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ELECTRONICS

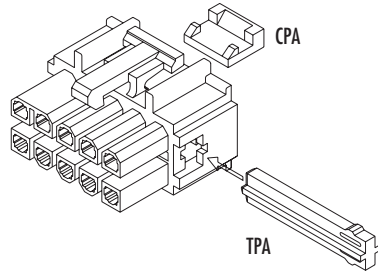
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Jameco Part Number 1298401

# 4.20mm (.165") Pitch Mini-Fit TPA™ Receptacle

**30067**  
Dual Row  
With Secondary Terminal  
Retention



### Features and Benefits

- Receptacle housing for wire-to-wire and wire-to-board applications
- Terminal Position Assurance (TPA) allows the terminal to be fully seated in the housing assuring that it will not back out during high vibration applications
- Connector Position Assurance (CPA) assures housing cannot be inadvertently disengaged
- Contrasting color (white) TPA/CPA for high visibility
- TPA and CPA keys are sold individually to meet customer-specific needs

### Reference Information

Packaging: Bag  
 UL File No.: E29179  
 CSA File No.: LR19980  
 TUV License No.: R75142  
 Use With: 46083, 45750 and 5556 terminals  
 Mates With: 30068 housing, 30069 and 30070 headers  
 Designed In: Millimeters

### Physical

Housing: Black polyester, UL 94V-0  
 Operating Temperature: -40 to +105°C

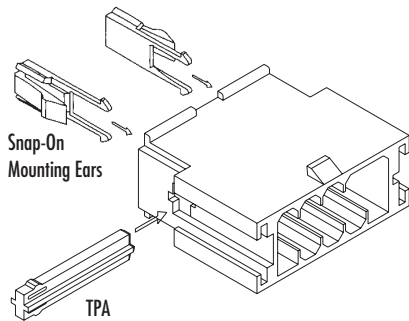
Circuits	Order No.			Lead-free
	Receptacle (30067 Series)	TPA Pin (30072 Series)	CPA Key (30071 Series)	
2	<a href="#">15-97-5021</a>	<a href="#">15-97-9041*</a>	<a href="#">15-97-0071†</a>	Yes
4	<a href="#">15-97-5041</a>			
6	<a href="#">15-97-5061</a>			
8	<a href="#">15-97-5081</a>			
10	<a href="#">15-97-5101</a>			
12	<a href="#">15-97-5121</a>			
16	<a href="#">15-97-5161</a>	<a href="#">15-97-9161</a>		

\* The same TPA pin is used for both the 2 and 4 circuit receptacles

† The same CPA key is used for all receptacles, regardless of circuit size

# 4.20mm (.165") Pitch Mini-Fit TPA™ Plug

**30068**  
Dual Row with Secondary  
Terminal Retention



### Features and Benefits

- Plug housing for wire-to-wire applications
- Terminal Position Assurance (TPA) allows the terminal to be fully seated in the housing, assuring that it will not back out during high-vibration applications
- TPA key is sold individually to meet customer-specific needs
- Optional snap-on ears for panel mounting
- Contrasting color (white) TPA/CPA for high visibility

### Reference Information

Packaging: Bag  
 UL File No.: E29179  
 CSA File No.: LR19980  
 TUV License No.: R75142  
 Use With: 46314, 46012 and 5558 terminals  
 Mates With: 30067 housing  
 Designed In: Millimeters

### Physical

Housing: Black polyester, UL 94V-0  
 Operating Temperature: -40 to +105°C

Circuits	Order No.			Lead-free
	Plug (30068 Series)	TPA Pin (30072 Series)	Snap-on Mounting Ears	
2	<a href="#">15-97-6021</a>	<a href="#">15-97-9041*</a>	<a href="#">43130-0001†</a>	Yes
4	<a href="#">15-97-6041</a>			
6	<a href="#">15-97-6061</a>			
8	<a href="#">15-97-6081</a>			
	<a href="#">15-97-6101</a>			
16	<a href="#">15-97-6161</a>	<a href="#">15-97-9161</a>		

\* The same TPA pin is used for both the 2 and 4 circuit plugs

† Two snap-on mounting ears required per plug housing for panel mounting application



# PRODUCT SPECIFICATION

## MINI-FIT TPA

### 1.0 SCOPE

This Product Specification covers performance requirements for the MINI-FIT TPA 4.20 mm (.165 inch) centerline (pitch) printed circuit board (PCB) connector series with Tin or Gold plating, and The MINI-FIT TPA connector series terminated with 16 to 28 AWG wire using Crimp technology with Tin or Gold plating.

### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND SERIES NUMBER (S)

<u>PRODUCT NAME</u>	<u>PART NUMBER</u>
Female Crimp Terminal	5556-****
Male Crimp Terminal	5558-****
Receptacle Housing	30067-****
Plug Housing	30068-****
Vertical Header Assembly	30069-****
Vertical Header Assembly	44482-****
Right Angle Header Assembly	30070-****
Right Angle Header Assembly	44483-****
Terminal Position Assurance Key (TPA)	30072-*
Connector Position Assurance Key (CPA)	30071

#### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate sales drawings for the information on dimensions, materials, platings and markings.

#### 2.3 SAFETY AGENCY APPROVALS

UL File #E29179  
CSA Certificate #LR 19980  
TUV Certificate #R75142-8

### 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See sales drawings and the other sections of this specification for the necessary referenced documents and specifications

### 4.0 RATINGS

#### 4.1 VOLTAGE

600 Volts AC (RMS) (or 600 Volts DC)

#### 4.2 CURRENT AND APPLICABLE WIRES

<b>Maximum Insulation Diameter and Applicable Wire Gauges</b>	16 AWG: 3.10/. 122 MAXIMUM
	18-24 AWG: 3.10/. 122 MAXIMUM
	22-28 AWG: 1.80/. 071 MAXIMUM

REVISION: <b>C</b>	ECR/ECN INFORMATION: EC No: <b>UCP2004-0947</b> DATE: <b>2003 / 11 / 14</b>	TITLE: <b>PRODUCT SPECIFICATION FOR MINI-FIT TPA CONNECTOR SYSTEM</b>	SHEET No. <b>1 of 5</b>
DOCUMENT NUMBER: <b>PS-5556-003</b>	CREATED / REVISED BY: <b>M. BANDURA</b>	CHECKED BY: <b>M. BANDURA</b>	APPROVED BY: <b>Y. MARGULIS</b>



# PRODUCT SPECIFICATION

## 4.2 CURRENT AND APPLICABLE WIRES (continued)

MAXIMUM CURRENT RATING (Amperes)									
Brass					Phosphor Bronze				
Wire \ Ckt. Size	2 & 3	4 - 6	7 - 10	12 - 24	Wire \ Ckt. Size	2 & 3	4 - 6	7 - 10	12 - 24
AWG #16	9	8	7	6	AWG #16	8	7	6	5
AWG #18	9	8	7	6	AWG #18	8	7	6	5
AWG #20	7	6	5	5	AWG #20	6	5	4	4
AWG #22	5	4	4	4	AWG #22	4	3	3	3
AWG #24	4	3	3	3	AWG #24	3	2	2	2
AWG #26	3	2	2	2	AWG #26	2	1	1	1
AWG #28	2	1	1	1	AWG #28	1	1	1	1

## 4.3 TEMPERATURE

Operating: \* - 40°C to + 105°C

Nonoperating: - 40°C to + 105°C

\*Including 30°C terminal temperature at rated current

## 5.0 PERFORMANCE

### 5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	<b>Contact Resistance (Low Level)</b>	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA. Wire resistance shall be removed from the measured value.	10 milliohms MAXIMUM [initial]
2	<b>Contact Resistance @ Rated Current</b>	Mate connectors: apply a maximum voltage of 20 mV at rated current.	10 milliohms MAXIMUM [initial]
3	<b>Contact Resistance of Wire Termination (Low Level)</b>	Terminate the applicable wire to the terminal and measure wire using a voltage of 20 mV and a current of 100 mA.	5 milliohms MAXIMUM [initial]
4	<b>Insulation Resistance</b>	Mate connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM

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<b>PS-5556-003</b>	<b>M. BANDURA</b>	<b>M. BANDURA</b>	<b>Y. MARGULIS</b>



# PRODUCT SPECIFICATION

## 5.1 ELECTRICAL REQUIREMENTS (continued)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	<b>Dielectric Withstanding Voltage</b>	Mate connectors: apply a voltage of 1500 VAC for 1 minute between adjacent terminals and between terminals to ground.	No breakdown. Current leakage < 5 mA
6	<b>Temperature Rise (via Current Cycling)</b>	Mate connectors. Measure the temperature rise at the rated current after 96 hours, during current cycling (45 minutes ON and 15 minutes OFF per hour) for 240 hours, and after final 96-hour steady state.	Temperature rise: +30°C MAXIMUM

