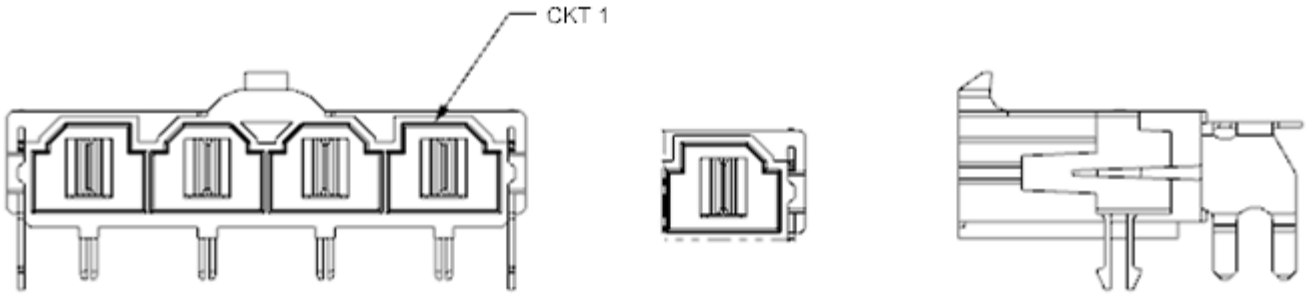
11.6 Vertical Header (Dual Row) (Series: 43915)



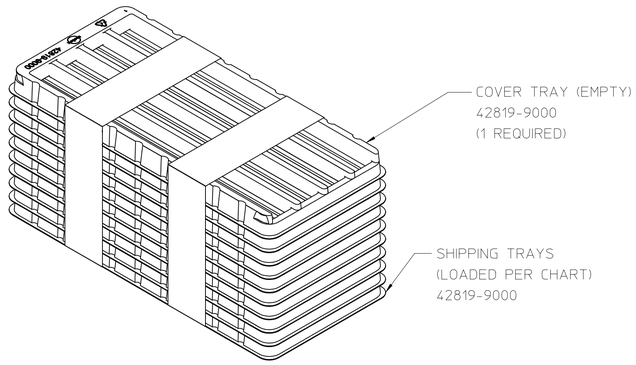
11.7 Panel Mount Plug (Dual Row) (Series: 43938)