## 5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	<b>Terminal Mate and Unmate Forces</b>	Insert and withdraw terminal (male to female) at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	14.7 N (3.30 lbf) MAXIMUM insertion force & 1.0 N (0.02 lbf) MINIMUM withdrawal force
2	<b>Crimp Terminal Retention Force (in Housing)</b>	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	30 N (6.74 lbf) MINIMUM retention force
3	<b>Crimp Terminal Retention Force (in Housing With TPA Key)</b>	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	SECTION 5.2.7
4	<b>Durability</b>	Mate connectors up to 30 cycles at a maximum rate of 10 cycles per minute prior to Environmental Tests.	20 milliohms MAXIMUM
5	<b>Vibration (Random)</b>	Mate connectors and vibrate per EIA 364-28, test condition VII.	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
6	<b>Shock (Mechanical)</b>	Mate connectors and shock at 50 g's with ½ sine wave (11 milliseconds) shocks in the ±X, ±Y, ±Z axes, (18 shocks total).	20 milliohms MAXIMUM & Discontinuity < 1 microsecond

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DOCUMENT NUMBER: <b>PS-5556-003</b>	CREATED / REVISED BY: <b>M. BANDURA</b>	CHECKED BY: <b>M. BANDURA</b>	APPROVED BY: <b>Y. MARGULIS</b>



# PRODUCT SPECIFICATION

## 5.2 MECHANICAL REQUIREMENTS (continued)

7	<b>Wire Pullout Force (Axial)</b>	Apply an axial pullout force on the wire at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch).	16 Awg = 88.0 N (19.8 lbf) Min. 18 Awg = 88.0 N (19.8 lbf) Min. 20 Awg = 59.0 N (13.3 lbf) Min. 22 Awg = 39.0 N (8.78 lbf) Min. 24 Awg = 29.0 N (6.52 lbf) Min. 26 Awg = 19.0 N (4.27 lbf) Min. 28 Awg = 9.80 N (2.20 lbf) Min.
8	<b>Crimp Terminal Insertion Force (into Housing)</b>	Apply an axial insertion force on the terminal at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch).	15.0 N (3.37 lbf) MAXIMUM insertion force
9	<b>Normal Force</b>	Apply a perpendicular force.	0.49 N (50 grams) MINIMUM [Gold (noble) plating] OR 1.47 N (150 grams) MINIMUM [Tin (non-noble) plating]
10	<b>PCB Engagement and Separation Forces</b>	Engage and separate a connector at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute. (Applies to parts with PCB retention features only)	49.0 N (11.0 lbf) MAXIMUM insertion force & 10.0 N (2.24 lbf) MINIMUM withdrawal force
12	<b>Receptacle Thumb Latch Strength (CPA not installed)</b>	Mate connectors. Pull connectors apart at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute.	68 N (15.3 lbf)

## 5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	<b>Thermal Shock</b>	Mate connectors: expose for 5 cycles between temperatures -55 and 105°C; dwell 0.5 hours at each temperature.	20 milliohms MAXIMUM Visual: No Damage Dielectric Strength per 5.1.5 Insulation Resistance per 5.1.4
2	<b>Thermal Aging</b>	Mate connectors; expose to: 96 hours at $105 \pm 2^\circ\text{C}$	20 milliohms MAXIMUM & Visual: No Damage
3	<b>Humidity (Steady State)</b>	Mate connectors: expose to a temperature of $60 \pm 2^\circ\text{C}$ with a relative humidity of 90-95% for 96 hours.	20 milliohms MAXIMUM Dielectric Strength per 5.1.5 Insulation Resistance per 5.1.4 Visual: No Damage

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<b>PS-5556-003</b>	<b>M. BANDURA</b>	<b>M. BANDURA</b>	<b>Y. MARGULIS</b>



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4	Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)
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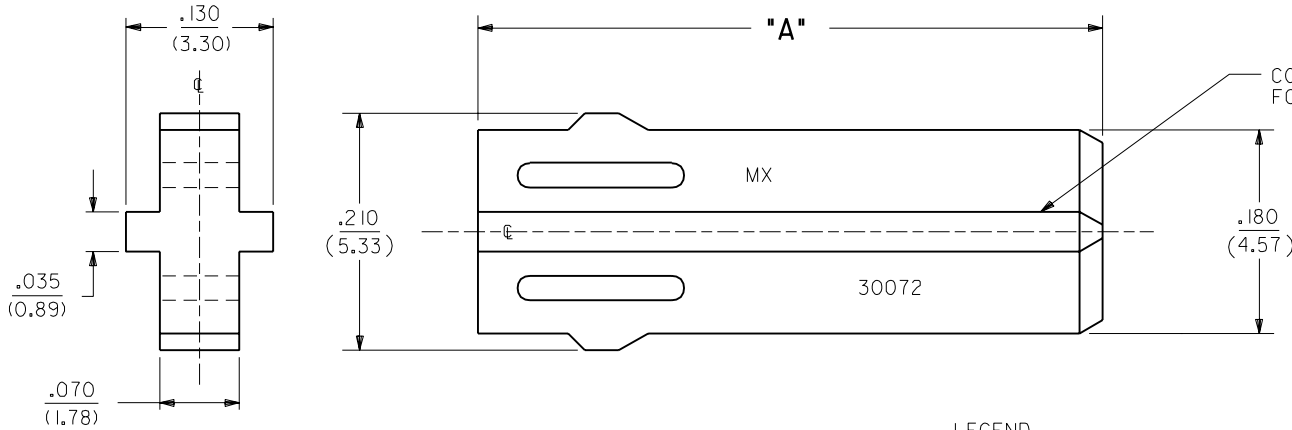
## 5.3 ENVIRONMENTAL REQUIREMENTS (continued)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	Solder Resistance	Dip connector terminal tails in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 235 ± 5°C	Visual: No Damage to insulator material
6	Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	20 milliohms MAXIMUM Visual: No Damage
7	Corrosive Atmosphere: Sulfur Dioxide Gas (SO <sub>2</sub> )	Mate connectors: Duration: 24 hours exposure. Atmosphere: 50 parts per million (ppm) SO <sub>2</sub> Gas. Temperature: 40 ± 3°C	20 milliohms MAXIMUM Visual: No damage

## 6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.

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CONTINUOUS RIB CAN BE DISRUPTED FOR EJECTOR PINS.

LEGEND  
30072 - \* \*

CKT. SIZE  
COLOR:  
"BLANK" = NATURAL  
"R" = DYED RED

HOUSING CKT. SIZE	DIM. "A"	NATURAL		DYED RED	
		ENG. NO.	EDP. NO.	ENG. NO.	EDP. NO.
2,4	$\frac{.387}{(9.83)}$	30072-04	15-97-9041	30072-04R	15-97-9042
6	$\frac{.553}{(14.05)}$	30072-6	15-97-9061	30072-06R	15-97-9062
8	$\frac{.718}{(18.24)}$	30072-8	15-97-9081	30072-08R	15-97-9082
10	$\frac{.883}{(22.43)}$	30072-10	15-97-9101	30072-10R	15-97-9102
12	$\frac{1.049}{(26.65)}$	30072-12	15-97-9121	30072-12R	15-97-9122
14	$\frac{1.214}{(30.84)}$	30072-14	NOT TOOLED	30072-14R	NOT TOOLED
16	$\frac{1.379}{(35.03)}$	30072-16	15-97-9161	30072-16R	15-97-9162
18	$\frac{1.742}{(44.25)}$	30072-18	NOT TOOLED	30072-18R	NOT TOOLED
20	$\frac{1.907}{(48.44)}$	30072-20	NOT TOOLED	30072-20R	NOT TOOLED
22	$\frac{2.072}{(52.63)}$	30072-22	NOT TOOLED	30072-22R	NOT TOOLED
24	$\frac{2.238}{(56.85)}$	30072-24	NOT TOOLED	30072-24R	NOT TOOLED

NOTES:

1. MATERIAL: NYLON 6/6, U.L. 94V-2, COLOR: NATURAL.
2. PART IS FOR USE WITH HOUSINGS #30067 AND #30068.
3. SEE PRODUCT SPECIFICATION # PS-5556-0003.

MFG. SH. REV. LTR. REVISIONS

I	ADD EDP NO'S ECN U30694 93/05/06 A.GUZIK
HI	ADDED DYED RED ECN U30639 GEP 4-26-93
H	CHGD. COLOR PER ECR U21575 10-27-92 RJF
G	-04 WAS -2,4 PER ECN U21078 GEP 7-24-92 RJF
F	ADDED 18-24 CKTS. PER ECN U11918 9-26-91 RJF
E	REV. PROD. SPEC. ECN U11690 GEP 8-15-91 RJF
D	REDRAWN & REVISED ON CAD ECR#U90361 TGP/DMF 10-23-89

DIMENSIONS SHOWN (METRIC) INCH		$\nabla = 0$ $\blacktriangledown = 0$ <b>REVISE ONLY ON CAD SYSTEM</b>	
UNLESS OTHERWISE SPECIFIED TOLERANCES: ANGULAR 1/2°			
INCH		METRIC	
3 PLACE	± .010	---	
2 PLACE	± .014	± 0.25	
1 PLACE	---	± 0.36	
DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS			
DRWG. BY: DMF	CHK'D. BY: TGP	PART NO. <b>SEE CHART</b> DRWG. NO. <b>SD-30072-*</b>	
APP'D. BY: SC	SCALE: 10:1	FILE NAME: S30072.DWG	THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION.
TITLE: TERMINAL POSITION ASSURANCE (TPA) FOR HOUSINGS #30067- * & #30068- *		SHEET NO. 1 OF 1	DATE 10/23/89
MOLEX INCORPORATED		LISLE, ILL. 60532	U.S.A.
DRW. CP	SIZE B		