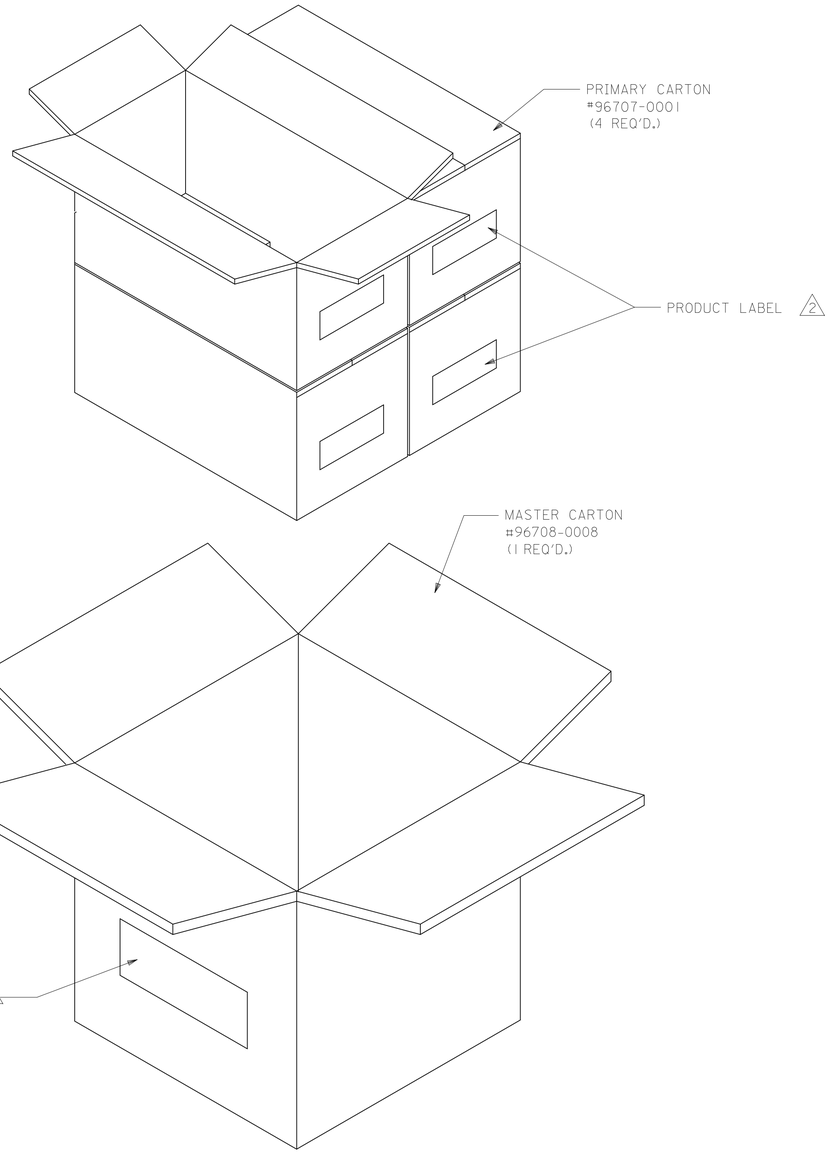


11.8 Right Angle Header (Single Row) (Series: 46984)



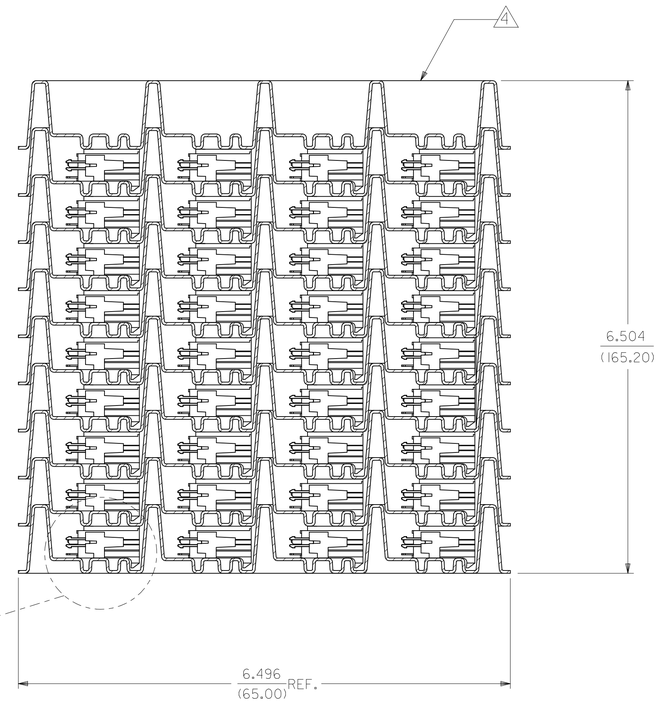
CKT. SIZE	HEADER ASSEMBLIES PER			
	ROW	TRAY	BOX	CARTON
2	13	52	468	1872
3	9	36	324	1296
4	7	28	252	1008
5	6	24	216	864
6	5	20	180	720

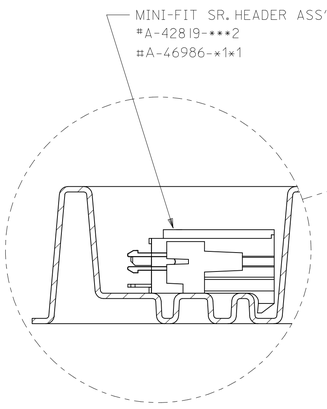




NOTES:

1) STAPLES MAY BE USED TO SET UP CARTONS ONLY. CARTON CLOSURES MUST BE DONE WITH TAPE ONLY.
2) CARTONS SHALL HAVE A LABEL AFFIXED TO IT WITH THE FOLLOWING INFORMATION: PART NO., QUANTITY AND DATE CODE.
3) THIS PACKAGING SPECIFICATION IS FOR MINI-FIT SR. VERTICAL HEADER ASSEMBLIES ONLY.
4) COVER TRAY IS SHIPPED EMPTY. IT IS USED TO KEEP PARTS IN TRAY BELOW IT FROM BOUNCING OUT OF THE ROWS DURING SHIPPING.
5) THIS TRAY IS DESIGNED FOR USE WITH VERTICAL HEADER ASSEMBLIES 42819-2311, 42819-*2** , 46986-*1*1 AND RIGHT ANGLE HEADER ASSEMBLIES 42820-*212. IT WILL NOT ACCEPT RIGHT ANGLE HEADER ASSEMBLIES 42820-*222 AND 42820-*232.
6) USE DUNNAGE AS REQUIRED TO PREVENT EXCESSIVE MOVEMENT DURING SHIPMENT.





ORIENTATION OF HEADER IN TRAY

TYP. TRAY NESTING

SCALE: FULL SIZE

CHG MASTER CARTON
EC NO: UCP2017-0961 2016/10/27
DRWN: JSCHAFER
CH'KD:
APPR: FSMITH 2016/10/28
DESCRIPTION
REV E3

QUALITY SYMBOLS
▼=0
▽=0

GENERAL TOLERANCES (UNLESS SPECIFIED)

	mm	INCH
4 PLACES	± ---	± ---
3 PLACES	± ---	± .005
2 PLACES	± 0.13	± .010
1 PLACE	± 0.25	± ---
0 PLACE	±	±

ANGULAR ±1/2°

DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS

DIMENSION STYLE: IN/MM
SCALE:
DESIGN UNITS: INCH
THIRD ANGLE PROJECTION

DRAWN BY: PBAKKE DATE: 11-06-06
CHECKED BY: JCOMERCI DATE: 11-06-06
APPROVED BY: JCOMERCI DATE: 11-06-06
MATERIAL NO.: NONE

TITLE: PACKAGING SPEC FOR MINIFIT SR. VERTICAL HEADER ASSEMBLIES

molex

DOCUMENT NO.: PK-42819-2375
SHEET NO.: 1 OF 1

SIZE D